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AUTHORITY

AUTOMOTIVE INDUSTRY RETAIL, SERVICE & REPAIR

VOLUME 2

TRAINING PACKAGE CODE AUR 99

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This material contained within this volume is part of the endorsed component of the training package, this volume should not be used in isolation, but should be used in the context of the whole training package

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Training packages are not static documents. Changes are made periodically to reflect the latest industry practices.

Before commencing any form of training or assessment, you must ensure delivery is from the *current version* of the Training Package.

To ensure you are complying with this requirement :

- Check the Print Version Number just below the copyright statement on the imprint pages of your current Training Package.
- Access the ATP website (<http://www.atpl.net.au>) and check the latest Print Number.
- In cases where the Print Version Number is later than yours, the Print Version Modification History in the Training Package sample on the ATP website will indicate the changes that have been made.

The Modification History is also available on the website of the developer of the Training Package: Automotive Training Australia ata@automotivetraining.org.au

The National Training Information Service (<http://www.ntis.gov.au>) also displays any changes in Units of Competency and the packaging of qualifications.

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Cannot be read in isolation
referring to Qualifications
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4.00	14/10/2003	NTQC	<p>Summary of Modifications</p> <p>1 x Change of Qualification packaging rule 27 x Revision of Qualifications 4 x Replacement of competency standards 4 x Splitting of competency standards 6 x New Qualifications 91 x New competency standards 3 x Newly imported competency standards</p> <p>Modification Details</p> <p><i>Change of Qualification packaging rule</i> (See Volume 1)</p> <ul style="list-style-type: none"> Changed packaging rules applicable to the compulsory stream AUR31499 (Sales – Vehicle) <p><i>Revision of Qualifications</i> (See Volume 1)</p> <ul style="list-style-type: none"> AUR23708A removed from compulsory stream of AUR20899 Cert II in Automotive (Mechanical – Cylinder head reconditioning) & AURT3813A & AURT3814A included in compulsory stream AUR23608A removed from compulsory stream of AUR20999 Cert II in Automotive (Mechanical – Driveline) & AURT3810A & AURT3811A included in compulsory stream AUR23608A removed from compulsory stream of AUR21099 Cert II in Automotive (Mechanical – Exhaust Fitting & Repair) & AURT3810A & AURT3811A included in compulsory stream AUR04166A, AUR04170A & AUR23608A, removed from compulsory stream of AUR21199 Cert II in Automotive (Mechanical – Natural Gas Vehicle (NGV) Services) & ART2833A, AURT3810A, AURT3811A & AURT3835A included in compulsory stream AUR23608A removed from compulsory stream of AUR21299 Cert II in Automotive (Mechanical – Radiator Repair) & AURT3810A & AURT3811A included in compulsory stream AUR23608A removed from compulsory stream of AUR21399 Cert II in Automotive (Mechanical – Steering & Suspension) & AURT3810A & AURT3811A included in compulsory stream AUR17966A removed from compulsory stream of AUR21499 Cert II (Mechanical – Tyre fitting & Repair Heavy) & AURT2800A, AURT2801A, AURT2802A, AURT2803A and AURT2804A to be chosen from for completion

<h2 style="text-align: center;">MODIFICATION HISTORY – ENDORSED MATERIALS</h2> <p style="text-align: center;">Please refer to the National Training Information Service for the latest version of Units of Competency and Qualification information (http://www.ntis.gov.au).</p>			
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4.00	14.04.2003	NTQC	<p><i>Revision of Qualifications</i> (continued) (See Volume 1)</p> <ul style="list-style-type: none"> • AUR23608A & AUR24623A removed from compulsory stream of AUR22499 Cert II in Automotive (Vehicle Body – Accessory Fitting “Mechanical”) & AURT2817A, AURT3810A and AURT3811A included in compulsory stream • AUR23608A removed from compulsory stream of AUR22699 Cert II in Automotive (Vehicle Body – Dismantling) & AURT3810A & AURT3811A included in compulsory stream • MEM8.7AA removed from compulsory stream of AUR22999 Certificate II in Automotive (Vehicle Body – Window Tinting) and AURV2800A included in compulsory stream • AUR23608A removed from compulsory stream of AUR30299 Cert III in Automotive (Mechanical – Automatic Transmission) & AURT3810A & AURT3811A included in compulsory stream • AUR23608A & AUR24623 removed from compulsory stream of AUR30399 Cert III in Automotive (Mechanical – Brakes) & AURT3810A & AURT3811A included in compulsory stream • AUR23708A removed from compulsory stream of AUR30499 Cert II in Automotive (Mechanical – Diesel Fitter) & AURT3813A & AURT3814A included in compulsory stream • AUR23608A removed from compulsory stream of AUR30699 Cert III in Automotive (Mechanical – Driveline) & AURT3810A & AURT3811A included in compulsory stream • AUR23608A removed from compulsory stream of AUR30799 Cert III in Automotive (Mechanical – Engine Reconditioning) & AURT3810A & AURT3811A included in compulsory stream • AUR23608A removed from compulsory stream of AUR30899 Cert III in Automotive (Mechanical – Heavy Vehicle Road Transport) & AURT3810A & AURT3811A included in compulsory stream • AUR23608A removed from compulsory stream of AUR30999 Cert III in Automotive (Mechanical – Heavy Vehicle Mobile Equipment) & AURT3810A & AURT3811A included in compulsory stream • AUR23608A removed from compulsory stream of AUR31199 Cert III in Automotive (Mechanical – Motorcycle) & AURT3810A & AURT3811A included in compulsory stream • AUR4131A, AUR4166A, AUR4170A & AUR23608A removed from compulsory stream of AUR31299 Cert III in Automotive (Mechanical – Natural Gas Vehicle Installer) & AURT2832A, AURT3810A, AURT3811A, AURT3831A & AURT3835A included in compulsory stream • AUR23708A removed from compulsory stream of AUR31599 Cert III in Automotive (Vehicle Body - Building) & AURT3813A & AURT3814A included in compulsory stream • AUR23708A removed from compulsory stream of AUR31699 Cert II in Automotive (Vehicle Body – Panel Beating) & AURT3813A & AURT3814A included in compulsory stream • AUR31108A removed from compulsory stream of AUR31799 Cert III Automotive (Vehicle Body – Trimming) & AURV3802A included in compulsory stream • AUR24623A removed from compulsory stream of AUR31999 Cert III in Bicycles (Mechanics) • AUR23708A removed from compulsory stream of AUR32199 Cert II in Marine (Installation) & AURT3813A & AURT3814A included in compulsory stream

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<p style="text-align: center;">Please refer to the National Training Information Service for the latest version of Units of Competency and Qualification information (http://www.ntis.gov.au).</p>			
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4	14/10/2003	NTQC	<p>Revision of Qualifications (continued) (See Volume 1)</p> <ul style="list-style-type: none"> • AUR23608A & THHHCO01A removed from compulsory stream of AUR32299 Cert III in Marine (Mechanics) & AURT2818A, AURT3810A & AURT3811A included in compulsory stream • AUR21271A removed from compulsory stream of AUR32499 Cert III in Outdoor Power Equipment (Mechanics) <p>Replacement of competency standards (See competency index for location)</p> <ul style="list-style-type: none"> • AUR21271A has been revised and replaced with AUR21271B • AUR21371A has been removed and replaced with AURT2821A • AUR70125A has been revised and replaced with AUR70125B • AUR70125A has been replaced with revised unit AUR70125B in common core for all qualifications <p>Splitting of competency standards (see Volume 4)</p> <ul style="list-style-type: none"> • AUR04131A, AUR04166A, AUR04177A & AUR04671A have been removed and replaced with AURT2832A, AURT2833A, AURT3830A, AURT3831A, AURT3834A, AURT3835A as a result of splitting of original unit • AUR17966A has been removed and replaced with AURT2800A, AURT2801A, AURT2802A, AURT2803A, AURT2804A as a result of splitting of original unit • AUR23608A & AUR23708A have been removed and replaced with AURT2812A, AURT3810A, AURT3811A, AURT3813A, AURT3814A & AURT3815A as a result of splitting of original units • AUR31108A has been removed and replaced with AURV2803V, AURV2804A and AURV3802A as a result of splitting of original unit <p>New Qualifications (See Volume 1)</p> <ul style="list-style-type: none"> • New Qualification AUR23402 Certificate II in Automotive (Motorsport) • New Qualification AUR32602 Certificate III in Automotive (Motorsport) • New Qualification AUR40202 Certificate IV in Automotive (Motorsport) • New Qualification AUR40302 Certificate IV in Automotive (Performance Enhancement) • New Qualification AUR50202 Diploma of Automotive (Motorsport) • New Qualification AUR50302 Diploma of Automotive (Technology) <p>New competency standards (See Volume 4)</p> <ul style="list-style-type: none"> • New unit AURC1501A Identify environmental regulations and best practice in a workplace or business • New unit AURC2501A Apply environmental regulations and best practice in the automotive industry • New unit AURC4501A Plan and manage compliance with environmental regulations and best practice in a workplace or business • New unit AURM2400A Operate in a motorsport environment • New unit AURM2401A Set up and dismantle temporary work location and equipment • New unit AURM3402A Assemble and prepare a competition vehicle

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4	14/10/2003	NTQC	<p>New competency standards (continued) (See Volume 4)</p> <ul style="list-style-type: none"> • New unit AURM3403A Collect and log motorsport data • New unit AURM3404A Comply with motorsport team and event safety requirements • New unit AURM3405A Conduct non-destructive testing • New unit AURM3406A Construct hose/pipe assemblies for competition vehicles • New unit AURM3407A Coordinate operations of a motorsport team • New unit AURM3408A Perform competition vehicle preparation procedures at an event • New unit AURM3409A Perform pit lane/service area operations • New unit AURM3410A Perform torquing and fastening • New unit AURM3411A Prepare competition vehicle and support equipment for transportation • New unit AURM4412A Analyse and repair complex performance driveline systems • New unit AURM4413A Analyse and repair complex performance fuel systems • New unit AURM4414A Manage motorsport data acquisition • New unit AURM4415A Manage personal presentation and development • New unit AURM4416A Manage the preparation of a competition vehicle • New unit AURM4417A Prepare competition vehicle suspension • New unit AURM4418A Select and prepare tyres and wheels for motorsport applications • New unit AURM4419A Test engines using a dynamometer • New unit AURM4420A Test suspension dampers using a dynamometer • New unit AURM5421A Apply aerodynamic and vehicle dynamic principles and effects to competition vehicles • New unit AURM5422A Determine material suitability for competition vehicle component construction • New unit AURM5423A Manage motorsport operations • New unit AURM5424A Manage motorsport team development • New unit AURM5425A Manage motorsport team media liaison • New unit AURM5426A Manage motorsport team promotional partnerships and marketing • New unit AURM5427A Manage team pit lane/service area operations • New unit AURM5428A Prepare and implement race strategies • New unit AURT2501A Apply environmental regulations and best practice in the marine service industry • New unit AURT2817A Carry out minor fabrication of components/equipment • New unit AURT2818A Comply with laws, regulations and codes of practice relating to the industry • New unit AURT3501A Implement and monitor environmental regulations and best practice in the marine repair industry • New unit AURT3502A Implement and monitor environmental regulations and best practice in the automotive mechanical industry • New unit AURT3805A Service auxiliary brakes • New unit AURT4501A Plan and manage compliance with environmental regulations and best practice in the marine repair and service industry

MODIFICATION HISTORY – ENDORSED MATERIALS			
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Version	Date of Release	Authorisation:	Comments
4	14/10/2003	NTQC	<p>New competency standards (continued) (See Volume 4)</p> <ul style="list-style-type: none"> • New unit AURT4502A Plan and manage compliance with environmental regulations and best practice in the mechanical repair industry • New unit AURT4770A Analyse and evaluate gas fuel system faults • New unit AURT5700A Analyse and evaluate light vehicle steering and suspension system faults • New unit AURT5701A Analyse and evaluate light vehicle driveline system faults • New unit AURT5702A Analyse and evaluate light vehicle engine and fuel system faults • New unit AURT5703A Analyse and evaluate light vehicle braking system faults • New unit AURT5710A Analyse and evaluate heavy vehicle steering and suspension system faults • New unit AURT5711A Analyse and evaluate heavy vehicle transmission system faults • New unit AURT5712A Analyse and evaluate heavy vehicle engine and fuel system faults • New unit AURT5713A Analyse and evaluate heavy vehicle braking system faults • New unit AURT5720A Analyse and evaluate wheeled mobile plant steering and suspension system faults • New unit AURT5721A Analyse and evaluate wheeled mobile plant transmission system faults • New unit AURT5722A Analyse and evaluate mobile plant engine and fuel system faults • New unit AURT5723A Analyse and evaluate tracked mobile plant transmission, steering and braking system faults • New unit AURT5724A Analyse and evaluate tracked mobile plant undercarriage and suspension system faults • New unit AURT5725A Analyse and evaluate wheeled mobile plant braking system faults • New unit AURT5726A Analyse and evaluate mobile plant hydraulic system faults • New unit AURT5730A Analyse and evaluate motorcycle steering, suspension and frame system faults • New unit AURT5731A Analyse and evaluate motorcycle engine and transmission system faults • New unit AURT5732A Analyse and evaluate motorcycle electrical/electronic system faults • New unit AURT5733A Analyse and evaluate motorcycle braking system faults • New unit AURT5735A Analyse and evaluate light marine hydraulic system faults • New unit AURT5736A Analyse and evaluate light marine transmission system faults • New unit AURT5737A Analyse and evaluate light marine engine and powerhead system faults • New unit AURT5738A Analyse and evaluate light marine hull performance and stability system faults • New unit AURT5740A Develop and apply mechanical systems modification • New unit AURT5741A Develop and apply hydraulic systems modification • New unit AURT5742A Develop and apply pneumatic systems modification

<h2 style="text-align: center;">MODIFICATION HISTORY – ENDORSED MATERIALS</h2> <p style="text-align: center;">Please refer to the National Training Information Service for the latest version of Units of Competency and Qualification information (http://www.ntis.gov.au).</p>			
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4	14/10/2003	NTQC	<p>New competency standards (continued) (See Volume 4)</p> <ul style="list-style-type: none"> • New unit AURT5750A Analyse and evaluate electrical and electronic faults in stability/steering/suspension systems • New unit AURT5751A Analyse and evaluate electrical and electronic faults in electric over hydraulic systems • New unit AURT5752A Analyse and evaluate electrical and electronic faults in engine management systems • New unit AURT5753A Analyse and evaluate electrical and electronic faults in transmission/driveline systems • New unit AURT5754A Analyse and evaluate electrical and electronic faults in braking systems • New unit AURT5755A Analyse and evaluate electrical and electronic faults in safety systems • New unit AURT5756A Analyse and evaluate electrical and electronic faults in monitoring/protection systems • New unit AURT5758A Analyse and evaluate electrical and electronic faults in convenience and entertainment systems • New unit AURT5759A Analyse and evaluate electrical and electronic faults in theft deterrent systems • New unit AURT5760A Analyse and evaluate electrical and electronic faults in electric and hybrid vehicle systems • New unit AURT5761A Analyse and evaluate electrical and electronic faults in climate control systems • New unit AURT5765A Develop and apply electrical systems modification • New unit AURT5766A Develop and apply electronic systems modification • New unit AURT5771A Develop and apply gas fuel systems modification • New unit AURT5773A Evaluate and select bodywork materials, equipment and processes • New unit AURT5775A Prepare technical reports • New unit AURT5776A Develop and document technical specifications and procedures • New unit AURT5777A Identify and calculate total costs of work • New unit AURV2801A Carry out minor panel repairs • New unit AURV2800A Carry out cleaning of vehicle windows • New unit AURV2501A Apply environmental regulations and best practice in the body repair industry • New unit AURV3501A Implement and monitor environmental regulations and best practice in the body repair industry • New unit AURV4501A Plan and manage compliance with environmental regulations and best practice in the body repair industry <p>New imported competency standards (See Volume 4)</p> <ul style="list-style-type: none"> • Units AURCR20051A, AURCR20900A and AURCT20200A have been imported from the Aftermarket Sector Training Package
3.00	15/04/2002	NTQC	<ul style="list-style-type: none"> • AUR18866A, AUR19066A & AUR 22670A removed from compulsory stream of AUR30899 Cert III in Automotive (Mechanical - Heavy Vehicle) & AUR17665A included in compulsory stream. • Typographical error in AUR04671A, now AUR04671B. • Change to qualification formula. • Other cat 1 changes - omission of words or content that do not necessarily effect outcomes.

2.00	1/10/2001	NTQC	Introduction of Aftermarket Sector
1.00	13/09/1999	NTFC	Primary Release

Forms control: All endorsed training packages will have a version number displayed on the imprint page of every volume constituting that training package. Every training package will display an up-to-date copy of this modification history form, to be placed immediately after the contents page of the first volume of the training package. Comments on changes will only show sufficient detail to enable a user to identify the nature and location of the change. Changes to training packages will generally be batched at quarterly intervals. This modification history form will be included within any displayed sample of that training package and will constitute all detail available to identify change

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AUR00108A**CARRY OUT MAINTENANCE AND/OR
COMPONENT SERVICING OPERATIONS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out component routine servicing, ensuring correct lubricants/fluids are used during servicing requirements.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR00108A.1 Carry out component servicing.	AUR00108A.1.1 Component servicing is completed without causing damage to any component or system. AUR00108A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR00108A.1.3 *Service is carried out using approved methods and equipment, according to specifications relative to the component. AUR00108A.1.4 *Service operations are completed within established industry guidelines. AUR00108A.1.5 * Appropriate workplace documentation is completed and dealt with relevant to service outcomes. AUR00108A.1.7 *All servicing/maintenance activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR00108A.2 Identify and use correct lubricants and/or fluids.	AUR00108A.2.1 *Correct lubricants/fluids are used for components as per the manufacturer specifications. AUR00108A.2.2 *Used lubricants/fluids are disposed of in accordance to statutory requirements for environment protection. AUR00108A.2.3 *Handling of lubricants/fluids is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical Stream

Sources of information/documents may include:

- manufacturer specifications
- equipment manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand, air or power tools, ramps, hoists and/or pits, lubricating equipment, measuring equipment and/or special tools for removal/adjustment
- engine oils, gear oils, automatic transmission fluids, brake fluids, radiator additives, windscreen washer additives, moving parts lubricants, wheel bearing grease, replacement parts

Methods include:

- carrying out maintenance services as per requirements. Identification and addition of various lubricants/fluids

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating maintenance/servicing operational information
- component servicing and maintenance procedures
- safe working practices
- protection methods

Underpinning knowledge:

- Personal safety requirements
- Types of lubricants and fluid
- Application of lubricants and fluid
- Equipment safety requirements
- Component safety requirements
- Servicing inspection checklists
- Maintenance procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Maintain customer records
- Apply maintenance procedures
- Follow servicing/inspection checklists

Key Competencies:	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Solve problems	1
Use technology	1

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- exchanging technical information
- exchanging information with the customer
- listening to customer requests
- listening to and following verbal instructions

Reading and writing skills may include:

- recording information on computer
- accessing information from computer
- reading and interpreting manufacturer specifications
- reading and interpreting labels on lubricants/fluids
- reading and interpreting technical and safety information
- recording information on company forms eg. checklists, jobsheets

Numeracy skills may include:

- using and interpreting measurements

AUR00208A**CARRY OUT MAINTENANCE OPERATIONS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out routine servicing, maintenance and safety inspection of plant and equipment and/or marine vessels and/or outdoor power equipment and/or bicycles.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR00208A.1 Carry out routine maintenance and servicing.	<p>AUR00208A.1.1 Routine maintenance and servicing is completed without causing damage to any component or system.</p> <p>AUR00208A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR00208A.1.3 Maintenance and servicing is carried out using approved methods and equipment, according to specifications relative to the system.</p> <p>AUR00208A.1.4 All servicing/maintenance activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR00208A.2 Identify and use correct lubricants and/or fluids.	<p>AUR00208A.2.1 Information is accessed from appropriate sources to inform the trainee of correct lubricants/fluids to be used for appropriate vehicle systems as per manufacturer specifications.</p> <p>AUR00208A.2.2 Lubricants/fluids are added to vehicle systems as recommended by manufacturer.</p> <p>AUR00208A.2.3 Used lubricants/fluids are disposed of in accordance to statutory requirements for environment protection.</p> <p>AUR00208A.2.4 Handling of lubricants/fluids is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR00208A.3 Perform a safety inspection.	<p>AUR00208A.3.1 Safety inspection is completed without causing damage to any component or system.</p> <p>AUR00208A.3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR00208A.3 (continued) Perform a safety inspection.	AUR00208A.3.3 Safety inspection is carried out (under direct supervision - where necessary) using approved methods and equipment, according to specifications and tolerances. AUR00208A.3.4 System modification/alterations outside of manufacturer specifications are recorded and appropriate action is taken in compliance with customer contract. AUR00208A.3.5 Records relating to the safety inspections are complete, accurate, in the approved format and promptly passed on to the appropriate person. AUR00208A.3.6 Safety inspections are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied.

- Marine vessels
- Outdoor power equipment
- Bicycles
- Automotive plant and equipment

Sources of information/documents may include:

- manufacturer specifications
- company operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, testing equipment, hoists, pits, greasing equipment, air operated equipment, measuring equipment
- engine oils, gear, oils automatic transmission fluids, brake fluids, radiator additives, windscreens washer additives, moving parts lubricants, wheel bearing grease, replacement parts
- appropriate personal protection

Methods may include:

- Measuring, visual inspection, assessing, testing, adjusting, lubricating, replenishing, removing and replacing

Methods should be applied under normal operating conditions.

Other variables may include:

- gas turbines, forklifts, air, air/hydraulic powered, drill rigs, water pumps

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- routine servicing and maintenance
- safety inspection and reporting procedures
- identifying and using correct lubricants and fluids

Underpinning knowledge:

- System/s principles of operation and their application
- Identification of relevant lubricants and/or fluids
- Servicing and maintenance procedures
- Safety inspection requirements and reporting procedures
- Vehicle/equipment safety requirements
- Maintenance/inspection checklists
- Manual handling techniques
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Maintain customer records
- Apply servicing and maintenance procedures
- Use appropriate lubricants and fluids
- Carry out safety inspection and report findings
- Use service/maintenance inspection checklists
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR00373A**SYNCHRONISE PLANT/EQUIPMENT**

UNIT DESCRIPTOR: This unit identifies the competence required to determine the operating parameters, set up and synchronise plant equipment to specific applications for the RS&R mechanical stream.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR00373A.1 Set up/synchronise procedures.	<p>AUR00373A.1.1 Set up/synchronise procedures is completed without causing damage to any component or system.</p> <p>AUR00373A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR00373A.1.3 Parameters surrounding the synchronisation of units are defined.</p> <p>AUR00373A.1.4 Synchronisation of plant and equipment is carried out using approved methods and equipment, according to specifications relative to the plant/system.</p> <p>AUR00373A.1.5 Synchronisation of units is tested for correct operation under operating conditions.</p> <p>AUR00373A.1.6 Appropriate workplace documentation is completed and dealt with relevant to synchronisation outcomes.</p> <p>AUR00373A.1.7 All setting up/synchronisation is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical Stream

Sources of information/documents may include:

- plant manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, testing equipment such as:
 - multi-meter
 - tachometer
 - pyrometer
 - manometer
 - thermometer
 - C.R.O.
 - pressure gauges

Methods include:

- removal, re-assembly, testing for speed, temperatures, pressure, operation
- synchronising specific component operation

Methods should be applied under normal operating conditions.

Other variables may include:

- farm equipment, movable and stationary plant such as diesel powered air compressors, generating sets, pumping equipment, locomotive, marine, haulage

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- setting up and synchronising plant equipment to specific requirements

Underpinning knowledge:

- Plant/equipment operating procedures
- Systems operating principles
- Equipment safety requirements
- Plant safety requirements
- Technical information
- Measuring and testing procedures
- Plant/equipment set up/synchronising procedures
- Personal safety requirements
- Manual handling procedures

Practical assessments:

- Access, interpret & apply technical information
- Use relevant tools and equipment
- Maintain customer records
- Apply plant/equipment set up/adjustment procedures
- Apply manual handling procedures
- Apply personal safety requirements

Key Competencies:	Level
Collect, analyse and organise information	2
Communicate ideas and information	2
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR01145A**OVERHAUL ENGINES AND ASSOCIATED ENGINE COMPONENTS****UNIT DESCRIPTOR:**

This unit identifies the competence required to Overhaul engines and associated components of a removed engine and involves a complete dismantle and rebuild for light/heavy vehicles, plant, motor cycles and marine on 2 and 4 stroke spark ignition and 2 and 4 stroke compression ignition engines. For overhaul of outdoor power equipment engines and associated components see AUR01245A.

PRE-REQUISITES:

AUR01170A Service engines and associated engine components
AUR01166A Repair engines and associated engine components

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01145A.1 Overhaul engines and/or engine components.	<p>AUR01145A.1.1 Overhaul engines and/or engine components is completed without causing damage to any component or system.</p> <p>AUR01145A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01145A.1.3 Adjustments or replacements of engine and/or engine components are carried out in accordance with manufacturer specifications and tolerances.</p> <p>AUR01145A.1.4 Overhaul activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- Light/heavy vehicles, plant, motor cycles and marine on 2 and 4 stroke spark ignition and 2 and 4 stroke compression ignition engines

Sources of information/documents may include:

- vehicle/ equipment / manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, lifting and jacking equipment, specialist tools, measuring equipment, tensioning equipment
- engine oils, moving part lubricants, replacement parts, gaskets and sealant

Methods include:

- dismantling, re-assembly, measurement

Methods should be applied under normal operating conditions.

Specific requirements:

- Identification of component wear/damages

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- dismantling, assembling and adjustment, component measuring and testing

Underpinning knowledge:

- Engine overhaul procedures
- Dismantling, assembling and adjustment methods
- Measuring and testing procedures
- Relevant technical information
- Equipment safety requirements
- Component safety requirements
- Relevant enterprise policies
- Manual handling techniques
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Measure and test engine components
- Overhaul engines and/or associated components
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR01166A**REPAIR ENGINES AND ASSOCIATED ENGINE COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out repair of an engine, and/or engine components for light/heavy vehicles, plant, motor cycles and marine on 2 and 4 stroke spark ignition and 2 and 4 stroke compression ignition engines. For service and repair of outdoor power equipment engines and associated components see AUR01271A.

PRE-REQUISITES: AUR01170A Service engines and associated engine components

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01166A.1 Repair, remove and replace engines and/or engine components.	AUR01166A.1.1 Repair, remove and replace engines and/or engine components are completed without causing damage to any components or system. AUR01166A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR01166A.1.3 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. AUR01166A.1.4 Service operations of an engine are completed within established industry guidelines. AUR01166A.1.5 Removal, replacement and repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicles, plant, motor cycles and marine on 2 and 4 stroke spark ignition and 2 and 4 stroke compression ignition engines

Sources of information/documents may include:

- vehicle/equipment manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, lifting and jacking equipment, specialist tools, lubricant dispensing equipment

Methods include:

- removal, dismantling, re-assembly, refitting, adjusting, testing

Methods should be applied under normal operating conditions.

Specific requirements may include:

- Identification of component wear/damage, fluid leakage

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing engines and/or engine components

Underpinning knowledge:

- engine/component repair procedures
- engine removal and replacement procedures
- measuring and testing procedures
- equipment/component safety requirements
- construction and operation relevant to application
- manual handling techniques
- personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Test and adjust engines for both technical and legal requirements
- Remove and replace engines
- Repair engines/components
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR01170A**SERVICE ENGINES AND ASSOCIATED ENGINE COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out service of an engine, and/or engine components for light/heavy vehicles, plant, motor cycles and marine on 2 and 4 stroke spark ignition and 2 and 4 stroke compression ignition engines. For service and repair of outdoor power equipment engines and associated components see AUR01271A.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01170A.1 Service engines and/or engine components.	<p>AUR01170A.1.1 Service engines and/or engine components is completed without causing damage to any component or system.</p> <p>AUR01170A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01170A.1.3 Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR01170A.1.4 Service operations of an engine are completed within established industry guidelines.</p> <p>AUR01170A.1.5 Service activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicles, plant, motor cycles and marine on 2 and 4 stroke spark ignition and 2 and 4 stroke compression ignition engines

Sources of information/documents may include:

- vehicle/equipment manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, lifting and jacking equipment, specialist tools, lubricant dispensing equipment

Methods include:

- removal, refitting, testing and adjusting

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing engines and/or engine components

Underpinning knowledge:

- Service procedures
- Equipment/component safety requirements
- Principles of engine operation
- Identify types of engines and components
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Service engines and/or associated components
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR01245A**OVERHAUL ENGINES AND ASSOCIATED ENGINE COMPONENTS (OUTDOOR POWER EQUIPMENT)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the overhaul of small engines and associated engine components appropriate to outdoor power equipment. For overhaul of light/heavy vehicle engines see AUR01145A.

PRE-REQUISITES: AUR01271A Service and repair engines and associated components (Outdoor Power Equipment)

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01245A.1 Overhaul engines and associated components.	<p>AUR01245A.1.1 Overhaul is completed without causing damage to any component or system.</p> <p>AUR01245A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01245A.1.3 Overhaul operations are completed within established guidelines set by Australian standards.</p> <p>AUR01245A.1.4 Adjustments or replacements of engine and/or engine components are carried out in accordance with manufacturer specifications and tolerances.</p> <p>AUR01245A.1.5 Associated component servicing and adjustments are carried out prior to starting the engine.</p> <p>AUR01245A.1.6 Overhaul activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- outdoor power equipment engines and associated components.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, specialist tools, measuring equipment, tensioning equipment.
- engine oils, moving part lubricants, replacement parts, gaskets and sealants
- tuning equipment

Methods include:

- dismantling, re-assembly, refitting, testing

Methods should be applied under normal operating conditions.

Specific requirements:

- component wear, bearing and piston clearances, ring gap, valve train wear, crankshaft end float, engine compression, cylinder leakage.
- 2 and 4 stroke spark ignition and compression ignition engines

Other variables may include:

- single and twin cylinder engines
- liquid and air cooled

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- overhauling of engines and associated equipment

Underpinning knowledge:

- Engine construction and operations relevant to application
- Dismantling and assembling procedures
- Overhaul procedures
- Measuring, testing and adjusting procedures
- Component evaluation
- Relevant technical information
- Equipment safety requirements
- Component safety requirements
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Test and adjust engines for both technical and legal requirements.
- Identify engine operating faults
- Overhaul engines and/or associated components
- Evaluate components
- Apply personal safety requirements.
- Maintain records

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR01271A**SERVICE AND REPAIR ENGINES AND ASSOCIATED ENGINE COMPONENTS (OUTDOOR POWER EQUIPMENT)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service and repair of engines and/or engine components of small engines appropriate to outdoor power equipment. For service and repair of light/heavy vehicle engines see AUR01170A and AUR01166A respectively.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01271A.1 Service and repair engine and/or engine components.	<p>AUR01271A.1.1 Service and repair are completed without causing damage to any component or system.</p> <p>AUR01271A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01271A.1.3 Appropriate workplace documentation is completed and dealt with relevant to service and repair outcomes.</p> <p>AUR01271A.1.4 Service and repair operations are completed within established industry guidelines.</p> <p>AUR01271A.1.5 Service and repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR01271A.2 Removal/replacement of engine.	<p>AUR01271A.2.1 Removal / replacement is completed without causing damage to any component or system.</p> <p>AUR01271A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01271A.2.3 Engine is removed in the prescribed manner.</p> <p>AUR01271A.2.4 Appropriate engine accessories are removed and replaced.</p> <p>AUR01271A.2.5 Engine removal/replacement is completed within established industry guidelines.</p> <p>AUR01271A.2.6 Engine removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams appropriate to the service and repair of outdoor power equipment engines

Sources of information/documents may include:

- manufacturer specifications
- operating procedures
- enterprise customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, specialist tools, measuring equipment, tuning equipment, tensioning equipment
- engine oils, moving part lubricants, replacement parts, gaskets and sealants

Methods include:

- servicing, repairing, fitting, testing and adjusting

Methods should be applied under normal operating conditions.

Specific requirements may include:

- 2 and 4 stroke spark ignition and compression ignition engines

Other variables may include:

- stationary, mobile, inboard engines
- air and liquid cooled
- OHV, OHC, side valve engines

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- service of engine and associated components
- repair of engine and associated components

Underpinning knowledge:

- Relevant technical information
- Equipment safety requirements
- Component safety requirements
- Principles of engine operation
- Personal safety requirements
- Testing and adjustment procedures
- Service and repair procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Identify engine operating faults
- Service and repair engines
- Test and adjust engines for both technical and legal requirements
- Apply personal safety requirements.
- Maintain records

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR01304A**ASSEMBLE ENGINE BLOCK AND SUB-ASSEMBLIES, CHECK TOLERANCES AND CARRY OUT RELEVANT TESTING PROCEDURES**

UNIT DESCRIPTOR: This unit identifies the competence required to assemble engine block and sub-assemblies, check tolerances, fit cylinder head(s) and carry out relevant testing and adjustment procedures as part of a re-conditioning procedure.

PRE-REQUISITES: AUR25678A Use and maintain measuring equipment

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR01304A.1 Use appropriate methods to check tolerances.</p>	<p>AUR01304A.1.1 Tolerances are checked without causing damage to any component or system.</p> <p>AUR01304A.1.2 This competency element is performed using industry approved procedures and equipment.</p> <p>AUR01304A.1.3 Correct tolerances are obtained using relevant vehicle/component manufacturer specifications.</p> <p>AUR01304A.1.4 Tasks carried out to comply within established industry guidelines.</p> <p>AUR01304A.1.5 All checking activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
<p>AUR01304A.2 Assemble engine block and sub-assemblies/fit cylinder head(s).</p>	<p>AUR01304A.2.1 Engine block and sub-assemblies are assembled and cylinder head(s) fitted without causing damage to any component or system.</p> <p>AUR01304A.2.2 This competency element is performed using industry approved procedures and equipment.</p> <p>AUR01304A.2.3 Assembly and fitting is carried out to comply with manufacturer specifications and established industry guidelines and Australian Standards.</p> <p>AUR01304A.2.4 All assembly and fitting activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01304A.3 Carry out relevant testing and adjustment procedures.	<p>AUR01304A.3.1 Tests and adjustments are completed without causing damage to any component or system.</p> <p>AUR01304A.3.2 Relevant tests and adjustments are performed using industry approved procedures and equipment.</p> <p>AUR01304A.3.3 Testing and adjustment is carried out to comply with manufacturer specifications, established industry guidelines and Australian Standards.</p> <p>AUR01304A.3.4 All testing and adjustment activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical Stream

Sources of information/documents may include:

- vehicle/product manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice including Australian Standards (AS4182 – 1994)
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special equipment, measuring equipment, relevant testing procedures, relevant tolerance checking methods, personal protective equipment, measuring equipment, lubricating equipment, gasket sealing materials

Methods include:

- tolerance checking procedures
- assembly/repair procedure
- tensioning procedures
- visually checking
- use of tools/equipment

Methods should be applied under normal operating conditions.

Specific requirements:

- engine components (including crankshafts, camshafts, cylinder blocks, idler shafts, pistons, connecting rods, bearings, rings, gears, chains, belts, pulleys, oil pumps, cylinder head assemblies, etc.)
- short motors, long motors (cylinder head fitting)

Other variables may include:

- ancillary systems/components (eg. cooling system, fuel systems, exhaust systems)

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- measuring and checking against manufacturer specifications
- engine block and sub-assembly repair procedures
- assembly and testing procedures
- assessing this unit after competency has been demonstrated in unit AUR25678A

Underpinning knowledge:

- Personal safety requirements
- Construction and operation of engine block and sub-assemblies relevant to application
- Assembly/repair procedures
- Measuring, adjusting and testing procedures
- Relevant technical information
- Equipment safety requirements
- Tensioning procedures
- Relevant company policies
- Manual handling technique
- Engine operating principles

Practical assessments:

- Access and interpret technical information
- Check/adjust tolerances
- Use relevant tools and equipment
- Use measuring equipment
- Apply manual handling procedures
- Maintain customer/company records
- Test and adjust engines for both technical and legal requirements
- Tension various components
- Assemble/repair engines/components

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	1

AUR01317A**DISASSEMBLE ENGINE BLOCK AND
SUB-ASSEMBLIES AND EVALUATE
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to disassemble, inspect, evaluate and determine preferred repair action for engine block and sub-assemblies as a part of a reconditioning procedure.

PRE-REQUISITES: AUR25678A Use and maintain measuring equipment

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01317A.1 Dismantle engine block and sub-assemblies.	AUR01317A.1.1 Engine block and sub-assemblies are dismantled without causing damage to any component or system. AUR01317A.1.2 Engine block and sub-assemblies are dismantled using approved methods and appropriate tools/equipment. AUR01317A.1.3 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR01317A.1.4 Component parts are cleaned in preparation for evaluation. AUR01317A.1.5 All dismantling/cleaning activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR01317A.2 Inspect/measure/test engine block and sub-assembly components and determine repair procedures.	AUR01317A.2.1 Inspection/measurement/testing is completed without causing damage to any component or system. AUR01317A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR01317A.2.3 Engine block and sub-assembly components are measured against manufacturer specifications and tolerances. AUR01317A.2.4 Engine block and sub-assembly components are evaluated against the measurements, tests and inspections made.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01317A.2 (continued) Inspect/measure/test engine block and sub-assembly components and determine repair procedures.	AUR01317A.2.5 Repair requirements are identified and reported according to enterprise policy and procedures. AUR01317A.2.6 Appropriate workplace documentation is completed and dealt with relevant to inspection/measurement/testing outcomes. AUR01317A.2.7 All inspection/measurement/testing activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical Stream

Sources of information/documents may include:

- vehicle/product manufacturer specifications
- enterprise operating procedures
- industry codes of practice including Australian Standards (AS4182 - 1994)
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special equipment, measuring equipment, lifting equipment, testing equipment, cleaning equipment, parts washers, chemical cleaning equipment, crack testing equipment, pressure testing equipment

Methods include:

- dismantling, cleaning, measuring against specifications, various testing (eg. crack and pressure tests), visual inspection, comparing against new, comparing against specifications

Methods should be applied under normal operating conditions.

Specific requirements:

- short engines, various engine components (including crankshafts, camshafts, cylinder blocks, idler shafts, pistons, con rods, bearings, rings, gears, chains, belts, pulleys, engine oil pump)

Other variables may include:

- ancillary systems/components (eg. cooling systems, fuel systems, exhaust systems)

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- engine block and sub-assembly dismantling and accurate assessment of condition
- determining appropriate repair action
- assessing this unit after competency has been demonstrated in Unit AUR25678A

Underpinning knowledge:

- Dismantling methods and procedures
- Measuring and testing procedures
- Repair methods
- Relevant technical information for comparison
- Equipment safety requirements
- Relevant company policies
- Personal safety requirements
- Manual handling techniques
- Cleaning methods and materials
- Principles of engine operation
- Construction and operation of engine block and sub-assemblies relevant to application

Practical assessments:

- Access and interpret technical information
- Apply dismantling procedures
- Apply testing techniques
- Use relevant tools and equipment
- Maintain customer/company records
- Use measuring equipment
- Apply manual handling procedures
- Check and compare various components to actual specifications
- Decide on most appropriate repair action necessary

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	2

AUR01357A**REBUILD ENGINE COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to use industry- accepted methods to apply metal spray, hard chrome and weld materials to rebuild components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01357A.1 Apply metal to engine components for rebuilding purposes.	<p>AUR01357A.1.1 Rebuilding work is completed without causing damage to any component or system.</p> <p>AUR01357A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01357A.1.3 Components are examined and repair process decided.</p> <p>AUR01357A.1.4 Components are prepared for rebuilding.</p> <p>AUR01357A.1.5 Rebuild process is used to repair damaged component.</p> <p>AUR01357A.1.6 Rebuild process is completed in readiness for further repair.</p> <p>AUR01357A.1.7 Operations are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- engine reconditioning

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice including Australian Standards (AS4182- 1994)
- customer requirements
- product manufacturer specifications

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, lifting equipment, measuring equipment, welding equipment
- roll welders, short arc welding equipment, gas metal arc welders, gas tungsten arc welders, metal spraying equipment, hard chroming equipment

Methods include:

- building up of lobes/journals by welding, metal spraying, hard chroming
- repairing cracks in alloy cylinder heads, repairing cast iron cylinder head

Methods should be applied under normal operating conditions.

Specific requirements may include:

- camshaft lobes/journals, crankshaft journals/thrust surfaces, cylinder heads both alloy and cast iron, piston and connecting rod assemblies, crankshaft and camshaft bearing faces

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- components rebuilt without damage to tools and equipment or injury to personnel

Underpinning knowledge:

- Technical information
- Equipment safety requirements
- Personal safety requirements
- Manual handling techniques
- Effects of heat on various metals and heating procedures
- Specific welding procedures (e.g. short arc, gma, gta, metal spraying)
- Hard chrome application

Practical assessments:

- Access and interpret technical information
- Use relevant tools/equipment
- Apply specific welding methods (building up, filling)
- Apply measuring techniques
- Apply manual handling techniques
- Heat components to carry out reclaiming
- Apply various methods used to build up surfaces (e.g. metal spraying, hard chroming)

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	2
Use technology	2

AUR01359A**RECLAIM ENGINE COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to use various industry accepted methods to reclaim engine components as part of the reconditioning process.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01359A.1 Heat treat engine components to reclaim.	<p>AUR01359A.1.1 Heat treat engine components to reclaim is completed without causing damage to any component or system.</p> <p>AUR01359A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01359A.1.3 Relevant heat treating methods are used to prepare or repair damaged/undersized component(s).</p> <p>AUR01359A.1.4 Components are prepared for heat treatment process.</p> <p>AUR01359A.1.5 Heat treating process is completed in readiness for next repair phase.</p> <p>AUR01359A.1.6 All heat treating operations are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR01359A.2 Straighten engine components to reclaim.	<p>AUR01359A.2.1 Straighten engine components to reclaim is completed without causing damage to any component or system.</p> <p>AUR01359A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01359A.2.3 Components are measured in preparation for reclaiming.</p> <p>AUR01359A.2.4 Components are mounted and clamped in straightening equipment.</p> <p>AUR01359A.2.5 Engine components are straightened using acceptable reconditioning methods, to comply with Australian Standards AS4182 - 1994.</p> <p>AUR01359A.2.6 Straightening operations are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- reconditioning of automotive internal combustion engines

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice including Australian Standards (AS4182- 1994)
- customer requirements
- product manufacturer specifications

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, lifting equipment, measuring equipment, hydraulic press
- heat equipment, heat ovens, reclaiming machines

Methods include:

- hardening and tempering
- straightening components
- machining components
- measuring and comparing to specifications

Methods should be applied under normal operating conditions.

Specific requirements may include:

- cylinder heads both alloy and cast iron, piston and connecting rod assemblies, crankshaft and camshaft

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- reclaiming components without damage or injury to tools, equipment and personnel
- reclaimed components machined to specified tolerances following enterprise procedures

Underpinning knowledge:

- Relevant technical information including technical drawings
- Equipment safety requirements
- Personal safety requirements
- Effects of heat on various metals and heating procedures
- Component straightening techniques
- Hardening and tempering techniques

Practical assessments:

- Access and interpret technical information
- Use relevant tools/equipment
- Apply measuring techniques
- Carry out component straightening
- Carry out hardening and tempering of components
- Heat components to carry out reclaiming

Key Competencies:	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	2
Use technology	2

AUR01404A**ASSEMBLE CYLINDER HEADS, CHECK
TOLERANCES AND CARRY OUT RELEVANT
TESTING PROCEDURES**

UNIT DESCRIPTOR: This unit identifies the competence required to assemble cylinder heads, check tolerances and carry out relevant testing and adjustment procedures as part of a re-conditioning procedure.

PRE-REQUISITES: AUR25678A Use and maintain measuring equipment

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01404A.1 Use appropriate methods to check tolerances.	<p>AUR01404A.1.1 Tolerances are checked without causing damage to any component or system.</p> <p>AUR01404A.1.2 This competency element is performed using industry approved procedures and equipment.</p> <p>AUR01404A.1.3 Correct tolerances are obtained using relevant vehicle/component manufacturer specifications.</p> <p>AUR01404A.1.4 Tasks carried out to comply within established industry guidelines.</p> <p>AUR01404A.1.5 All checking activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR01404A.2 Assemble cylinder heads.	<p>AUR01404A.2.1 Cylinder heads are assembled without causing damage to any component or system.</p> <p>AUR01404A.2.2 This competency element is performed using industry approved procedures and equipment.</p> <p>AUR01404A.2.3 Assembly is carried out to comply with manufacturer specifications and established industry guidelines and Australian Standards.</p> <p>AUR01404A.2.4 All assembly activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR01404A.3 Carry out relevant testing and adjustment procedures.	AUR01404A.3.1 Tests and adjustments are completed without causing damage to any component or system.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01404A.3 (continued) Carry out relevant testing and adjustment procedures.	AUR01404A.3.2 Relevant tests and adjustments are performed using industry approved procedures and equipment. AUR01404A.3.3 Testing and adjustment is carried out to comply with manufacturer specifications established industry guidelines and Australian Standards. AUR01404A.3.4 All testing and adjustment activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical Stream

Sources of information/documents may include:

- vehicle/product manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice including Australian Standards (AS4182 – 1994)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special equipment, measuring equipment, relevant testing procedures, relevant tolerance checking methods, personal; protective equipment, measuring equipment, lubricating equipment, gasket sealing materials

Methods include:

- tolerance checking procedures
- assembly/repair procedure
- tensioning procedures
- visually checking
- use of tools/equipment

Methods should be applied under normal operating conditions.

Specific requirements:

- cylinder heads of various configurations, cylinder head components (including inserts, valves, valve guides, rocker gear, etc.)

Other variables may include:

- ancillary systems/components (eg. cooling system, fuel systems, exhaust systems, lubricating systems, camshafts)

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- measuring and checking against manufacturer specifications
- cylinder head repair procedures
- assembly and testing procedures
- assessing this unit after competency has been demonstrated in Unit AUR25678A

Underpinning knowledge:

- Personal safety requirements
- Construction and operation of cylinder heads relevant to application
- Assembly/repair procedures
- Measuring, adjusting and testing procedures
- Relevant technical information
- Equipment safety requirements
- Relevant company policies
- Manual handling technique
- Engine operating principles

Practical assessments:

- Access and interpret technical information
- Check/adjust tolerances
- Use relevant tools and equipment
- Use measuring equipment
- Apply manual handling procedures
- Maintain customer/company records
- Assemble/repair cylinder heads/components

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	1

AUR01417A**DISASSEMBLE CYLINDER HEADS AND EVALUATE COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to disassemble, inspect, evaluate and determine preferred repair action for cylinder heads as a part of a reconditioning procedure.

PRE-REQUISITES: AUR25678A Use and maintain measuring equipment

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01417A.1 Dismantle cylinder heads.	<p>AUR01417A.1.1 Cylinder head is dismantled without causing damage to any component or system.</p> <p>AUR01417A.1.2 Cylinder head is dismantled using approved methods and appropriate tools/equipment.</p> <p>AUR01417A.1.3 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01417A.1.4 Component parts are cleaned in preparation for evaluation.</p> <p>AUR01417A.1.5 All dismantling/cleaning activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR01417A.2 Inspect/measure/test cylinder head and components and determine repair procedures.	<p>AUR01417A.2.1 Inspection/measurement/testing is completed without causing damage to any component or system.</p> <p>AUR01417A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR01417A.2.3 Cylinder head components are measured against manufacturer specifications and tolerances.</p> <p>AUR01417A.2.4 Cylinder head components are evaluated against the measurements, tests and inspections made.</p> <p>AUR01417A.2.5 Repair requirements are identified and reported according to enterprise policy and procedures.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR01417A.2 (continued) Inspect/measure/test cylinder head and components and determine repair procedures.	AUR01417A.2.6 Appropriate workplace documentation is completed and dealt with relevant to inspection/measurement/testing outcomes. AUR01417A.2.7 All inspection/measurement/testing activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical Stream

Sources of information/documents may include:

- vehicle/product manufacturer specifications
- enterprise operating procedures
- industry codes of practice including Australian Standards (AS4182 - 1994)
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special equipment, measuring equipment, lifting equipment, testing equipment, cleaning equipment, parts washers, chemical cleaning equipment, crack testing equipment, pressure testing equipment

Methods include:

- dismantling, cleaning, measuring against specifications, various testing (eg. crack and pressure tests), visual inspection, comparing against new, comparing against specifications

Methods should be applied under normal operating conditions.

Specific requirements:

- cylinder heads of various configurations, cylinder head components (including inserts, valves, valve guides, rocker gear, etc.)

Other variables may include:

- ancillary systems/components (eg. cooling systems, fuel systems, exhaust systems, camshafts, etc.)

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- cylinder head dismantling and accurate assessment of condition
- appropriate repair action determined
- assessing this unit after competency has been demonstrated in Unit AUR25678A

Underpinning knowledge:

- Dismantling methods and procedures
- Measuring and testing procedures
- Repair methods
- Relevant technical information for comparison
- Equipment safety requirements
- Relevant company policies
- Personal safety requirements
- Manual handling techniques
- Cleaning methods and materials
- Principles of engine operation
- Construction and operation of cylinder heads relevant to application

Practical assessments:

- Access and interpret technical information
- Apply dismantling procedures
- Apply testing techniques
- Use relevant tools and equipment
- Maintain customer/company records
- Use measuring equipment
- Apply manual handling procedures
- Check and compare various components to actual specifications
- Decide on most appropriate repair action necessary

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	2

AUR02145A**OVERHAUL COOLING SYSTEM COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the overhaul of cooling system components for light/heavy vehicle, plant, motor cycle, marine and outdoor power equipment.

PRE-REQUISITES: AUR02166A Repair cooling systems & associated components
AUR02170A Service cooling systems & associated components

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR02145A.1 Overhaul cooling systems components.	<p>AUR02145A.1.1 Cooling systems overhaul is completed without causing damage to any component or system.</p> <p>AUR02145A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR02145A.1.3 *Cooling systems components are overhauled and repaired according to specifications and tolerances relative to the manufacturer.</p> <p>AUR02145A.1.4 *Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes.</p> <p>AUR02145A.1.5 *Overhaul and repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated into these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle, plant, motor cycle, marine and outdoor power equipment

Sources of information/documents may include:

- vehicle manufacturer specifications
- component manufacturer specifications
- company operating procedures
- industry codes of practice
- customer requirements
- product manufacturer specifications (including coolants and basic metallurgy)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for dismantling, assembling, adjustment, thermometer, heat source, Ph tester, anti freeze/rust inhibitor tester, cooling system pressure tester, and reverse flushing equipment

Methods include:

- visual, aural and functional assessments (including: damage, corrosion, wear)

Methods should be applied under normal operating conditions.

Specific requirements:

- fluid cooled systems, air cooled systems, combination systems

Other variables may include:

- thermostats, water pumps, plumbing, ducting, fans, belts, heat exchanger, electric and viscous fans, sealed and non sealed systems, interior heater, and coolant heater manifold
- ferrous and non ferrous metals
- keel cooling, heat exchanger, raw water cooling, sacrificial anodes
- cooling system additives

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- cooling system component overhaul procedures followed

Underpinning knowledge:

- Component overhaul procedures
- Component testing procedures
- Component evaluation
- Equipment/Material safety requirements
- Component safety requirements

Practical assessments:

- Access, interpret & apply technical information.
- Evaluate components
- Overhaul cooling systems components
- Use relevant tools & equipment
- Test cooling system components

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to verbal instructions
- following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg. job sheets, checksheets
- completing company forms eg. checklists, job sheets
- accessing information from computer
- entering information on computer
- reading and interpreting safety signs and codes
- reading and interpreting technical information eg. company/vehicle manuals, technical updates

Numeracy skills may include:

- reading and interpreting temperature gauges
- using ratio for adding coolant
- reading and interpreting decimals from gauges

AUR02166A**REPAIR COOLING SYSTEMS AND ASSOCIATED COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out repairs to cooling systems and/or associated components for light/heavy vehicle, plant, motor cycle, marine and outdoor power equipment.

PRE-REQUISITES: AUR02170A Service cooling systems & associated components

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR02166A.1 Repair cooling systems and/or associated components.	<p>AUR02166A.1.1 Cooling system repairs are completed without causing damage to any component or system.</p> <p>AUR02166A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR02166A.1.3 *Cooling systems and associated components are replaced, repaired in accordance with manufacturer current specifications for methods, equipment used and tolerances relative to the vehicle/system.</p> <p>AUR02166A.1.4 * Appropriate workplace documentation is completed and dealt with relevant to repair outcomes.</p> <p>AUR02166A.1.5 *All cooling systems and/or component removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated into these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle, plant, motor cycle, marine and outdoor power equipment

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- workplace/industry codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools
- multimeters, power tools, cylinder leakage test equipment, Ph tester, anti freeze/rust inhibitor tester, pressure testers, thermometers, heat source

Methods include:

- functional testing, pressure testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, fluid levels/leaks, wear)

Methods should be applied under normal operating conditions.

Specific requirements:

- fluid cooled systems, air cooled systems, combination systems

Other variables may include:

- thermostats, water pumps, plumbing, ducting, fans, belts, heat exchanger, electric and viscous fans, sealed and non sealed systems, interior heater, and coolant heater manifold
- ferrous and non ferrous metals
- keel cooling, heat exchanger, raw water cooling, sacrificial anodes
- cooling system additives

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- cooling system and/or associated component repair procedures followed

Underpinning knowledge:

- Repair, removal and replacement procedures
- Cooling system construction and operation (relevant to application)
- System component testing procedures
- Equipment safety requirements
- Vehicle safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Identify cooling system faults
- Repair cooling systems and/or components
- Use relevant tools and equipment
- Test cooling systems and components
- Perform personal protection methods

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organising activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to and following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg. jobsheets, checklists
- reading and interpreting manufacturer specifications
- completing company forms eg. jobsheets, checklists
- accessing information from computer
- entering information on computer

Numeracy skills may include:

- reading and interpreting gauges
- reading numbers including decimals on cooling systems and gauges
- reading temperatures

AUR02170A**SERVICE COOLING SYSTEMS AND ASSOCIATED COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out service to cooling systems and/or associated components for light/heavy vehicle, plant, motor cycle, marine and outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR02170A.1 Service cooling systems and/or associated components.	<p>AUR02170A.1.1 Service cooling systems and/or associated components is completed without causing damage to any component or system.</p> <p>AUR02170A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR02170A.1.3 *Cooling systems and associated components are serviced in accordance with manufacturer current specifications for methods, equipment used and tolerances relative to the vehicle/system.</p> <p>AUR02170A.1.4 *Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR02170A.1.5 *All cooling systems and/or component removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated into these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle, plant, motor cycle, marine and outdoor power equipment

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- workplace/industry codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, pressure testers
- thermometer, heat source, Ph tester, anti freeze/rust inhibitor tester, reverse flushing equipment

Methods include:

- visual, aural and functional assessments (including: damage, corrosion, fluid levels/leaks, wear)

Methods should be applied under normal operating conditions.

Specific requirements:

- fluid cooled systems, air cooled systems, combination systems

Other variables may include:

- thermostats, water pumps, plumbing, ducting, fans, belts, heat exchanger, electric and viscous fans, sealed and non sealed systems, interior heater, and coolant heater manifold
- ferrous and non ferrous metals
- keel cooling, heat exchanger, raw water cooling, sacrificial anodes
- cooling system additives

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- cooling system and/or associated components service procedures followed

Underpinning knowledge:

- Operating principles of cooling systems
- Types of coolants and their application
- Rust inhibitor
- Anti freeze/anti boil
- Servicing procedures
- Coolant testing procedures
- Equipment safety requirements
- Vehicle safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Service cooling systems and/or components
- Use relevant tools and equipment
- Test cooling systems and/or components for technical requirements
- Apply coolant testing procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

Language, literacy and numeracy:

Speaking and listening skills may include:

- listening to customer information and verbal instructions
- following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg. job sheets, checklists
- reading and interpreting manufacturer requirements eg component manuals
- filling in company forms eg. checklists or job sheets
- accessing information from computer
- entering information on computer

Numeracy skills may include:

- reading temperature gauges

AUR02608A**CARRY OUT RADIATOR REPAIRS**

UNIT DESCRIPTOR: This unit identifies the competence required to perform radiator repairs.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR02608A.1 Repair radiators and/or components.	<p>AUR02608A.1.1 Radiators are repaired without causing damage to any component or system.</p> <p>AUR02608A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR02608A.1.3 *Radiators and associated components are repaired using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle manufacturer.</p> <p>AUR02608A.1.4 *Appropriate workplace documentation is completed and dealt with relevant to repair outcomes.</p> <p>AUR02608A.1.5 *Repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated into these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- the specific repair of radiators

Sources of information/documents may include:

- vehicle manufacturer specifications
- company operating procedures
- industry codes of practice
- product manufacturer specifications
- customer report/job cards/requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools, welders, soldering equipment, testing equipment including pressure testers, compressed air, testing tanks, jigs and vices

Methods include:

- pressure testing, tank testing, visual and functional assessments (including corrosion, fluid leaks and wear) welding, soldering, cutting and shaping

Methods should be applied under normal operating conditions.

Specific requirements:

- radiators (metal, plastic, copper, aluminium, cast)

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle protection methods
- repairing of radiator faults

Underpinning knowledge:

- Industry Code of Practice
- Statutory legislation where applicable
- Relevant technical information
- Equipment safety requirements
- Radiator principles of operation
- Radiator types, construction and materials
- Personal safety requirements
- Relevant manufacturer/company policies
- Radiator repair and test procedures
- Soldering process

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Test radiators
- Dismantle radiators for repair purposes
- Repair radiators/components as necessary
- Solder components
- Assemble repaired radiator/components

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Solve problems	1
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to and following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company instructions eg SOPs job sheets or check sheets
- reading and interpreting manufacturer specifications for radiators
- reading and interpreting safety signs and codes
- completing company forms eg. job sheets and check sheets
- accessing information from computer
- entering information on computer

Numeracy skills may include:

- reading and interpreting temperatures
- reading and interpreting gauges eg. pressure (psi, Kpa)
- reading and interpreting decimals from gauges

AUR03145A**OVERHAUL PETROL FUEL SYSTEM
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the overhaul of mechanical and/or electric carburettor petrol fuel system components eg. carburettors and fuel pumps. The competency does not include fuel injection or electronic engine management systems.

PRE-REQUISITES: AUR03170A Service petrol fuel systems
AUR03166A Repair petrol fuel systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR03145A.1 Overhaul petrol fuel system components.	AUR03145A.1.1 Petrol fuel system component overhaul is completed without causing damage to any component or system. AUR03145A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR03145A.1.3 Overhaul of fuel system components is carried out in accordance with manufacturer specifications. AUR03145A.1.4 Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes. AUR03145A.1.5 All fuel system/component overhaul, disassembly and assembly activities are carried out according to industry regulations guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicle and/or heavy vehicle and or motor cycle, and/or marine engines and/or small engines and/or outdoor power equipment

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- workplace/industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for disassembly/assembly, adjustment and testing equipment including: hand held meters, computer testers, engine analysers, fuel pump testers, pressure testers, injector cleaners and testers

Methods include:

- aural, visual and functional assessments (including damage, corrosion, fluid levels, leaks, wear and safety aspects)

Methods should be applied under normal operating conditions.

Specific requirements include:

- 2 stroke and/or 4 stroke, spark ignition fuel systems

Other variables may include:

- carburettors (all position, electronic, fixed venturi, variable venturi)
- fuel pumps, mechanical and electrical
- engine shutdown system

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- fuel system/components overhaul procedures followed

Underpinning knowledge:

- Dismantling and assembling methods
- Overhaul procedures
- Measuring and testing procedures
- Relevant Australian Design Rules (ADRs)
- Manufacturer/enterprise policies
- Manual handling techniques
- Equipment/component safety requirements
- Component construction and operation relevant to application
- Personal safety

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Test systems/components for both technical and legal requirements
- Maintain customer records
- Overhaul carburettor fuel system components
- Dismantle and assemble components
- Apply manual handling techniques
- Apply personal safety procedures

Key Competencies:	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	2
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR03166A**REPAIR PETROL FUEL SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out repairs to mechanical and/or electric/electronic carburettor petrol fuel systems/components. The competency does not include electronic fuel injection or electronic engine management systems (see AUR21171A).

PRE-REQUISITES: AUR03170A Service petrol fuel systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR03166A.1 Repair petrol fuel system components.	<p>AUR03166A.1.1 Petrol fuel system component repairs are completed without causing damage to any component or system.</p> <p>AUR03166A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR03166A.1.3 Repairs and adjustments of fuel system/components are carried out in accordance with manufacturer specifications.</p> <p>AUR03166A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes.</p> <p>AUR03166A.1.5 All fuel system/component repair, adjustment and removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- repair procedures appropriate to light vehicle and/or heavy vehicles and/or motor cycle, and/or marine engines, and/or small engines and/or outdoor power equipment

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- workplace/industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/replacement, adjustment and testing equipment including: hand held meters, engine analysers, fuel pump testers, emissions tester, pressure testers

Methods include:

- aural, visual and functional assessments (including damage, corrosion, fluid levels, leaks, wear and safety aspects)

Methods should be applied under normal operating conditions.

Specific requirements include:

- 2 stroke and/or 4 stroke, spark ignition fuel systems

Other variables may include:

- carburettors (all position, electronic, fixed venturi, variable venturi)
- fuel pumps, mechanical and electrical
- engine shutdown system

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- carburettor fuel system/components repair procedures followed

Underpinning knowledge:

- Construction and operation of carburettor fuel systems (relevant to application)
- Repair methods
- Removal, replacement and adjustment procedures
- Measuring, testing and adjustment procedures
- Relevant Australian Design Rules (ADRs)
- Safety requirements
- Manufacturer/enterprise policies
- Manual handling techniques
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Identify carburettor fuel system faults
- Use relevant tools and equipment
- Test systems/components for both technical and legal requirements
- Maintain customer records
- Repair carburettor fuel systems/ components
- Remove and replace relevant components
- Check system for normal operation
- Apply manual handling techniques
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	2
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR03170A**SERVICE PETROL FUEL SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of mechanical and/or electric/electronic petrol fuel system/components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR03170A.1 Service petrol fuel system components.	<p>AUR03170A.1.1 Petrol fuel system components service is completed without causing damage to any component or system.</p> <p>AUR03170A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR03170A.1.3 Service of fuel system/components are carried out in accordance with manufacturer specifications.</p> <p>AUR03170A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR03170A.1.5 All fuel system component service activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- servicing procedures light vehicle and/or heavy vehicles and/or motor cycle, and/or marine engines and/or small engines and/or outdoor power equipment.

Sources of information/documents may include:

- vehicle/manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- workplace/industry codes of practice
- Australian Design Rules

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, exhaust gas analyser, vacuum gauge, pressure gauge, tachometer, multimeter

Methods include:

- aural, visual and functional assessments (including damage, corrosion, fluid levels, leaks, wear and safety aspects)

Methods should be applied under normal operating conditions.

Specific requirements may include:

- 2 stroke and/or 4 stroke, spark ignition fuel systems

Other variables may include:

- carburettors (all position, electronic, fixed venturi, variable venturi)
- fuel pumps, mechanical and electrical

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- fuel system/components service procedures followed

Underpinning knowledge:

- Service procedures relevant to application
- Equipment/vehicle safety requirements
- Manufacturer/enterprise policies
- Operating principles of mechanical and electronically controlled fuel systems
- Manual handling techniques
- Personal safety procedures
- Australian Design Rules

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Maintain customer records
- Service fuel systems components
- Check system for normal operation
- Apply manual handling techniques
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	2
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR03645A**OVERHAUL DIESEL FUEL INJECTION SYSTEM
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out overhaul of diesel fuel injection system/components for light/heavy vehicles, vessels, and outdoor power equipment. (Complete disassemble and assemble/rebuild)

PRE-REQUISITES: AUR03670A Service diesel fuel injection systems
AUR03666A Repair diesel fuel injection system/components

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR03645A.1 Overhaul diesel fuel system components.	AUR03645A.1.1 Diesel fuel system component overhaul is completed without causing damage to any component or system. AUR03645A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR03645A.1.3 Overhaul and replacements of system components are carried out in accordance with manufacturer specifications. AUR03645A.1.4 Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes. AUR03645A.1.5 Fuel system component overhaul is completed according to manufacturer procedures and specifications. AUR03645A.1.6 All fuel system component overhaul activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicles, plant, vessels, and outdoor power equipment

Sources of information/documents may include:

- vehicle/manufacturer specifications
- enterprise operating procedures
- customer requirements
- workplace/industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, special tools for disassembly/assembly, testing equipment including: pressure testers, injector cleaners and testers, fuel pump test bench calibration machine
- computer/electronic test equipment, comparator

Methods include:

- aural, visual and functional assessments (including damage, corrosion, fluid levels, leaks, wear and safety aspects)
- dismantle or assemble components, clean, measure, inspect, lubricate, test

Methods should be applied under normal operating conditions.

Specific requirements may include:

- hydraulic and mechanical diesel fuel injectors, pumps and governors

Other variables may include:

- electronic engine shutdown and pneumatic/electro-hydraulic governor systems

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- fuel system/components – dismantle, assemble and overhaul procedures

Underpinning knowledge:

- Dismantling, assembling and overhaul procedures
- Measuring, testing and adjusting procedures
- Relevant Australian Design Rules (ADRs)
- Equipment safety requirements
- Manufacturer/enterprise policies
- Personal safety procedures

Practical assessments:

- Apply equipment safety requirements
- Use relevant tools and equipment
- Test systems/components for both technical and legal requirements
- Maintain customer records
- Dismantle, assemble and overhaul fuel system components
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	2
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR03666A**REPAIR DIESEL FUEL SYSTEMS/COMPONENTS****UNIT DESCRIPTOR**

This unit identifies the competence required to carry out repair including removal and replacement of diesel fuel system/components for light/heavy vehicles, vessels, and outdoor power equipment.

PRE-REQUISITES: AUR03670A Service diesel fuel injectors

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR03666A.1 Repair, remove and replace diesel fuel injection system components.	<p>AUR03666A.1.1 Diesel fuel injection system component repair, remove and replace is completed without causing damage to any component or system.</p> <p>AUR03666A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR03666A.1.3 Diesel fuel injection components are repaired, tested and or replaced according to manufacturer specifications.</p> <p>AUR03666A.1.4 Diesel fuel injection components are tested to comply with operational requirements.</p> <p>AUR03666A.1.5 All repair and testing activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicles, plant, vessels, and outdoor power equipment

Sources of information/documents may include:

- vehicle/plant/manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, cleaning equipment
- pump tester, injector tester, electrical/electronic test equipment, boost control setting testing equipment, auto advance equipment, comparator, fuel flow meter

Methods include:

- removal and replacement of components, dismantling, cleaning, measuring, visual inspection, assessing, lubricating, assembling, testing, adjusting

Methods should be applied under normal operating conditions.

Other variables may include:

- mechanically, hydraulically and electronically controlled systems including speed control
- GM., Cummins Caterpillar and Jerk pump type fuel systems

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- system/component testing servicing, repair and replacement procedures
- cleanliness of work environment.

Underpinning knowledge:

- Repair procedures
- Equipment/material safety requirements
- Manufacturer specification charts
- Testing procedures
- Personal safety requirements
- Manual handling techniques
- Construction and operation of systems and components relevant to application

Practical assessments:

- Access, interpret & apply technical information
- Use relevant tools and equipment
- Maintain customer records
- Apply testing procedures for both technical and legal requirements
- Identify fuel system faults
- Repair fuel system components
- Remove and replace relevant components/sensors
- Apply manual handling techniques

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	1

AUR03670A**SERVICE DIESEL FUEL INJECTION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to service diesel fuel injection systems and components for light/heavy vehicles, vessels, outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR03670A.1 Service diesel fuel injection systems and components.	<p>AUR03670A.1.1 Diesel fuel injection system and component service is completed without causing damage to any component or system.</p> <p>AUR03670A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications</p> <p>AUR03670A.1.3 Diesel fuel injection pumps/components are serviced according to and within manufacturer specifications.</p> <p>AUR03670A.1.4 Diesel fuel injection pumps/components are tested to comply with operational requirements.</p> <p>AUR03670A.1.5 All service/repair/testing activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicles, plant, vessels and outdoor power equipment

Sources of information/documents may include:

- vehicle/plant/manufacturer specifications
- industry/workplace codes of practice
- enterprise operating procedures
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, cleaning equipment
- timing gauges, injector cleaning equipment, injector testing equipment, manometer, pressure and vacuum gauges

Methods include:

- cleaning components, measuring, visual inspection, assessing, lubricating, testing
- removing and replacing injectors

Methods should be applied under normal operating conditions.

Other variables may include:

- lift pumps, pre-cleaners, air cleaners, spark arrestors

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- component testing and servicing procedures followed
- servicing diesel fuel injector system.

Underpinning knowledge:

- Servicing procedures (including bleeding)
- Principles of operation of diesel fuel injection systems and components
- Equipment/material safety requirements
- Manufacturer specification charts
- Testing procedures
- Personal safety requirements

Practical assessments:

- Access, interpret & apply technical information
- Use relevant tools and equipment
- Check system for normal operations
- Maintain customer records
- Apply testing procedures
- Service diesel fuel injection systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	1

AUR04671A**SERVICE AND REPAIR EMISSION CONTROL SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out service and repairs to emission control systems and associated components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR04671A.1 Service and repair emission control systems and/or associated components.	<p>AUR04671A.1.1 Emission control systems service and repair is completed without causing damage to any component or system.</p> <p>AUR04671A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR04671A.1.3 Appropriate test equipment is selected.</p> <p>AUR04671A.1.4 Tests are performed and results analysed in accordance with manufacturer specifications.</p> <p>AUR04671A.1.5 Service, repair and adjust emission control system assemblies and components according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- heavy/light vehicles and/or plant and equipment and/or marine equipment and/or motorcycles. Emission control systems associated with engine management system are dealt with in another standard

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation for vehicle road worthiness (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, test equipment including; exhaust gas analysers, hand held meters
- power tools, special tools for testing, removal or adjustment, dynamometers

Methods include:

- road testing, dyno testing, exhaust gas testing
- visual, aural and functional assessments (including: damage, corrosion, air leaks, wear, testing of electrical circuits)
- measurements
- electronic system tests

Methods should be applied under normal operating conditions.

Specific requirements:

- sensing and control systems including: carbon canisters, mechanical devices, catalytic converters, electronic sensors, EGR values

Other variables may include:

- appropriate licenses

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- service and repair to emission control systems and associated components

Underpinning knowledge:

- OH&S legislation
- Statutory legislation where applicable
- Identification of motor vehicle emissions and their effects on the environment
- The relationship between emission control system faults and their symptoms
- Testing procedures
- Types of emission systems and components
- Operation of emission control systems, sub-assemblies and components (relevant to application)
- Service, repair and adjustment principles for emission control systems
- The interpretation of technical information, graphic symbols and diagrams

Practical assessments:

- Work safely
- Access, interpret and apply technical information
- Test emission systems/component)
- Safely and correctly use tools and equipment
- Remove and replace emission control systems and components
- Maintain customers records
- Test, inspect and evaluate emission control system/components
- Repair and adjust emission control systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

AUR05123A**FABRICATE EXHAUST SYSTEMS/
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to design, fabricate and test exhaust systems and/or components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR05123A.1 Design exhaust system/component.	<p>AUR05123A.1.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR05123A.1.2 Exhaust system/components are designed using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle/plant manufacturer.</p> <p>AUR05123A.1.3 Appropriate workplace documentation is completed and dealt with relevant to design outcomes.</p> <p>AUR05123A.1.4 Design activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR05123A.2 Fabricate exhaust system/component.	<p>AUR05123A.2.1 Exhaust system/ component fabrication is completed without causing damage to any component or system.</p> <p>AUR05123A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR05123A.2.3 Exhaust system/components are fabricated using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle/ plant manufacturer.</p> <p>AUR05123A.2.4 Appropriate workplace documentation is completed and dealt with relevant to fabrication outcomes.</p> <p>AUR05123A.2.5 Fabrication activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR05123A.3 Test exhaust system/component.	<p>AUR05123A.3.1 Exhaust system/component testing is completed without causing damage to any component or system.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR05123A.3 (continued) Test exhaust system/component.	AUR05123A.3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR05123A.3.3 Exhaust system/components are tested using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle/ plant manufacturer. AUR05123A.3.4 Appropriate workplace documentation is completed and dealt with relevant to testing outcomes. AUR05123A.3.5 Testing activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- internal combustion engine/vehicle exhaust systems/ components

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- product manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- relevant ADRs

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for forming, testing equipment, bending equipment, rollers, cutters, presses
- measuring equipment
- welding equipment
- sealing equipment

Methods include:

- designing of systems/components
- pipe bending
- welding of components
- manufacture of flanges
- testing of system

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle/plant protection methods
- use of relevant equipment
- designing, fabricating and testing of system/components.

Underpinning knowledge:

- Industry code of practice
- Statutory legislation where applicable, including ADRs
- Relevant technical information
- Personal safety requirements
- Relevant manufacturer/company policies
- Equipment and material safety requirements
- Exhaust system/component operating principles
- Design, manufacturing and testing procedures
- Manual handling procedures
- Exhaust systems/components construction and operation

Practical assessments:

- Access, interpret & apply technical information
- Use relevant tools and equipment
- Fabricate exhaust systems/components
- Design exhaust systems/components
- Test exhaust systems/components
- Apply manual handling procedures
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	2
Use technology	1

AUR05166A**REPAIR EXHAUST SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the removal, repair and replacement of faulty exhaust components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR05166A.1 Remove, repair and replace faulty exhaust components.	AUR05166A.1.1 Faulty exhaust components repair is completed without causing damage to any component or system. AUR05166A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR05166A.1.3 *Repairs and/or replacements to faulty exhaust components are carried out in accordance with manufacturer specifications for methods, equipment used and tolerances relative to the vehicle/system. AUR05166A.1.4 *Removal/replacement operations are completed within established industry guidelines. AUR05166A.1.5 *All exhaust removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicle and/or heavy vehicle and/or motor cycle and/or plant and equipment

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, lifting equipment, welding equipment, special tools for removal/replacement, testing equipment, cutting equipment
- decibel meters

- **Methods include:**

- checking, comparing, removal/replacement, welding (oxy, mig/tig)
- repacking mufflers with replaceable baffles
- decoke exhaust components to unblock

Methods should be applied under normal operating conditions.

Specific requirements:

- Systems including – catalytic converters, replaceable baffles

Other variables may include:

- does not apply to outdoor power equipment where the exhaust system is one single component/unit

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating information
- removing and replacing systems/components
- Identify exhaust system faults
- repairing systems/components
- safe working practice
- vehicle protection methods

Underpinning knowledge:

- Relevant Australian Design Rules (ADRs) for noise pollution, gas emissions (catalytic converters)
- Systems operation/minimum requirements
- Equipment safety requirements
- Vehicle safety requirements
- Exhaust systems/components construction and principles of operation relevant to application
- Exhaust system repair procedures
- Identify exhaust system faults

Practical assessments:

- Access and interpret technical information
- Use relevant tools and equipment
- Maintain customer records
- Test and adjust systems for both technical and legal requirements
- Repair/replace faulty exhaust systems/components

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Solve problems	2
Use technology	1

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- following verbal instructions
- listening to verbal instructions/customer information
- exchanging technical information

Reading and writing skills may include:

- reading and completing company forms eg. jobsheets, checklists
- accessing information from computer
- entering information on computer

AUR05671A**SERVICE AND REPAIR ENGINE FORCED INDUCTION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out service and repair to engine turbo charging and super charging forced induction systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR05671A.1 Service and repair forced induction systems and associated components.	<p>AUR05671A.1.1 Service and repair operations are completed without causing damage to any component or system.</p> <p>AUR05671A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR05671A.1.3 Service and repair operations are carried out in accordance with vehicle/system manufacturer current specifications for methods, equipment used and tolerances relative to the vehicle/system/plant.</p> <p>AUR05671A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service and repair outcomes..</p> <p>AUR05671A.1.5 Service and repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicles, plant, vessels and outdoor power equipment

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, boost pressure gauge
- computer/electronic testers hand held meters, engine analysers, emission testers, pressure testers, pyrometer, manometer

Methods include:

- aural, visual and functional assessment (including damage, corrosion, leaks, wear and safety aspects)
- removal and replacement of components, disassembly, assembly, cleaning, measuring, visual inspection, lubricating, testing, adjusting

Methods should be applied under normal operating conditions.

Other variables may include:

- petrol, diesel, LPG/CNG/NGV
- pressure ratio control, aneroid device, turbine shut down timer delay
- exhaust driven turbo charger, roots type blower

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- component testing procedures
- service and repair procedures

Underpinning knowledge:

- Removal, replacement, repair and service procedures
- Component testing procedures
- Equipment/material safety requirements
- Operating principles relating to forced induction systems
- Construction and operation of system relevant to application
- Manual handling techniques
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information.
- Use relevant tools and equipment
- Identify system faults
- Apply testing procedures
- Remove, replace, service and repair forced induction systems
- Apply manual handling techniques
- Apply personal safety requirements
- Maintain customer records

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR06145A**OVERHAUL CLUTCH ASSEMBLY AND/OR COMPONENTS****UNIT DESCRIPTOR:**

This unit identifies the competence required to carry out overhaul procedures (complete disassembly, assembly and repair) of clutch assembly/components such as pressure plates and clutch drive plates for light/heavy vehicles, plant, motor cycles, outdoor power equipment and marine.

PRE-REQUISITES:

AUR06170A Service clutch assemblies and/or associated operating system components

AUR06166A Repair clutch assemblies and/or associated operating system components

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR06145A.1 Overhaul clutch assembly and/or components.</p>	<p>AUR06145A.1.1 Overhaul of clutch assembly or components is achieved without causing damage to any component or system.</p> <p>AUR06145A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR06145A.1.3 Overhaul procedures are carried out in accordance with manufacturer specifications for methods, equipment used and tolerances relative to the vehicle/system.</p> <p>AUR06145A.1.4 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- clutch assemblies/components of light/heavy vehicle, plant, motorcycle, outdoor power equipment and marine

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, special tools, testing equipment, lifting equipment, appropriate personal protection

Methods include:

- testing, dismantling, assembling, machining riveting, resetting

Methods should be applied under normal operating conditions.

Specific requirements:

- clutch assemblies including single or multiplate, wet and dry construction, standard and heavy duty types. actuating mechanisms including mechanical, hydraulic and pneumatic assisted
- clutch drive plates, pressure plates

Other variables may include:

- centrifugal, semi-centrifugal, dog, one way, cone and over centre construction
- steering clutches

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- overhauling clutch assemblies and components

Underpinning knowledge:

- Construction and operation of clutch assembly/components
- Overhauling procedures
- Measuring and testing procedures
- Relevant technical information
- Component evaluation
- Equipment safety requirements
- Component/vehicle/plant safety requirements
- Relevant manufacturer/company policies
- Personal safety procedures
- Manual handling methods

Practical assessments:

- Access, interpret & apply technical information
- Use relevant tools and equipment
- Overhaul clutch assemblies and/or components
- Test and evaluate components
- Apply personal protection procedures
- Apply manual handling methods
- Maintain customer records

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR06166A**REPAIR CLUTCH ASSEMBLIES AND/OR ASSOCIATED OPERATING SYSTEM COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to remove and replace clutch assemblies and/or components and to repair/remove and replace clutch operating systems and/or components for light/heavy vehicles, plant, motor cycles, outdoor power equipment and marine.

PRE-REQUISITES: AUR06170A Service clutch assemblies and/or associated operating system components

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR06166A.1 Remove and replace clutch assemblies and/or components.	AUR06166A.1.1 Removal and replacement of clutch assemblies and/or components is achieved without causing damage to any component or system. AUR06166A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR06166A.1.3 *All removal and replacement procedures carried out in accordance with manufacturer specifications. AUR06166A.1.4 All activities are carried out in accordance with statutory and enterprise policy and procedures for OH&S.
AUR06166A.2 Repair/remove clutch operating system components.	AUR06166A.2.1 Repair of clutch operating system components is achieved without causing damage to any component or system. AUR06166A.2.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR06166A.2.3 *All repair/removal and replacement procedures carried out in accordance with manufacturer specifications and tolerances. AUR06166A.2.4 *All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicles and/or heavy vehicles and/or motor cycles and/or outdoor equipment and/or plant and/or marine

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- Statutory legislation
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, jacks, jack stands, lifting equipment, clutch aligning tools/equipment, appropriate personal protection
- hoist, power tools, press

Methods include:

- visual checks, functional testing, removing, replacing, aligning, adjusting

Methods should be applied under normal operating conditions.

Specific requirements:

- clutch assemblies including single or multiplate, wet and dry construction, standard and heavy duty types. Actuating mechanisms including mechanical, hydraulic and pneumatic assisted

Other variables may include:

- centrifugal, semi-centrifugal, dog, one way, cone and over centre construction
- steering clutches

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- clutch assembly repair/removal and replacement procedures followed

Underpinning knowledge:

- Clutch assembly construction and operation (relevant to application)
- Relevant repair/removal, replacement and adjustment procedures
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/enterprise policies
- Personal protection procedures

Practical assessments:

- Access, interpret and apply technical information
- Identify faults in clutch system
- Remove and replace clutch assemblies and components
- Test system/components for correct operation
- Use relevant tools and equipment
- Maintain customer records
- Apply personal protection procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills

Speaking and listening skills may include:

- listening to customer information and job instructions
- exchanging technical information
- following verbal job instructions

Reading and writing skills may include:

- reading and completing company forms eg. jobsheets, checklists
- recording customer-related information
- accessing information from computer
- entering information on computer system

Numeracy may include:

- using measuring tools
- measuring distance between parts

AUR06170A**SERVICE CLUTCH ASSEMBLIES AND/OR ASSOCIATED OPERATING SYSTEM COMPONENTS****UNIT DESCRIPTOR:**

This unit identifies the competence required to service clutch assemblies and clutch operating systems for light/heavy vehicles, plant, motor cycles, outdoor power equipment and marine.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR06170A.1 Service clutch assemblies and/or associated operating system components.	<p>AUR06170A.1.1 Clutch assemblies and/or associated operating system components are serviced without causing damage to any component or system.</p> <p>AUR06170A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR06170A.1.3 *All servicing procedures carried out in accordance with manufacturer specifications and tolerances.</p> <p>AUR06170A.1.4 *Testing is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicles and/or heavy vehicles and/or motor cycles and/or outdoor equipment and/or plant and/or marine

Sources of information/documents may include:

- vehicle/equipment manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- Statutory legislation
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, appropriate lubricants and special service tools/equipment
- hoist, lifting equipment, power tools, jacks and stands

Methods include:

- lubrication procedures, visual checks, road test, testing under operating conditions. Methods should be applied under normal operating conditions.

Specific requirements:

- clutch assemblies including single or multiplate, wet and dry construction, standard and heavy duty types. Actuating mechanisms including mechanical, hydraulic and pneumatic assisted.

Other variables may include:

- Centrifugal, semi-centrifugal, dog, one way, cone and over centre construction
- Steering clutches

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- clutch assemblies servicing procedures followed

Underpinning knowledge:

- Clutch assembly operating principles
- Relevant servicing procedures
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/enterprise policies
- Personal protection procedures

Practical assessments:

- Access, interpret and apply technical information
- Service clutch assemblies and/or operating systems including free travel adjustment
- Check for normal clutch operation
- Use relevant tools and equipment
- Maintain customer records
- Apply personal protection procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills

Speaking and listening skills may include:

- exchanging technical information in the workplace
- listening to customer information and verbal instructions
- following verbal instructions

Reading and writing skills may include:

- reading and completing company forms eg. job sheets, checklists
- recording customer-related information
- accessing information from computer
- entering information on computer
- accessing and interpreting written information from manufacturer specifications

AUR06645A**OVERHAUL TRANSMISSIONS (MANUAL)****UNIT DESCRIPTOR**

This unit identifies the competence required to completely dismantle and rebuild a manual transmission for light/heavy vehicle, plant and outdoor power equipment, involving the identification and replacement or repair of all worn and deteriorated parts, tests and adjustments.

PRE-REQUISITES:

AUR06670A Service manual transmissions
AUR06666A Repair manual transmissions

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR06645A.1 Overhaul manual transmissions.	<p>AUR06645A.1.1 Manual transmission is overhauled without causing damage to any component or system.</p> <p>AUR06645A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR06645A.1.3 Manual transmissions are overhauled using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle/plant manufacturer.</p> <p>AUR06645A.1.4 Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes.</p> <p>AUR06645A.1.5 Overhauling activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- manual transmissions fitted to light/heavy vehicle, plant and outdoor power equipment

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools
- precision measuring equipment, lifting and supporting equipment, cleaning equipment and materials

Methods include:

- visual, aural and functional assessments (including: fluid leaks, wear, damage, corrosion)
- dismantling and assembling, testing, adjusting
- electrical testing of short circuits, open circuits

Methods should be applied under normal operating conditions.

Specific requirements:

- conventional, transaxle and overdrive type manual transmissions
- transfer cases

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not
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ed workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating technical information
- overhauling procedures

Underpinning knowledge:

- Dismantling and assembling procedures (relevant to application)
- Component repair and adjustment procedures (relevant to application)
- Component/unit measurement and test procedures (relevant to application)
- Equipment/material safety requirements
- Personal safety requirements
- Manual handling procedures

Practical assessments:

- Access, and apply safety and technical information
- Apply personal safety requirements
- Use relevant tools and equipment
- Overhaul manual transmissions and associated components
- Apply component/unit test procedures
- Apply manual handling procedures
- Maintain customer records

Key Competencies:

Key Competencies	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR06666A**REPAIR TRANSMISSIONS (MANUAL)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the repair, remove and replace manual transmissions and/or associated components for light/heavy vehicle, plant and outdoor power equipment.

PRE-REQUISITES: AUR06670A Service transmissions (manual)

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR06666A.1 Repair, remove and replace manual transmissions and/or associated components.	AUR06666A.1.1 Manual transmission is repaired without causing damage to any component or system. AUR06666A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR06666A.1.3 Repairs and adjustments to transmission components are carried out in accordance with vehicle/plant/ system manufacturer current specifications for methods, equipment used and tolerance relative to the plant/vehicle/ system. AUR06666A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair, remove and replace outcomes. AUR06666A.1.5 All transmission system repair and removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light and/or heavy vehicle transmissions (manual) and/or outdoor power equipment and/or plant

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools
- multimeters
- precision measuring equipment, lifting and supporting equipment

Methods include:

- road testing, test under operating conditions, dynamometer testing, electrical testing
- visual, aural and functional assessment (including: fluid leakage, selection, wear, damage, corrosion)

Methods should be applied under normal operating conditions.

Specific requirements:

- Manual transmissions, front and/or rear wheel drive configurations
- Belt drive transmission

Other variables may include:

- power take off assemblies, multiple forward and reverse gears, synchronised and non-synchronised gear selection, metal and non-metal gears, electrical/pneumatic controls, transverse/longitudinal mounting, helical, double helical and spur gears, transaxle, overdrive, transfer case and belt drive speed control

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- transmission/components repair procedures

Underpinning knowledge:

- Construction and operation of manual and/or belt drive transmissions (relevant to application)
- Removal, replacement and repair procedures
- Measuring and testing procedures
- Relevant technical information
- Equipment safety requirements
- Vehicle/plant safety requirements
- Relevant manufacturer/company policies
- Manual handling techniques
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Remove and replace manual transmissions
- Repair manual and /or belt drive transmissions
- Test and adjust transmissions/components
- Apply manual handling methods
- Apply personal safety procedures
- Maintain customer records

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR06670A**SERVICE TRANSMISSIONS (MANUAL)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of manual transmissions and/or associated components for light/heavy vehicle, plant and outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR06670A.1 Service manual transmissions and/or associated components.	<p>AUR06670A.1.1 Manual transmission is serviced without causing damage to any component or system.</p> <p>AUR06670A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR06670A.1.3 Services to system components are carried out in accordance with vehicle/plant/system manufacturer current specifications for methods, equipment.</p> <p>AUR06670A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR06670A.1.5 All transmission system service activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light and/or Heavy vehicle transmissions (manual) and/or outdoor power equipment and/or plant

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools
- precision measuring equipment
- power tools, special tools, test bench, fluid dispensing equipment

Methods include:

- road testing
- visual, aural and functional assessment (including: fluid leakage, selection)

Methods should be applied under normal operating conditions.

Specific requirements:

- Manual transmissions, front and/or rear wheel drive configurations
- Belt drive transmissions

Other variables may include:

- power take off assemblies, multiple forward and reverse gears, synchronised and non-synchronised gear selection, metal and non-metal gears, electrical/pneumatic controls, transverse/longitudinal mounting, helical, double helical and spur gears, transaxle, overdrive, transfer case and belt drive speed control

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- transmission/components service procedures

Underpinning knowledge:

- Service procedures
- Transmission lubricants/fluids and their application
- Operating principles of manual and belt drive transmissions
- Relevant technical information
- Equipment safety requirements
- Vehicle/plant safety requirements
- Relevant manufacturer/enterprise policies
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Service manual and/or belt drive transmissions
- Check transmission for normal operation
- Apply personal safety procedures
- Maintain customer records

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR07145A**OVERHAUL TRANSMISSIONS (AUTOMATIC)****UNIT DESCRIPTOR**

This unit identifies the competence required to completely dismantle and rebuild an automatic transmission involving the identification and replacement or repair of all worn and deteriorated parts, tests and adjustments for light/heavy vehicles, plant and outdoor power equipment.
(For repairs to electronic control drive management systems refer to AUR21271A.)

PRE-REQUISITES:

AUR07170A Service automatic transmissions
AUR07166A Repair automatic transmissions

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR07145A.1 Overhaul automatic transmissions.	<p>AUR07145A.1.1 Automatic transmission is overhauled without causing damage to any component or system.</p> <p>AUR07145A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR07145A.1.3 Automatic transmissions are overhauled using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle/plant manufacturer.</p> <p>AUR07145A.1.4 Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes.</p> <p>AUR07145A.1.5 Overhauling activities are carried out in accordance to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- automatic transmissions fitted to light and/or heavy vehicles, and/or plant and/or outdoor power equipment

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, special tools for disassembly, assembly and adjustment
- measuring equipment, lifting equipment, cleaning equipment and materials
- testing equipment including: pressure testers, tachometers and multimeters, power tools

Methods include:

- pressure testing, electrical testing (including: leakage, short circuits, open circuits)
- visual, aural and functional assessments (including: fluid leaks, wear, damage, corrosion)
- dismantling and assembling, testing, adjusting

Methods should be applied under normal operating conditions.

Specific requirements:

- Conventional, transaxle, 4 WD and overdrive type automatic transmissions
- Electronically controlled transmissions
- Torque converter, continuously variable

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating technical information
- unit/component overhauling procedures followed

Underpinning knowledge:

- Dismantling and assembling procedures (relevant to application)
- Component repair and adjustment procedures (relevant to application)
- Component/unit test procedures and evaluation (relevant to application)
- Equipment/Material safety requirements
- Personal safety requirements
- Manual handling procedures

Practical assessments:

- Access, interpret & apply technical information
- Apply personal safety requirements
- Use relevant tools and equipment
- Overhaul automatic transmissions and associated components
- Apply component/unit test procedures and evaluation
- Maintain customer records
- Apply manual handling procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	3
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR07166A**REPAIR TRANSMISSIONS (AUTOMATIC)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the repair, removal or replacement of automatic transmissions and/or associated components for light/heavy vehicles and outdoor power equipment. (For repairs to electronic control drive management systems refer to AUR21271A.)

PRE-REQUISITES: AUR07170A Service transmissions (automatic)

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR07166A.1 Repair, removal and replacement automatic transmissions and/or associated components.	<p>AUR07166A.1.1 Automatic transmission is repaired without causing damage to any component or system.</p> <p>AUR07166A.1.2 Information is accessed from appropriate sources to enable this competency element to be carried out using approved methods and equipment, in accordance with manufacturer specifications.</p> <p>AUR07166A.1.3 Repairs and adjustments to transmission components are carried out in accordance with manufacturer current specifications for methods, equipment used and tolerance.</p> <p>AUR07166A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair, removal and replacement outcomes.</p> <p>AUR07166A.1.5 All transmission system repairs and removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light and/or heavy vehicle and/or plant transmissions and/or outdoor power equipment (automatic)

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, torque wrench, special tools for removal/adjustment
- pressure gauges, multimeters and tachometers
- measuring equipment, lifting equipment
- test bench
-

Methods include:

- operational testing, test under operating conditions, dynamometer testing, electrical testing
- visual, aural and functional assessment (including: fluid leakage, speed and range selection, wear, damage, corrosion, electrical leakage, short circuits, broken circuits)

Methods should be applied under normal operating conditions.

Specific requirements:

- Automatic transmissions, front and/or rear wheel drive configurations

Other variables may include:

- power take off assemblies
- pre-selective transmissions
- electronically controlled transmissions

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- transmission/components repair procedures followed

Underpinning knowledge:

- Removal, replacement and repair procedures
- Construction and operation of automatic transmissions (relevant to application)
- Measuring and testing procedures
- Relevant technical information
- Equipment safety requirements
- Vehicle/plant safety requirements
- Relevant manufacturer/enterprise policies
- Manual handling techniques
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Identify faults in transmission system
- Repair, remove and replace automatic transmissions/components
- Test and adjust transmissions/components
- Apply manual handling methods
- Apply personal safety procedures
- Maintain customer records

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR07170A**SERVICE TRANSMISSIONS (AUTOMATIC)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of automatic transmissions and/or associated components for light/heavy vehicles, plant, outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR07170A.1 Service automatic transmissions and/or associated components.	<p>AUR07170A.1.1 Automatic transmission is serviced without causing damage to any component or system.</p> <p>AUR07170A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR07170A.1.3 Service to system components are carried out in accordance with manufacturer current specifications for methods and equipment used.</p> <p>AUR07170A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR07170A.1.5 All transmission system servicing activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light and/or heavy vehicle and/or plant transmissions and/or outdoor power equipment (automatic)

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, fluid dispensing equipment
- multimeters, tachometer
- pressure gauges
- power tools, torque wrench

Methods include:

- operational testing
- visual, aural and functional assessment (including: fluid leakage, selection)

Methods should be applied under normal operating conditions.

Specific requirements:

- Automatic transmissions, front and/or rear wheel drive configurations

Other variables may include:

- power take off assemblies
- pre-selective transmissions
- electronically controlled transmissions

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- transmission/components service procedures followed

Underpinning knowledge:

- Operating principles of automatic transmissions
- Service procedures
- Types of fluids and their application
- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/enterprise policies
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Test and adjust transmissions/components
- Service automatic transmissions
- Check transmission for normal operation
- Apply personal safety procedures
- Maintain customer records

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR07671A**SERVICE AND REPAIR MARINE TRANSMISSIONS (OUTBOARD OR STERN DRIVE)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service and repair to outboard or stern drive transmissions and/or their associated components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR07671A.1 Service and repair outboard and stern drive transmissions and/or associated components.	AUR07671A.1.1 Service and repairs are completed without causing damage to any component or system. AUR07671A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR07671A.1.3 Service, repairs and adjustments to system components are carried out in accordance with vehicle/plant/ system manufacturer current specifications for methods, equipment used and tolerance relative to the plant/vehicle/ system. AUR07671A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service and repair outcomes. AUR07671A.1.5 All transmission system repair and removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- marine outboard and/or stern drive transmissions

Sources of information/documents may include:

- vessel/plant/component manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, lubricant dispensing equipment
- measuring equipment, meters, lifting equipment
- test equipment

Methods include:

- tank test, electrical testing
- visual, aural and functional assessment (including: fluid leakage, selection, wear, damage, corrosion)

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- transmission/components service and repair procedures
- safe working practices
- vehicle/plant protection methods
- manual handling methods

Underpinning knowledge:

- Construction and operation of transmissions (relevant to application)
- Removal, replacement, repair and service procedures
- Types of lubricants and their application
- Measuring and testing procedures
- Relevant technical information
- Equipment safety requirements
- Vessel/plant/component safety requirements
- Relevant manufacturer/enterprise policies
- Manual handling techniques
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Test and adjust transmissions/components
- Maintain customer records
- Service and repair transmissions
- Apply manual handling methods
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR07771A**SERVICE AND REPAIR MARINE TRANSMISSIONS (INBOARD)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service or repairs to inboard transmissions and/or associated components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR07771A.1 Service and repair marine inboard transmissions and/or associated components.	AUR07771A.1.1 Service and repairs are completed without causing damage to any component or system. AUR07771A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR07771A.1.3 Service, repairs and adjustments to system components are carried out in accordance with vehicle/plant/system manufacturer current specifications for methods, equipment used and tolerance relative to the plant/vehicle/ system. AUR07771A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service and repair outcomes. AUR07771A.1.5 All transmission system service, repair and removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- inboard marine transmissions

Sources of information/documents may include:

- vessel/plant/component manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, lubricant dispensing equipment
- measuring equipment, meters, lifting equipment
- Test equipment

Methods include:

- electrical testing
- visual, aural and functional assessment (including: fluid leakage, selection, wear, damage, corrosion)

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- transmission/components service and repair procedures
- safe working practices
- vehicle/plant protection methods
- manual handling methods

Underpinning knowledge:

- Construction and operation of transmissions (relevant to application)
- Removal, replacement, repair and service procedures
- Types of lubricants and their application
- Measuring and testing procedures
- Relevant technical information
- Equipment safety requirements
- Vessel/plant/component safety requirements
- Relevant manufacturer/enterprise policies
- Manual handling techniques
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Test and adjust transmissions/components
- Maintain customer records
- Service and repair transmissions
- Apply manual handling methods
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR08145A**OVERHAUL TRANSMISSIONS (HYDROSTATIC)**

UNIT DESCRIPTOR: This unit identifies the competence required to completely dismantle and rebuild a hydrostatic transmission for heavy vehicle, plant and outdoor power equipment, involving the identification and replacement or repair of all worn and deteriorated parts, tests and adjustments.

PRE-REQUISITES: AUR08170A Service transmissions (hydrostatic)
AUR08166A Repair transmissions (hydrostatic)

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR08145A.1 Overhaul hydrostatic transmissions.	<p>AUR08145A.1.1 Hydrostatic transmission is overhauled without causing damage to any component or system.</p> <p>AUR08145A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR08145A.1.3 Hydrostatic transmissions are overhauled using approved methods and equipment, according to specifications and tolerances relative to the component/ vehicle/plant manufacturer.</p> <p>AUR08145A.1.4 Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes.</p> <p>AUR08145A.1.5 Overhauling activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- hydrostatic transmissions fitted to heavy vehicle, plant and outdoor power equipment

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, hydraulic pressure gauges
- hydraulic test bench, hydraulic flow meters
- precision measuring equipment

Methods include:

- visual, aural and functional assessment (including: excessive wear, corrosion, selection and damage)
- system testing under operating conditions

Methods should be applied under normal operating conditions.

Specific requirements:

- Variable displacement and fixed displacement hydraulic pumps
- Variable displacement and fixed displacement hydraulic motors

Other variables may include:

- radial piston, axial piston, vane, rotor and gear type pumps and motors
- closed and replenishing systems
- charge pumps
- positive and non-positive displacement hydraulic pumps

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and applying technical information
- transmission/components repair procedures followed

Underpinning knowledge:

- System testing procedures
- Overhaul procedures
- Manual handling techniques
- Technical information
- Component evaluation
- Equipment/personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Identify system faults
- Overhaul hydrostatic transmissions
- System testing and adjustments
- Apply manual handling methods
- Apply safety procedures.
- Maintain customer records

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR08166A**REPAIR TRANSMISSIONS (HYDROSTATIC)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the repair, removal and replacement of hydrostatic transmissions and/or associated components for heavy vehicle, plant and/or outdoor power equipment.

PRE-REQUISITES: AUR08170A Service transmissions (hydrostatic)

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR08166A.1 Repair, remove and replace hydrostatic transmissions and/or associated components.	<p>AUR08166A.1.1 Hydrostatic transmission is repaired without causing damage to any component or system.</p> <p>AUR08166A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR08166A.1.3 Repairs and adjustments to transmission components are carried out in accordance with vehicle/plant/system manufacturer current specifications for methods, equipment used and tolerance relative to the plant/vehicle/system.</p> <p>AUR08166A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair, remove and replace outcomes.</p> <p>AUR08166A.1.5 All transmission system repair and removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- heavy vehicle transmissions (hydrostatic) and/or outdoor power equipment and/or plant

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, hydraulic pressure gauges
- hydraulic test bench, hydraulic flow meters
- precision measuring equipment

Methods include:

- visual, aural and functional assessment (including: excessive wear, corrosion, selection and damage)
- system testing under operating conditions

Methods should be applied under normal operating conditions.

Specific requirements:

- Variable displacement and fixed displacement hydraulic pumps
- Variable displacement and fixed displacement hydraulic motors

Other variables may include:

- radial piston, axial piston, vane, rotor and gear type pumps and motors
- closed and replenishing systems
- charge pumps
- positive and non-positive displacement hydraulic pumps

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and applying technical information
- transmission/components repair procedures followed

Underpinning knowledge:

- Construction and operation of hydrostatic transmissions (relevant to application)
- System testing procedures
- Technical information
- Manual Handling Techniques
- Component evaluation
- Equipment/personal safety requirements
- Hydrostatic transmission repair procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Identify system faults
- Repair hydrostatic transmissions
- System testing and adjustments
- Apply manual handling methods
- Apply safety procedures
- Maintain customer records

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR08170A**SERVICE TRANSMISSIONS (HYDROSTATIC)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of hydrostatic transmissions and/or associated components for heavy vehicle, plant and outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR08170A.1 Service hydrostatic transmissions and/or associated components.	<p>AUR08170A.1.1 Hydrostatic transmission is serviced without causing damage to any component or system.</p> <p>AUR08170A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR08170A.1.3 Services to system components are carried out in accordance with vehicle/plant/system manufacturer current specifications for methods, equipment.</p> <p>AUR08170A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR08170A.1.5 All transmission system service activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- heavy vehicle transmissions (hydrostatic) and/or outdoor power equipment and/or plant

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools
- hydraulic pressure gauges
- hydraulic flow meter

Methods include:

- visual, aural and functional assessment including: fluid leakage

Methods should be applied under normal operating conditions.

Specific requirements:

- Variable displacement and fixed displacement hydraulic pumps
- Variable displacement and fixed displacement hydraulic motors

Other variables may include:

- radial piston, axial piston, vane, rotor and gear type pumps and motors
- closed and replenishing systems
- charge pumps
- positive and non-positive displacement hydraulic pumps

EVIDENCE GUIDE**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- hydrostatic transmission service procedures followed

Underpinning knowledge:

- Service procedures
- Hydraulic fluids and their application
- Personal safety requirements
- Operating principles of hydrostatic transmissions
- Technical information
- Vehicle/equipment safety requirements
- Relevant manufacturer/enterprise policies

Practical assessments:

- Access, interpret and apply technical information
- Service hydraulic transmissions
- Check normal operation of system
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR08666A**REPAIR BICYCLE WHEEL HUBS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect, plan, and safely repair and test bicycle wheel hubs and complete required documents.

PRE-REQUISITES: AUR08670A Service bicycle wheel hubs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR08666A.1 Inspect bicycle wheel hub.	<p>AUR08666A.1.1 Inspect bicycle wheel hub for faults and worn or damaged components.</p> <p>AUR08666A.1.2 Repairs required are determined by visual, aural, tactile inspections and measurements.</p> <p>AUR08666A.1.3 Conditions found are compared with bicycle wheel hub specifications and customer use requirements.</p> <p>AUR08666A.1.4 Repair options for bicycle wheel hub are identified following workplace procedures.</p> <p>AUR08666A.1.5 Repairs required are documented and costed for customer approval.</p> <p>AUR08666A.1.6 Customer approval obtained and checked against repair work to be undertaken.</p>
AUR08666A.2 Prepare for the repair of a bicycle wheel hub.	<p>AUR08666A.2.1 Planned repair sequence and availability of required tools and equipment determined.</p> <p>AUR08666A.2.2 Planned repair sequence includes post repair testing and checking process.</p> <p>AUR08666A.2.3 Parts list prepared and availability of replacement components determined.</p> <p>AUR08666A.2.4 Tools and equipment are selected to meet job requirements.</p> <p>AUR08666A.2.5 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR08666A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR08666A.2 (continued) Prepare for the repair of a bicycle wheel hub.	AUR08666A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.
AUR08666A.3 Repair and test bicycle wheel hub.	<p>AUR08666A.3.1 Repair operation for bicycle wheel hub performed according to plan.</p> <p>AUR08666A.3.2 Repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace.</p> <p>AUR08666A.3.3 Customer requirements and bicycle wheel hub specifications checked following repair procedures.</p> <p>AUR08666A.3.4 Repaired bicycle wheel hub is operated through full range, noting test results, including non-conformity.</p> <p>AUR08666A.3.5 Repaired bicycle wheel hub checked, adjustments and alignments completed and unit prepared for delivery.</p> <p>AUR08666A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures.</p> <p>AUR08666A.3.7 Portable tools and equipment are stored in approved designated areas.</p> <p>AUR08666A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise.</p> <p>AUR08666A.3.9 Accounts and invoices prepared as required by enterprise.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- disk, drum and coaster and internal foot brake hubs, loose ball, cage and roller bearings, and hub lubricants

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific repair and general workshop equipment and tools
- enterprise documentation and reporting systems
- jigs and fixtures

Methods include:

- on and off site repairs
- repair and manual adjustments of wheel hubs and components
- communicating with customers
- documenting and reporting repairs

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle wheel hub configurations requiring repair

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing bicycle wheel hubs

Underpinning knowledge:

- Purpose and requirements of a bicycle wheel hub and the relationship to suspension, Wheels, drive train, frame and braking
- The materials used in bicycle wheel hubs
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle wheel hubs and the identification of system components

Practical assessments:

- Gather information on bicycle wheel hubs
- Check bicycle wheel hubs for damage
- Plan bicycle wheel hub repair procedures
- Repair and adjust bicycle wheel hubs

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR08670A**SERVICE BICYCLE WHEEL HUBS**

UNIT DESCRIPTOR: This unit identifies the competence required to plan and safely service and test bicycle wheel hubs and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR08670A.1 Gather information on bicycle wheel hub.</p>	<p>AUR08670A.1.1 Customer requirements checked following workplace procedures.</p> <p>AUR08670A.1.2 Intended use of the unit being serviced is confirmed by discussions with customer.</p> <p>AUR08670A.1.3 Bicycle wheel hub service requirements researched, specifications accessed and checked.</p> <p>AUR08670A.1.4 Tools and equipment checked prior to use, for conformity with specifications and safe condition.</p> <p>AUR08670A.1.5 Condition of system is determined by visual, aural, tactile inspections and measurements.</p> <p>AUR08670A.1.6 Conditions found are compared with bicycle wheel hub specifications and customer use requirements.</p>
<p>AUR08670A.2 Prepare for the service of a bicycle wheel hub.</p>	<p>AUR08670A.2.1 Planned service sequence and availability of required tools and equipment determined.</p> <p>AUR08670A.2.2 Planned service sequence includes post service testing and checking process.</p> <p>AUR08670A.2.3 Materials list prepared and availability determined.</p> <p>AUR08670A.2.4 Tools and equipment are selected to meet job requirements.</p> <p>AUR08670A.2.5 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR08670A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements.</p> <p>AUR08670A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR08670A.3 Service and test bicycle wheel hub.	<p>AUR08670A.3.1 Service operation for bicycle wheel hub performed according to plan.</p> <p>AUR08670A.3.2 Service operations are performed using all required personal safety equipment and precautions required to protect others in the workplace.</p> <p>AUR08670A.3.3 Customer requirements and bicycle wheel hub specifications checked following service procedures.</p> <p>AUR08670A.3.4 Serviced bicycle wheel hub is operated through full range, noting test results, including non-conformity.</p> <p>AUR08670A.3.5 Serviced bicycle wheel hub checked, adjustments completed and unit prepared for delivery.</p> <p>AUR08670A.3.6 Portable tools and equipment are stored in approved designated areas.</p> <p>AUR08670A.3.7 Workplace records, customer file and warranty information updated, as required by enterprise.</p> <p>AUR08670A.3.8 Accounts and invoices prepared as required by enterprise.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- disk, drum and coaster and internal foot brake hubs, loose ball, cage and roller bearings, and hub lubricants

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific service and general workshop equipment and tools
- enterprise documentation and reporting systems
- jigs and fixtures

Methods include:

- on and off site servicing
- servicing and manual adjustments of wheel hub components
- communicating with customers
- documenting and reporting on service

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle hub configurations requiring servicing

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing bicycle wheel hubs

Underpinning knowledge:

- Purpose and requirements of bicycle hub systems and their relationship to suspension, wheels, drive train, brakes and frame
- The materials used in bicycle wheel hubs
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle wheel hubs and the identification of system components

Practical assessments:

- Gather information on bicycle wheel hubs
- Test bicycle wheel hubs
- Plan bicycle wheel hub service procedures
- Service bicycle wheel hubs

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR09131A**INSTALL HYDRAULIC SYSTEMS TO SPECIFIC APPLICATIONS**

UNIT DESCRIPTOR: This unit identifies the competence required to fit a hydraulic system to a vehicle/equipment and carry out testing procedures.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR09131A.1 Install hydraulic systems.	<p>AUR09131A.1.1 Installation is completed without causing damage to any component or system.</p> <p>AUR09131A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR09131A.1.3 Hydraulic system plans are designed and followed as per customer requirements.</p> <p>AUR09131A.1.4 All installation procedures are carried out in accordance with manufacturer specifications and tolerances.</p> <p>AUR09131A.1.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR09131A.2 Test hydraulic systems.	<p>AUR09131A.2.1 Testing is completed without causing damage to any component or system.</p> <p>AUR09131A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR09131A.2.3 All tests are carried out in accordance with manufacturer specifications and tolerances.</p> <p>AUR09131A.2.4 All tests are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- heavy vehicles and/or trailers and/or plant and/or vessels and/or outdoor power equipment

Sources of information/documents may include:

- vehicle/manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- statutory legislation
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for installation, testing equipment including: hydraulic flow meter, hydraulic pressure gauges

Methods include:

- aural, visual and functional assessments (including damage, corrosion, fluid levels, leaks, tests, wear and safety aspects)
- installation procedures
- testing procedures

Methods should be applied under normal operating conditions.

Other variables may include the following types of vehicles/equipment:

- highway, off-highway, earthmoving, mining, agricultural, marine, industrial
- outdoor power equipment such as cutting, digging, lifting, drilling and pumping

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- hydraulic system/components installation procedures followed
- system testing completed

Underpinning knowledge:

- Measuring and testing procedures
- Relevant technical information including graphic symbols
- Design and sketch hydraulic circuitry diagrams
- Types of hydraulic fluids and their application
- Equipment safety requirements
- Vehicle safety requirements as per relevant legislation
- Manufacturers/company policies
- Hydraulic system operating principles
- Hydraulic systems/component installation procedures
- Construction and operation of hydraulic systems relevant to application
- Manual handling techniques
- Personal safety requirements
- Hydraulic system test procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Test systems/components for both technical and legal requirements
- Construct hydraulic systems from circuit diagrams
- Install various hydraulic systems/components
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR09166A**REPAIR HYDRAULIC SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out repairs using approved methods and equipment and testing procedures for heavy vehicle, plant, vessel and outdoor power equipment.

PRE-REQUISITES: AUR09170A Service hydraulic systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR09166A.1 Repair hydraulic systems.	<p>AUR09166A.1.1 Hydraulic systems are repaired without causing damage to any component or system.</p> <p>AUR09166A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR09166A.1.3 *All repair procedures are carried out in accordance with manufacturer specifications and tolerances.</p> <p>AUR09166A.1.4 *All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR09166A.2 Test hydraulic systems.	<p>AUR09166A.2.1 Hydraulic systems are tested without causing damage to any component or system.</p> <p>AUR09166A.2.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR09166A.2.3 *All testing procedures are carried out in accordance with manufacturer specifications and tolerances.</p> <p>AUR09166A.2.4 *All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- heavy vehicle, plant, vessel and outdoor power equipment

Sources of information/documents may include:

- machine/vehicle manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- statutory legislation
- material safety data sheets.

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, special tools for removal/replacement, hydraulic pressure gauges
- power tools, hydraulic flow meter, hydraulic test bench

Methods include:

- aural, visual and functional assessments (including damage, corrosion, fluid levels, leaks, tests, wear and safety aspects)

Methods should be applied under normal operating conditions.

Other variables may include:

- hoists, jacks, pressing equipment, steering gear, power trim, power tilt

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- test procedures
- hydraulic system/components, repair and test procedures

Underpinning knowledge:

- Dismantling, assembling and repair procedures
- Measuring and testing procedures
- Component evaluation
- Equipment safety requirements
- Manufacturer/company policies
- Construction and operation of hydraulic system relevant to application
- Manual handling techniques
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Test systems/components for both technical and legal requirements
- Identify hydraulic system faults
- Repair various hydraulic systems and/or components
- Remove and replace relevant components
- Evaluate components
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Work with others and in teams	2
Solve problems	1
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills include:

- exchanging technical information

Reading and writing skills may include:

- reading test procedures
- completing safety checklists

Numeracy skills may include:

- reading and interpreting numerical specifications and tolerances

AUR09170A**SERVICE HYDRAULIC SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to service hydraulic systems for heavy vehicle, plant, vessel and outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR09170A.1 Service and test hydraulic systems.	<p>AUR09170A.1.1 Service is achieved without causing damage to any component or system.</p> <p>AUR09170A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR09170A.1.3 *Appropriate materials/oils/filters are selected.</p> <p>AUR09170A.1.4 *Servicing is completed according to service schedule/job card.</p> <p>AUR09170A.1.5 *System is tested prior to placing into service and results are recorded in accordance with enterprise policies and procedures.</p> <p>AUR09170A.1.6 *Servicing is carried out according to industry regulations/guidelines OH&S legislation, statutory legislation and enterprise/procedures policies.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- heavy vehicles and/or plant and/or vessels and/or outdoor power equipment

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, servicing materials including; filters, oils, servicing specifications, lifting equipment, safety equipment

Methods include:

- visual, aural and functional assessments including: damage, corrosion, wear and testing

Methods should be applied under normal operating conditions.

Other variables may include:

- hoists, jacks, pressing equipment, steering gear, power trim, power tilt

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing hydraulic systems

Underpinning knowledge:

- Equipment safety requirements
- Hydraulic system servicing and testing procedures
- Fluid types and their application
- Manual handling techniques

Practical assessments:

- Access, interpret and apply technical information
- Hydraulic system principles of operation
- Service and test hydraulic systems
- Check system for normal operation
- Safely and correctly use relevant tools and equipment
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- exchanging safety information after vehicle inspection
- exchanging technical information

Reading and writing skills may include:

- reading and completing company forms eg. jobsheets, checklists
- reading and completing safety checklist
- reading and interpreting labels

Numeracy may include:

- following appropriate label/mixture standard for materials and oils

AUR09604A**ASSEMBLE PNEUMATIC SYSTEM
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to assemble and test pneumatic systems/components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR09604A.1 Assemble and test pneumatic system components.	<p>AUR09604A.1.1 Pneumatic system components are assembled and tested without causing damage to any component or system.</p> <p>AUR09604A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR09604A.1.3 Appropriate fittings/components/ materials are selected.</p> <p>AUR09604A.1.4 Pneumatic components are assembled according to assembly procedures/specifications using appropriate tools and techniques.</p> <p>AUR09604A.1.5 Components are tested prior to placing in service and results are recorded in accordance with enterprise policies and procedures.</p> <p>AUR09604A.1.6 Assembly is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- pneumatic components fitted to mechanical systems

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment, air supply
- power tools, air tools

Methods include:

- mechanical fastening
- testing
- assembly
- measuring

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- assembly of pneumatic components

Underpinning knowledge:

- OH&S legislation
- interpretation of technical materials, graphic symbols and diagrams
- the identification of pneumatic components
- pneumatic component operation
- personal safety requirements
- equipment/component safety requirements
- assembly procedures
- measuring and testing procedures

Practical assessments:

- access, interpret and apply technical information
- correctly use tools and equipment
- assemble pneumatic components
- test pneumatic components
- select and use appropriate materials for assembly of pneumatic components

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR09631A**INSTALL PNEUMATIC SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to install and test pneumatic systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR09631A.1 Install and test pneumatic systems.	AUR09631A.1.1 Pneumatic systems install and test is completed without causing damage to any component or system. AUR09631A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR09631A.1.3 Appropriate fittings/materials are selected. AUR09631A.1.4 Pneumatic systems are installed using appropriate tools and techniques. AUR09631A.1.5 Installation is tested prior to placing in service and results are recorded in accordance with enterprise policies and procedures. AUR09631A.1.6 Installation is carried according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- pneumatic systems fitted to mechanical systems

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, measuring equipment, fastening equipment, and testing equipment.
- power tools, air tools and lifting equipment.

Methods include:

- measurement
- fastening
- installing pneumatic systems
- testing pneumatic systems

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation of pneumatic systems

Underpinning knowledge:

- OH&S legislation
- Equipment/component safety requirements
- Interpretation of technical materials, graphic symbols and diagrams
- The identification of pneumatic components
- Pneumatic system operation
- Personal safety requirements
- Installation procedures
- Measuring and testing procedures

Practical assessments:

- Access, interpret and apply technical information
- Correctly use tools and equipment
- Install pneumatic systems
- Test pneumatic systems
- Select and use appropriate materials for the installation of pneumatic systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR09671A**SERVICE AND REPAIR PNEUMATIC SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to repair, service and test pneumatic systems/components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR09671A.1 Repair, service and test pneumatic systems/components.	<p>AUR09671A.1.1 Repair, service and test procedures are completed without causing damage to any workplace property or vehicle.</p> <p>AUR09671A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR09671A.1.3 Necessary repairs, service or component replacement is carried out using appropriate tools, techniques and materials.</p> <p>AUR09671A.1.4 Pneumatic systems are tested prior to placing into service and results are recorded in accordance with enterprise policies and procedures.</p> <p>AUR09671A.1.5 Repairs and service are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- pneumatic components fitted to mechanical systems.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, measuring equipment, fastening equipment, testing equipment including; system testers and pressure testers
- power tools, air tools and lifting equipment

Methods include:

- measurement
- fastening
- removal/replacement
- dismantling/assembling
- adjusting
- installing pneumatic systems
- testing pneumatic systems

Methods should be applied under normal operating conditions.

Other variables may include:

- pneumatic systems such as air-operated door mechanisms, air motors, air pumps, air servos

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repair and service of pneumatic systems

Underpinning knowledge:

- OH&S legislation
- Equipment safety requirements
- Personal safety requirements
- Interpretation of technical materials, graphic symbols and diagrams
- Dismantling and assembling methods
- Repair procedures
- Pneumatic system operating principles
- Construction and operation relevant to application
- The identification of pneumatic components
- Service procedures
- Measuring and testing procedures

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Repair pneumatic systems
- Remove and replace components
- Test pneumatic systems
- Select and use appropriate materials for the repair of pneumatic systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR10104A**ASSEMBLE AND FIT BRAKING SYSTEMS/ COMPONENTS****UNIT DESCRIPTOR**

This unit identifies the competence required to assemble, install and test braking systems and associated components including hydraulic, pneumatic, electric and mechanical operating systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR10104A.1 Assemble and fit braking system/ components.	<p>AUR10104A.1.1 Braking system/components are assembled and fitted without causing damage to any component or system.</p> <p>AUR10104A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10104A.1.3 All procedures are carried out using approved methods and equipment, according to manufacturer specifications and tolerances.</p> <p>AUR10104A.1.4 Appropriate workplace documentation is completed and dealt with relevant to fit and assemble outcomes.</p> <p>AUR10104A.1.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR10104A.2 Test braking system/components.	<p>AUR10104A.2.1 Braking system/components are tested without causing damage to any component or system.</p> <p>AUR10104A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10104A.2.3 All procedures are carried out using approved methods and equipment, according to manufacturer specifications and tolerances.</p> <p>AUR10104A.2.4 Appropriate workplace documentation is completed and dealt with relevant to testing outcomes.</p> <p>AUR10104A.2.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical Streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- product manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, cutting equipment, measuring equipment, lifting equipment, brake bleeding equipment, testing equipment (eg brake dyno).
- pipe bending and flaring equipment.

Methods include:

- assembling systems
- installation of components
- testing systems

Methods should be applied under normal operating conditions.

Specific requirements:

- Hydraulic, air over hydraulic, vacuum over hydraulics, electric, electric over hydraulic systems, air braking systems.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- identifying materials and components
- assembling materials and components
- safe working practices
- testing systems
- vehicle protection methods

Underpinning knowledge:

- Industry/Workplace Codes of Practice
- Equipment safety requirements
- Personal safety requirements
- Statutory legislation where applicable
- Braking systems operating principles
- Construction and operation relevant to application
- Types of materials and their application
- Brake pipes fabrication procedures
- Methods of fastening
- Assembly and fitting procedures
- Relevant technical information
- Vehicle safety requirements
- Relevant manufacturer/company policies
- Brake system test procedures
- Lubricant and brake fluid types

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Use relevant assembly methods
- Use relevant testing methods
- Install braking system components
- Fabricate various components (eg brake pipes etc)

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR10145A**OVERHAUL BRAKING SYSTEM COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out an overhaul to hydraulic, mechanical, pneumatic, vacuum and power assisted braking system components.

PRE-REQUISITES: AUR10170A Service braking systems
AUR10166A Repair braking systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR10145A.1 Overhaul braking system components/sub-assemblies.	<p>AUR10145A.1.1 Overhaul of braking system components/sub assemblies is completed without causing damage to any component or system.</p> <p>AUR10145A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10145A.1.3 *Braking system components are overhauled using approved methods, equipment and materials, in accordance with manufacturer specifications.</p> <p>AUR10145A.1.4 * Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes.</p> <p>AUR10145A.1.5 *All braking systems component overhaul activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicle and/or heavy vehicle and/or motor cycle and/or trailers and/or outdoor power equipment

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications (including fluids and materials used)
- customer requirements
- Statutory legislation
- material safety data sheets.

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, lifting and supporting equipment, brake dust extraction equipment
- measuring instruments
- overhaul machining equipment

Methods include:

- pressure testing
- visual, aural and functional assessments (including: damage, corrosion, fluid leaks, wear)

Methods should be applied under normal operating conditions.

Other variables may include:

- fluid operated, electronically operated, mechanically operated, power assisted, anti-lock brake systems, computer systems
- dual braking systems
- anti-dive systems
- disc pads, master cylinders, brake shoes, brake calipers, brake hoses, brake actuators mechanical devices
- current driver's licence

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- brake systems and/or components overhaul procedures followed
- safe working practices
- protection methods

Underpinning knowledge:

- Overhaul procedures
- Component measuring and test procedures
- Hazards associated with brake dust
- Relevant technical information
- Equipment safety requirements
- Component safety requirements
- Personal safety requirements
- Relevant manufacturer/company policies

Practical assessments:

- Access, interpret and apply technical information
- Overhaul brake components
- Use relevant tools and equipment
- Test components to comply with technical and legal requirements

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	3
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to customer information and verbal instructions
- following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and completing company forms eg. jobsheets, checklists
- recording safety-related information
- reading and interpreting manufacturer requirements eg component specifications, performance level of brakes, pressure tests, computer read outs/manuals
- accessing information from computer
- entering information on computer

Numeracy skills may include:

- reading gauges
- interpreting measuring equipment eg. dynamometers, pressure tests, hand held items
- measuring eg. psi/kPa

AUR10166A**REPAIR BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out repairs, removal and replacement to hydraulic, mechanical, pneumatic, vacuum and power assisted braking systems and/or associated components.

PRE-REQUISITES: AUR10170A Service braking systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR10166A.1 Repair, removal and replacement of braking systems and/or associated components.	<p>AUR10166A.1.1 Repair, removal and replacement of braking systems and/or associated components is completed without causing damage to any component or system.</p> <p>AUR10166A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10166A.1.3 *Braking system and components are repaired, removed and replaced using approved methods, equipment and materials, in accordance with manufacturer specifications.</p> <p>AUR10166A.1.4 * Appropriate workplace documentation is completed and dealt with relevant to repair, removal and replacement outcomes.</p> <p>AUR10166A.1.5 *All braking systems and/or component repair, removal and replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicle and/or heavy vehicle and/or motor cycle and/or trailers and/or outdoor power equipment. This unit does not apply to ABS braking systems.

Sources of information/documents may include:

- vehicle/manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications (including fluids and materials used)
- customer requirements
- Statutory legislation
- material safety data sheets.

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, lifting and supporting equipment, brake dust extraction equipment
- measuring instruments
- roller brake dynamometers, hand held testing equipment, skid pan, inertia testing device

Methods include:

- road testing, pressure testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, fluid leaks, wear)

Methods should be applied under normal operating conditions.

Specific requirements:

- Fluid, mechanical, pneumatic and vacuum operated, power assisted, dual braking systems
- Anti-dive systems

Other variables may include:

- disc pads, master cylinders, brake shoes, brake calipers, brake hoses, brake actuators mechanical devices
- current driver's licence

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- brake systems and/or components repair procedures followed
- safe working practices
- vehicle protection methods

Underpinning knowledge:

- Construction and operation of braking systems (relevant to application)
- Removal, replacement and repair procedures
- Testing procedures
- Hazards associated with brake dust
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/company policies

Practical assessments:

- Access, interpret and apply technical information
- Identify brake system faults
- Remove and replace braking system components
- Repair brake systems and associated components
- Use relevant tools and equipment
- Test and adjust braking systems and associated components to comply with technical and legal requirements
- Check system for normal operations

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	3
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

Language, Literacy and Numeracy:

Speaking and listening skills may include:

- listening to customer information and job instructions
- following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and completing company forms eg. job sheets, checklists
- reading and recording safety information
- reading and interpreting vehicle manufacturer requirements eg manuals/computer read outs on brake specifications, components
- entering information on computer system

AUR10170A**SERVICE BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of hydraulic, mechanical, pneumatic, vacuum and power assisted braking systems with their associated components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR10170A.1 Service braking systems and/or associated components.	<p>AUR10170A.1.1 Braking systems and/or associated components are serviced without causing damage to any component or system.</p> <p>AUR10170A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10170A.1.3 *Braking system components are serviced using approved methods, equipment and materials, in accordance with manufacturer specifications.</p> <p>AUR10170A.1.4 * Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR10170A.1.5 *All braking systems and/or component service activities are carried out in accordance to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicle and/or heavy vehicle and/or motor cycle and/or trailers and/or outdoor power equipment. This unit does not apply to ABS electrical/electronic components.

Sources of information/documents may include:

- vehicle/manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications (including fluids and materials used)
- customer requirements
- Statutory legislation
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, dust extraction equipment
- lifting and supporting equipment, roller brake dynamometer, skid pan, inertia testing devices, test light

Methods include:

- road testing, pressure testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, fluid leaks, wear)
- measurements

Methods should be applied under normal operating conditions.

Specific requirements:

- Fluid, mechanical, pneumatic and vacuum operated, power assisted, dual braking systems
- Anti-dive systems

Other variables may include:

- disc pads, master cylinders, brake shoes, brake calipers, brake hoses, brake actuators, mechanical devices
- current driver's licence

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- brake systems and/or components service procedures followed
- safe working practices
- vehicle protection methods

Underpinning knowledge:

- Braking system operating principles
- Service procedures including visual inspection, bleeding and adjustment
- Types of brake fluids and their application
- Relevant technical information
- Hazards associated with brake dust
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/company policies
- Environmental requirements for disposal of substances
- Types of brake material and their potential dangers.

Practical assessments:

- Access, interpret and apply technical information
- Service brake systems and associated components
- Bleed and adjust braking systems
- Use relevant tools and equipment
- Check system for normal operation

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	3
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to and following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and completing company forms eg. job sheets, checklists
- recording customer-related information
- reading and recording technical and safety information
- reading manufacturer specifications eg manuals, computer read outs
- entering information on computer system

Numeracy skills may include:

- using and interpreting measurements

AUR10605A**ATTACH FRICTION MATERIALS AND RADIUS GRIND**

UNIT DESCRIPTOR: This unit identifies the competence required to select relevant friction materials and attachment methods, attach friction material to brake shoes/clutch plates and radius grind brake shoes.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR10605A.1 Ascertain relevant material, attachment methods and attach friction materials.	AUR10605A.1.1 Work is completed without causing damage to any component or system. AUR10605A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR10605A.1.3 Friction material is attached in accordance with manufacturer specifications for methods of attachment, equipment used and tolerances relative to the vehicle/system. AUR10605A.1.4 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR10605A.2 Radius grind brake shoes.	AUR10605A.2.1 Work is completed without causing damage to any component or system. AUR10605A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR10605A.2.3 Radius grinding of brake shoes is completed in accordance with manufacturer specifications for methods and equipment used to suit the brake drum. AUR10605A.2.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- the selection of material and method of attachment, the attachment of brake and clutch frictional materials and the radius grinding of brake shoes of motor vehicles

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- Statutory legislation for vehicle road worthiness (including ADRs)
- material safety data sheet

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources must include:

- hand tools, power tools, riveting machines, bonding materials and equipment, radius grinding machines, relevant safety equipment and apparel, measuring equipment
- relevant specialist equipment

Methods include:

- riveting, bolting, grinding, measuring, matching

Methods should be applied under normal operating conditions.

Specific requirements:

- Brake shoes, clutch plates, rivets, bolts and nuts, brake linings, clutch linings

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- attachment methods and types of materials
- attachment procedures
- radius grinding procedures

Underpinning knowledge:

- Friction material types and their application
- Friction material attachment methods and procedures
- Radius grinding procedures
- Equipment/material safety requirements
- Personal safety procedures
- Vehicle safety requirements
- Manual handling procedures

Practical assessments:

- Access, and apply safety and technical information
- Apply personal safety requirements
- Use relevant tools and equipment
- Attach relevant friction material using appropriate method
- Radius grind brake shoe friction materials
- Maintain customer records
- Apply correct manual handling techniques

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	2
Plan and organise activities	2
Work with others and in teams	2
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR10608A**CARRY OUT BONDING OF FRICTION MATERIALS**

UNIT DESCRIPTOR: This unit identifies the competence required to select and bond friction materials to prepared surfaces.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR10608A.1 Select appropriate friction material.	<p>AUR10608A.1.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10608A.1.2 Friction materials are identified and selected for the required application.</p>
AUR10608A.2 Prepare component/material for bonding.	<p>AUR10608A.2.1 Component/material is prepared for bonding without causing damage to any component or system.</p> <p>AUR10608A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10608A.2.3 Component is prepared in accordance with material manufacturer requirements for bonding.</p> <p>AUR10608A.2.4 All preparation activities are carried out according to industry regulations/ guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR10608A.3 Bond relevant materials.	<p>AUR10608A.3.1 Materials are bonded without causing damage to any component or system.</p> <p>AUR10608A.3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10608A.3.3 Bonding of friction materials to component is completed using approved methods and equipment, according to manufacturer specifications and tolerances.</p> <p>AUR10608A.3.4 Bonding activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR10608A.4 Radius grind brake shoes.	<p>AUR10608A.4.1 Radius grinding of brake shoes is completed without causing damage to any component or system.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR10608A.4 (continued) Radius grind brake shoes.	AUR10608A.4.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR10608A.4.3 Radius grinding of brake shoes is completed in accordance with manufacturer specifications for methods and equipment used to suit the brake drum. AUR10608A.4.4 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- company operating procedures
- industry codes of practice
- customer requirements
- component manufacturer specifications
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special removal tools
- measuring instruments
- bonding oven
- radius grinder
- appropriate personal protection

Methods include:

- bonding of friction materials
- radius grinding

Methods should be applied under normal operating conditions.

Specific requirements:

- Selections of correct friction materials
- Bonding agents

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- bonding of friction materials to components
- safe working practices
- radius grinding

Underpinning knowledge:

- Industry code of practice
- Statutory legislation where applicable
- Relevant technical information
- Equipment safety requirements
- Relevant manufacturer/company policies
- Vehicle safety requirements
- Personal safety requirements
- Bonding agents and procedures
- Types of friction materials and their application
- Radius grinding

Practical assessments:

- Access and interpret technical information
- Use relevant tools and equipment
- Repair component/material for bonding
- Select appropriate friction material for bonding
- Bond various materials
- Radius grinding

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR10736A**MACHINE BRAKE DRUMS AND BRAKE DISC ROTORS**

UNIT DESCRIPTOR: This unit identifies the competence required to recondition brake drums and brake disc rotors by machining.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR10736A.1 Machine brake drums and brake disc rotors.	<p>AUR10736A.1.1 Brake drums and brake disc rotors are machined without causing damage to any component or system.</p> <p>AUR10736A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR10736A.1.3 Brake drums and/or brake disc rotors are measured prior to machining to determine the suitability for machining to manufacturer safety specifications.</p> <p>AUR10736A.1.4 Appropriate workplace documentation is completed and dealt with relevant to machining outcomes.</p> <p>AUR10736A.1.5 Machining activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- brake drums and brake disc rotors fitted to vehicle braking systems such as: four wheel brake drums, brake drums/disc combination, four wheel disc brakes, fluid operated, mechanically operated, power assisted, combination systems, anti-lock braking systems, electrically/electronically operated braking systems

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- component manufacturer specifications
- customer requirements
- material safety data sheet

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools
- measuring equipment
- on-car and/or off-car machining equipment
- appropriate personal protection.

Methods include:

- on-car brake disc rotor machining
- off-car brake drum and brake disc rotor machining

Methods should be applied under normal operating conditions.

Specific requirements:

- Solid, vented, integrated metal construction.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- machining/reconditioning brake drums and brake disc rotors

Underpinning knowledge:

- Measuring and testing procedures
- Brake drum and disc rotor machining procedures
- Equipment/Material safety requirements
- Personal safety requirements
- Manual handling procedures

Practical assessments:

- Access, and apply safety and technical information
- Apply personal safety requirements
- Use relevant tools and equipment
- Apply measuring and testing procedures
- Carry out brake drum and disc rotor machining operations
- Maintain customer records
- Apply manual handling procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR11145A**OVERHAUL AIR BRAKING SYSTEM
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the overhaul to air braking systems/components using approved methods and equipment.

PRE-REQUISITES: AUR11170A Service air braking systems
AUR11166A Repair air braking systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR11145A.1 Overhaul air braking system components.	<p>AUR11145A.1.1 Air braking system component overhaul is completed without causing damage to any component or system.</p> <p>AUR11145A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR11145A.1.3 Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes.</p> <p>AUR11145A.1.4 Air braking systems and/or component overhaul activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical streams

Sources of information/documents may include:

- vehicle/equipment manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- product manufacturer specifications (including fluids and materials used)
- Statutory legislation (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, special tools for dismantling/adjustment, testing equipment including: tapley meters, hand held testing equipment, pressure testing equipment
- measuring instruments

Methods include:

- visual, aural and functional assessments (including: damage, corrosion, wear)
- measurements, disassembly, assembly

Methods should be applied under normal operating conditions.

Specific requirements:

- Air over hydraulic system, air system

Other variables may include:

- accumulators, adjusting mechanism, air tanks, air drier, air lines, air valves, compressors

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- brake system component overhaul procedures
- vehicle/equipment protection methods

Underpinning knowledge:

- Relevant technical information
- Equipment safety requirements
- Relevant manufacturer/company policies
- Component overhaul procedures.
- Measuring, testing and evaluation procedures
- Personal safety requirements.

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Overhaul air braking system components
- Test and adjust air braking system components for technical and legal requirements
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	2
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR11166A**REPAIR AIR BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out repairs to air braking systems and associated components.

PRE-REQUISITES: AUR11170A Service air braking systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR11166A.1 Repair air braking systems and associated components.	AUR11166A.1.1 Braking systems and associated component repairs are completed without causing damage to any component or system. AUR11166A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR11166A.1.3 Repair operations are completed within established industry guidelines and ADRs. AUR11166A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. AUR11166A.1.5 Air braking systems and/or component repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical streams

Sources of information/documents may include:

- vehicle/equipment manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- product manufacturer specifications (including fluids and materials used)
- Statutory legislation (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools, hand held testing equipment, pressure testing equipment

Methods include:

- road testing,
- visual, aural and functional assessments (including: damage, corrosion, wear)
- measurements, lubrication, adjustment

Methods should be applied under normal operating conditions.

Specific requirements:

- Air/hydraulic system, air system.

Other variables may include:

- brake shoes, accumulators, adjusting mechanism, air tanks, air drier, air lines, air valves, compressors.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information.
- safe working practices.
- air brake systems and/or components, repair procedures
- vehicle/equipment protection methods
- repairing air braking systems

Underpinning knowledge:

- Construction and operation of air braking system relevant to application
- Testing procedures
- Relevant technical information
- Equipment safety requirements
- Relevant manufacturer/company policies
- Manual handling techniques
- Repair procedures
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Repair air braking systems and associated components
- Use relevant tools and equipment
- Test and adjust air braking systems and associated components for technical and legal requirements
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	2
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR11170A**SERVICE AIR BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out service of air braking systems and associated components using approved methods and equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR11170A.1 Service air braking systems and associated components.	<p>AUR11170A.1.1 Air braking systems and associated components are serviced without causing damage to any workplace property or vehicle.</p> <p>AUR11170A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR11170A.1.3 Service operations are completed within established industry guidelines.</p> <p>AUR11170A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR11170A.1.5 Air braking systems and/or component service activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical Streams

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- product manufacturer specifications (including fluids and materials used)
- Statutory legislation (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools, hand held testing equipment, pressure testing equipment

Methods include:

- road testing
- visual, aural and functional assessments (including: damage, corrosion, wear)
- measurements, lubrication, adjustments

Methods should be applied under normal operating conditions.

Specific requirements:

- Air/hydraulic system, air system

Other variables may include:

- brake shoes, accumulators, adjusting mechanism, air tanks, air drier, air lines, air valves, compressors

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- air brake systems and/or components, servicing procedures
- vehicle/equipment protection methods

Underpinning knowledge:

- Types of air braking systems/components and their principles of operation
- Testing procedures
- Relevant technical information
- Vehicle/Equipment/Material safety requirements
- Relevant manufacture/company policies
- Brake materials and their potential dangers
- Service procedures
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information.
- Service air braking systems and associated components
- Use relevant tools and equipment
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	2
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR11666A**REPAIR ELECTRIC BRAKING SYSTEMS****UNIT DESCRIPTOR:**

This unit identifies the competence required to repair electric braking systems and/or associated components as fitted to trailers. This standard also applies to electric braking controllers fitted to vehicles and/or plant and equipment. For mechanical braking systems see AUR10170A Service braking systems and AUR10166A Repair braking systems.

PRE-REQUISITES: AUR18708A Carry out repairs to electrical circuit/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR11666A.1 Repair electrical braking systems and/or associated components.	<p>AUR11666A.1.1 Electrical braking systems and/or associated components repair is completed without causing damage to any component or system.</p> <p>AUR11666A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR11666A.1.3 Tests on electrical braking systems are carried out to determine faults using appropriate tools and techniques.</p> <p>AUR11666A.1.4 Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials.</p> <p>AUR11666A.1.5 Repairs are carried out according to industry regulations/guidelines OH&S legislation, statutory legislation and enterprise/procedures policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to light vehicles and/or plant and equipment fitted with electric trailer braking controllers or trailers fitted with electric brakes.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, vehicle lifting equipment, testing equipment including multimeters
- power tools, air tools, special tools for removal/adjustment, brake decelerometer

Methods include:

- repair and/or replacement of system components
- removal, dismantling, re-assembly and refitting
- testing under operating conditions
- visual, aural and functional assessment (including damage, corrosion)
- road testing
- electrical/electronic testing

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing electrical braking systems
- testing electrical braking systems

Underpinning knowledge:

- OH&S legislation
- Vehicle equipment/material safety requirements
- Personal safety requirements
- Repair, removal, replacement and adjustment procedures
- Operating principles of electric braking systems
- Construction and operation of electric braking systems/components relevant to application
- Testing procedures
- Repair procedures

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Repair, adjust and/or replace systems/components as necessary
- Clean, test, inspect and evaluation of electric braking system components

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR12166A**REPAIR BICYCLE MECHANICAL BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect, plan, and safely repair and test bicycle mechanical braking systems and complete required documents.

PRE-REQUISITES: AUR12170A Service bicycle mechanical braking system

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR12166A.1 Inspect bicycle mechanical braking system.	AUR12166A.1.1 Inspect bicycle mechanical braking system for faults and worn or damaged components. AUR12166A.1.2 Repairs required are determined by visual, aural, tactile inspections and measurements. AUR12166A.1.3 Conditions found are compared with bicycle mechanical braking system specifications and customer use requirements. AUR12166A.1.4 Repair options for mechanical braking system are identified following workplace procedures. AUR12166A.1.5 Repairs required are documented and costed for customer approval. AUR12166A.1.6 Customer approval obtained and checked against repair work to be undertaken.
AUR12166A.2 Prepare for the repair of a bicycle mechanical braking system.	AUR12166A.2.1 Plan repair sequence and availability of required tools and equipment determined. AUR12166A.2.2 Plan repair sequence includes post repair testing and checking process. AUR12166A.2.3 Parts list prepared and availability of replacement components determined. AUR12166A.2.4 Additional personnel required to assist in the repair process identified and permission obtained. AUR12166A.2.5 Tools and equipment are selected to meet job requirements.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR12166A.2 (continued) Prepare for the repair of a bicycle mechanical braking system.	<p>AUR12166A.2.7 Tools and equipment are handled and used in accordance with OH&S requirements.</p> <p>AUR12166A.2.8 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>
AUR12166A.3 Repair and test bicycle mechanical braking system.	<p>AUR12166A.3.1 Repair operation for bicycle mechanical braking system performed according to plan.</p> <p>AUR12166A.3.2 Repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace.</p> <p>AUR12166A.3.3 Customer requirements and bicycle braking system specifications checked following repair procedures.</p> <p>AUR12166A.3.4 Repaired bicycle braking system is operated through full range, noting test results, including non-conformity.</p> <p>AUR12166A.3.5 Repaired bicycle mechanical braking system checked, adjustments completed and unit prepared for delivery.</p> <p>AUR12166A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures.</p> <p>AUR12166A.3.7 Portable tools and equipment are stored in approved designated areas.</p> <p>AUR12166A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise.</p> <p>AUR12166A.3.9 Accounts and invoices prepared as required by enterprise.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to cantilever, disc, internal coaster and drum brakes, composite material brake pads, mechanical linkages, manual adjustment and integrated brake and gear levers

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific repair and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- workbench
- pneumatic air tools

Methods include:

- on and off site repairs
- repair and manual adjustments of mechanical braking system components
- communicating with customers
- documenting and reporting repairs

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle mechanical braking unit configurations requiring repair

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing bicycle mechanical brake systems

Underpinning knowledge:

- Purpose and requirements of bicycle mechanical braking systems and their relationship to suspension, wheels, drive train, frame and steering
- The materials used in bicycle mechanical braking systems
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle mechanical braking systems and the identification of system components

Practical assessments:

- Gather information on bicycle mechanical braking systems
- Check bicycle mechanical braking systems for damage and wear
- Plan bicycle mechanical braking system repair procedures
- Repair bicycle mechanical braking systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR12170A**SERVICE BICYCLE MECHANICAL BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to plan, and safely service and test bicycle mechanical braking systems and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR12170A.1 Gather information on bicycle mechanical braking system.</p>	<p>AUR12170A.1.1 Customer requirements checked following workplace procedures.</p> <p>AUR12170A.1.2 Intended use of the unit being serviced is confirmed by discussions with customer.</p> <p>AUR12170A.1.3 Bicycle mechanical braking system service requirements researched, specifications accessed and checked.</p> <p>AUR12170A.1.4 Tools and equipment checked prior to use, for conformity with specifications and safe condition.</p> <p>AUR12170A.1.5 Condition of system is determined by visual, aural, tactile inspections and measurements.</p> <p>AUR12170A.1.6 Conditions found are compared with bicycle mechanical braking system specifications and customer use requirements.</p>
<p>AUR12170A.2 Prepare for the service of a bicycle mechanical braking system.</p>	<p>AUR12170A.2.1 Plan service sequence and availability of required tools and equipment determined.</p> <p>AUR12170A.2.2 Plan service sequence includes post service testing and checking process.</p> <p>AUR12170A.2.3 Materials list prepared and availability determined.</p> <p>AUR12170A.2.4 Tools and equipment are selected to meet job requirements.</p> <p>AUR12170A.2.5 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR12170A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR12170A.2 (continued) Prepare for the service of a bicycle mechanical braking system.	AUR12170A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.
AUR12170A.3 Service and test bicycle mechanical braking system.	<p>AUR12170A.3.1 Service operation for bicycle mechanical braking system performed according to plan.</p> <p>AUR12170A.3.2 Service operations are performed using all required personal safety equipment and precautions required to protect others in the workplace.</p> <p>AUR12170A.3.3 Customer requirements and bicycle braking system specifications checked following service procedures.</p> <p>AUR12170A.3.4 Serviced bicycle braking system is operated through its full range, noting test results, including non-conformity.</p> <p>AUR12170A.3.5 Serviced bicycle mechanical braking system checked, adjustments completed and unit prepared for delivery.</p> <p>AUR12170A.3.6 Portable tools and equipment are stored in approved designated areas.</p> <p>AUR12170A.3.7 Workplace records, customer file and warranty information updated, as required by enterprise.</p> <p>AUR12170A.3.8 Accounts and invoices prepared as required by enterprise.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- cantilever, disc, internal coaster and drum brakes, composite material brake pads, mechanical linkages, manual adjustment and integrated brake and gear levers

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific service and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- workbench
- pneumatic air tools

Methods include:

- on and off site servicing
- servicing and manual adjustments of mechanical braking system components
- communicating with customers
- documenting and reporting on service

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle mechanical braking unit configurations requiring servicing

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing bicycle mechanical braking systems

Underpinning knowledge:

- Purpose and requirements of bicycle mechanical braking systems and their relationship to suspension, wheels, drive train, frame and steering
- The materials used in bicycle mechanical braking systems
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle mechanical braking systems and the identification of system components

Practical assessments:

- Gather information on bicycle mechanical braking systems
- Test bicycle mechanical braking systems
- Plan bicycle mechanical braking system service procedures
- Service bicycle mechanical braking systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR12366A**REPAIR BICYCLE HYDRAULIC BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect, plan, and safely repair and test bicycle hydraulic braking systems and complete required documents.

PRE-REQUISITES: AUR12370A Service bicycle hydraulic braking systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR12366A.1 Inspect bicycle hydraulic braking system.	AUR12366A.1.1 Inspect bicycle hydraulic braking system for faults and worn or damaged components. AUR12366A.1.2 Repairs required are determined by visual, aural, tactile inspections and measurements. AUR12366A.1.3 Conditions found are compared with bicycle hydraulic braking system specifications and customer use requirements. AUR12366A.1.4 Repair options for hydraulic braking system are identified following workplace procedures. AUR12366A.1.5 Repairs required are documented and costed for customer approval. AUR12366A.1.6 Customer approval obtained and checked against repair work to be undertaken.
AUR12366A.2 Prepare for the repair of a bicycle hydraulic braking system.	AUR12366A.2.1 Plan repair sequence and availability of required tools and equipment determined. AUR12366A.2.2 Plan repair sequence includes post repair testing and checking process. AUR12366A.2.3 Parts list prepared and availability of replacement components determined. AUR12366A.2.4 Additional personnel required to assist in the repair process identified and permission obtained. AUR12366A.2.5 Tools and equipment are selected to meet job requirements.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA cont.
AUR12366A.2 (cont) Prepare for the repair of a bicycle hydraulic braking system.	<p>AUR12366A.2.6 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR12366A.2.7 Tools and equipment are handled and used in accordance with OH&S requirements.</p> <p>AUR12366A.2.8 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>
AUR12366A.3 Repair and test bicycle hydraulic braking system.	<p>AUR12366A.3.1 Repair operation for bicycle hydraulic braking system performed according to plan.</p> <p>AUR12366A.3.2 Repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace.</p> <p>AUR12366A.3.3 Customer requirements and bicycle braking system specifications checked following repair procedures.</p> <p>AUR12366A.3.4 Repaired bicycle braking system is operated through its full range, noting test results, including non-conformity.</p> <p>AUR12366A.3.5 Repaired bicycle hydraulic braking system checked, adjustments completed and unit prepared for delivery.</p> <p>AUR12366A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures.</p> <p>AUR12366A.3.7 Portable tools and equipment are stored in approved designated areas.</p> <p>AUR12366A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise.</p> <p>AUR12366A.3.9 Accounts and invoices prepared as required by enterprise.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to master cylinder design, hydraulic lines and mechanical linkages, cantilever disc and drum brakes, composite material brake pads, hydraulic linkages, manual adjustment and integrated brake and gear levers.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific repair and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- workbench
- pneumatic air tools
- area for safe testing of bicycle hydraulic braking system

Methods include:

- on and off site repairs
- repair and manual adjustments of hydraulic braking system components
- communicating with customers
- documenting and reporting repairs

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle hydraulic braking unit configurations requiring repair

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing bicycle hydraulic braking system

Underpinning knowledge:

- Purpose and requirements of bicycle hydraulic braking systems and their relationship to suspension, wheels, drive train, frame and steering
- The materials and fluids used in bicycle hydraulic braking systems
- Use of tools and equipment
- The application of hydraulic principles
- Classification of bicycle hydraulic braking systems and the identification of system components

Practical assessments:

- Gather information on bicycle hydraulic braking systems
- Check bicycle hydraulic braking systems for damage
- Plan bicycle hydraulic braking system repair procedures
- Repair bicycle hydraulic braking systems

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR12370A**SERVICE BICYCLE HYDRAULIC BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to plan, and safely service and test bicycle hydraulic braking systems and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR12370A.1 Gather information on bicycle hydraulic braking system.</p>	<p>AUR12370A.1.1 Customer requirements checked following workplace procedures.</p> <p>AUR12370A.1.2 Intended use of the unit being serviced is confirmed by discussions with customer.</p> <p>AUR12370A.1.3 Bicycle hydraulic braking system service requirements researched, specifications accessed and checked.</p> <p>AUR12370A.1.4 Tools and equipment checked prior to use, for conformity with specifications and safe condition.</p> <p>AUR12370A.1.5 Condition of system is determined by visual, aural, tactile inspections and measurements.</p> <p>AUR12370A.1.6 Conditions found are compared with bicycle hydraulic braking system specifications and customer use requirements.</p>
<p>AUR12370A.2 Prepare for the service of a bicycle hydraulic braking system.</p>	<p>AUR12370A.2.1 Plan service sequence and availability of required tools and equipment determined.</p> <p>AUR12370A.2.2 Plan service sequence includes post service testing and checking process.</p> <p>AUR12370A.2.3 Materials list prepared and availability determined.</p> <p>AUR12370A.2.4 Tools and equipment are selected to meet job requirements.</p> <p>AUR12370A.2.5 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR12370A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements.</p> <p>AUR12370A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR12370A.3 Service and test bicycle hydraulic braking system.	AUR12370A.3.1 Service operation for bicycle hydraulic braking system performed according to plan. AUR12370A.3.2 Service operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR12370A.3.3 Customer requirements and bicycle braking system specifications checked following service procedures. AUR12370A.3.4 Serviced bicycle braking system is operated through its full range, noting test results, including non-conformity. AUR12370A.3.5 Serviced bicycle hydraulic braking system checked, adjustments completed and unit prepared for delivery. AUR12370A.3.6 Portable tools and equipment are stored in approved designated areas. AUR12370A.3.7 Workplace records, customer file and warranty information updated, as required by enterprise. AUR12370A.3.8 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- master cylinder design, hydraulic lines and mechanical linkages, cantilever disc and drum brakes, composite material brake pads, hydraulic linkages, manual adjustment and integrated brake and gear levers

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific service and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- workbench
- pneumatic air tools
- area for safe testing of bicycle hydraulic braking system

Methods include:

- on and off site servicing
- servicing and manual adjustments of hydraulic braking system components
- communicating with customers
- documenting and reporting on service

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle hydraulic braking unit configurations requiring servicing

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing bicycle hydraulic braking systems

Underpinning knowledge:

- Purpose and requirements of bicycle hydraulic braking systems and their relationship to suspension, wheels, drive train, frame and steering
- The materials used in bicycle hydraulic braking systems
- Use of tools and equipment
- The application of hydraulic principles
- Classification of bicycle hydraulic braking systems and the identification of system components

Practical assessments:

- Gather information on bicycle hydraulic braking systems
- Test bicycle hydraulic braking systems
- Plan bicycle hydraulic braking system service procedures
- Service bicycle hydraulic braking systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR12645A**OVERHAUL FINAL DRIVE ASSEMBLIES**

UNIT DESCRIPTOR: This unit identifies the competence required to completely dismantle and rebuild a final drive assembly (including differential mechanism) involving the identification and replacement or repair of all worn and deteriorated parts, tests and adjustments for light/heavy vehicles, motor cycles, plant and outdoor power equipment.

PRE-REQUISITES: AUR12670A Service final drive assemblies
AUR12666A Repair final drive assemblies

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR12645A.1 Overhaul final drive assemblies.	<p>AUR12645A.1.1 Final drive overhaul is completed without causing damage to any component or system.</p> <p>AUR12645A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR12645A.1.3 Final drive assemblies are overhauled using approved methods and equipment, according to specifications and tolerances relative to the component/vehicle/plant manufacturer.</p> <p>AUR12645A.1.4 Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes.</p> <p>AUR12645A.1.5 Overhauling activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle and/or motor cycle and/or plant and/or outdoor power equipment final drive assemblies

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for disassembly, assembly and adjustment
- precision measuring equipment, lifting equipment, cleaning equipment and materials

Methods include:

- visual, aural and functional assessment (including: fluid leaks, wear, damage, corrosion)
- dismantling and assembling, testing and adjusting
- electrical testing of short circuits, open circuits
- functional testing (before and after overhaul)

Methods should be applied under normal operating conditions.

Specific requirements:

- Front wheel drive, rear wheel drive, 4 wheel drive, limited slip and locker differentials and constant drive differentials
- Track driven undercarriage assemblies

Other variables may include:

- spiral bevel, helical, hypoid, spur, planetary gearing
- single and two speed, double reduction
- manual, air and electric/electronic shift mechanisms

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating overhaul/repair information
- unit/component overhauling procedures followed

Underpinning knowledge:

- Dismantling and assembling procedures (relevant to application)
- Component measuring test and evaluation procedures
- Component repair and adjustment procedures (relevant to application)
- Equipment/material safety requirements
- Personal safety requirements
- Manual handling procedures

Practical assessments:

- Access, and apply safety and technical information
- Use relevant tools and equipment
- Evaluate components
- Overhaul final drive assembly and associated components
- Apply component/unit testing and adjustment procedures
- Maintain customer records
- Apply manual handling procedures
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR12666A**REPAIR FINAL DRIVE ASSEMBLY****UNIT DESCRIPTOR**

This unit identifies the competence required to carry out repairs to final drive assembly and associated components for light/heavy vehicles, motor cycles, plant and outdoor power equipment.

PRE-REQUISITES: AUR12670A Service final drive assemblies

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR12666A.1 Repair final drive assemblies and associated components.	AUR12666A.1.1 Final drive assembly and associated component repairs are completed without causing damage to any component or system. AUR12666A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR12666A.1.3 Repairs and/or replacement of final drive assemblies and associated components are carried out in accordance with manufacturer specifications for methods, equipment used and tolerances relative to the vehicle/plant. AUR12666A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. AUR12666A.1.5 All final drive assemblies and associated component repair, removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle and/or motor cycle and/or plant and/or outdoor power equipment final drive assemblies

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, special tools for removal/adjustment, precision measuring equipment, pullers.
- power tools
- heating equipment, pressing equipment
- lifting equipment

Methods include:

- functional testing
- visual, aural and functional assessment (including: damage, wear, fluid level leakage and alignment)
- dynamometer testing

Methods should be applied under normal operating conditions.

Specific requirements:

- Front wheel drive, rear wheel drive, 4 wheel drive, limited slip and locker differentials and constant drive differentials
- Track driven undercarriage assemblies

Other variables may include:

- spiral bevel, helical, hypoid, spur, planetary gearing
- single and two speed, double reduction
- manual, air and electric/electronic shift mechanisms

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- final drive assemblies and associated components repair procedures followed

Underpinning knowledge:

- Removal, replacement and repair procedures
- Types and designs of final drive assemblies
- Construction and operation of final drive assembly (relevant to application).
- Types of lubricants and their applications
- Testing and adjustment procedures
- Relevant technical information
- Equipment safety requirements
- Vehicle/plant safety requirements
- Relevant manufacturer/enterprise policies
- Manual handling methods
- Personal protective requirements

Practical assessments:

- Access, interpret and apply technical information
- Identify faults in final drive assemblies
- Repair final drive assemblies and associated components
- Use relevant tools and equipment
- Test and adjust final drive assemblies components
- Apply manual handling techniques
- Apply personal protective requirements

Key competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR12670A**SERVICE FINAL DRIVE ASSEMBLIES**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out servicing to final drive assemblies and associated components for light/heavy vehicles, motor cycles, plant and outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR12670A.1 Service final drive assemblies and associated components.	<p>AUR12670A.1.1 Final drive assemblies and associated components are serviced without causing damage to any component or system.</p> <p>AUR12670A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR12670A.1.3 Service to final drive assemblies and associated components is carried out in accordance with manufacturer specifications for methods, equipment used.</p> <p>AUR12670A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR12670A.1.5 All final drive assemblies and associated component service activities are carried out according to industry regulations/ guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle and/or motor cycle and/or plant and/or outdoor power equipment final drive assemblies

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, lubrication dispensing equipment
- vehicle lifting equipment, safety stands.

Methods include:

- functional testing
- visual, aural and functional assessment (including: damage, wear, fluid leakage)

Methods should be applied under normal operating conditions.

Specific requirements:

- Front wheel drive, rear wheel drive, 4 wheel drive, limited slip and locker differentials and constant drive differentials
- Track driven undercarriage assemblies

Other variables may include:

- spiral bevel, helical, hypoid, spur, planetary gearing
- single and two speed, double reduction
- manual, air and electric/electronic shift mechanisms

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- final drive type and associated components service procedures followed

Underpinning knowledge:

- Final drive assembly types and operating principles
- Types of lubricants and their applications
- Servicing procedures
- Relevant technical information
- Equipment safety requirements
- Vehicle/plant safety requirements
- Relevant manufacturer/enterprise policies
- Personal protective requirements

Practical assessments:

- Access, interpret and apply technical information
- Service final drive assembly and associated components
- Check final drive assembly for normal operation
- Use relevant tools and equipment
- Apply personal protective requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organis activities	1
Solve problems	2
Use technology	2

AUR13166A**REPAIR FINAL DRIVE (DRIVELINE)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out repairs to drive shafts, tail shafts, chains, tracks, gears and associated components for light/heavy vehicles, motor cycles, plant and outdoor power equipment.

PRE-REQUISITES: AUR13170A Service final drive (driveline)

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR13166A.1 Repair drive shafts, tail shafts, chains, gears and/or associated components.	AUR13166A.1.1 Drive shaft, tail shaft, chains, gears and/or associated components repairs are completed without causing damage to any component or system. AUR13166A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR13166A.1.3 Repairs and/or replacement of drive shafts, tail shafts, chains, gears and associated components are carried out in accordance with manufacturer specifications for methods, equipment used and tolerances relative to the vehicle/plant. AUR13166A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes. AUR13166A.1.5 All drive shaft, tail shaft, chains, gears and associated component service, activities are carried out according to industry regulations/ guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle and/or motor cycle and/or plant and/or outdoor power equipment drive lines

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, tools for removal/adjustment, lifting equipment
- power tools
- pressing equipment
- heating equipment
- pullers, special tools
- measuring equipment

Methods include:

- functional testing
- visual, aural and functional assessment (including: damage, wear, fluid leakage and alignment)
- dynamometer testing

Methods should be applied under normal operating conditions.

Specific requirements:

- Front wheel drive, rear wheel drive, 4 wheel drive
- Undercarriage assemblies

Other variables may include:

- U-joint, CV joints, CV boots, centre bearings, half shafts, axles, bearings, tracks, track rollers and idlers, track tensioners, sprockets, drive shafts, power take off drives.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- drive shafts, tail shafts and/or gear/chain drive repair procedures followed

Underpinning knowledge:

- Removal, replacement and repair procedures
- Construction and operation of drive lines (relevant to application)
- Testing procedures
- Component evaluation
- Relevant technical information
- Equipment safety requirements
- Vehicle/plant safety requirements
- Relevant manufacturer/enterprise policies
- Personal protective requirements

Practical assessments:

- Access, interpret and apply technical information
- Identify drive line system faults
- Evaluate components
- Repair drive lines and associated components
- Use relevant tools and equipment
- Test drive lines and associated components
- Apply personal protective requirements

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

AUR13170A**SERVICE FINAL DRIVE (DRIVELINE)**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out servicing of drive shafts, tail shafts chains, tracks, gears and associated components for light/heavy vehicles, motor cycles, plant and outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR13170A.1 Service drive shafts, tail shafts, chains gears and/or associated components.	AUR13170A.1.1 Service is completed without causing damage to any component or system. AUR13170A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR13170A.1.3 Service to drive shafts, tail shafts, chains, gears and associated components is carried out in accordance with manufacturer specifications for methods, equipment used. AUR13170A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes. AUR13170A.1.5 All drive shaft, tail shaft, chains, gears and associated component service, activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle and/or motor cycle and/or plant and/or outdoor power equipment drive lines

Sources of information/documents may include:

- vehicle/plant manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, lubrication dispensing equipment

Methods include:

- functional testing
- visual, aural and functional assessment (including: damage, wear, vibration and run out)

Methods should be applied under normal operating conditions.

Specific requirements:

- Front wheel drive, rear wheel drive, 4 wheel drive
- Undercarriage assemblies

Other variables may include:

- U-joint, CV joints, CV boots, centre bearings, half shafts, axles, bearings, tracks, track rollers and idlers, track tensioners, sprockets, drive shafts, power take off drives

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- drive shafts, tail shafts and/or gear/chain drive service procedures followed

Underpinning knowledge:

- Types and designs of drive lines (appropriate to application)
- Drive line operating principles
- Velocity fluctuations
- Relevant technical information
- Equipment safety requirements
- Vehicleplant safety requirements
- Relevant manufacturer/enterprise policies
- Personal protective requirements

Practical assessments:

- Access, interpret and apply technical information
- Service drive lines and associated components
- Check for normal operation
- Use relevant tools and equipment
- Apply personal protective requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

AUR13631A**INSTALL INBOARD PROPELLER DRIVE SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to install, test and commission inboard propeller drive systems on vessels.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR13631A.1 Install propeller drive systems and/or associated components.	<p>AUR13631A.1.1 Installation of propeller drive systems and/or associated components is completed without causing damage to any component or system.</p> <p>AUR13631A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR13631A.1.3 Propeller drive system installation is carried out in accordance with vehicle/system manufacturer current specifications for methods, equipment used and tolerances relative to the vehicle/system.</p> <p>AUR13631A.1.4 Appropriate workplace documentation is completed and dealt with relevant to installation outcomes.</p> <p>AUR13631A.1.5 Installation activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- inboard engines

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating policy
- industry/workplace codes of practice
- Statutory legislation for marine vessels

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, lifting equipment, measuring equipment
- special tools
- computer testers

Methods include:

- measuring, visual inspection, assessing, assembling, testing

Methods should be applied under normal operating conditions.

Specific requirements:

- Systems may include:
 - separate and integral thrust arrangements
 - non-sealed, semi-sealed, and fully sealed gland systems
 - pin, splines and keyed drives
 - skeg bush materials

Other variables may include:

- direct drive, forward reverse drive, forward neutral drive, stern drive lower, stern drive upper

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installing, testing and commissioning of inboard propeller drive system

Underpinning knowledge:

- Installation procedures
- Testing and commissioning procedures
- Equipment/material safety requirements
- Personal safety requirements
- Vessel safety requirements
- Statutory legislation where applicable
- Industry codes of practice
- Manual handling procedures

Practical assessments:

- Access, interpret & apply technical information
- Apply personal safety requirements
- Use relevant tools & equipment
- Install propeller drive systems
- Apply testing and commissioning procedures
- Maintain customer records
- Apply manual handling procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR13666A**REPAIR PROPELLER DRIVE SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to repair propeller systems on marine craft.

PRE-REQUISITES: AUR13670A Service propeller drive systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR13666A.1 Repair, remove and replace propeller drive systems and/or associated components.	AUR13666A.1.1 Propeller drive systems and/or associated components repairs are completed without causing damage to any component or system. AUR13666A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR13666A.1.3 Repairs and adjustments to propeller drive system components are carried out in accordance with vessel/system manufacturer current specifications for methods, equipment used and tolerances relative to the vessel/system. AUR13666A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. AUR13666A.1.5 All propeller drive system repair, removal/replacement activities are carried out in accordance to industry regulations/guidelines, OH & S legislation, statutory legislation and enterprise policy/procedures.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- marine applications: mid-mounted engines, stern mounted engines, outboard engines, inboard and outboard engines

Sources of information/documents may include:

- vessel manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- Statutory legislation for Marine and Harbours Board requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, testing equipment may include: hand held meters, testing tanks, system testers, measuring equipment
- special tools for removal/adjustment
- computer testers
- lifting equipment

Methods include:

- aural, visual and functional assessments, tank testing, testing under working conditions

Methods should be applied under normal operating conditions.

Specific requirements:

- Systems may include:
 - separate and integral thrust arrangements
 - non-sealed, semi-sealed, and fully sealed gland systems
 - pin, splines and keyed drives
 - skeg bush materials

Other variables may include:

- direct drive, forward reverse drive, forward neutral drive, stern drive lower, stern drive upper

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repair of propeller systems on marine craft

Underpinning knowledge:

- Construction and operation of propeller systems
- Removal, replacement and repair procedures
- Relevant Marine and Harbour Board guidelines
- Measuring and testing procedures
- Vessel safety requirements
- Equipment safety requirements
- Materials used in the system
- Classification of propeller system types

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Test systems/components for both technical and legal requirements
- Set up out board propulsion systems
- Maintain customer records
- Repair propeller drive systems
- Remove and replace propeller drive system components
- Apply manual handling techniques
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR13670A**SERVICE PROPELLER DRIVE SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of propeller systems on marine craft.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR13670A.1 Service propeller drive systems and/or associated components.	AUR13670A.1.1 Propeller drive systems and/or associated components service is completed without causing damage to any component or system. AUR13670A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR13670A.1.3 Services to propeller drive system components are carried out in accordance with vehicle/plant/ system manufacturer current specifications for methods, equipment. AUR13670A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes. AUR13670A.1.5 All propeller drive system service activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- marine applications: mid-mounted engines, stern mounted engines, outboard engines, inboard and outboard engines

Sources of information/documents may include:

- vessel manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements
- Statutory legislation for Marine and Harbours Board requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, fluid handling equipment
- measuring equipment
- power tools, special tools, test equipment
- lifting equipment

Methods include:

- testing under working conditions
- visual, aural and functional assessment (including: fluid leakage, selection)

Methods should be applied under normal operating conditions.

Specific requirements:

- Systems may include:
 - separate and integral thrust arrangements
 - non-sealed, semi-sealed, and fully sealed gland systems
 - pin, splines and keyed drives
 - skeg bush materials

Other variables may include:

- direct drive, forward reverse drive, forward neutral drive, stern drive lower, stern drive upper

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- service of propeller systems on marine craft.

Underpinning knowledge:

- Service procedures
- Propeller drive system lubricants/fluids and their application
- Operating principles of propeller drive systems
- Equipment safety requirements
- Vessel safety requirements
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Maintain customer records
- Service propeller drive systems
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR14131A**INSTALL JET DRIVE PROPULSION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to install, test and commission jet drive propulsion systems and/or associated components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR14131A.1 Install jet drive propulsion systems and associated components.	<p>AUR14131A.1.1 Installation of jet drive propulsion systems and associated components is completed without causing damage to any component or system.</p> <p>AUR14131A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR14131A.1.3 Jet drive propulsion system installation is carried out in accordance with vehicle/system manufacturer current specifications for methods, equipment used and tolerances relative to the vessel/system.</p> <p>AUR14131A.1.4 Appropriate workplace documentation is completed and dealt with relevant to installation outcomes.</p> <p>AUR14131A.1.5 Installation of jet drive propulsion systems are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- marine applications: single hull, multi hull, single and multi engine, personal water craft

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating policy
- industry codes of practice
- product manufacturer specifications
- Statutory legislation for marine vessels

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, precision equipment may include: micrometer, dial indicator, feeler gauges, specialist service tools, pressure testing equipment.

Methods include:

- measuring, visual inspection, assessing, installing, assembling, testing, commissioning

Methods should be applied under normal operating conditions.

Specific requirements:

- Systems may include:
 - single and multi stage units
 - fixed and variable pitch impellers

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- install jet drive propulsion systems and/or associated components
- test and commission jet drive propulsion systems

Underpinning knowledge:

- Installation procedures
- Testing and commissioning procedures
- Equipment/material safety requirements
- Personal safety requirements
- Vessel safety requirements
- Statutory legislation where applicable
- Industry codes of practice
- Manual handling procedures

Practical assessments:

- Access, interpret & apply technical information.
- Apply personal safety requirements.
- Use relevant tools & equipment.
- Install jet drive propulsion systems
- Apply testing and commissioning procedures
- Maintain customer records
- Apply manual handling procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR14166A**REPAIR JET DRIVE PROPULSION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the repair, removal and replacement of jet propulsion systems and/or associated components.

PRE-REQUISITES: AUR14170A Service jet drive propulsion systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR14166A.1 Repair, remove and replace jet drive propulsion systems and/or associated components.	AUR14166A.1.1 Jet drive propulsion repairs are completed without causing damage to any component or system. AUR14166A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR14166A.1.3 Repairs and adjustments to jet drive propulsion systems/components are carried out in accordance with vessel/ system manufacturer current specifications for methods, equipment used and tolerances relative to the system/components. AUR14166A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. AUR14166A.1.5 All jet drive propulsion systems repair, removal/replacement activities are carried out in accordance to industry regulations/guidelines, OH & S legislation, statutory legislation and enterprise policy/procedures.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- marine applications: single hull, multi hull, single and multi engine, personal water craft

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- lifting equipment, fluid handling equipment, pressure testing equipment, precision equipment may include: micrometer, dial indicator, feeler gauges, specialised service tools
- scan tools, test light, multimeter

Methods include:

- aural, visual and functional assessments (including: wear, damage, corrosion), manoeuvering, dismantling and assembling, testing under working conditions

Methods should be applied under normal operating conditions.

Specific requirements:

Systems may include:

- single and multi stage units
- fixed and variable pitch impellers

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- carrying out the repair, removing and replacing jet drive propulsion systems and/or associated components

Underpinning knowledge:

- Construction and operation of jet drive propulsion systems (relevant to application)
- Measuring and testing procedures
- Materials used in the system
- Removal, replacement and repair procedures
- Equipment safety requirements
- Vessel safety requirements
- Manual handling techniques

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Test and adjust jet drive propulsion systems
- Repair jet propulsion systems
- Remove and replace jet drive propulsion system/components
- Apply manual handling techniques
- Apply personal safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR14170A**SERVICE JET DRIVE PROPULSION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of jet drive propulsion systems and/or associated components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR14170A.1 Service jet drive propulsion systems and associated components.	AUR14170A.1.1 Jet drive propulsion service is completed without causing damage to any component or system. AUR14170A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR14170A.1.3 Service to jet drive propulsion system installation is carried out in accordance with vehicle/system manufacturer current specifications for methods, equipment used and tolerances relative to the vessel/system. AUR14170A.1.4 Appropriate workplace documentation is completed and dealt with relevant to service outcomes. AUR14170A.1.5 Service of jet drive propulsion systems are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- marine applications: single hull, multi hull, single and multi engine, personal water craft

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating policy
- industry codes of practice
- product manufacturer specifications
- Statutory legislation for marine vessels

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, precision tools, equipment may include: micrometer, dial indicator, feeler gauges, specialist service tools, pressure testing equipment.

Methods include:

- measuring, visual inspection, assessing, testing.

Methods should be applied under normal operating conditions.

Specific requirements:

- Systems may include:
 - single and multi stage units
 - fixed and variable pitch impellers

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing jet drive propulsion systems and/or associated components

Underpinning knowledge:

- Equipment/Material safety requirements
- Operating principles of jet drive propulsion systems
- Service procedures
- Vessel safety requirements
- Personal safety requirements
- Statutory legislation where applicable
- Industry codes of practice

Practical assessments:

- Access, interpret & apply technical information
- Apply personal safety requirements
- Use relevant tools & equipment
- Test propulsion unit for normal operation
- Service jet drive propulsion systems
- Maintain customer records

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR14666A**REPAIR BICYCLE DRIVETRAIN SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect, plan, and safely repair and test bicycle drivetrain systems and complete required documents.

PRE-REQUISITES: AUR14670A Service bicycle drivetrain systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR14666A.1 Inspect bicycle drivetrain system.	<p>AUR14666A.1.1 Inspect bicycle drivetrain system for faults and worn or damaged components.</p> <p>AUR14666A.1.2 Repairs required are determined by visual, aural, tactile inspections and measurements.</p> <p>AUR14666A.1.3 Conditions found are compared with bicycle drivetrain system specifications and customer use requirements.</p> <p>AUR14666A.1.4 Repair options for bicycle drivetrain system are identified following workplace procedures.</p> <p>AUR14666A.1.5 Repairs required are documented and costed for customer approval.</p> <p>AUR14666A.1.6 Customer approval obtained and checked against repair work to be undertaken.</p>
AUR14666A.2 Prepare for the repair of a bicycle drivetrain system.	<p>AUR14666A.2.1 Planned repair sequence and availability of required tools and equipment determined.</p> <p>AUR14666A.2.2 Planned repair sequence includes post repair testing and checking process.</p> <p>AUR14666A.2.3 Parts list prepared and availability of replacement components determined.</p> <p>AUR14666A.2.4 Additional personnel required to assist in the repair process identified and permission obtained.</p> <p>AUR14666A.2.5 Tools and equipment are selected to meet job requirements.</p> <p>AUR14666A.2.6 Tools and equipment are regularly checked to ensure they are in good working order.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR14666A.2 (continued) Prepare for the repair of a bicycle drivetrain system.	AUR14666A.2.7 Tools and equipment are handled and used in accordance with OH&S requirements. AUR14666A.2.8 Daily maintenance of tools and equipment is performed as specified by enterprise.
AUR14666A.3 Repair and test bicycle drivetrain system.	AUR14666A.3.1 Repair operation for bicycle drivetrain system performed according to plan. AUR14666A.3.2 Repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR14666A.3.3 Customer requirements and bicycle drivetrain system specifications checked following repair procedures. AUR14666A.3.4 Repaired bicycle drivetrain system is operated through full range, noting test results, including non-conformity. AUR14666A.3.5 Repaired bicycle drivetrain system checked, adjustments and alignments completed and unit prepared for delivery. AUR14666A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures. AUR14666A.3.7 Portable tools and equipment are stored in approved designated areas. AUR14666A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise. AUR14666A.3.9 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- pedals, cranks, chains and chain wheels, cassette, cartridge and internal hub gear systems, manual mechanical, automatic, electro-mechanical and electric gear changers, integrated brake/gear lever systems, loose ball, needle and roller bearings, cables and cable liners, fixed and freewheel rear sprockets, lubricants and greases

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific repair and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- drivetrain jigs
- suitable area for testing drivetrains

Methods include:

- on and off site repairs
- repair and manual adjustments of drivetrain system components
- communicating with customers
- documenting and reporting repairs

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle drivetrain unit configurations requiring repair

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing bicycle drivetrain systems

Underpinning knowledge:

- Purpose and requirements of a bicycle drivetrain system and the relationship to suspension, wheels, frame and braking
- The materials used in bicycle drivetrain systems
- Drivetrain lubricants
- Use of tools and equipment
- The application of mechanical and electronic principles
- Classification of bicycle drivetrain systems and the identification of system components

Practical assessments:

- Gather information on bicycle drivetrain systems
- Check bicycle drivetrain systems for damage
- Plan bicycle drivetrain system repair procedures
- Repair bicycle drivetrain systems

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR14670A**SERVICE BICYCLE DRIVETRAIN SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to plan, and safely service and test bicycle drivetrain systems and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR14670A.1 Gather information on bicycle drivetrain system.</p>	<p>AUR14670A.1.1 Customer requirements checked following workplace procedures.</p> <p>AUR14670A.1.2 Intended use of the unit being serviced is confirmed by discussions with customer.</p> <p>AUR14670A.1.3 Bicycle drivetrain system service requirements researched, specifications accessed and checked.</p> <p>AUR14670A.1.4 Tools and equipment checked prior to use, for conformity with specifications and safe condition.</p> <p>AUR14670A.1.5 Condition of system is determined by visual, aural, tactile inspections and measurements.</p> <p>AUR14670A.1.6 Conditions found are compared with bicycle drivetrain system specifications and customer use requirements.</p>
<p>AUR14670A.2 Prepare for the service of a bicycle drivetrain system.</p>	<p>AUR14670A.2.1 Planned service sequence and availability of required tools and equipment determined.</p> <p>AUR14670A.2.2 Planned service sequence includes post service testing and checking process.</p> <p>AUR14670A.2.3 Materials list prepared and availability determined.</p> <p>AUR14670A.2.4 Tools and equipment are selected to meet job requirements.</p> <p>AUR14670A.2.5 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR14670A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements.</p> <p>AUR14670A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR14670A.3 Service and test bicycle drivetrain system.	AUR14670A.3.1 Service operation for bicycle drivetrain system performed according to plan. AUR14670A.3.2 Service operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR14670A.3.3 Customer requirements and bicycle drivetrain system specifications checked following service procedures. AUR14670A.3.4 Serviced bicycle drivetrain system is operated through full range, noting test results, including non-conformity. AUR14670A.3.5 Serviced bicycle drivetrain system checked, adjustments completed and unit prepared for delivery. AUR14670A.3.6 Portable tools and equipment are stored in approved designated areas. AUR14670A.3.7 Workplace records, customer file and warranty information updated, as required by enterprise. AUR14670A.3.8 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- pedals, cranks, chains and chain wheels, cassette, cartridge and internal hub gear systems, manual mechanical, automatic, electro-mechanical and electric gear changers, integrated brake/gear lever systems, loose ball, needle and roller bearings, cables and cable liners, fixed and freewheel rear sprockets, lubricants and greases

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific service and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- drivetrain jigs
- suitable area for testing drivetrains

Methods include:

- on and off site servicing
- servicing and manual adjustments of drivetrain system components
- communicating with customers
- documenting and reporting on service

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle drivetrain configurations requiring servicing

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing bicycle drivetrain systems

Underpinning knowledge:

- Purpose and requirements of bicycle drivetrain systems and their relationship to suspension, wheels and frame
- The materials used in bicycle drivetrain systems
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle drivetrain systems and the identification of system components

Practical assessments:

- Gather information on bicycle drivetrain systems
- Test bicycle drivetrain systems
- Plan bicycle drivetrain system service procedures
- Service bicycle drivetrain systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR15130A**INSPECT STEERING SYSTEM**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out inspection and testing of steering system/components and assess the condition (including mechanical and power assisted steering systems). This operation would normally be carried out prior to performing a wheel alignment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR15130A.1 Inspect steering system/components and assess condition.	AUR15130A.1.1 Steering system inspection is completed without causing damage to any component or system. AUR15130A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR15170A.1.3 *Inspections of steering systems are carried out in accordance with manufacturer specifications for methods, tools and equipment. AUR15130A.1.4 System/component condition is determined by comparing actual component condition to manufacturer specifications for limits/tolerances and to State/Territory legislation regarding vehicle roadworthiness. AUR15130A.1.5 * Appropriate workplace documentation is completed and dealt with relevant to inspection outcomes. AUR15130A.1.6 *All steering system inspection and condition identification activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- workplace/industry codes of practice
- product manufacturer specifications
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal, test equipment, vehicle-lifting equipment
- safety stands and holding equipment
- hydraulic test equipment, multimeter, test light, precision measurement tools

Methods may include:

- road testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, wear, leakage, electrical)

Methods should be applied under normal operating conditions.

Other variables may include:

- ball joints, struts, idler arms, steering boxes and columns
- electronic controlled systems, 2 & 4 wheel steer
- one wheel steer
- outdoor power equipment

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- steering systems inspection procedures and condition assessment
- safe working practices

Underpinning knowledge:

- Personal safety requirements
- Vehicles/Equipment safety requirements
- Principles of operation of mechanical and power-assisted steering systems
- Construction and operation of steering systems relevant to inspection requirements
- Steering system inspection and testing procedures (relevant to application)
- Steering system/components condition assessment procedures
- Relevant technical information
- Relevant manufacturer/enterprise policies

Practical assessments:

- Access, interpret and apply technical information
- Apply steering system inspection and testing procedures
- Apply steering system/component condition assessment procedures
- Use relevant tools and equipment

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to and following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg. jobsheets, checklists
- reading and interpreting manufacturer requirements e.g. specifications, testing
- accessing information from computer
- recording information on computer

Numeracy skills may include:

- using and interpreting measurements
- using specific (precision) measuring tools
- using multimeter
- using and interpreting test devices eg. hydraulic pressure tester/test lights

AUR15145A**OVERHAUL STEERING SYSTEM COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out an overhaul of steering system components (including mechanical and power assisted components).

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR15145A.1 Overhaul steering systems and/or associated components.	AUR15145A.1.1 Steering systems overhaul is completed without causing damage to any component or system. AUR15145A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR15145A.1.3 *Overhaul and/or replacements to faulty steering systems are carried out in accordance with manufacturer specifications for methods, equipment and tolerances. AUR15145A.1.4 * Appropriate workplace documentation is completed and dealt with relevant to overhaul outcomes. AUR15145A.1.5 *Overhaul operations are completed within established industry guidelines. AUR15145A.1.6 *All steering systems overhaul, removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, Literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical stream applicable to light vehicles and/or heavy vehicles

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- workplace/industry codes of practice
- product manufacturer specifications
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for dismantling/assembling/adjustment, test equipment
- hydraulic pressure testers, multimeter, test lights, precision measurement tools

Methods include:

- disassembly, assembly and adjustment
- visual, aural and functional assessments (including: damage, corrosion, wear)

Methods should be applied under normal operating conditions.

Specific requirements:

- Mechanical steering boxes
- Power-assisted steering boxes

Other variables may include:

- steering components (including pumps and rams)

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- overhaul procedures
- safe working practices
- protection methods

Underpinning knowledge:

- Principles of operation
- Construction and operation relevant to application
- Overhaul procedures
- Relevant technical information
- Safety requirements
- Relevant manufacturer/enterprise policies
- Measuring, testing and evaluation procedures
- Equipment and material safety requirements
- Dismantling, assembling and adjusting procedures

Practical assessments:

- Access, interpret and apply technical information
- Overhaul steering components
- Use relevant tools and equipment
- Test and adjust components

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg. checklists, jobsheets
- reading and interpreting manufacturer requirements e.g. specifications, measurements, testing
- accessing information from computer
- recording information on computer

Numeracy skills may include:

- reading and interpreting measurements
- using specific (precision) measuring tools
- using multimeter
- using and interpreting test devices eg. hydraulic pressure tester

AUR15166A**REPAIR STEERING SYSTEMS****UNIT DESCRIPTOR:**

This unit identifies the competence required to carry out the repair of steering systems and associated components (mechanical and power-assisted).

- For bicycles steering repair refer to unit AUR15666A
- For marine steering services & repair refer to unit AUR46266A

PRE-REQUISITES:

AUR15170A Service steering systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR15166A.1 Repair, remove and replace steering systems and associated components.</p>	<p>AUR15166A.1.1 Steering system repair is completed without causing damage to any component or system.</p> <p>AUR15166A.1.2 Correct information is accessed and interpreted from manufacturers specifications.</p> <p>AUR15166A.1.3 Repair and/or replacement is carried out in accordance with manufacturer specifications for methods, equipment and tolerances.</p> <p>AUR15166A.1.4 Appropriate workplace documentation is completed and dealt with relevant to repair outcomes.</p> <p>AUR15166A.1.5 All steering systems repair, removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical stream

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry codes of practice
- product manufacturer specifications
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, test equipment
- pressure testers
- lifting equipment
- safety stands and holding equipment
- hydraulic pressure testers, multimeter, test lights, precision measurement tools

Methods include:

- operational testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, wear)
- the principles, angles and geometry of vehicle wheel alignment

Methods should be applied under normal operating conditions.

Other variables may include:

- ball joints, struts, idler arms, steering boxes and columns
- electronic, controlled systems, 2 & 4 wheel steer
- one wheel steer
- outdoor power equipment

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- steering systems repair procedures
- safe working practices
- protection methods

Underpinning knowledge:

- Removal, replacement and repair procedures
- Construction and operation of steering systems relevant to application
- The principles and geometry of vehicle wheel alignment
- Testing and adjustment procedures
- Relevant technical information
- Vehicle/equipment safety requirements
- Personal safety requirements
- Relevant manufacturer/enterprise policies

Practical assessments:

- Access, interpret and apply technical information
- Identify steering faults
- Repair, remove and replace steering systems and associated components
- Use relevant tools and equipment
- Test and adjust steering and associated components.
- Check system for normal operation

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

AUR15170A**SERVICE STEERING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of steering systems and associated components (mechanical and power-assisted).

- For bicycle steering service refer to unit AUR15670A
- For marine steering service and repair refer to unit AUR46266A

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR15170A.1 Service steering systems and/or associated components.	AUR15170A.1.1 Steering system service is completed without causing damage to any component or system. AUR15170A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR15170A.1.3 *Service to steering systems is carried out in accordance with manufacturer specifications for methods, equipment. AUR15170A.1.4 * Appropriate workplace documentation is completed and dealt with relevant to service outcomes. AUR15170A.1.5 *All steering systems service activities are carried out according to industry regulations/ guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- workplace/industry codes of practice
- product manufacturer specifications
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, test equipment, vehicle-lifting equipment
- safety stands and holding equipment
- hydraulic test equipment, multimeter, test light, precision measurement tools

Methods include:

- road testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, wear, electrical)

Methods should be applied under normal operating conditions.

Other variables may include:

- ball joints, struts, idler arms, steering boxes and columns
- electronic controlled systems, 2 & 4 wheel steer
- one wheel steer
- outdoor power equipment

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- steering systems service procedures (including inspection, lubrication and minor adjustments)
- safe working practices
- protection methods

Underpinning knowledge:

- Service procedures
- Principles of operation of mechanical and power-assisted steering systems
- Relevant technical information
- Vehicles/equipment safety requirements
- Personal safety requirements
- Relevant manufacturer/enterprise policies

Practical assessments:

- Access, interpret and apply technical information
- Service steering systems and associated components
- Check system for normal operation
- Use relevant tools and equipment

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to and following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg. jobsheets, checklists
- reading and interpreting manufacturer requirements e.g. specifications, testing
- accessing information from computer
- recording information on computer

Numeracy skills may include:

- using and interpreting measurements
- using specific (precision) measuring tools
- using multimeter
- using and interpreting test devices eg. hydraulic pressure tester/test lights

AUR15666A**REPAIR BICYCLE STEERING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect, plan, and safely repair and test bicycle steering systems and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR15666A.1 Inspect bicycle steering system.	AUR15666A.1.1 Inspect bicycle steering system for faults and worn or damaged components. AUR15666A.1.2 Repairs required are determined by visual, aural, tactile inspections and measurements. AUR15666A.1.3 Conditions found are compared with bicycle steering system specifications and customer use requirements. AUR15666A.1.4 Repair options for bicycle steering system are identified following workplace procedures. AUR15666A.1.5 Repairs required are documented and costed for customer approval. AUR15666A.1.6 Customer approval obtained and checked against repair work to be undertaken.
AUR15666A.2 Prepare for the repair of a bicycle steering system.	AUR15666A.2.1 Planned repair sequence and availability of required tools and equipment determined. AUR15666A.2.2 Planned repair sequence includes post repair testing and checking process. AUR15666A.2.3 Parts list prepared and availability of replacement components determined. AUR15666A.2.4 Additional personnel required to assist in the repair process identified and permission obtained. AUR15666A.2.5 Tools and equipment are selected to meet job requirements. AUR15666A.2.6 Tools and equipment are regularly checked to ensure they are in good working order.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR15666A.2 (continued) Prepare for the repair of a bicycle steering system.	AUR15666A.2.7 Tools and equipment are handled and used in accordance with OH&S requirements. AUR15666A.2.8 Daily maintenance of tools and equipment is performed as specified by enterprise.
AUR15666A.3 Repair and test bicycle steering system.	AUR15666A.3.1 Repair operation for bicycle steering system performed according to plan. AUR15666A.3.2 Repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR15666A.3.3 Customer requirements and bicycle steering system specifications checked following repair procedures. AUR15666A.3.4 Repaired bicycle steering system is operated through full range, noting test results, including non-conformity. AUR15666A.3.5 Repaired bicycle steering system checked, adjustments and alignments completed and unit prepared for delivery. AUR15666A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures AUR15666A.3.7 Portable tools and equipment are stored in approved designated areas. AUR15666A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise. AUR15666A.3.9 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to suspension forks, composite materials, cartridge, needle, cage, and loose headset bearings, threaded and threadless headset types, drop, flat, clip on, time trial and BMX handlebars, and all terrain, road, and BMX headstems

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific repair and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- steering jigs

Methods include:

- on and off site repairs
- repair and manual adjustments of steering system components
- communicating with customers
- documenting and reporting repairs

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle steering unit configurations requiring repair

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing bicycle steering systems

Underpinning knowledge:

- Purpose and requirements of a bicycle steering system and the relationship to suspension, wheels, drive train, frame and braking
- The materials used in bicycle steering systems
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle steering systems and the identification of system components

Practical assessments:

- Gather information on bicycle steering systems
- Check bicycle steering systems for damage
- Plan bicycle steering system repair procedures
- Repair bicycle steering systems

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR15670A**SERVICE BICYCLE STEERING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to plan, and safely service and test bicycle steering systems and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR15670A.1 Gather information on bicycle steering system.</p>	<p>AUR15670A.1.1 Customer requirements checked following workplace procedures.</p> <p>AUR15670A.1.2 Intended use of the unit being serviced is confirmed by discussions with customer.</p> <p>AUR15670A.1.3 Bicycle steering system service requirements researched, specifications accessed and checked.</p> <p>AUR15670A.1.4 Tools and equipment checked prior to use, for conformity with specifications and safe condition.</p> <p>AUR15670A.1.5 Condition of system is determined by visual, aural, tactile inspections and measurements.</p> <p>AUR15670A.1.6 Conditions found are compared with bicycle steering system specifications and customer use requirements.</p>
<p>AUR15670A.2 Prepare for the service of a bicycle steering system.</p>	<p>AUR15670A.2.1 Planned service sequence and availability of required tools and equipment determined.</p> <p>AUR15670A.2.2 Planned service sequence includes post service testing and checking process.</p> <p>AUR15670A.2.3 Materials list prepared and availability determined.</p> <p>AUR15670A.2.4 Tools and equipment are selected to meet job requirements.</p> <p>AUR15670A.2.5 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR15670A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements.</p> <p>AUR15670A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR15670A.3 Conduct bicycle steering system service.	AUR15670A.3.1 Service operation for bicycle steering system performed according to plan. AUR15670A.3.2 Service operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR15670A.3.3 Customer requirements and bicycle steering system specifications checked following service procedures. AUR15670A.3.4 Serviced bicycle steering system is operated through full range, noting test results, including non-conformity. AUR15670A.3.5 Serviced bicycle steering system checked, adjustments completed and unit prepared for delivery. AUR15670A.3.6 Portable tools and equipment are stored in approved designated areas. AUR15670A.3.7 Workplace records, customer file and warranty information updated, as required by enterprise. AUR15670A.3.8 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- suspension forks, composite materials, cartridge, needle, cage, and loose headset bearings, threaded and threadless headset types, drop, flat, clip on, time trial and BMX handlebars, and all terrain, road, and BMX headstems

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific service and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- steering jigs

Methods include:

- on and off site servicing
- servicing and manual adjustments of steering system components
- communicating with customers
- documenting and reporting on service

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle steering unit configurations requiring servicing

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing bicycle steering system

Underpinning knowledge:

- Purpose and requirements of bicycle steering systems and their relationship to suspension, wheels, drive train, and frame
- The materials used in bicycle steering systems
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle steering systems and the identification of system components

Practical assessments:

- Gather information on bicycle steering systems
- Test bicycle steering systems
- Plan bicycle steering system service procedures
- Service bicycle steering systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR16130A**INSPECT SUSPENSION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out inspection and testing of suspension system/components and assess the condition (front and rear). This operation would normally be carried out prior to performing a wheel alignment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR16130A.1 Inspect suspension system/components and assess condition.	AUR16130A.1.1 Suspension system inspection is completed without causing damage to any component or system. AUR16130A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR16170A.1.3 *Inspections of suspension systems are carried out in accordance with manufacturer specifications for methods, tools and equipment. AUR16130A.1.4 System/component condition is determined by comparing actual component condition to manufacturer specifications for limits/tolerances and to State/Territory legislation regarding vehicle roadworthiness. AUR16130A.1.5 * Appropriate workplace documentation is completed and dealt with relevant to inspection outcomes. AUR16130A.1.6 *All suspension system inspection and condition identification activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- workplace/industry codes of practice
- product manufacturer specifications
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand and power tools
- lifting equipment
- safety stands and supporting equipment
- measuring equipment and special tools
- test equipment

Methods may include:

- functional testing/road testing, pressure testing, measurement
- visual, aural and functional assessments (including: damage, corrosion, leakage, wear,)

Methods should be applied under normal operating conditions.

Other variables may include:

- lateral and longitudinal arms
- ball joints
- self levelling devices, ride control, height control

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- suspension systems inspection procedures and condition assessment
- safe working practices

Underpinning knowledge:

- Personal safety requirements
- Vehicles/Equipment safety requirements
- Principles of operation of suspension systems
- Construction and operation of suspension systems relevant to inspection requirements
- Suspension system inspection and testing procedures (relevant to application)
- Suspension system/components condition assessment procedures
- Relevant technical information
- Relevant manufacturer/enterprise policies

Practical assessments:

- Access, interpret and apply technical information
- Apply suspension system inspection and testing procedures
- Apply suspension system/component condition assessment procedures
- Use relevant tools and equipment

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to and following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg. jobsheets, checklists
- reading and interpreting manufacturer requirements e.g. specifications, testing
- accessing information from computer
- recording information on computer

Numeracy skills may include:

- using and interpreting measurements
- using specific (precision) measuring tools
- using multimeter
- using and interpreting test devices eg. hydraulic pressure tester/test lights

AUR16166A**REPAIR SUSPENSION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the repairs to suspension systems and associated components for light/heavy vehicle, plant, trailer, motor cycle and outdoor power equipment.

PRE-REQUISITES: AUR16170A Service suspension systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR16166A.1 Repair suspension systems and/or associated components.	AUR16166A.1.1 Suspension system repair is completed without causing damage to any component or system. AUR16166A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR16166A.1.3 *Repairs and/or replacements to faulty suspension systems are carried out in accordance with manufacturer specifications for methods, equipment and tolerances. AUR16166A.1.4 * Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. AUR16166A.1.5 *All suspension systems servicing, removal/replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical streams applicable to light/heavy vehicle, plant, trailer, motor cycle and outdoor power equipment.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- workplace/industry codes of practice
- product manufacturer specifications
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADR's)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment
- lifting equipment
- safety stands and holding equipment
- measurement equipment
- pressure testers
- wheel alignment equipment

Methods include:

- functional testing, pressure testing, electrical testing
- visual, aural and functional assessments (including: damage, corrosion, fluid levels, fluid leaks, air leaks, wear, alignment)
- adjustment of shock absorbers

Methods should be applied under normal operating conditions.

Specific requirements:

- Gas, hydraulic, pneumatic, mechanical, rubber suspension

Other variables may include:

- lateral and longitudinal arms, independent suspension
- ball joints
- self levelling device, ride control, height control

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- suspension systems repair procedures followed

Underpinning knowledge:

- Removal, replacement and repair procedures
- Construction and operation relevant to application
- Testing procedures
- Component evaluation
- Relevant technical information
- Vehicle/equipment safety requirements
- Personal safety requirements
- Relevant manufacturer/enterprise policies

Practical assessments:

- Access, interpret and apply technical information
- Test suspension systems and identify faults.
- Evaluate components
- Repair suspension systems and associated components
- Use relevant tools and equipment

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- following verbal instructions and customer instructions
- giving information to customers
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting manufacturer requirements eg. specifications, tolerances, parts application
- reading and interpreting component manufacturer requirements eg. fitting of modified or non-standards parts
- reading and interpreting company forms eg. jobsheets, checklists
- accessing information from computer
- recording information on computer system

Numeracy skills may include:

- using measurements eg. applying tolerances (such as torque settings)
- testing hydraulic or electrically adjusted suspension or pneumatic suspension (pressure and testing)
- using multimeter

AUR16170A**SERVICE SUSPENSION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service of suspension systems and associated components for light/heavy vehicle, plant, trailer, motor cycle and outdoor power equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR16170A.1 Service suspension systems and/or associated components.	<p>AUR16170A.1.1 Suspension system service is completed without causing damage to any component or system.</p> <p>AUR16170A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR16170A.1.3 *Service to suspension systems are carried out in accordance with manufacturer specifications for methods, equipment and tolerances.</p> <p>AUR16170A.1.4 * Appropriate workplace documentation is completed and dealt with relevant to service outcomes.</p> <p>AUR16170A.1.5 *All suspension systems servicing activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light/heavy vehicle, plant, trailer, motor cycle and outdoor power equipment

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- workplace/industry codes of practice
- product manufacturer specifications
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools
- lifting equipment.
- safety stands and supporting equipment
- measurement equipment, power tools
- test equipment

Methods include:

- functional testing, pressure testing, measurement
- visual, aural and functional assessments (including: damage, corrosion, leakage, wear)
- adjustment of shock absorbers

Methods should be applied under normal operating conditions.

Specific requirements:

- Gas, hydraulic, pneumatic, mechanical, rubber suspension

Other variables may include:

- lateral and longitudinal arms, independent suspension
- ball joints
- self levelling device, ride control, height control

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- suspension systems service procedures followed

Underpinning knowledge:

- Service procedures
- Types of suspension systems and their operating principles
- Relevant technical information
- Vehicle/equipment safety requirements
- Personal safety requirements
- Relevant manufacturer/enterprise policies

Practical assessments:

- Access, interpret and apply technical information
- Check suspension system for normal operation
- Service suspension systems and associated components
- Use relevant tools and equipment

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Solve problems	2
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to and following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting manufacturer requirements
- reading and interpreting company forms eg. jobsheets, checklists
- recording information on computer

Numeracy skills may include:

- measuring/estimating
- testing hydraulic, pneumatic or electrically adjusted suspension (pressure and multimeter testing)

AUR16666A**REPAIR BICYCLE SUSPENSION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect, plan, and safely repair and test bicycle suspension systems and complete required documents.

PRE-REQUISITES: AUR16670A Service bicycle suspension systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR16666A.1 Inspect bicycle suspension system.	<p>AUR16666A.1.1 Inspect bicycle suspension system for faults and worn or damaged components.</p> <p>AUR16666A.1.2 Repairs required are determined by visual, aural, tactile inspections and measurements.</p> <p>AUR16666A.1.3 Conditions found are compared with bicycle suspension system specifications and customer use requirements.</p> <p>AUR16666A.1.4 Repair options for suspension system are identified following workplace procedures.</p> <p>AUR16666A.1.5 Repairs required are documented and costed for customer approval.</p> <p>AUR16666A.1.6 Customer approval obtained and checked against repair work to be undertaken.</p>
AUR16666A.2 Prepare for the repair of a bicycle suspension system.	<p>AUR16666A.2.1 Planned repair sequence and availability of required tools and equipment determined.</p> <p>AUR16666A.2.2 Planned repair sequence includes post repair testing and checking process.</p> <p>AUR16666A.2.3 Parts list prepared and availability of replacement components determined.</p> <p>AUR16666A.2.4 Additional personnel required to assist in the repair process identified and permission obtained</p> <p>AUR16666A.2.5 Tools and equipment are selected to meet job requirements.</p> <p>AUR16666A.2.6 Tools and equipment are regularly checked to ensure they are in good working order.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR16666A.2 (continued) Prepare for the repair of a bicycle suspension system.	AUR16666A.2.7 Tools and equipment are handled and used in accordance with OH&S requirements. AUR16666A.2.8 Daily maintenance of tools and equipment is performed as specified by enterprise.
AUR16666A.3 Repair and test bicycle suspension system.	AUR16666A.3.1 Repair operation for bicycle suspension system performed according to plan. AUR16666A.3.2 Repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR16666A.3.3 Customer requirements and bicycle suspension system specifications checked following repair procedures AUR16666A.3.4 Repaired bicycle suspension system is operated through full range, noting test results, including non-conformity. AUR16666A.3.5 Repaired bicycle suspension system checked, adjustments completed and unit prepared for delivery. AUR16666A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures. AUR16666A.3.7 Portable tools and equipment are stored in approved designated areas. AUR16666A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise. AUR16666A.3.9 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to:

- RS&R streams applicable to frame and suspension geometry, suspension bearings, lubricants, suspension compression ratios, mechanical, air and hydraulic systems, hydraulic fluids, lubricating oils, composite materials, fasteners.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific repair and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- workbench
- pneumatic air tools
- area for safe testing of bicycle suspension system

Methods include:

- on and off site repairs
- repair and manual adjustments of suspension system components
- communicating with customers
- documenting and reporting repairs

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle suspension unit configurations requiring repair

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing bicycle suspension systems

Underpinning knowledge:

- Purpose and requirements of bicycle suspension systems and their relationship to wheels, drive train, and frame
- The materials used in bicycle suspension systems
- Use of tools and equipment
- The application of mechanical and hydraulic principles
- Classification of bicycle suspension systems and the identification of system components

Practical assessments:

- Gather information on bicycle suspension systems
- Check bicycle suspension systems for damage and wear
- Plan bicycle suspension system repair procedures
- Repair bicycle suspension systems

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR16670A**SERVICE BICYCLE SUSPENSION SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to plan, and safely service and test bicycle suspension systems and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR16670A.1 Gather information on bicycle suspension system.</p>	<p>AUR16670A.1.1 Customer requirements checked following workplace procedures.</p> <p>AUR16670A.1.2 Intended use of the unit being serviced is confirmed by discussions with customer.</p> <p>AUR16670A.1.3 Bicycle suspension system service requirements researched, specifications accessed and checked.</p> <p>AUR16670A.1.4 Tools and equipment checked prior to use, for conformity with specifications and safe condition.</p> <p>AUR16670A.1.5 Condition of system is determined by visual, aural, tactile inspections and measurements.</p> <p>AUR16670A.1.6 Conditions found are compared with bicycle suspension system specifications and customer use requirements.</p>
<p>AUR16670A.2 Prepare for the service of a bicycle suspension system.</p>	<p>AUR16670A.2.1 Planned service sequence and availability of required tools and equipment determined.</p> <p>AUR16670A.2.2 Planned service sequence includes post service testing and checking process.</p> <p>AUR16670A.2.3 Materials list prepared and availability determined.</p> <p>AUR16670A.2.4 Tools and equipment are selected to meet job requirements.</p> <p>AUR16670A.2.5 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR16670A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements.</p> <p>AUR16670A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR16670A.3 Service and test bicycle suspension system.	AUR16670A.3.1 Service operation for bicycle suspension system performed according to plan. AUR16670A.3.2 Service operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR16670A.3.3 Customer requirements and bicycle suspension system specifications checked following service procedures. AUR16670A.3.4 Serviced bicycle suspension system is operated through full range, noting test results, including non-conformity. AUR16670A.3.5 Serviced bicycle suspension system checked, adjustments completed and unit prepared for delivery. AUR16670A.3.6 Portable tools and equipment are stored in approved designated areas. AUR16670A.3.7 Workplace records, customer file and warranty information updated, as required by enterprise. AUR16670A.3.8 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to:

- frame and suspension geometry, suspension bearings, lubricants, suspension compression ratios, mechanical, air and hydraulic systems, hydraulic fluids, lubricating oils, composite materials, fasteners

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific service and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- workbench
- pneumatic air tools
- area for safe testing of bicycle suspension system

Methods include:

- on and off site servicing
- servicing and manual adjustments of suspension system components
- communicating with customers
- documenting and reporting on service

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle suspension unit configurations requiring servicing

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing bicycle suspension systems

Underpinning knowledge:

- Purpose and requirements of bicycle suspension systems and their relationship to, wheels, drive train, and frame
- The materials used in bicycle suspension systems
- Use of tools and equipment
- The application of mechanical and hydraulic principles
- Classification of bicycle suspension systems and the identification of system components

Practical assessments:

- Gather information on bicycle suspension systems
- Test bicycle suspension systems
- Plan bicycle suspension system service procedures
- Service bicycle suspension systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR17108A**CARRY OUT WHEEL ALIGNMENT OPERATIONS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out wheel alignment operations for light vehicles or heavy vehicles or motor cycles.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR17108A.1 Perform vehicle wheel alignment.	<p>AUR17108A.1.1 Wheel alignment is completed without causing damage to any component or system.</p> <p>AUR17108A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR17108A.1.3 *Vehicle wheel alignment pre-checks are carried out.</p> <p>AUR17108A.1.4 *Wheel alignment measuring equipment is connected to vehicle in accordance with the manufacturer specifications.</p> <p>AUR17108A.1.5 *Corrective adjustments/repairs are carried out in accordance with vehicle/equipment manufacturer specifications.</p> <p>AUR17108A.1.6 * Appropriate workplace documentation is completed and dealt with relevant to alignment outcomes.</p> <p>AUR17108A.1.7 *Wheel alignment testing and adjustment is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated into these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicle and/or heavy vehicle and/or motor cycles

Sources of information/documents may include:

- vehicle manufacturer specifications
- equipment manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- Statutory legislation for vehicle road worthiness (including: ADRs)
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, and/or special tools for removal/adjustment
- mechanical and/or electronic wheel alignment equipment
- measuring equipment
- lifting equipment

Methods include:

- chassis/underframe alignment checks
- measurement and adjustment
- road testing (before and after adjustments)
- visual, aural and functional assessment (including: damage, corrosion, wear, measurement)
- alignment equipment operation
- string lining

Methods should be applied under normal operating conditions.

Specific requirements: – one or more of the following systems:

- Rear wheel drive, front wheel drive.
- 2 & 4 wheel steer, tandem steer
- 1 wheel steer

Other variables may include:

- appropriate current vehicle licence

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- assessing this unit after competency has been demonstrated in unit a087 inspect and test steering and suspension components

Underpinning knowledge:

- OH&S regulations
- The relationships between fault symptoms and component defects
- Frame alignment checks
- Wheel alignment system types and their construction
- Wheel alignment components
- The operating principles of wheel alignment systems, sub-assemblies and components
- The use of appropriate measuring tools and test equipment
- The use of appropriate hand tools and specialised equipment
- The adjustment principles and procedures for wheel alignment systems
- Personal safety requirements

Practical assessments:

- Complete all tasks to OH&S regulations
- Access, interpret and apply technical information
- Correctly use tools and equipment
- Perform wheel alignment pre-checks
- Perform frame alignment checks
- Correctly operate alignment equipment
- Align wheels

Key Competencies:

	Level
Collect, analyse and organise information	2
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

Language, literacy and numeracy skills:

Listening and speaking skills may include:

- listening to and following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg checklists, job sheets
- reading and interpreting manufacturer specifications
- accessing information from computer
- entering information on computer
- completing company forms eg checklist, job sheet

Numeracy skills may include:

- reading and interpreting decimals
- adding and subtracting decimals
- reading and interpreting positive and negative numbers
- adding and subtracting positive and negative numbers
- reading and interpreting gauges
- converting measurements of pressure (psi, kpa)
- reading and interpreting angles
- converting measurements of angles (degrees, minutes, seconds)

AUR17606A**BALANCE TYRES/WHEELS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out tyre/wheel balance.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR17606A.1 Balance tyre and rim combinations.	<p>AUR17606A.1.1 Tyres and rims are balanced without causing damage to any component or system.</p> <p>AUR17606A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR17606A.1.3 *Balancing is completed within established industry guidelines.</p> <p>AUR17606A.1.4 *All balancing activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p> <p>AUR17606A.1.5 Static and dynamic wheel balance terms are identified.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical streams (Heavy Vehicle)

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, wheel balances

Methods include:

- visual inspection, static wheel balance, combination of static/dynamic or dynamic balance

Methods should be applied under normal operating conditions.

Specific requirements:

- heavy tyre fitting to use static wheel balance only

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- use of balancing equipment
- safe working practices
- wheel balances

Underpinning knowledge:

- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/company policies
- Principles of static and dynamic balances
- Static wheel balance procedures
- Static/dynamic combination balance procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools & equipment
- Carry out a wheel balance

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Work with others and in teams	1
Solve problems	1
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening and responding to customer information and verbal instructions
- following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting industry information such as manufacturer specifications and industry guidelines
- reading and interpreting company forms eg checklists, jobsheets
- accessing information from computer

Numeracy skills may include:

- reading and interpreting numerical specifications

AUR17665A**REMOVE, FIT AND ADJUST WHEEL(S)**

UNIT DESCRIPTOR: This unit identifies the competence required to apply technical skills to remove, fit and adjust wheel(s) to all vehicles.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR17665A.1 Identify wheel construction type, and mounting system.	AUR17665A.1.1 Wheel construction is completed without causing damage to any component or system. AUR17665A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR17665A.1.3 Inspect road wheel(s) for identification marks and mounting points. AUR17665A.1.4 Classify wheel(s) by construction and mounting method.
AUR17665A.2 Remove road wheel(s).	AUR17665A.2.1 Identify safe procedures for removing the wheel(s). AUR17665A.2.2 Tools and equipment checked prior to use for conformity with specifications and safe condition. AUR17665A.2.3 Access required tools and equipment, and organize safe work area. AUR17665A.2.4 Plan sequence of work, noting points where safety checks are required. AUR17665A.2.5 Vehicle/machine/equipment raised and supported. AUR17665A.2.6 Remove wheels on both a level and inclined plane. AUR17665A.2.7 Follow the plan to remove the wheel(s).
AUR17665A.3 Inspect wheels and fittings.	AUR17665A.3.1 Inspect road wheel(s), mounting point(s) and fitting(s) for damage and wear, appropriateness, foreign material and cracks. AUR17665A.3.2 Check specifications and compare to conditions found. AUR17665A.3.3 Report findings and any recommendation(s).

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR17665A.4 Fit road wheel(s).	<p>AUR17665A.4.1 Access specifications for torque settings and tightening sequences.</p> <p>AUR17665A.4.2 Plan work to reflect the specification requirements.</p> <p>AUR17665A.4.3 Organize tools and equipment, and safe working area.</p> <p>AUR17665A.4.4 Follow the plan to safely fit the wheel(s), ensuring that tightening sequence and torque settings meet specifications.</p> <p>AUR17665A.4.5 Check operation of the wheel(s) for correct assembly and/or even wear.</p> <p>AUR17665A.4.6 All servicing/maintenance activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- to all vehicles

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- lifting equipment
- support stands
- hand tools, power tools

Methods include:

- on and off site, indoors and outdoors

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- raising and supporting vehicle safely
- removing and replacing wheel without damage or injury to tools, equipment or personnel

Underpinning knowledge:

- Vehicle/machine/plant/equipment safety requirements
- Types and classifications of wheels
- Construction materials and road wheels
- Personal safety requirements
- Process used in torque measurement when tightening wheel nuts
- Safety precautions to be observed when handling wheels
- Vehicle lifting and support procedures
- Manual handling techniques

Practical assessments:

- Access, interpret and apply technical information
- Lift and support vehicle/machine
- Change a wheel
- Follow enterprise procedures
- Observe safety precautions

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR17668A**SELECT TYRES AND RIMS FOR SPECIFIC APPLICATIONS (LIGHT)**

UNIT DESCRIPTOR: This unit identifies the competence required to select tyres and rims to suit specific applications relating to light vehicles.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR17668A.1 Select type of tyre/tube required for specific applications.</p>	<p>AUR17668A.1.1 *Correct information is accessed and interpreted from appropriate manufacturer specifications and client requirements</p> <p>AUR17668A.1.2 Tyres/tubes selected according to specifications including rim type, load, speed, terrain and climate conditions.</p> <p>AUR17668A.1.3 * Appropriate workplace documentation is completed and dealt with relevant to selection outcomes.</p> <p>AUR17668A.1.4 *All selection activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
<p>AUR17668A.2 Select rims to suit specific applications.</p>	<p>AUR17668A.2.1 *Correct information is accessed and interpreted from appropriate manufacturer specifications and client requirements.</p> <p>AUR17668A.2.2 Rim replacements are carried out in accordance with vehicle/component manufacturer current specifications.</p> <p>AUR17668A.2.3 *Selections completed within established industry guidelines.</p> <p>AUR17668A.2.4 *All selection procedures are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p> <p>AUR17668A.2.5 *Wheel rim codes and component markings, where applicable, matched correctly.</p> <p>AUR17668A.2.6 Rim component functions identified.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicles including passenger and light commercial vehicles, motor cycles and outdoor equipment

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements
- tyre and rim combinations
- types of tyres and rims

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- tread depth gauges, measuring equipment including taps and calipers

Methods include:

- visual inspection and matching tyre specification with application
- determine application conditions
- construction differences between tyres
- tread pattern differences
- code identification
- dual sizing

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- matching rims to different applications
- matching tyres to different applications
- identifying tyre codes and tread patterns
- identifying rim codes

Underpinning knowledge:

- Types of tyres and tubes and their application
- Types of rims and their application
- Tyres and rim selection procedures
- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/company policies

- Statutory legislation where applicable
- Types of tyre construction
- Types of rim construction
- Different tread patterns
- Tyre and rim terms
- Tyre and rim codes
- Dual sizing

Practical assessments:

- Access, interpret and apply technical information regarding types of tyres and rims
- Use relevant tools & equipment
- Select correct types of tyre/tube and rims for specific applications

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- exchanging technical information

Reading and writing skills may include:

- reading and interpreting industry information such as manufacturer specifications and industry guidelines
- recording information on company forms eg checklists, jobsheets
- accessing information from computer
- entering information on computer

Numeracy skills may include:

- reading and interpreting numerical specifications

AUR17766A**REMOVE, REPAIR AND FIT TYRES AND TUBES (LIGHT)**

UNIT DESCRIPTOR: This unit identifies the competence required to remove and refit/replace Light Vehicle tyres and tubes from wheel rims, inspect tyres and tubes to assess repairability and perform minor tyre and tube repairs.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR17766A.1 Remove and refit/replace tyres and tubes.	AUR17766A.1.1 Removal and replacement of tyres and tubes is achieved without causing damage to any component or system. AUR17766A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR17766A.1.3 * Appropriate workplace documentation is completed and dealt with relevant to removal and replace outcomes. AUR17766A.1.4 *All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies. AUR17766A.1.5 Company liability in relation to tyre repair is known.
AUR17766A.2 Inspect tubes and tyres to assess repairability.	AUR17766A.2.1 Inspection of tubes and tyres is achieved without causing damage to any workplace property or vehicle. AUR17766A.2.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR17766A.2.3 * Appropriate workplace documentation is completed and dealt with relevant to inspection outcomes. AUR17766A.2.4 *All inspection activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies. AUR17766A.2.5 Tyres are correctly assessed as major, minor or unrepairable in relation to tyre repair. AUR17766A.2.6 Company liability in relation to tyre repair is known.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR17766A.3 Carry out a minor tube and tyre repair.	AUR17766A.3.1 Tyre and tube repairs are completed without causing damage to any component or system. AUR17766A.3.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR17766A.3.3 *Repair or replace tubes and tyres using approved methods and equipment, according to industry and manufacturer specifications. AUR17766A.3.4 * Appropriate workplace documentation is completed and dealt with relevant to repair outcomes. AUR17766A.3.5 *All repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicles and light outdoor power equipment

Sources of information/documents may include:

- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements
- material safety data sheets
- Statutory requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- Hand tools, power tools
- Specialised equipment such as buffs, spreaders, tyre removal equipment, immersion tanks

Methods include:

- visual inspection, use of specific hand tools and machinery

Methods should be applied under normal operating conditions.

Specific requirements:

- Types of tubes and tyres
- Various repair material

Minor tyre repairs are made to the crown of the tread of tubeless tyres and include:

- up to 10mm diameter hole
- injury angle greater than 20° from the vertical use separate plug and patch
- unlimited number of minor repairs, provided they do not overlap
- mini-combi repair
- plug and patch

Tube repair may include stick-on type patches.

Valve replacement is with the stick-on type replaceable valve.

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating procedural information
- removing and refitting procedures
- inspection procedures
- repair procedures for tubes and tyres
- safe working practices

Underpinning knowledge:

- Types of tubes and tyres and their construction
- Inspection procedures to determine repairability (major, minor or unrepairable)
- Company liability in relation to tyre repair
- Roadworthy regulations relating to tyres and rims
- Removal and replacement procedures
- Tyre and tube repair procedures
- Relevant technical information
- Equipment safety requirements
- Relevant manufacturer/company policies
- Statutory legislation where applicable
- Manual handling procedures
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Apply manual handling procedures
- Apply personal safety requirements
- Remove and replace tyre and/or tube
- Assess tube and tyre repairability
- Repair tyre and/or tube

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Work with others and in teams	1
Solve problems	1
Use technology	2

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to customer information and verbal instructions
- following verbal instructions
- exchanging technical information

Reading and writing skills may include:

- reading and interpreting company forms eg. checklists, jobsheets
- reading and interpreting manufacturer requirements eg. specifications
- accessing information from computer
- entering information on computer

Numeracy skills may include:

- measuring and interpreting pressures

AUR17866A**REPAIR RIMS**

UNIT DESCRIPTOR: This unit identifies the competencies required to carry out serviceability checks and repairs to wheel rims.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR17866A.1 Inspect and assess rim damage.	<p>AUR17866A.1.1 Rim damage is inspected and assessed without causing damage to any component or system.</p> <p>AUR17866A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR17866A.1.3 Assessment is carried out in accordance with vehicle/component manufacturer current specifications for methods, equipment used and tolerances relative to the vehicle/rims per statutory roadworthiness requirements using Australian Standards.</p>
AUR17866A.2 Carry out repairs to rims.	<p>AUR17866A.2.1 Repair to rims are completed without causing damage to any component or system.</p> <p>AUR17866A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR17866A.2.3 Repairs are completed within established industry guidelines.</p> <p>AUR17866A.2.4 All repairs are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to heavy and light vehicles and motor cycles

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements
- material safety data sheets
- Australian Standards for wheel rims

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools, testing equipment
- Rim types must include (heavy vehicle):
 - five piece
 - two piece
 - trilex
 - drop centre

Methods include:

- road testing, measuring.
- visual, for damage, corrosion, cracks metal fatigue, excessive wear
- protection from corrosion

Methods should be applied under normal operating conditions.

Specific requirements:

- Current drivers/operator's licence

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- checking procedures
- safe working practices
- vehicle protection methods
- repair methods

Underpinning knowledge:

- Types of rims and their application
- Rim repair procedures
- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Rim repair methods to Australian Standards
- Statutory legislation where applicable
- Respoking procedures (motor cycle)

Practical assessments:

- Access, interpret and apply technical information
- Carry out rim repairs to Australian Standards
- Use relevant tools and equipment
- Respoke rims (motor cycle)

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR17968A**SELECT TYRES AND RIMS FOR SPECIFIC APPLICATIONS (HEAVY)**

UNIT DESCRIPTOR: This unit identifies the competence required to select heavy vehicle tyres and rims to suit specific applications.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR17968A.1 Select type of tyre/tube required for specific applications.	<p>AUR17968A.1.1 *Correct information is accessed and interpreted from appropriate manufacturer specifications and client requirements.</p> <p>AUR17968A.1.2 Tyres/tubes selected according to specifications including compound type, rim type, load, speed, terrain and climate conditions.</p> <p>AUR17968A.1.3 * Appropriate workplace documentation is completed and dealt with relevant to selection outcomes.</p> <p>AUR17968A.1.4 *All selection activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR17968A.2 Select rims to suit specific applications.	<p>AUR17968A.2.1 *Correct information is accessed and interpreted from appropriate manufacturer specifications and client requirements.</p> <p>AUR17968A.2.2 Rim selection is carried out in accordance with vehicle/component manufacturer current specifications and roadworthiness requirements.</p> <p>AUR17968A.2.3 *Selections completed within established industry guidelines.</p> <p>AUR17968A.2.4 *All selection procedures are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p> <p>AUR17968A.2.5 *Wheel rim codes and component markings, where applicable, matched correctly.</p> <p>AUR17968A.2.6 Rim component functions identified.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- heavy vehicles

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements
- tyre and rim combinations
- types of tyres and rims

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- tread depth gauges, measuring equipment including taps and calipers

Methods include:

- visual inspection and matching tyre specification with application
- calculation of work capability factor (heavy vehicle only)
- calculation of the tonne kilometre per hour factor (heavy vehicle only)
- job conditions (heavy vehicle)
- rolling radius (heavy vehicle)
- construction differences between tyres
- tread pattern differences
- code identification
- dual sizing

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- matching rims to different applications
- matching tyres to different applications
- identifying tyre codes and tread patterns
- identifying rim codes

Underpinning knowledge:

- Types of tyres and tubes and application
- Types of tyre construction
- Tread pattern differences and their application
- Types of rims and their application
- Types of rim construction
- Tyre and rim terms
- Tyre and rim codes
- Load and environmental factors relating to tyre and rim selection
- Tonne kilometre per hour factor and work capability factor calculation methods
- Leads and ratios applicable to front wheel assisted and all wheel drive vehicles
- Dual sizing requirements
- Tyre and rim selection and matching procedures
- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Personal safety requirements
- Relevant manufacturer/company policies
- Statutory legislation where applicable

Practical assessments:

- Access, interpret and apply technical information regarding types of tyres and rims
- Use relevant tools & equipment
- Select correct types of tyre/tube and rims for specific applications
- Match tyre and rim selection to existing application
- Apply equipment safety requirements
- Apply vehicle safety requirements
- Apply personal safety requirements

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- exchanging technical information

Reading and writing skills may include:

- reading and interpreting industry information such as manufacturer specifications and industry guidelines
- recording information on company forms eg checklists, jobsheets
- accessing information from computer
- entering information on computer

Numeracy skills may include:

- reading and interpreting numerical specifications

AUR18168A**REMOVE, REPAIR AND REFIT BICYCLE TYRES**

UNIT DESCRIPTOR: This unit identifies the competence required to remove, repair and refit bicycle tyres and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR18168A.1 Gather information on bicycle tyre.</p>	<p>AUR18168A.1.1 Customer requirements checked following workplace procedures.</p> <p>AUR18168A.1.2 Intended use of the tyre is confirmed by discussions with customer.</p> <p>AUR18168A.1.3 Bicycle tyre fitting requirements researched, specifications accessed and checked.</p> <p>AUR18168A.1.4 Tools and equipment checked prior to use, for conformity with specifications and safe condition.</p> <p>AUR18168A.1.5 Condition of tyre is determined by visual, tactile inspections and pressure measurement.</p> <p>AUR18168A.1.6 Conditions found are compared with bicycle tyre specifications and customer use requirements.</p> <p>AUR18168A.1.7 Repairs and additional work required is costed and approved by customer.</p>
<p>AUR18168A.2 Prepare for the removal, repair and refitting of a bicycle tyre and tube.</p>	<p>AUR18168A.2.1 Planned removal, repair and refitting sequence and availability of required tools and equipment determined.</p> <p>AUR18168A.2.2 Planned removal and refitting includes post-fitting testing and checking process.</p> <p>AUR18168A.2.3 Tools and equipment are selected to meet job requirements.</p>
<p>AUR18168A.3 Remove refit, and test bicycle tyre and tube.</p>	<p>AUR18168A.3.1 Removal, repair and refitting operation for bicycle tyre and tube performed according to plan.</p> <p>AUR18168A.3.2 Tools and equipment are handled and used in accordance with OH&S requirements.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18168A.3 (continued) Remove, refit, and test bicycle tyre and tube.	AUR18168A.3.3 Fitting and repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR18168A.3.4 Customer requirements and bicycle tyre and tube specifications checked following fitting procedures. AUR18168A.3.5 Fitted bicycle tyre and tube is operated through full range, noting test results, including non-conformity. AUR18168A.3.6 Fitted bicycle tyre and tube checked, pressure adjustments completed and unit prepared for delivery. AUR18168A.3.7 Portable tools and equipment are stored in approved designated areas. AUR18168A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise. AUR18168A.3.9 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- road, track, heavy duty, tubed, tubeless, and solid tyres, steel, aluminium, deep dish, aero, composite material, and disc type rims, adhesives and cleaning agents, plastic, rubber and cloth rim tapes

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH:S legislation
- Award provisions

Resources may include:

- specific tyre removing, repairing, refitting and general workshop equipment and tools
- enterprise documentation and reporting systems
- specific test equipment
- pneumatic inflation equipment
- area and equipment for safe removing, repairing, refitting and checking of bicycle tyres

Methods include:

- on and off site removing and refitting
- removing, repairing, refitting and adjustment of tyres
- communicating with customers
- documenting and reporting on work done

Methods should be applied under normal operating conditions.

Specific requirements:

- Removing repairing and refitting a range of bicycle tyres to different rim configurations

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- removal, repair and refitting of bicycle tyres and tubes

Underpinning knowledge:

- Purpose and requirements of bicycle tyres and tubes and their relationship to wheels, steering systems suspension, drive train, frame and braking
- The application of mechanical, and pneumatic principles
- The materials used in bicycle tyres and tubes
- Use of tools and equipment
- Classification of tyres and tubes and fitting types

Practical assessments:

- Gather information on bicycle tyres
- Plan bicycle tyre removing, repairing and refitting procedures
- Remove, repair and refit bicycle tyres and tubes
- Inflate, test and adjust bicycle tyre pressures

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR18207A**DESIGN AND BUILD BICYCLE WHEELS**

UNIT DESCRIPTOR: This unit identifies the competence required to plan, design and safely build bicycle wheels and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18207A.1 Gather information on bicycle wheel.	AUR18207A.1.1 Customer requirements checked following workplace procedures. AUR18207A.1.2 Intended use of the unit being designed is confirmed by discussions with customer. AUR18207A.1.3 Bicycle wheel design requirements researched, specifications accessed and checked. AUR18207A.1.4 Bicycle wheel design and specifications confirmed by customer. AUR18207A.1.5 Tools and equipment checked prior to use, for conformity with specifications and safe condition.
AUR18207A.2 Prepare for the building of a bicycle wheel.	AUR18207A.2.1 Planned build sequence and availability of required tools and equipment determined. AUR18207A.2.2 Planned build sequence includes post build checking process. AUR18207A.2.3 Materials list prepared and availability determined. AUR18207A.2.4 Tools and equipment are selected to meet job requirements. AUR18207A.2.5 Tools and equipment are regularly checked to ensure they are in good working order. AUR18207A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements. AUR18207A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.
AUR18207A.3 Build bicycle wheel.	AUR18207A.3.1 Build operations for bicycle wheel performed according to plan.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18207A.3 (continued) Build bicycle wheel.	AUR18207A.3.2 Build operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR18207A.3.3 Customer requirements and bicycle wheel specifications checked following build procedures. AUR18207A.3.4 Built bicycle wheel is operated through full range, noting test results, including non-conformity. AUR18207A.3.5 Built bicycle wheel checked, adjustments completed and unit prepared for delivery. AUR18207A.3.6 Portable tools and equipment are stored in approved designated areas. AUR18207A.3.7 Workplace records, customer file and warranty information updated, as required by enterprise. AUR18207A.3.8 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- steel, aluminium, deep dish, aero, composite material, and disc type rims, high flange, low flange and integrated brake hubs, metal and composite hub materials, steel, aluminium and composite spoke materials, straight gauge, double butted and bladed spokes, spoke nipples, spoke lacing patterns, types of adhesives and surface coatings

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific wheel building and general workshop equipment and tools
- enterprise documentation and reporting systems
- workbench
- floorstand
- wheel building jigs and fixtures

Methods include:

- assembling and manual adjustments of wheel components
- communicating with customers
- documenting and reporting on work done

Methods should be applied under normal operating conditions.

Specific requirements:

- building a range of bicycle wheel with different hub, spoke and rim configurations

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- Designing and building bicycle wheels

Underpinning knowledge:

- Purpose and requirements of bicycle wheels and their relationship to suspension, drive train, frame and steering systems
- The materials used in bicycle wheels
- The design requirements of bicycle wheels
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle wheels and the identification of components

Practical assessments:

- Gather information and design bicycle wheels
- Plan bicycle wheel building procedures
- Build bicycle wheels

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR18265A**REMOVE / REFIT AND ADJUST BICYCLE WHEELS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect, and safely remove, refit and adjust bicycle wheels and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18265A.1 Inspect bicycle wheel.	<p>AUR18265A.1.1 Inspect bicycle wheel for faults and worn or damaged components.</p> <p>AUR18265A.1.2 Repairs/services required are determined by visual, aural, tactile inspections and measurements.</p> <p>AUR18265A.1.3 Conditions found are compared with bicycle wheel specifications and customer use requirements.</p> <p>AUR18265A.1.4 Repair/service options for bicycle wheel are identified following workplace procedures.</p> <p>AUR18265A.1.5 Repairs/services required are documented and costed for customer approval.</p> <p>AUR18265A.1.6 Customer approval obtained and checked against work to be undertaken.</p>
AUR18265A.2 Prepare for the removal and refitting of a bicycle wheel.	<p>AUR18265A.2.1 Planned removal sequence and availability of required tools and equipment determined.</p> <p>AUR18265A.2.3 Tools and equipment are selected to meet job requirements.</p> <p>AUR18265A.2.4 Tools and equipment are regularly checked to ensure they are in good working order and are handled and used in accordance with OH&S requirements.</p> <p>AUR18265A.2.5 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>
AUR18265A.3 Remove, refit and adjust bicycle wheel.	<p>AUR18265A.3.1 Removal operation for bicycle wheel performed according to plan.</p> <p>AUR18265A.3.2 Removal operations are performed using all required personal safety equipment and precautions required to protect others in the workplace.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18265A.3 (continued) Remove, refit and adjust bicycle wheel.	AUR18265A.3.3 Customer requirements and bicycle wheel repairs/services performed prior to refitting. AUR18265A.3.4 Refitted bicycle wheel is operated through full range, noting test results, including non-conformity. AUR18265A.3.5 Refitted bicycle wheel checked, adjustments and alignments completed and unit prepared for delivery. AUR18265A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures. AUR18265A.3.7 Portable tools and equipment are stored in approved designated areas. AUR18265A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise. AUR18265A.3.9 Accounts and invoices prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- spoked, disk, and tri-spoked wheels, conventional, clincher, tubular, aero, deep dished and composite material wheel rims, quick release, allen head and nut wheel fasteners, vertical and horizontal frame lugs

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific removal and general workshop equipment and tools
- enterprise documentation and reporting systems
- workbenches, floor stands
- wheel jigs

Methods include:

- on and off site removal
- removal and manual adjustments of wheels
- communicating with customers
- documenting and reporting work done

Methods should be applied under normal operating conditions.

Specific requirements:

- a range of bicycle wheel configurations requiring removing, refitting and adjusting

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- Removal and refitting of bicycle wheels

Underpinning knowledge:

- Purpose and requirements of a bicycle wheel as a suspension, steering and braking component
- Materials and processes used in torque measurement and adjustment of wheels
- Classification of bicycle wheels and the identification of system components
- Use of tools and equipment

Practical assessments:

- Gather information on bicycle wheels
- Check bicycle wheels for damage and wear
- Plan bicycle wheel removal and refitting procedures
- Remove and refit bicycle wheels

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR18266A**REPAIR BICYCLE WHEELS**

UNIT DESCRIPTOR: This unit identifies the competence required to safely repair bicycle wheels and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR18266A.1 Inspect bicycle wheel.</p>	<p>AUR18266A.1.1 Inspect bicycle wheel for faults and worn or damaged components.</p> <p>AUR18266A.1.2 Repairs required are determined by visual, aural, tactile inspections and measurements.</p> <p>AUR18266A.1.3 Conditions found are compared with bicycle wheel specifications and customer use requirements.</p> <p>AUR18266A.1.4 Repair options for bicycle wheel are identified following workplace procedures.</p> <p>AUR18266A.1.5 Repairs required are documented and costed for customer approval.</p> <p>AUR18266A.1.6 Customer approval obtained and checked against repair work to be undertaken.</p>
<p>AUR18266A.2 Prepare for the repair of a bicycle wheel.</p>	<p>AUR18266A.2.1 Planned repair sequence and availability of required tools and equipment determined.</p> <p>AUR18266A.2.2 Planned repair sequence includes post-repair testing and checking process.</p> <p>AUR18266A.2.3 Parts list prepared and availability of replacement components determined.</p> <p>AUR18266A.2.4 Additional personnel required to assist in the repair process identified and permission obtained.</p> <p>AUR18266A.2.5 Tools and equipment are selected to meet job requirements.</p> <p>AUR18266A.2.6 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR18266A.2.7 Tools and equipment are handled and used in accordance with OH&S requirements.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18266A.2 (continued) Prepare for the repair of a bicycle wheel.	AUR18266A.2.8 Daily maintenance of tools and equipment is performed as specified by enterprise.
AUR18266A.3 Repair and test bicycle wheel.	<p>AUR18266A.3.1 Repair operation for bicycle wheel performed according to plan.</p> <p>AUR18266A.3.2 Repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace.</p> <p>AUR18266A.3.3 Customer requirements and bicycle wheel specifications checked following repair procedures.</p> <p>AUR18266A.3.4 Repaired bicycle wheel is operated through full range, noting test results, including non-conformity.</p> <p>AUR18266A.3.5 Repaired bicycle wheel checked, adjustments and alignments completed and unit prepared for delivery.</p> <p>AUR18266A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures.</p> <p>AUR18266A.3.7 Portable tools and equipment are stored in approved designated areas.</p> <p>AUR18266A.3.8 Workplace records, customer file and warranty information updated, as required by enterprise.</p> <p>AUR18266A.3.9 Accounts and invoices prepared as required by enterprise.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- steel, aluminium, deep dish, aero, composite material, and disc type rims, high flange, low flange and integrated brake hubs, metal and composite hub materials, steel, aluminium and composite spoke materials, straight gauge, double butted and bladed spokes, spoke nipples, spoke lacing patterns, types of adhesives and surface coatings

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific wheel repairing and general workshop equipment and tools
- enterprise documentation and reporting systems
- workbench
- floorstand
- wheel building and repairing jigs and fixtures

Methods include:

- repairing and manual adjustments of wheel components
- communicating with customers
- documenting and reporting on work done

Methods should be applied under normal operating conditions.

Specific requirements:

- repairing a range of bicycle wheel with different hub, spoke and rim configurations

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing bicycle wheels

Underpinning knowledge:

- Purpose and requirements of bicycle wheels and their relationship to suspension, drive train, frame and steering systems
- The materials used in bicycle wheels
- Use of tools and equipment
- The application of mechanical principles
- Classification of bicycle wheels and the identification of components

Practical assessments:

- Gather information and repair bicycle wheels
- Plan bicycle wheel repair procedures
- Repair bicycle wheels

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR18676A**TEST, SERVICE AND REPLACE BATTERY****UNIT DESCRIPTOR:**

This unit identifies the competence required to service, remove, replace, test and charge automotive batteries. The competency is applicable to batteries fitted to vehicles, plant and equipment and marine applications. It may also be applied to the service, replacement and charging of batteries in electric vehicles such as golf buggies and electric forklifts.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18676A.1 Test batteries.	<p>AUR18676A.1.1 Batteries are tested without causing damage to any component or system.</p> <p>AUR18676A.1.2 *Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR18676A.1.3 Appropriate test equipment is selected.</p> <p>AUR18676A.1.4 *Tests are performed and results analysed in accordance with manufacturer specifications.</p> <p>AUR18676A.1.5 *Testing is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR18676A.2 Remove and replace batteries.	<p>AUR18676A.2.1 Batteries are removed and replaced without causing damage to any component or system.</p> <p>AUR18676A.2.2 Appropriate tools and equipment are selected and used.</p> <p>AUR18676A.2.3 *Action is taken to prevent loss of vehicles electronic memory if applicable.</p> <p>AUR18676A.2.4 *Removal/replacement is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR18676A.3 Service and charge batteries.	<p>AUR18676A.3.1 Battery is charged using the appropriate battery charger.</p> <p>AUR18676A.3.2 Electrolyte levels are checked and topped up as necessary.</p> <p>AUR18676A.3.3 Battery/terminals are cleaned.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18676A.3 (continued) Service and charge batteries.	<p>AUR18676A.3.4 *Service and charging activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR18676A.4 Jump start vehicle.	<p>AUR18676A.4.1 Vehicle is jump started without causing damage to any component or system.</p> <p>AUR18676A.4.2 Appropriate jumper leads are selected ensuring spike protection is employed when necessary.</p> <p>AUR18676A.4.3 *Leads are connected/disconnected in correct sequence and polarity.</p> <p>AUR18676A.4.4 *Jump start is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

*Language, literacy and numeracy skills are integrated in these performance criteria.

Further details included in Evidence Guide.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or marine applications

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- statutory legislation (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including load tester, hydrometer, multimeter or voltmeter, battery charger
- special tools for removal/adjustment

Methods include:

- load tests
- specific gravity tests
- interpreting manufacturer information
- fast/trickle charging
- jump starting vehicles

Methods should be applied under normal operating conditions.

Other variables may include:

- this standard may be applied to electric vehicles such as golf buggies and electric forklifts

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- removing/replacing batteries
- servicing and charging batteries
- testing and jump starting vehicles

Underpinning knowledge:

- OH&S legislation
- Safe handling of battery electrolyte and acids
- Industry codes of practice
- Statutory legislation in relation to disposal of batteries and acids
- Testing procedures of both, load and specific gravity
- Identification of battery types
- Servicing procedures
- Jump starting procedures
- Battery charging procedures

Practical assessments:

- Access, interpret and apply technical information including statutory legislation
- Safely and correctly use tools and equipment
- Service batteries
- Test batteries (both, load testing and specific gravity)
- Removal and replacement of batteries
- Jump start vehicles
- Charge batteries

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

Language, literacy and numeracy skills:

Speaking and listening skills may include:

- listening to and following verbal instructions
- exchanging technical information
- giving information to the customer

Reading and writing skills may include:

- reading and interpreting battery manufacturer requirements
- reading and interpreting vehicle manufacturer requirements
- reading and interpreting company forms eg jobsheets, checklists
- carrying out written safety requirements

Numeracy skills may include:

- interpreting measurements from test equipment eg. load tester, hydrometer, multimeter, battery charger

AUR18708A**CARRY OUT MINOR REPAIRS TO ELECTRICAL CIRCUIT/SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to correctly test electrical circuits/systems and carry out minor repairs. Minor repairs include replacement of fuses, bulbs and terminals, wiring repairs ie. open circuits/short circuits/earthing.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18708A.1 Test systems/components and identify faults.	<p>AUR18708A.1.1 Systems/components are tested without causing damage to any component or system.</p> <p>AUR18708A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specification.</p> <p>AUR18708A.1.3 Tests are carried out to determine faults using appropriate tools and techniques.</p> <p>AUR18708A.1.4 Faults are identified and preferred repair action determined.</p> <p>AUR18708A.1.5 Tests are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR18708A.2 Complete minor repairs to circuit wiring.	<p>AUR18708A.2.1 Minor repairs to circuit wiring are completed without causing damage to any component or system.</p> <p>AUR18708A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR18708A.2.3 Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials.</p> <p>AUR18708A.2.4 Repairs are carried out according to industry regulations/guidelines OH&S legislation, statutory and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R mechanical and body streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry codes of practice

OH&S practices must abide by:

- State/Territory/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, test lamp, multimeter
- power/air tools, special tools for removal/replacement, special testing equipment, soldering equipment

Methods include:

- electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading and interpreting circuit diagrams
- testing
- soldering

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- performing minor repairs to circuit wiring
- testing and identifying faults

Underpinning knowledge:

- OH&S regulations
- Electrical principles
- Repair procedures
- Electrical measuring and testing procedures
- Vehicle safety requirements
- Procedures to avoid damage to ECUs

Practical assessments:

- Access interpret and apply technical information
- Safely and correctly use tools and equipment
- Test and identify faults
- Perform electrical connections – crimping and soldering
- Isolate power supply to components
- Perform minor electrical repairs

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR18866A**REPAIR ELECTRICAL SYSTEMS****UNIT DESCRIPTOR:**

This unit identifies the competence required to:

- carry out repairs to vehicle electrical systems. Electrical systems include: after market accessories, wipers, electric windows, lighting, turning indicators, hazard lights, door locks, fan blowers. For minor electrical repairs see AUR18708A.
- carry out minor repairs to electrical circuits/systems. For repairs to electrical marine systems see AUR20066A Repair marine electrical system/components.

PRE-REQUISITES:

AUR18708A Carry out minor repairs to electrical circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18866A.1 Repair electrical systems.	AUR18866A.1.1 Repairs to electrical systems are completed without causing damage to any component or system. AUR18866A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR18866A.1.3 Tests on electrical systems are carried out to determine faults using appropriate tools and techniques. AUR18866A.1.4 Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials. AUR18866A.1.5 Repairs are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- electrical systems fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including multimeters
- power tools, air tools, special tools for removal/adjustment, manufacturer diagnostic tools

Methods include:

- electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading/interpreting wiring diagrams
- soldering
- crimping
- repairing components and wiring
- remove/replace components

Methods should be applied under normal operating conditions.

Other variables may include:

- lighting
- accessories
- electric winches
- cruise control
- central locking

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repair of ancillary electrical systems
- testing and identifying faults

Underpinning knowledge:

- OH&S legislation
- Operation of electrical system/components relevant to application
- Procedures for the repair of electrical system/components
- Testing procedures of electrical system/components

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Test and identify faults in electrical systems
- Repair electrical systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR18966A**REPAIR INSTRUMENTS AND WARNING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to test and repair instrument and warning systems. Instruments and warning systems include gauges, warning lights (including dash lamps), engine shutdown systems, audible reverse warning systems. Hazard lights are included in AUR18866A. Repair electrical systems.

PRE-REQUISITES: AUR18708A Carry out minor repairs to electrical circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR18966A.1 Test systems/components and identify faults.	AUR18966A.1.1 Tests are completed without causing damage to any component or system. AUR18966A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR18966A.1.3 Tests are carried out to determine faults using appropriate tools and techniques. AUR18966A.1.4 Faults are identified and preferred repair action determined. AUR18966A.1.5 Tests are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR18966A.2 Repair instrument and warning systems and/or associated components.	AUR18966A.2.1 Instrument and warning systems repairs are completed without causing damage to any component or system. AUR18966A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR18966A.2.3 Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials. AUR18966A.2.4 Repairs are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or motor cycles and/or outdoor power equipment

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including: multimeters
- power tools, air tools, special tools for removal/adjustment

Methods include:

- testing dismantling, assembling, removal and replacement
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical short/broken circuits, electrical measurements
- electronic systems data (including fault codes, sensor measurement and control unit input/output signals)
- reading/interpreting wiring diagrams

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- testing of instruments and warning systems
- repair of instrument and warning systems.

Underpinning knowledge:

- OH&S legislation
- Interpretation of statutory legislation, technical materials, graphic symbols and diagrams
- Testing procedures
- Operation of instruments and warning systems relevant to application
- Repair procedures
- Construction and operation of instruments and warning systems relevant to application

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Test and identify faults in instruments and warning systems/components
- Repair instruments and warning systems

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR19045A**OVERHAUL ELECTRICAL SYSTEM
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to overhaul automotive electrical system components including starter motors and alternators as fitted to vehicles, plant and equipment, motorcycles and marine equipment.

PRE-REQUISITES: AUR19066A Repair starting and charging systems
AUR18708A Carry out minor repairs to electrical circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR19045A.1 Overhaul electrical system components.	<p>AUR19045A.1.1 Electrical system components are overhauling without causing damage to any component or system.</p> <p>AUR19045A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR19045A.1.3 Electrical system components are dismantled, reassembled and tested to manufacturer specifications.</p> <p>AUR19045A.1.4 Worn, damaged, deteriorated or faulty components/parts are identified and replaced/repaired.</p> <p>AUR19045A.1.5 Electrical system components are overhauled according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- electrical components fitted to vehicles and/or plant and equipment and/or plant and equipment and/or motorcycles and/or marine equipment

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including diode testers, multimeters, growlers and insulation tester, soldering equipment
- power tools, test benches, measuring equipment including micrometers, calipers

Methods include:

- measurements
- fault finding with aural, visual and functional assessments (including damage, corrosion, wear, electrical leakage, short circuits and broken circuits)
- reading/interpreting manufacturer information

Methods should be applied under normal operating conditions.

Specific requirements(components) include:

- starter motors; heavy and/or light
- alternators; heavy and/or light

Other variables may include:

- electrical motors (low voltage)
- distributors
- generators

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- Overhauling of electrical system components:
- Starter motors
- Alternators

Underpinning knowledge:

- OH&S legislation
- Electrical component operating principles
- Interpretation of technical reference materials, graphic symbols and diagrams
- Construction and operation of components relevant to the application
- Unit and component part test procedures
- Unit overhauling procedures

Practical assessments:

- Safely and correctly use tools and equipment
- Use appropriate workshop manuals and technical publications
- Clean, test, inspect and evaluate components of units
- Overhaul units including dismantle and reassemble units
- Repair/replace as required
- Test final product for return to service

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Solve problems	1
Use technology	1

AUR19066A**REPAIR CHARGING AND STARTING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to test and repair charging and starting systems/direct current motors appropriate to vehicles, plant and equipment, motor cycles and/or outdoor power equipment and/or marine vessels

PRE-REQUISITES: AUR18708A Carry out minor repairs to electrical circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR19066A.1 Test systems/components and identify faults.	AUR19066A.1.1 Tests are completed without causing damage to any component or system. AUR19066A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR19066A.1.3 Tests are carried out to determine faults using appropriate tools and techniques. AUR19066A.1.4 Faults are identified and preferred repair action determined. AUR19066A.1.5 Tests are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR19066A.2 Repair charging and starting systems/direct current motors and/or associated components.	AUR19066A.2.1 Charging and starting systems/direct current motors are repaired without causing damage to any component or system. AUR19066A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR19066A.2.3 Necessary repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials. AUR19066A.2.4 Repairs are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or outdoor power equipment and/or marine vessels

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including multimeters, voltmeters, ammeters
- power tools, air tools, electrical loading equipment, test benches, soldering equipment, multimeters, growler, induction ammeter, test light (12V and 240V), lathe, single and ganged panels, CRO

Methods include:

- testing, dismantling, assembly, removal and replacement
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical short/broken circuits, electrical measurements
- reading/interpreting wiring diagrams

Methods should be applied under normal operating conditions.

Other variables may include:

- starting systems electrical including dynastart, inertia, pre-engaged, axial, coaxial, fixed and remote solenoid, direct drive, gear reduction, protection lockout, inhibitor switch, series-parallel switching, battery isolation switch, single/multiple battery system
- starting systems mechanical including pull rope, crank handle, inertia
- solar systems including single and ganged panels, internal and external regulation, battery sensed and non-battery sensed, 6V, 12V and 24V operation, solid state controlled
- charging systems including alternator, generator, internal/external regulation, battery sensed and non-battery sensed regulation, 6V, 12V and 24V operation, dynastart, solid state and mechanical regulation, belt and/or direct drive, single/multiple belt drive, adjustable tensioning devices
- direct current motors

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- testing of charging and starting systems
- repair of charging and starting systems/direct current motors

Underpinning knowledge:

- OH&S legislation
- Interpretation of technical materials, graphic symbols and diagrams
- Testing procedures
- Construction and operation of charging and starting systems/direct current motors relevant to application
- Principles of operation and their application to charging and starting systems/direct current motors
- Repair procedures

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Test and identify faults in charging and starting systems
- Repair charging and starting systems/direct current motors

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR19331A**INSTALL, TEST AND REPAIR
WIRING/LIGHTING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out wiring installation, testing and repair. This standard applies only to low voltage systems. For electric braking systems, refer to AUR11666A Repair electric braking systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR19331A.1 Install wiring/lighting electrical systems.	AUR19331A.1.1 Installation is achieved without causing damage to any component or system. AUR19331A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR19331A.1.3 Appropriate fittings/materials are selected. AUR19331A.1.4 Electrical systems are installed and wired up using appropriate tools and techniques. AUR19331A.1.5 Installation is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation for vehicle roadworthiness (including ADRs) and enterprise procedures/policies.
AUR19331A.2 Test electrical systems.	AUR19331A.2.1 Electrical systems are tested without causing damage to any component or system. AUR19331A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR19331A.2.3 Tests are carried out to determine faults using appropriate tools and techniques. AUR19331A.2.4 Faults are identified and preferred repair action determined. AUR19331A.2.5 Testing is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation for vehicle roadworthiness (including ADRs) and enterprise procedures/policies.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR19331A.3 Repair electrical systems.	AUR19331A.3.1 Electrical systems are repaired without causing damage to any component or system. AUR19331A.3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR19331A.3.3 Necessary repairs are carried out using appropriate tools, techniques and materials. AUR19331A.3.4 Repairs are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation for vehicle roadworthiness (including ADRs) and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- low voltage electrical systems fitted to trailer and caravans

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including multimeters and test lamps
- power tools, air tools, special tools for removal/adjustment

Methods include:

- testing and electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects.
- Reading/interpreting wiring diagrams
- soldering
- crimping
- installing/repairing components and wiring

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation, testing and repair of wiring/lighting on trailers/caravans

Underpinning knowledge:

- OH&S legislation
- Interpretation of statutory legislation
- Installation procedures
- Operation of electrical system and components relevant to application
- Electrical principles and their application to wiring/lighting
- Repair procedures for of electrical systems
- Testing and fault finding procedures
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Test and identify faults in electrical systems
- Perform electrical connections; crimping and soldering
- Repair electrical systems
- Select and use appropriate materials for installation/repair of electrical systems
- Install electrical systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR19431A**INSTALL, TEST AND REPAIR ELECTRICAL SECURITY SYSTEM/COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out installation, testing and repair of automotive electrical security systems and components. This standard can also be applied to the installation of security systems in marine applications.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR19431A.1 Install electrical security system/components.	<p>AUR19431A.1.1 Installation is completed without causing damage to any component or system.</p> <p>AUR19431A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR19431A.1.3 Appropriate fittings/materials are selected.</p> <p>AUR19431A.1.4 Electrical security systems/components are installed and wired using appropriate tools and techniques.</p> <p>AUR19431A.1.5 Installation is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR19431A.2 Test electrical security systems/components.	<p>AUR19431A.2.1 Tests are completed without causing damage to any component or system.</p> <p>AUR19431A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR19431A.2.3 Tests are carried out to determine faults using appropriate tools and techniques.</p> <p>AUR19431A.2.4 Faults are identified and preferred repair action determined.</p> <p>AUR19431A.2.5 Testing is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR19431A.3 Repair electrical security systems/components.	AUR19431A.3.1 Electrical security systems/ components are repaired without causing damage to any component or system.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR19431A.3 (continued) Repair electrical security systems/ components.	AUR19431A.3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR19431A.3.3 Necessary repairs, component replacement and adjustment are carried out using appropriate tools, techniques and materials. AUR19431A.3.4 Repairs are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- electrical security systems fitted to automotive or marine applications

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, test equipment including multimeters, test lamps
- power tools, air tools, special tools for removal adjustment

Methods include:

- testing and electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects
- reading interpreting wiring diagrams
- soldering
- crimping
- installing/repairing components and wiring

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation, testing and repair of automotive security systems and components

Underpinning knowledge:

- OH&S legislation
- Interpretation of statutory legislation, technical materials, graphic symbols and diagrams
- Installation procedures
- Operation of electrical security systems and components
- Electrical principles and their application to security systems/components
- Repair procedures for security systems/components
- Testing and fault finding procedures
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Test and identify faults in security systems/components
- Install security systems
- Perform electrical connections; crimping and soldering
- Repair security systems/components
- Select and use appropriate materials for installation/repair of electrical security systems/components

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR19531A**INSTALL ANCILLARY ELECTRICAL EQUIPMENT**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out installation of vehicle ancillary electrical equipment. Ancillary electrical equipment includes aftermarket accessories such as lighting, tachographs, cruise control, stereo equipment and communication equipment. For marine applications see AUR20031A Install marine electrical systems/components.

PRE-REQUISITES: AUR18708A Carry out minor repairs to electrical circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR19531A.1 Install ancillary electrical equipment.	AUR19531A.1.1 Ancillary electrical equipment installation is completed without causing damage to any component or system. AUR19531A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR19531A.1.3 Appropriate fittings/materials are selected. AUR19531A.1.4 Ancillary electrical equipment is installed and wired using appropriate tools and techniques. AUR19531A.1.5 Installation is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- ancillary electrical equipment fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including multimeters, test lamp
- power tools, air tools, special tools for removal

Methods include:

- reading/interpreting wiring diagrams
- soldering
- crimping
- installing components and wiring

Methods should be applied under normal operating conditions.

Other variables may include:

- lighting
- accessories
- using relays
- installing

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation of ancillary electrical equipment.

Underpinning knowledge:

- OH&S legislation
- Interpretation of statutory legislation, technical materials, graphic symbols and diagrams
- Installation and test procedures relevant to the application

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Install ancillary electrical equipment
- Perform electrical connections; crimping and soldering
- Select and use appropriate materials for installation of ancillary electrical equipment

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR20031A**INSTALL MARINE ELECTRICAL SYSTEMS/ COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out installation of marine electrical systems/components. Marine electrical systems include dash instrumentation, switch/fuse panels, bilge pumps, lighting and navigation aids.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR20031A.1 Install marine electrical systems/components.	<p>AUR20031A.1.1 Installation is completed without causing damage to any component or marine craft/system.</p> <p>AUR20031A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR20031A.1.3 Appropriate fittings/materials are selected.</p> <p>AUR20031A.1.4 Marine electrical systems/components are installed and wired up using appropriate tools and techniques.</p> <p>AUR20031A.1.5 Installation is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation for vehicle roadworthiness (including ADRs) and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- low voltage marine electrical system/components

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation in relation to marine electrical systems/components

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including multimeters
- power tools, air tools, special tools and equipment

Methods include:

- reading/interpreting wiring diagrams
- soldering
- crimping
- installing components and wiring

Methods should be applied under normal operating conditions.

Other variables may include:

- navigation aids

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation of marine electrical systems/components

Underpinning knowledge:

- OH&S legislation
- Interpretation of statutory legislation, technical materials, graphic symbols and diagrams
- Procedures for the installation of marine electrical systems/components
- Electrical principles

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Perform electrical connections; crimping and soldering
- Installation of marine electrical system components
- Select and use appropriate materials for the installation of marine electrical systems/components
- Test prior to placing in service

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR20066A**REPAIR MARINE ELECTRICAL SYSTEMS/COMPONENTS****UNIT DESCRIPTOR:**

This unit identifies the competence required to carry out repairs to marine electrical systems/components. Marine electrical systems include dash instrumentation, switch/fuse panels, bilge pumps, lighting.

PRE-REQUISITES: AUR18708A Carry out minor repairs to electric circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR20066A.1 Repair marine electrical systems/components.	<p>AUR20066A.1.1 Marine electrical systems/components are repaired without causing damage to any component or marine craft/system.</p> <p>AUR20066A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR20066A.1.3 Necessary repair or component replacement is carried out using appropriate tools, techniques and materials.</p> <p>AUR20066A.1.4 Repairs are carried out according to industry regulations/guidelines OH&S legislation, statutory legislation for vehicle roadworthiness (including ADRs) and enterprise/procedures policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- low voltage marine electrical system/components such as: basic lighting, switchboard, fuse panels, pumps, navigation aids

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation in relation to marine electrical systems/components

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including multimeters, test lamps
- power tools, air tools, special tools and equipment

Methods include:

- testing and electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects.
- reading/interpreting wiring diagrams
- soldering
- crimping
- repairing components and wiring

Methods should be applied under normal operating conditions.

Other variables may include:

- instruments associated with engines
- navigation aids

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repair of marine electrical systems/components

Underpinning knowledge:

- OH&S legislation
- Interpretation of statutory legislation, technical materials, graphic symbols and diagrams
- Operation of marine systems and components relevant to application
- Procedures for the repair and testing of marine electrical systems/components

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Test and identify faults in marine electrical systems/components
- Perform electrical connections; crimping and soldering
- Repair marine electrical systems
- Select and use appropriate materials for repair of marine electrical systems/components

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR20140A**MANUFACTURE AND/OR REPAIRS TO WIRING HARNESS/LOOMS**

UNIT DESCRIPTOR: This unit identifies the competence required to manufacture and/or repair wiring harnesses including checking/testing wiring harness/loom and deciding preferred repair action and removal, replacement and labelling of wiring harness/loom. Wiring harnesses/looms maybe fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or marine applications. For wiring harnesses/looms applicable to trailers/caravans, see AUR19331A Install, test and repair wiring systems of trailers/caravans.

PRE-REQUISITES: AUR18708A Carry out minor repairs to electrical circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR20140A.1 Check/test wiring harness/loom and decide preferred repair action.	AUR20140A.1.1 Checking/testing is achieved without causing damage to any component or system. AUR20140A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR20140A.1.3 Visual checks are carried out to establish the extent of damage. AUR20140A.1.4 Tests are carried out to determine faults using appropriate tools and techniques. AUR20140A.1.5 Faults are identified and operator determines preferred repair action. AUR20140A.1.6 Checks and tests are carried out according to industry regulations/guidelines OH&S legislation and enterprise/procedures policies.
AUR20140A.2 Removal, replacement and labelling of wiring harness loom.	AUR20140A.2.1 Removal, replacement and labelling is completed without causing damage to any component or system. AUR20140A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR20140A.2.3 Wiring harness/loom is labelled and removed using appropriate tools and techniques. AUR20140A.2.4 Associated components are labelled and removed and tagged for storage.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR20140A.2 (continued) Removal, replacement and labelling of wiring harness loom.	<p>AUR20140A.2.5 Repaired/remanufactured harness/loom is correctly refitted to vehicle and reconnected according to manufacturer specifications and/or labels.</p> <p>AUR20140A.2.6 All removal/replacement and labelling is carried out according to industry regulations/guidelines OH&S legislation and enterprise/procedures policies.</p>
AUR20140A.3 Repair wiring harness/loom.	<p>AUR20140A.3.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR20140A.3.2 Necessary repairs are carried out using appropriate tools, techniques and materials.</p> <p>AUR20140A.3.3 All repairs are carried out according to industry regulations/guidelines OH&S legislation and enterprise/procedures policies.</p>
AUR20140A.4 Manufacture wiring harness/looms.	<p>AUR20140A.4.1 Electrical circuit wiring diagrams are accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR20140A.4.2 Manufacture harness/loom to manufacturer specifications using appropriate tools, techniques and materials.</p> <p>AUR20140A.4.3 Harness/loom is tested prior to placing in service and results are recorded in accordance with enterprise policies and procedures.</p> <p>AUR20140A.4.4 Manufacturing activities are carried out according to industry regulations/guidelines OH&S legislation and enterprise/procedures policies.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- wiring harnesses/looms fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or marine applications. It is also applicable to wiring harnesses/looms fitted to flammable goods vehicle.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, cable of various types and sizes, electrical tape, terminals and fitting equipment
- tagging/labelling materials

Methods include:

- soldering
- crimping
- harness/loom taping
- electrical measurements
- fault finding using aural, visual and functional assessments for damage, corrosion, wear and electrical defects.
- reading/interpreting circuit diagrams
- tagging disconnected components or wiring

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- checking/testing wiring harnesses/looms
- identifying and repairing faults
- removing and replacing wiring harnesses/looms

Underpinning knowledge:

- OH&S legislation
- Checking and testing procedures
- Interpreting wiring diagrams and graphic symbols
- Cable types/sizes, current carrying capacity and their application
- Testing procedures (voltage drop and circuit performance)
- Repair and manufacture procedures

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Test wiring harnesses/looms and locate faults
- Perform electrical connections; crimping and soldering
- Remove and replace wiring harnesses/looms
- Manufacture wiring harnesses
- Repair wiring harnesses/looms
- Select and use appropriate materials for repair/manufacture of wiring harnesses/looms

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	2
Use technology	1

AUR20666A**REPAIR IGNITION SYSTEMS****UNIT DESCRIPTOR:**

This unit identifies the competence required to repair Kettering and/or electronic ignition system (not including systems associated with electronic engine management) and/or magnetos and/or associated components for light vehicles, plant, motor cycles, marine and outdoor power equipment. For ignitions systems associated with electronic engine management see AUR21171A.

PRE-REQUISITES: AUR18708A Carry out minor repairs to electrical circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR20666A.1 Repair ignition systems/components.	AUR20666A.1.1 Ignition system is repaired without causing damage to any component or system. AUR20666A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR20666A.1.3 Necessary repair, adjustment or component replacement is carried out using appropriate tools, techniques and materials. AUR20666A.1.4 Ignition systems are tested and results are recorded in accordance with enterprise policies and procedures. AUR20666A.1.5 Repairs are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation for vehicle roadworthiness (including ADRs) and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- petrol engines utilising Kettering, electronic ignition systems and/or magneto systems (not including systems associated with electronic engine management)

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, test equipment including multimeters, ohmeters, voltmeters, tachometer, timing light, spark plug cleaner/tester.
- power tools, air tools, tunescopes, engine analysers, dynamometers, distributor test bench
- coil, condenser, transistor, insulation testers.
- soldering equipment

Methods include:

- disassembly, assembly, component replacement
- function test
- measurements
- visual and functional assessments including damage, wear

Methods should be applied under normal operating conditions.

Other variables may include:

- single and dual points, transistor assisted, single and multiple distributors, ballast and non ballast primary circuits, suppressed and non suppressed high tension leads
- advance mechanisms: mechanical, vacuum, electronic
- CDI, magnetic pulse, optic, hall effect

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- testing ignition systems/components
- repairing ignition systems/components

Underpinning knowledge:

- Ignition system construction and operation appropriate to application
- Measuring and testing procedures
- Vehicle, equipment and personal safety requirements
- Ignition scope patterns

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Test and identify faults in ignition systems/components
- Repair ignition systems

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR21171A**SERVICE AND REPAIR ELECTRONIC ENGINE MANAGEMENT SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to service/repair electronic fuel injection and electronic engine management systems and/or associated components. Engine management systems are systems where the ECU incorporates control over the fuel injection and ignition systems.

PRE-REQUISITES: AUR18708A Carry out minor repairs to electrical circuits/systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR21171A.1 Service and repair electronic engine management systems and/or associated components.	<p>AUR21171A.1.1 Service and repairs are completed without causing damage to any component or system.</p> <p>AUR21171A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR21171A.1.3 Tests on electronic fuel injection and engine management systems are carried out to determine faults using appropriate tools and techniques.</p> <p>AUR21171A.1.4 Necessary service and repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials.</p> <p>AUR21171A.1.5 Service and repairs are carried out according to industry regulations/guidelines OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- Electronic fuel injection and electronic engine management systems fitted light vehicles and/or motorcycles and/or vessels and/or outdoor power equipment. (Engine management systems are systems where the ECU incorporates control over the fuel injection and ignition systems.)

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including multimeters, exhaust gas analyser, vacuum gauge, pressure gauge, tachometer, multimeter
- vehicle lifting equipment, power tools, air tools, special tools for removal/adjustment, specialised system testers

Methods include:

- service and repair and/or replacement of system components
- removal, dismantling, re-assembly and refitting
- testing system operation
- retrieval and assessment of electronic systems data including fault codes

Methods should be applied under normal operating conditions.

Specific requirements:

- Electronic engine management systems. The electronic/electrical system/components of controlling the engine's fuel and ignition requirements.

Other variables may include:

- testing fuel pressure
- cleaning injectors

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.
- The competency should be assessed within the context of the qualification being sought.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- testing electronic engine management systems and identifying faults.
- servicing/repairing electronic engine management systems

Underpinning knowledge:

- OH&S legislation
- Service/repair, removal, replacement and adjustment procedures of engine management systems
- Operating principles of electronic fuel injection and engine management systems/components
- Construction and operation of electronic fuel injection engine management system/components relevant to application
- Personal safety requirements
- Equipment/vehicle safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Service/repair, adjust and/or replace system components as necessary
- Testing, inspection and evaluation of fuel injection/engine management system/components

Key Competencies:	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR21271B**Service and repair electronic body management systems****Unit Descriptor**

This unit identifies the competence required to service/repair electronic body management systems and/or associated components. Electronic body management systems may control the following functions: steering systems, central locking, electric windows, electric mirrors, security systems.

Pre-Requisites:

AUR18708A Carry out minor repairs to electrical circuits/ systems

ELEMENT

1. Prepare for work

2. Service and repair electronic body management systems and/or associated components.

3. Clean up work area and Maintain equipment

PERFORMANCE CRITERIA

- 1.1 Work instructions are used to determine job requirements including quality, materials, equipment quantities and service manuals.
- 1.2 Job specifications are read and interpreted
- 1.3 Workplace health and safety requirements, including personal protection needs, are observed throughout the work
- 2.1 Service and repairs are achieved without causing damage to any component or system.
- 2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.
- 2.3 Tests on electronic body management systems are carried out to determine faults using appropriate tools and techniques.
- 2.4 Necessary service and repairs, component replacement and adjustments are carried out using appropriate tools, techniques and materials.
- 2.5 Service and repairs are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
- 3.1 Material that can be reused is collected and stored
- 3.2 Waste and scrap is removed following workplace procedures.
- 3.3 Equipment and work area are cleaned and inspected for serviceable conditions in accordance with workplace procedures.

ELEMENT	PERFORMANCE CRITERIA
3. Clean up work area and Maintain equipment (continued)	<p>3.4 Unserviceable equipment is tagged and faults identified in accordance with workplace.</p> <p>3.5 Operator maintenance is completed in accordance with manufacturer's specifications and site procedures.</p> <p>3.6 Tooling is maintained in accordance with workplace procedures.</p>

RANGE STATEMENT

The Range Statement provides advice to interpret the scope and context of this unit of competency, allowing for differences between enterprises and workplaces. It relates to the unit as a whole and facilitates holistic assessment. The following variables may be present for this particular unit:

Electronic Body Management System

- Steering, Central locking, windows mirrors and security systems.
- Work involves Testing, servicing and minor repairs to electronic body management systems fitted to light vehicles and/or heavy commercial vehicles and/or plant and outdoor power equipment.

Unit Scope

- Workplace health and safety requirements include OH&S legislation, Australian Standards, material safety management systems, hazardous substances and dangerous goods code, local safe operating procedures.
- Work is carried out in accordance with legislative obligations, environmental legislation, relevant health regulations, manual handling procedures and organisation insurance requirements
- Work requires individuals to demonstrate some discretion, judgement and problem solving skills

Unit Context

- Competency may be demonstrated in workplaces involved in auto electrical dealerships, roadside service, general repairs, auto accessory fitting, collision repair and steering establishments.

Tools and Equipment

- Tools and equipment are to include hand tools including multimeters and test equipment and may include, but not be limited to power tools, air tools, special tools for removal/adjustment specialist system tester.

Materials

- Materials are to include electronic components, wire, solder.

RANGE STATEMENT

Personal Protective Equipment	<ul style="list-style-type: none">• Personal protective equipment is to include that prescribed under legislation, regulations and enterprise policies and practices.
Information and Procedures	<ul style="list-style-type: none">• Workplace procedures relating to the use of tools and equipment.• Work instructions, including job sheets, manufacturers data sheets and customer requests• Workplace procedures relating to reporting and communication.• Manufacturer's specifications and operational procedures.

EVIDENCE GUIDE

The Evidence Guide identifies the critical aspects, knowledge and skills to be demonstrated to confirm competency for this unit. This is an integral part of the assessment of competency and should be read in conjunction with the Range Statement.

Critical Aspects of Evidence	<ul style="list-style-type: none">• Interpret work order and locate and apply relevant information• Apply safe handling requirements for equipment, products and materials, including use of personal protective equipment.• Read and interpret communication procedural information from job sheets to prepare for work.• Identify materials used in the work process• Follow work instructions, operating procedures and inspection processes to:<ul style="list-style-type: none">— Minimise the risk of injury to self or others— Prevent damage and wastage of goods, equipment and products— Maintain required production output and product quality• Identify, set up, operate specialist testing equipment and multimeters• Conduct operator maintenance as per manufacturers specifications.• Work effectively with others• Modify activities to cater for variations in workplace context and environment.
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EVIDENCE GUIDE

Underpinning Knowledge

The types, characteristics, uses and limitations of:

- OH&S legislation
- Service/repair, removal, replacement and adjustment procedures relevant to application
- Operating principles of body management systems
- Construction and operation of body management systems/components relevant to application.
- Planning, processes and techniques
- Characteristics of materials and uses of products produced.
- Workplace guidelines regarding acceptable Australian Standards tolerance levels.
- Workplace safety policies and procedures
- Procedures for reporting equipment faults and material defects.

Underpinning Skills

These include a number of processes that are learnt throughout work and life, which are required in most jobs. Some of these are covered by the national key competencies, although others may be added. The questions below highlight how these processes are applied in this competency unit. The number in brackets indicates the level to which the key competency needs to be demonstrated where (1) is where work is within set conditions and process, (2) is where the management or facilitation of conditions or process is exercised, and (3) is where the design and/or development of conditions or process is required.

How will the candidate apply the following key competency in this unit?

The candidate will need to:

Collect, Analyse and Organise Information

Collect, organise and understand information related to

- Testing electronic body management systems
- Service/repair of electronic body management systems

work orders, plans and safety procedures

(Level 2)

Communicate Ideas and Information

Communicate ideas and information to enable confirmation of work requirements and specifications, co-ordination of work with site supervisor, other workers and customers, and the reporting of work outcomes and problems.

(Level 2)

EVIDENCE GUIDE

Underpinning Skills (continued)

Plan and Organise Activities

Plan and organise activities including the preparation and layout of the worksite and the obtaining of equipment and materials to avoid any back tracking, workflow interruptions or wastage.

(Level 2)

Work with Others and in a Team

Work with others and in a team by recognising dependencies and using co-operative approaches to optimise workflow and productivity.

(Level 1)

Use Mathematical Ideas and Techniques

Use mathematical ideas and techniques to correctly complete measurements and estimate material requirements required for the work.

(Level 2)

Solve Problems

Use pre-checking and inspection techniques to anticipate planning and cleaning problems, avoid re working and avoid wastage. .

(Level 2)

Use Technology

Use the workplace technology related to

- Accessing, interpreting and applying technical information
- Safely and correctly use tools and equipment
- Service/repair, adjust and/or replace systems/components as necessary
- Application of testing , inspection and evaluation of body management system/components

including tools and equipment.

(Level 2)

EVIDENCE GUIDE

Resource Implications	<ul style="list-style-type: none">• Access to manufacturer specifications, enterprise operating procedures, customer requirements, Industry/workplace codes of practice, statutory legislation (including ADRs) as identified in the Range Statement, standard operating procedures.
Method of Assessment	<ul style="list-style-type: none">• Assessment methods must confirm consistency of performance over time and in a range of workplace relevant contexts.• Assessment should be by direct observation of tasks and questioning on underpinning knowledge.• Assessment should be conducted over time and may be in conjunction with assessment of other units of competency
Context/s of Assessment	<ul style="list-style-type: none">• Assessment may occur on the job or in a workplace simulated facility with relevant process equipment, materials, work instructions and deadlines.

AUR21471A**SERVICE AND REPAIR ELECTRONICALLY CONTROLLED ANTI-LOCK BRAKING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out service/repairs to electric/electronic anti-lock brake systems/components in accordance with manufacturer specifications. This standard applies to the electrical/electronic components and control of anti-lock braking systems fitted to light vehicles and/or heavy vehicles and/or motorcycles. The hydraulic system/components of ABS systems are addressed in:

AUR10170A Service braking systems

AUR10166A Repair braking systems

AUR10145A Overhaul braking systems

PRE-REQUISITES: AUR18708A Carry out minor repairs to electrical systems/components

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR21471A.1 Service/repair anti-lock braking systems.	<p>AUR21471A.1.1 Service/repair is completed without causing damage to any component or system.</p> <p>AUR21471A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR21471A.1.3 Tests on anti-lock braking systems are carried out to determine faults using appropriate tools and techniques.</p> <p>AUR21471A.1.4 Appropriate service/repair procedures are determined.</p> <p>AUR21471A.1.5 Service and repairs are carried out according to industry regulations/guidelines OH&S legislation and enterprise/procedures policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to electronic/electrical anti-locking braking systems/components fitted to light vehicles and/or heavy vehicles and/or motorcycles.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools
- multimeter
- vehicle lifting devices
- power tools
- special tools for removal/replacement
- brake dynamometer
- electronic testing equipment

Methods include:

- road testing, electrical testing
- visual, aural and functional assessments (including damage, corrosion, wear, electrical defects)
- fault codes analysis and electronic systems tests

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- identifying faults in electrical/electronic components of ABS systems
- servicing/repairing electrical/electronic components of ABS components
- ensuring ABS system meets manufacturer specification before returning to customer

Underpinning knowledge:

- OH&S legislation
- Testing procedures
- Equipment/material safety requirements
- The operating principles of ABS braking system
- Construction and operation of ABS systems/components relevant to application
- Servicing/repairing, cleaning and adjustment procedures
- The use of appropriate measuring tools, and equipment
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Testing and evaluation of faults in ABS braking systems
- Service/repair/replace anti-lock brake systems components

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	2
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR21831A**INSTALL MARINE ELECTRONIC SYSTEMS/COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out installation of marine electronic systems/components. Marine electrical systems include Global Positions Systems (GPS), depth sanders, fish finders, communications equipment and radar.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR21831A.1 Install marine electronic systems/components.	<p>AUR21831A.1.1 Marine electronic systems/components installation is completed without causing damage to any component or marine craft/system.</p> <p>AUR21831A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR21831A.1.3 Appropriate fittings/materials are selected.</p> <p>AUR21831A.1.4 Marine electronic systems/components are installed and wired up using appropriate tools and techniques.</p> <p>AUR21831A.1.5 Installation is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation for vehicle roadworthiness (including ADRs) and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- low voltage marine electronic system/components

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, testing equipment including multimeters
- power tools, air tools, special tools and equipment

Methods include:

- reading/interpreting wiring diagrams and technical specifications
- soldering
- crimping
- installing components and wiring

Methods should be applied under normal operating conditions.

Other variables may include:

Systems include:

- depth sounders
- communications equipment
- Global Positioning Systems (GPS)
- chart plotters

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation of marine electronic systems/components

Underpinning knowledge:

- OH&S legislation
- Interpretation of statutory legislation, technical materials, graphic symbols and diagrams
- Procedures for the installation of marine electronic systems/components
- Electrical/electronic principles associated with the installation of marine electronic systems/components
- Principles of interference suppression

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Perform electrical connections; crimping and soldering
- Installation of marine electronic system/components
- Select and use appropriate materials for the installation of marine electronic systems/components
- Test prior to placing in service

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	1

AUR22171A**SERVICE AND REPAIR AIR COMPRESSORS/COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out the service and repair of air compressors and associated components.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR22171A.1 Service and repair air compressor and associated components.	AUR22171A.1.1 Air compressor is serviced and repaired without causing damage to any component or system. AUR22171A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR22171A.1.3 Service/repairs are carried out using approved methods and equipment, according to specifications relative to the plant/system. AUR22171A.1.4 Service/repair operations are completed within established industry guidelines. AUR22171A.1.5 Appropriate workplace documentation is completed and dealt with relevant to service and repair outcomes. AUR22171A.1.6 All servicing/repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R mechanical streams

Sources of information/documents may include:

- plant manufacturer specifications
- company operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)
- material safety data sheets.

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, testing equipment, greasing equipment, air operated equipment, measuring equipment
- engine oils, gear oils, moving parts lubricants
- appropriate personal protection

Methods include:

- carrying out maintenance services as per requirements
- identification and addition of various lubricants/fluids
- conducting plant safety inspection as recommended by plant manufacturer/enterprise practices and specifications

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- carrying out servicing/maintenance procedures
- carrying out repair procedures
- carrying out safety inspection and report findings

Underpinning knowledge:

- Principles of operation of air compressors
- Construction and operation of air compressors relevant to application
- Correct lubricants and/or fluids
- Equipment safety requirements
- Plant safety requirements
- Testing procedures
- Repair procedures
- Service procedures
- Maintenance/inspection checklists
- Manual handling techniques
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information.
- Use relevant tools and equipment
- Maintain customer records
- Apply service/maintenance procedures
- Apply testing procedures
- Apply repair procedures
- Use maintenance/inspection checklists
- Apply manual handling techniques
- Apply personal safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR22631A**INSTALL AIR CONDITIONING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to install air conditioning systems.

PRE-REQUISITES: AUR22670A Service air conditioning systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR22631A.1 Install air conditioning systems.	<p>AUR22631A.1.1 Air conditioning system installation is completed without causing damage to any component or system.</p> <p>AUR22631A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR22631A.1.3 Appropriate fittings/materials are selected.</p> <p>AUR22631A.1.4 Air conditioning systems are installed using appropriate tools and techniques.</p> <p>AUR22631A.1.5 Installation is tested prior to placing in service and results are recorded in accordance with enterprise policies and procedures.</p> <p>AUR22631A.1.6 Installation is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR22631A.2 De-gas and re-gas air conditioning systems.	<p>AUR22631A.2.1 De-gas and re-gas air conditioning system is completed without causing damage to any component or system.</p> <p>AUR22631A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications, industry codes of practice and relevant legislation.</p> <p>AUR22631A.2.3 System is de-gassed using approved recovery unit.</p> <p>AUR22631A.2.4 System is evacuated in accordance with manufacturer specifications and industry codes of practice.</p> <p>AUR22631A.2.5 System is re-gassed/performance tested using approved methods and equipment.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR22631A.2 continued De-gas and re-gas air conditioning systems.	AUR22631A.2.6 De-gassing and re-gassing are carried out according to manufacturer specifications, industry regulations/guidelines, OH&S legislation, relevant legislation and enterprise policies/procedures.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- air conditioning systems fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or marine (low voltage)

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry codes of practice
- Statutory legislation
- Statutory legislation for vehicle road worthiness (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, refrigerant leak detecting equipment, evacuation equipment, refrigerant recovery and/or recycling equipment, thermometers, refrigerant re-gassing equipment, refrigerant, refrigerant oils, air-conditioning system kits
- ram air fan

Methods include:

- refrigerant leak detecting
- refrigerant re-gassing and de-gassing
- system evacuation
- installation of air conditioning systems
- system testing
- performance testing

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation of air conditioning systems

Underpinning knowledge:

- OH&S legislation
- Industry codes of practice
- Statutory legislation where applicable
- Air conditioning installation procedures
- Construction and operation relevant to application
- Leakage test procedures
- System electrical circuits
- Equipment/material safety requirements
- Equipment maintenance procedures
- Appropriate refrigerant/oils and capacities

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Maintain customer and enterprise records
- Install air conditioning systems
- Perform de-gas, re-gas, evacuation, operations according to industry codes of practice and statutory legislation
- Test installed system for leaks
- Performance test air conditioning systems

Key Competencies:	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Solve problems	1
Use technology	1

AUR22645A**OVERHAUL AIR CONDITIONING SYSTEM
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to overhaul air conditioning system components.

PRE-REQUISITES: AUR22670A Service air conditioning systems
AUR22666A Repair/retrofit air conditioning systems

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR22645A.1 Overhaul air conditioning system components.	<p>AUR22645A.1.1 Air conditioning system overhaul is completed without causing damage to any component or system.</p> <p>AUR22645A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR22645A.1.3 Air conditioning system components are dismantled, reassembled and tested to manufacturer specifications.</p> <p>AUR22645A.1.4 Worn, damaged, deteriorated or faulty components are identified and replaced/repaired.</p> <p>AUR22645A.1.5 System components are tested prior to placing into service and results are recorded in accordance with enterprise policies and procedures.</p> <p>AUR22645A.1.6 Air conditioning system components are overhauled according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- air conditioning components fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation for vehicle road worthiness (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, cleaning equipment, refrigeration oils, spare parts, pressure testing equipment, sealing equipment
- evacuation equipment, heating/soldering equipment, refrigerant recovery and/or recycling equipment, refrigerant re-gassing equipment, refrigerant

Methods include:

- dismantling and reassemble
- cleaning components
- testing
- fault finding with aural, visual and functional assessments (including damage, corrosion, wear, refrigeration leakage)
- reading and interpreting manufacturer information

Methods should be applied under normal operating conditions.

Specific requirements:

- Compressors
- Evaporators
- Condensers

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- overhauling air conditioning components

Underpinning knowledge:

- OH&S legislation
- Relevant technical information
- Personal safety requirements
- Equipment/component/material safety requirements
- Measuring and testing procedures
- Identification of air conditioning components/types
- Air conditioning component operation
- Component repair/overhauling procedures

Practical assessments:

- Work safely
- Safely and correctly use tools and equipment
- Use appropriate workshop manuals, technical publications, tools and equipment
- Identify faults in air conditioning components
- Clean, test, inspect and evaluate air conditioning components
- Dismantle and reassemble air conditioning components
- Repair and replace components as required
- Test final product for return to service

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Solve problems	1
Use technology	1

AUR22666A**REPAIR/RETROFIT AIR CONDITIONING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to repair and retrofit automotive air conditioner systems.

PRE-REQUISITES: AUR22670A Servicing air conditioning units

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR22666A.1 De-gas and re-gas air conditioner systems.	AUR22666A.1.1 De-gas and re-gas air conditioner system is completed without causing damage to any component or system. AUR22666A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications AUR22666A.1.3 System is de-gassed using approved recovery unit. AUR22666A.1.4 System is evacuated in accordance with manufacturer specifications and industry codes of practice. AUR22666A.1.5 System is re-gassed/performance tested using approved methods and equipment. AUR22666A.1.6 De-gassing and re-gassing are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR22666A.2 Repair/retrofit air conditioning systems.	AUR22666A.2.1 Repair/retrofit air conditioning system is completed without causing damage to any component or system. AUR22666A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR22666A.2.3 Appropriate air conditioning repair/retrofit procedures are determined after performance testing. AUR22666A.2.4 Repair/retrofit and or replacement of the system and components are carried out in accordance with vehicle/manufacturer specifications. AUR22666A.2.5 Repair/retrofit is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR22666A.2 continued Repair/retrofit air conditioning systems.	AUR22666A.2.6 System is tested prior to placing into service and results are recorded according to enterprise policies and procedures.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- automotive air conditioners fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or marine

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, refrigerant leak detecting equipment, evacuation equipment, refrigerant recovery and/or recycling equipment, thermometers, refrigerant re-gassing equipment, refrigerant, refrigerant oils.
- air conditioning spare parts as required
- ram air fan

Methods include:

- refrigerant leak detecting
- refrigerant re-gassing and de-gassing
- system evacuation
- mechanical removal and replacement of components
- system/component testing
- performance testing

Methods should be applied under normal operating conditions.

Other variables may include:

- climate control systems

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repair and retrofitting air conditioning systems

Underpinning knowledge:

- OH&S legislation
- Refrigerant types and application
- Industry/Workplace codes of practice
- Statutory legislation where applicable
- Construction and operation of systems relevant to application
- System electrical circuits
- Equipment/material safety requirements
- Equipment maintenance procedures
- Appropriate refrigerant/oils and capacities
- Repair/retrofitting procedures

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Maintain customer and enterprise records
- Perform de-gas, re-gas, evacuation, retrofit and repair operations according to industry codes of practice and statutory legislation

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Solve problems	2
Use technology	2

AUR22670A**SERVICE AIR CONDITIONING SYSTEMS**

UNIT DESCRIPTOR: This unit identifies the competence required to service automotive air conditioner systems and record operating condition.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR22670A.1 Service air conditioning systems.	<p>AUR22670A.1.1 Air conditioning system service is completed without causing damage to any component or system.</p> <p>AUR22670A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR22670A.1.3 System is performance tested and the appropriate air conditioning service procedures are determined.</p> <p>AUR22670A.1.4 Service of the system and components are carried out in accordance with vehicle/system manufacturer specifications.</p> <p>AUR22670A.1.5 Servicing is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p> <p>AUR22670A.1.6 System is tested and results are recorded in accordance with enterprise policies and procedures.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- automotive air conditioners fitted to light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or marine

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry/workplace codes of practice
- Statutory legislation
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, refrigerant leak detecting equipment, thermometers, evacuation equipment, refrigerant recovery and/or recycling equipment, refrigerant re-gassing equipment, refrigerant, refrigerant oils

Methods include:

- adjustment
- refrigerant leak detecting
- performance testing

Methods should be applied under normal operating conditions.

Other variables may include:

- climate control systems

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- servicing automotive air conditioners and recording operating procedures

Underpinning knowledge:

- OH&S legislation
- Safe handling of refrigerants
- Industry/Workplace codes of practice
- Statutory legislation where applicable
- Principles of operation (basic refrigeration cycle)
- Equipment/material safety requirements
- Equipment maintenance procedures

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Maintain customer and enterprise records
- Perform service operations according to industry codes of practice and statutory legislation
- Performance test air conditioning systems

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Solve problems	2
Use technology	2

AUR23131A**INSTALL REFRIGERATION SYSTEMS/
COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to install refrigeration systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR23131A.1 Install refrigeration systems.	AUR23131A.1.1 Refrigeration system installation is completed without causing damage to any component or system. AUR23131A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR23131A.1.3 Appropriate fittings/materials are selected. AUR23131A.1.4 Refrigeration systems/components are installed using appropriate tools and techniques. AUR23131A.1.5 Installation is tested prior to placing in service and results are recorded in accordance with enterprise policies and procedures. AUR23131A.1.6 Installation is carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR23131A.2 De-gas and re-gas refrigeration systems.	AUR23131A.2.1 De-gas and re-gas is completed without causing damage to any component or system. AUR23131A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications, industry codes of practice and relevant legislation. AUR23131A.2.3 System de-gassed using approved recovery unit. AUR23131A.2.4 System is evacuated in accordance with manufacturer specifications and industry codes of practice. AUR23131A.2.5 De-gassing and re-gassing are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- refrigeration systems fitted in low voltage applications in light vehicles and/or plant and equipment and/or heavy commercial vehicles and/or marine applications.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- customer requirements
- Statutory legislation including environmental legislation
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, refrigerant leak detecting equipment, evacuation equipment, refrigerant recovery and/or recycling equipment, thermometers, refrigerant re-gassing equipment, refrigerant, refrigerant oils
- refrigeration spare parts as required

Methods include:

- refrigerant leak detecting
- refrigerant re-gassing and de-gassing
- system evacuation
- installation of refrigeration systems
- system/component testing
- performance testing

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- installation of refrigeration systems
- de-gassing and re-gassing refrigeration systems

Underpinning knowledge:

- OH&S legislation
- Safe handling of refrigerants
- Industry codes of practice
- Statutory legislation where applicable
- Refrigeration system operating principles
- Construction and operation of refrigeration systems relevant to application
- Refrigeration installation procedures
- System electrical circuits
- Equipment/material safety requirements
- Equipment maintenance procedures
- Appropriate refrigerant/oils and capacities

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Maintain customer and enterprise records
- Install refrigeration systems
- Perform de-gas, re-gas, evacuation, operations according to industry codes of practice and statutory legislation
- Performance test refrigeration systems

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	1

AUR23808A**CARRY OUT SOLDERING TECHNIQUES**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out soft soldering processes including the preparation of materials and equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR23808A.1 Prepare components, tools and equipment for soft soldering.	AUR23808A.1.1 Preparing components, tools and equipment for soft soldering is completed without causing damage to any vehicle or component. AUR23808A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR23808A.1.3 Materials/components to be joined are cleaned and appropriate flux added. AUR23808A.1.4 Soldering equipment is prepared/cleaned and heated in readiness for soldering. AUR23808A.1.5 All preparation activities are carried out according to a standard that meets industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR23808A.2 Carry out soft soldering of components/materials.	AUR23808A.2.1 Soft soldering is completed without causing damage to any vehicle or component. AUR23808A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR23808A.2.3 Soldering joint is tested prior to placing into service. AUR23808A.2.4 Soldering activities are carried out according to a standard that meets industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to:

- RS&R streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- Industry/Workplace Codes of Practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, soldering equipment, various fluxes, different types of soft solder
- power tools, gas
- soldering equipment including electric and flame heated irons, gas fired torches

Methods include:

- cleaning components
- heating and/or soldering

Methods should be applied under normal operating conditions.

Specific requirements:

- Soft soldering of various types of material
- Soft soldering of various thickness of material

Other variables may include:

- electronic circuit repairs

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- soft soldering materials

Underpinning knowledge:

- OH&S legislation
- Soldering procedures
- Fluxes and their application
- Soft solders and their application
- Types of material that can be soldered
- Personal safety requirements
- Equipment safety requirements

Practical assessments:

- Access, interpret and apply technical information including statutory regulations
- Safely and correctly use tools and equipment
- Use fluxes correctly
- Solder various materials

Key Competencies:

	Level
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR23908A**CARRY OUT THERMO PLASTIC REPAIR PROCEDURES**

UNIT DESCRIPTOR: This unit identifies the competence required to perform repairs applying thermo plastic welding and bonding process.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR23908A.1 Determine and carry out repair procedures.	<p>AUR23908A.1.1 Determine and carry out repair procedures are completed without causing damage to any equipment or machinery.</p> <p>AUR23908A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR23908A.1.3 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR23908A.2 Test repaired component(s).	<p>AUR23908A.2.1 Testing of repaired component(s) is completed without causing damage to any component or system.</p> <p>AUR23908A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR23908A.2.3 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to:

- RS&R streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- company operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- triad hot air welding gun or similar equipment and attachments for relevant repairs
- various clamps, holding jigs, relevant special equipment.
- air compressor, lines, air guns
- safety ventilation equipment
- drills, drill bits, bolts, nuts and washers, hand tools, power tools

Methods include:

- manual or machine operation

Methods should be applied under normal operating conditions.

Specific requirements:

- Vinyl flooring, accessories (mirrors, vents, etc) grills, bumpers, emblems, names etc.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle protection methods
- thermo plastic welding procedures

Underpinning knowledge:

- Types and application of cleaning agents
- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Relevant thermo plastic welding procedures
- Personal safety requirements
- Manual handling techniques
- Relevant testing methods
- Environmental requirements for the disposal of substances
- Removal and replacement procedures
- Bonding procedures

Practical assessments:

- Access, interpret and apply technical information.
- Use relevant tools/equipment
- Remove and replace components from vehicle
- Apply thermo plastic welding procedures
- Apply manual handling techniques
- Apply personal safety requirements
- Use relevant testing methods
- Apply bonding procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Solve problems	1
Use technology	1

AUR24623A**FABRICATE COMPONENTS/EQUIPMENT**

UNIT DESCRIPTOR: This unit identifies the competence required to measure, markout and fabricate components/equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR24623A.1 Fabricate components and equipment.	<p>AUR24623A.1.1 Fabrication is completed without causing damage to any component or system.</p> <p>AUR24623A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR24623A.1.3 Suitable materials are selected and components/equipment fabricated to specific requirements.</p> <p>AUR24623A.1.4 Production objectives and timelines established.</p> <p>AUR24623A.1.5 Production plans drafted noting key quality characteristics, check points and activities where other personnel will be involved.</p> <p>AUR24623A.1.6 Procedures for set up are followed in accordance with production plan, customer requirements and specifications.</p> <p>AUR24623A.1.7 Tools, equipment and materials are located on site and confirmed for commencement of production in accordance with enterprise established procedures.</p>
AUR24623A.2 Follow production process.	<p>AUR24623A.2.1 Follow work plan to commence production.</p> <p>AUR24623A.2.2 Check production for conformity to specification.</p>
AUR24623A.3 Monitor production process and outputs.	<p>AUR24623A.3.1 Monitor key characteristics to ensure conformity is to specification during production process.</p> <p>AUR24623A.3.2 Product finish is compared with competitive products and market information.</p> <p>AUR24623A.3.3 Recommendations for improvement discussed and solutions determined with appropriate personnel.</p> <p>AUR24623A.3.4 Equipment tagged and stored correctly and safely for future use.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR24623A.3 (continued) Monitor production process and outputs.	AUR24623A.3.5 All fabrication operations are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- fabrication of components/equipment

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, welding equipment including oxy, arc, MIG, TIG, soldering equipment, spot welding equipment, cutting equipment, measuring equipment, marking out equipment and lifting equipment
- ventilation equipment
- fibreglass, acrylic and plastic equipment

Methods include:

- welding, heating, soldering, measuring, mechanical fastening, cutting, shaping, bonding, gluing, marking out, assembling

Methods should be applied under normal operating conditions.

Other variables may include:

- wood, fibreglass, acrylic and plastic, metal, viscous, composites, fabrics

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of :

- interpreting and communicating operational information
- identifying materials
- following fabrication procedures
- marking out and cutting materials
- assembling material.

Underpinning knowledge:

- Industry Code of Practice
- Equipment safety requirements
- Statutory legislation where applicable
- Types of materials and their application
- Fabrication procedures
- Marking out and cutting procedures
- Methods of fastening/gluing/bonding
- Relevant technical information
- Vehicle safety requirements
- Relevant manufacturer/company policies
- Material safety requirements
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Use relevant methods of marking out and cutting
- Use relevant methods of assembling project
- Fabricate components and equipment
- Monitor production process
- Evaluate finished product against consumer/customer requirements

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	2

AUR24708A**CARRY OUT WOODWORKING OPERATIONS FOR FABRICATION**

UNIT DESCRIPTOR: This unit identifies the competence required to fabricate components, plugs or moulds using wood material/templates

PRE-REQUISITES: AUR25156A Read and interpret engineering drawings
AUR25678A Use and maintain measuring equipment

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR24708A.1 Determine items to be fabricated.	<p>AUR24708A.1.1 Items for fabrication are determined without causing damage to any equipment or machinery.</p> <p>AUR24708A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR24708A.1.3 Items are identified for fabrication.</p> <p>AUR24708A.1.4 Methods and applications are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR24708A.2 Fabricate in wood material to determine requirements.	<p>AUR24708A.2.1 Fabrication in wood material to determine requirements is achieved without causing damage to any equipment or machinery.</p> <p>AUR24708A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR24708A.2.3 Materials are selected and prepared for fabrication.</p> <p>AUR24708A.2.4 Fabrication procedures are carried out following enterprise policies and procedures within established enterprise guidelines.</p> <p>AUR24708A.2.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R body stream

Sources of information/documents may include:

- vehicle manufacturer specifications
- company operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special equipment including all relevant woodworking tools and equipment, jigs, measuring equipment, adhesives, templates

Methods include:

- manual, machine operation, measuring, interpreting of drawings, relevant fabrication procedures, gluing, screwing, nailing etc.

Methods should be applied under normal operating conditions.

Specific requirements:

- Specific wood material to suit component being fabricated, glue, screws, nails and other relevant fasteners.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- completion of fabrication of materials has been completed without damage to components, tools, equipment and personnel
- fabricated component in accordance with template
- suitability of finished product for intended use
- assessing this unit after competency has been demonstrated in unit AUR25156A Read and interpret engineering drawings and AUR25678A Use and maintain measuring equipment

Underpinning knowledge:

- Relevant technical information
- Material safety requirements
- Equipment safety requirements
- Vehicle safety requirements
- Personal safety requirements
- Relevant fabrication procedures
- Measuring procedures
- Performance of different adhesives in use

Practical assessments:

- Access, interpret and apply technical information.
- Use relevant tools and equipment
- Apply relevant fabrication procedures
- Apply relevant equipment safety procedures
- Apply relevant personal safety procedures
- Use relevant vehicle safety procedures.

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	1

AUR24766A**REPAIR PLUGS, MOULDS, FRAMES AND FLOORING USING WOOD MATERIALS**

UNIT DESCRIPTOR: This unit identifies the competence required to repair plugs, moulds, frames and flooring on vehicle bodies using wood materials.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR24766A.1 Determine and carry out repair procedures.	<p>AUR24766A.1.1 Determine and carry out repair procedures are completed without causing damage to any equipment or machinery.</p> <p>AUR24766A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR24766A.1.3 Method of repair identified.</p> <p>AUR24766A.1.4 Area for repair prepared and materials selected.</p> <p>AUR24766A.1.5 Repair procedures are carried out within established industry guidelines.</p> <p>AUR24766A.1.6 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Vehicle Body Stream

Sources of information/documents may include:

- vehicle manufacturer specifications
- product manufacturer specifications
- enterprise operating procedures
- industry codes of practice
- customer requirements
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special equipment including all relevant wood working tools and equipment, jigs, measuring equipment, fastening equipment, paints, scalers, brushes, spraying equipment, adhesives

Methods include:

- manual, machine operating, measuring, interpreting of drawings, relevant repair procedures, gluing, screwing, nailing

Methods should be applied under normal operating conditions.

Specific requirements:

- Specific wood material to suit repairs required, glues, screws, nails and other relevant fasteners

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing plugs, moulds, frames and flooring using wood materials without damage to components, tools, equipment and personnel
- successful completion of repair procedure following enterprise guidelines

Underpinning knowledge:

- Cleaning agents
- Relevant technical information
- Material safety requirements
- Equipment safety requirements
- Vehicle safety requirements
- Personal safety requirements
- Types of materials and their application including adhesives
- Measuring procedures
- Repair procedures

Practical assessments:

- Access, interpret and apply technical information.
- Use relevant tools and equipment
- Apply repair procedures
- Apply equipment safety procedures
- Apply personal safety procedures
- Use vehicle safety procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Solve problems	1

AUR24823A**FABRICATE FIBREGLASS/COMPOSITE MATERIAL COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to fabricate components for use in vehicle bodies using fibreglass/composite materials.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR24823A. Determine items/component to be fabricated.	<p>AUR24823A.1.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR24823A.1.2 Items to be fabricated are identified.</p> <p>AUR24823A.1.3 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR24823A.2 Fabricate item/component to determined requirements.	<p>AUR24823A.2.1 Item/component is fabricated without causing damage to any equipment or machinery.</p> <p>AUR24823A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR24823A.2.3 Method of fabrication is identified.</p> <p>AUR24823A.2.4 Equipment, tools and materials are prepared for use.</p> <p>AUR24823A.2.5 Fabrication procedures are carried out following enterprise procedures.</p> <p>AUR24823A.2.6 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R body stream

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)
- material safety data sheets

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, specialist tools for fibreglass work, fibreglass materials and mixers, moulds, jigs, measuring equipment

Methods include:

- hand and machine operations

Methods should be applied under normal operating conditions.

Specific requirements:

- Body components to be fabricated

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- component fabrication without damage to tools, equipment and personnel
- components fabrication following enterprise procedures

Underpinning knowledge:

- Measuring procedures
- Relevant technical information
- Equipment safety requirements
- Material safety requirements
- Types of composite materials (including fibreglass)
- Fabrication processes
- Vehicle safety requirements
- Manufacturer/enterprise policies
- Personal safety requirements
- Manual handling techniques
- Relevant environmental requirements

Practical assessments:

- Access, interpret apply technical information.
- Apply relevant fibreglass procedures
- Use relevant tools and equipment
- Perform personal safety requirements
- Apply manual handling techniques
- Apply relevant environmental requirements

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	2
Solve problems	1

AUR24866A**REPAIR FIBREGLASS/COMPOSITE MATERIAL COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to repair components on vehicle bodies using fibreglass/composite materials.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR24866A.1 Determine and carry out repair procedures.	AUR24866A.1.1 Determine and carry out repair procedures are completed without causing damage to any equipment or machinery. AUR24866A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR24866A.1.3 Items to be repaired are identified. AUR24866A.1.4 Methods of repair are identified. AUR24866A.1.5 Area of repair is prepared for use. AUR24866A.1.6 Equipment, tools and materials are prepared for use. AUR24866A.1.7 Repair procedures are carried out following enterprise procedures. AUR24866A.1.8 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R vehicle body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry codes of practice
- Statutory legislation (including ADRs)
- material safety data sheets.

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, specialist tools for fibreglass work, fibreglass materials and mixers, moulds, jigs, measuring equipment.

Methods include:

- hand and machine operations

Methods should be applied under normal operating conditions.

Specific requirements:

- Relevant items/components to be repaired

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repair procedures carried out without damage to tools, equipment and personnel
- repair procedures successfully completed following enterprise procedures

Underpinning knowledge:

- Measuring procedures
- Relevant technical information
- Material safety requirements
- Types of composite materials (including fibreglass) and their application
- Repair procedures
- Equipment safety requirements
- Vehicle safety requirements
- Personal safety requirements
- Relevant environmental requirements
- Relevant manufacturer/company policies
- Manual handling techniques

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Apply fibreglass procedures
- Maintain customer records
- Perform personal safety requirements
- Apply manual handling techniques
- Apply relevant environmental requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Solve problems	1
Use Technology	1

AUR25149A**PREPARE ENGINEERING DRAWINGS**

UNIT DESCRIPTOR: This unit identifies the competence required to prepare engineering drawings applicable to the Vehicle Body stream for their use in fabrication and repair of body components.

PRE-REQUISITES: AUR25156A Read and interpret engineering drawings

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR25149A.1 Prepare engineering drawing.	<p>AUR25149A.1.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR25149A.1.2 Drawing equipment is selected to match the complexity of the requirement.</p> <p>AUR25149A.1.3 Engineering drawings are completed to the requirements of the enterprise.</p> <p>AUR25149A.1.4 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&S Vehicle Body streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- engineering drawing ISO practices

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- all relevant tools and equipment used in conjunction with engineering drawing, eg. computers, drawing boards, drawing machines, rulers, T squares, measuring equipment, pens, pencils

Methods include:

- hand and machine drawing
- computer and machine drawing

Methods should be applied under normal operating conditions.

Specific requirements:

- Computer programs, drawing paper, drawing implements

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- preparation of engineering drawings to comply with enterprise requirements

Underpinning knowledge:

- Measuring and testing procedures
- Relevant technical information
- Equipment safety requirements
- Interpreting engineering drawings
- ISO standards
- Personal safety requirements
- Engineering drawing procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant equipment
- Prepare engineering drawings to the requirement of the workplace

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	2
Solve problems	2
Use technology	2

AUR25156A**READ AND INTERPRET ENGINEERING DRAWINGS**

UNIT DESCRIPTOR: This unit identifies the competence required to read and interpret engineering drawings.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR25156A.1 Read and interpret engineering drawings.	<p>AUR25156A.1.1 Symbols, codes, legends and diagrammatic representations are correctly recognised.</p> <p>AUR25156A.1.2 Product/system/component/item represented is correctly identified.</p> <p>AUR25156A.1.3 Information represented is correctly understood.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- reading and interpreting of engineering drawings

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- relevant tools and equipment
- engineering drawings
- drawing boards, rulers, T-squares, measuring equipment, pens, pencils etc.

Methods include:

- reading and interpreting engineering drawing details

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- reading engineering drawings
- interpreting engineering drawings

Underpinning knowledge:

- Measuring procedures
- Interpreting engineering drawings
- Reading engineering drawings
- Industry engineering drawing standards
- Product manufacturer engineering drawing standards and practices
- Enterprise policies and procedures regarding engineering drawings

Practical assessments:

- Access, interpret and apply technical information
- Apply engineering drawing standards and practices
- Correctly determine technical information represented in engineering drawing

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	1
Solve problems	1

AUR25678A**USE AND MAINTAIN MEASURING EQUIPMENT**

UNIT DESCRIPTOR: This unit identifies the competence required to measure equipment, components or sections using non-specialist equipment and maintain the measuring equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR25678A.1 Measure dimensions or variables using appropriate equipment.	<p>AUR25678A.1.1 Measuring of dimensions and variables are completed without causing damage to any equipment or components.</p> <p>AUR25678A.1.2 Appropriate measuring equipment is selected.</p> <p>AUR25678A.1.3 Relevant measuring techniques are used and results appropriately recorded.</p> <p>AUR25678A.1.4 All measuring activities are carried out according to industry regulations/guidelines OH&S legislation, statutory legislation and enterprise/procedures policies.</p>
AUR25678A.2 Maintain measuring equipment.	<p>AUR25678A.2.1 Maintenance of measuring equipment is achieved without causing damage to any equipment or component.</p> <p>AUR25678A.2.2 Routine care and storage of measuring equipment is undertaken to manufacturer specifications.</p> <p>AUR25678A.2.3 Check and make routine adjustment to measuring devices including zeroing prior to use.</p> <p>AUR25678A.2.4 All maintenance activities are carried out according to industry regulations/guidelines OH&S legislation, statutory legislation and enterprise/procedures policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Mechanical and Vehicle Body streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- customer requirements
- industry codes of practice including Australian Standards (AS4182 – 1994)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, measuring equipment (including: inside/outside micrometers, vernier calipers, dial gauges, depth gauges, steel rulers, T-squares, flat edges, calipers, dividers and protractors)

Methods include:

- measurement of length, squareness, flatness, angles, roundness, depth, clearances or any measurements that can be taken from analogue or digital devices
- routine adjustment of measuring equipment

Methods should be applied under normal operating conditions.

Specific requirements:

- imperial and metric measurement

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- measuring components or section and maintaining measuring equipment

Underpinning knowledge:

- Personal and equipment safety requirements
- Measuring equipment types and their application
- Measuring procedures
- Measuring equipment graduation
- Measuring equipment maintenance procedures

Practical assessments:

- Access, interpret and apply technical information
- Safely and correctly use tools and equipment
- Maintain measuring equipment
- Use measuring equipment specified under Resources to measure components or sections

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Use technology	1

AUR26108A**CARRY OUT PRE-REPAIR OPERATIONS**

UNIT DESCRIPTOR: This unit identifies the competence required to clean components by mechanical or chemical means and remove components in preparation for either storage or repair.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26108A.1 Clean components prior to repairs and/or storage.	AUR26108A.1.1 Cleaning of components is achieved without causing damage to any component or system. AUR26108A.1.2 Cleaning agents are used according to cleaning agent manufacturer instructions. AUR26108A.1.3 Components of the vehicle are cleaned to facilitate inspection, assessment, replacement, repair and/or storage. AUR26108A.1.4 Used cleaning agents and waste materials are safely disposed of according to statutory and enterprise requirements. AUR26108A.1.5 Cleaning activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR26108A.2 Remove, tag and store components.	AUR26108A.2.1 Components are removed, tagged and stored without causing damage to any component or system. AUR26108A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR26108A.2.3 Components are removed, tagged and stored in accordance with manufacturer specifications and enterprise procedures, to prevent injury to self and others/damage to components. AUR26108A.2.4 Removal and storage activities are carried out according to industry regulations/ guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies. AUR26108A.2.5 Report on additional parts required to complete the repair (not listed on quotation) is completed in accordance with enterprise policy.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle/manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- repair quotations
- product manufacturer specifications
- material safety data sheets
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools and equipment, appropriate personal and vehicle protection
- cleaning agents/sprays (dewaxing, detergents, degreasers, special purpose agents)
- storage tabs and racks
- special equipment (pressure washers, steam cleaners, spray equipment)
- power tools, jacks, stands, lifting equipment

Methods include:

- manual washing, machine-assisted washing, the use of protective coverings
- dismantling

Methods should be applied under normal operating conditions.

Specific requirements:

- Vehicle underbody, vehicle paintwork, glass, brightwork, plastics, rubber engine components, trim, brake system components, wiring looms, vehicle electrics (special attention should be paid to the safe disconnection of electrical components and the storage), suspension and final drive components

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle protection methods
- removal, storage and cleaning of component parts of a vehicle

Underpinning knowledge:

- OH&S regulations
- Personal safety protection procedures
- Manual handling techniques
- Equipment safety requirements
- Vehicle safety requirements
- Use and handling of cleaning agents
- Relevant technical information
- Removal and storage procedures
- Component tagging methods

Practical assessments:

- Access, and apply safety and technical information
- Apply correct manual handling techniques
- Apply personal safety requirements
- Use relevant tools and equipment
- Remove and replace components
- Clean components using the appropriate agent
- Tag removed components when necessary
- Safely store removed components

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	2
Use technology	2

AUR26266A**REPAIR BODY PANELS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out panel beating, split repairs, heat shrinking, metal finishing and body filler repair procedures to repair body panels.

PRE-REQUISITES: AUR23708A Carry out welding, thermal cutting and heating procedures

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26266A.1 Carry out panel beating and panel split repairs.	AUR26266A.1.1 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR26266A.1.2 Protective clothing and equipment appropriate to the repair activities are used. AUR26266A.1.3 Components are repaired using approved methods and equipment in accordance with manufacturer specification. AUR26266A.1.4 Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, appropriate authorised assistance is sought where required. AUR26266A.1.5 Repairs are carried out to pre-paint condition. AUR26266A.1.6 Repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR26266A.2 Carry out heat shrinking operations.	AUR26266A.2.1 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR26266A.2.2 Protective clothing and equipment appropriate to the repair activities are used. AUR26266A.2.3 Components are repaired using approved methods and equipment in accordance with manufacturer specification. AUR26266A.2.4 Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, appropriate authorised assistance is sought where required. AUR26266A.2.5 Repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26266A.3 Carry out metal finishing.	AUR26266A.3.1 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR26266A.3.2 Protective clothing and equipment appropriate to the repair activities are used. AUR26266A.3.3 Components are repaired using approved methods and equipment in accordance with manufacturer specification. AUR26266A.3.4 Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, appropriate authorised assistance is sought where required. AUR26266A.3.5 Repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR26266A.4 Carry out repairs using body fillers.	AUR26266A.4.1 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR26266A.4.2 Protective clothing and equipment appropriate to the repair activities are used. AUR26266A.4.3 Components are repaired using approved methods and equipment in accordance with manufacturer specification. AUR26266A.4.4 Repairs are carried out to pre-paint condition. AUR26266A.4.5 Repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R body streams

Sources of information/documents may include:

- vehicle manufacturer specification
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- repair quotations
- product manufacturer specifications
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, and equipment
- templates, welding equipment, heat shrinking equipment
- appropriate personal and vehicle protection
- special tools and lifting equipment

Methods include:

- panel beating, heat shrinking, panel split repair, metal finishing, body filling
- file finish, hail repair, rust repair techniques, paintless dent repairs

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- panel beating repair procedures
- split-panel repair procedures
- heat shrinking procedures
- metal finishing procedures
- body-filler repair procedures
- vehicle protection methods

Underpinning knowledge:

- OH&S requirements/regulations
- Personal protection procedures
- Equipment safety requirements
- Vehicle safety requirements
- Relevant technical information
- Material types and stress limits
- Types of body filler and their application
- Panel beating and split repair methods
- Heat shrinking methods and procedures
- Metal finishing procedures
- Body filler repair procedures

Practical assessments:

- Access, interpret and apply technical information
- Apply personal safety requirements
- Use relevant tools and equipment
- Repair by heat shrinking
- Complete panel beating and split panel repairs
- Carry out a metal finishing
- Carry out body filler repairs

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Solve problems	2
Use technology	2

AUR26366A**REPAIR MINOR STRUCTURAL DAMAGE****UNIT DESCRIPTOR:**

This unit identifies the competence required to carry out minor structural repairs using re-forming, welded panel replacement and body panel manual measuring procedures.

Types of repairs include:

- radiator support panels and sections
- front skirt section
- door skins
- sill panels and section
- beaver panel replacement

PRE-REQUISITES:

AUR26266A Repair body panels

AUR23708A Carry out welding, thermal cutting and thermal heating procedures

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR26366A.1 Carry out minor structural re-forming procedures.</p>	<p>AUR26366A.1.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR26366A.1.2 Protective clothing and equipment appropriate to the repair activities are used.</p> <p>AUR26366A.1.3 Components are repaired using approved methods and equipment in accordance with manufacturer specification.</p> <p>AUR26366A.1.4 Where repair of components includes disturbance to electrical, mechanical, air conditioning systems or trim, appropriate authorised assistance is sought where required.</p> <p>AUR26366A.1.5 Repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
<p>AUR26366A.2 Carry out welded panel replacement procedures.</p>	<p>AUR26366A.2.1 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR26366A.2.2 Protective clothing and equipment appropriate to the repair activities are used.</p> <p>AUR26366A.2.3 Components are replaced using approved methods and equipment in accordance with manufacturer specification.</p> <p>AUR26366A.2.4 Where replacement of components includes disturbance to electrical, mechanical, air conditioning systems or trim, appropriate authorised assistance is sought where required.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26366A.2 (continued) Carry out welded panel replacement procedures.	AUR26366A.2.5 Replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR26366A.3 Carry out body panel manual measuring procedures.	AUR26366A.2.1 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR26366A.2.2 Protective clothing and equipment appropriate to the repair activities are used. AUR26366A.2.3 Components are measured using approved methods and equipment in accordance with manufacturer specification. AUR26366A.2.5 Measuring activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R body streams

Sources of information/documents may include:

- vehicle manufacturer specification
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- repair quotations
- compound/product manufacturer specifications
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, and equipment, including hydraulic push pull
- templates, welding equipment may include: arc, OXY, MIG and TIG
- measuring equipment/devices
- appropriate personal and vehicle protection
- special tools and equipment

Methods include:

- panel beating, heat shrinking, panel split repair, metal finishing, body filling
- hail repair, rust repair techniques, paintless dent repairs
- hydraulic re-forming, minor sectional repair, welded panel replacement, manual measuring

Methods should be applied under normal operating conditions.

Specific requirements:

- minor structural repair

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle protection procedures
- hydraulic re-forming procedures
- welded section replacement procedures
- body panel manual measuring procedures
- manual handling techniques

Underpinning knowledge:

- OH&S requirements/regulations
- Personal protection procedures
- Equipment safety requirements
- Vehicle safety requirements
- Relevant technical information
- Hydraulic re-forming procedures
- Body panel measuring procedures
- Panel replacement procedures
- Manual handling procedures

Practical assessments:

- Access, interpret and apply technical information
- Apply correct manual handling techniques
- Apply personal safety requirements
- Use relevant tools and equipment
- Apply hydraulic re-forming procedures
- Carry out manual measuring operations
- Carry out welded panel replacement
- Carry out minor structural repairs

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Solve problems	2
Use technology	2

AUR26367A**REPLACE MAJOR WELDED PANELS**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out major welded panel replacement.

Types of repairs include:

- quarter panels
- side panels (utes and vans)
- inner and outer hinge pillars
- centre pillars
- inner and outer rear wheel arches

PRE-REQUISITES: AUR23708A Carry out welding, cutting and heating procedures
AUR26266A Repair body panels
AUR26366A Carry out minor structural repairs

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26367A.1 Carry out major welded panel replacement.	AUR26367A.1.1 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR26367A.1.2 Protective clothing and equipment appropriate to the repair activities are used. AUR26367A.1.3 Components are replaced using approved methods and equipment in accordance with manufacturer specification. AUR26367A.1.4 Where replacement of components includes disturbance to electrical, mechanical, air conditioning systems or trim, appropriate authorised assistance is sought where required. AUR26367A.1.5 Repairs are carried out to pre-paint condition. AUR26367A.1.6 Replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R body streams

Sources of information/documents may include:

- vehicle manufacturer specification
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- repair quotations
- product manufacturer specifications
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, and equipment including hydraulic push pull
- heating and welding equipment may include: arc, oxy, MIG, TIG
- measuring equipment/devices
- appropriate personal and vehicle protection
- special tools and equipment

Methods include:

- panel beating, heat shrinking, panel split repair, metal finishing, body filling
- hail repair, rust repair techniques, paintless dent repairs
- hydraulic re-forming, minor sectional repair, welded panel replacement, manual measuring

Methods should be applied under normal operating conditions.

Specific requirements:

- major welded panel replacement

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- major welded panel replacement procedures
- manual handling techniques

Underpinning knowledge:

- OH&S requirements/regulations
- Personal protection procedures
- Equipment safety requirements
- Vehicle safety requirements
- Relevant technical information
- Major welded panel replacement procedures
- Manual handling procedures

Practical assessments:

- Access, interpret and apply technical information
- Apply correct manual handling techniques
- Apply personal safety requirements
- Use relevant tools and equipment
- Carry out major welded panel replacement procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Solve problems	2
Use technology	2

AUR26466A**REPAIR BODY COMPONENTS USING LEAD WIPING**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out lead wiping.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26466A.1 Re-instate body components by lead wiping, use of spray fillers.	<p>AUR26466A.1.1 Re-instate body components by lead wiping, using spray fillers is completed without causing damage to any component or system.</p> <p>AUR26466A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR26466A.1.3 Protective clothing and equipment appropriate to the repair activities are used.</p> <p>AUR26466A.1.4 Lead filling and spray fillers materials are prepared and applied to pre-cleaned and prepared area according to industry standards.</p> <p>AUR26466A.1.5 Repair are operations are completed within established industry guidelines.</p> <p>AUR26466A.1.6 Repairs carried out to pre-paint condition to acceptable industry standards using physical, visual and mechanical checks.</p> <p>AUR26466A.1.7 Waste materials are stored and/or disposed of in accordance with statutory and enterprise requirements.</p> <p>AUR26466A.1.8 Repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- repair quotations
- product manufacturer specifications
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power and air tools, heating equipment, templates

Methods include:

- body filling, aluminum filling, lead wiping, spray on materials

Methods should be applied under normal operating conditions.

Specific requirements:

- Lead filling

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- various repair methods using various filling materials
- vehicle protection methods
- relevant environmental procedures
- personal safety requirements

Underpinning knowledge:

- Material types (metals, plastics, fibreglass etc.)
- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Filling materials and procedures
- Waste product disposal procedures
- Personal safety requirements
- Material safety requirements
- Environmental protection requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Perform lead wiping operations
- Apply personal safety requirements
- Apply relevant environmental procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	1

AUR26508A**CARRY OUT VEHICLE BODY AND
UNDERFRAME ALIGNMENT**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out misalignment repair operations.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26508A.1 Rectify body and underframe misalignment.	<p>AUR26508A.1.1 Rectifying of body and underframe misalignment is completed without causing damage to any component or system.</p> <p>AUR26508A.1.2 Protective clothing and equipment appropriate to the repair activities are used.</p> <p>AUR26508A.1.3 Equipment selected for the assessment of alignment is appropriate to the vehicle manufacturer specification.</p> <p>AUR26508A.1.4 Equipment used for the assessment of alignment is prepared and adjusted in accordance with the equipment manufacturer specification.</p> <p>AUR26508A.1.5 The item to be aligned is prepared and, where appropriate, installed/located on the alignment equipment in accordance with the equipment manufacturer instructions.</p> <p>AUR26508A.1.6 Hydraulic repair equipment is prepared and attached using equipment manufacturer approved methods.</p> <p>AUR26508A.1.7 Hydraulic repair equipment is operated using approved methods and techniques.</p> <p>AUR26508A.1.8 The alignment of the item is reinstated to the manufacturer specification and tolerances.</p> <p>AUR26508A.1.9 Reinstatement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- repair quotations
- product manufacturer specifications
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, and equipment
- heating and welding equipment including: oxy, arc, MIG, TIG
- lifting and hydraulic push/pull equipment
- measuring system
- vehicle alignment bench including a range of clamping and anchoring procedures/methods

Methods include:

- heating, hydraulic re-forming, sectional repair including a range of joins eg. staggered and Traffic Authority approved methods
- visual, mechanical and physical examination
- measurements in conjunction with alignment equipment including identification of under-body damage, sway, sag and/or twist
- panel beating, welding, mechanical fastening, riveting, metal cutting
- removal and replacement of mechanical, suspension, steering transmissions etc.

Methods should be applied under normal operating conditions.

Specific requirements:

- In-situ panels, double panels, box panels, sill panels, chassis, frame, turrets, high stress steels and plastic body panels

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle and personal safety procedures
- equipment safety requirements
- alignment assessment and repair methods
- manual handling techniques

Underpinning knowledge:

- OH&S requirements/regulations
- Equipment/vehicle safety requirements
- Personal safety procedures
- Use of relevant tools and equipment including welding and heating equipment
- Relevant manufacturer specifications
- Relevant alignment methods/repair techniques and procedures
- Relevant removal and replacement procedures
- Manual handling techniques

Practical assessments:

- Access and apply safety and technical information
- Apply personal safety requirements
- Apply equipment/material safety procedures
- Apply manual handling techniques
- Use relevant tools and equipment
- Apply relevant alignment methods and procedures
- Apply relevant repair and straightening techniques
- Apply relevant removal and replacement procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	2
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR26608A**CARRY OUT VEHICLE MEASUREMENT**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out relevant operations to measure vehicle using specialised equipment.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26608A.1 Perform vehicle measuring.	<p>AUR26608A.1.1 Measurement of the vehicle is completed without causing damage to any component or system.</p> <p>AUR26608A.1.2 Protective clothing and equipment is appropriate to the activities are used.</p> <p>AUR26608A.1.3 Equipment selected for vehicle measuring is appropriate to the vehicle manufacturer specification.</p> <p>AUR26608A.1.4 Equipment used for vehicle measuring is prepared and adjusted in accordance with the equipment manufacturer specification.</p> <p>AUR26608A.1.5 The vehicle is prepared and, where appropriate, installed/located on the equipment in accordance with the equipment manufacturer instructions.</p> <p>AUR26608A.1.6 The nature and extent of misalignment is determined using approved measuring methods.</p> <p>AUR26608A.1.7 The results of measurements of vehicle alignment are recorded accurately and completely.</p> <p>AUR26608A.1.8 Reinstatement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- repair quotations
- tool and equipment manufacturer specifications
- product manufacturer specifications
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- measuring system

Methods include:

- measurements in conjunction with alignment equipment including identification of under-body damage, sway, sag and/or twist

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- manual handling techniques
- equipment measurement procedures

Underpinning knowledge:

- OH&S requirements/regulations
- Equipment/vehicle safety requirements
- Personal safety procedures
- Use of relevant tools and equipment
- Relevant manufacturer specifications
- Relevant measurement methods/techniques and procedures
- Manual handling techniques

Practical assessments:

- Access and apply safety and technical information
- Apply personal safety requirements
- Apply equipment safety procedures
- Apply manual handling techniques
- Use relevant tools and equipment
- Apply relevant measurement procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	2
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR26708A**CARRY OUT MAJOR SECTIONAL REPAIR**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out sectional replacement/repair operations on a vehicle with major damage.

PRE-REQUISITES:

- AUR23608A Carry out welding, cutting and heating procedures
- AUR26266A Repair body panels
- AUR26508A Repair vehicle body and underframe misalignment

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26708A.1 Perform major sectional repairs.	<p>AUR26708A.1.1 Major sectional repairs are completed without causing damage to any component or system.</p> <p>AUR26708A.1.2 Protective clothing and equipment appropriate to the repair activities are used.</p> <p>AUR26708A.1.3 Sections not subject to repair are protected, where appropriate, using approved methods and equipment.</p> <p>AUR26708A.1.4 Damaged sections are removed using approved methods and equipment.</p> <p>AUR26708A.1.5 Damaged surfaces are restored to a condition suitable for the fitting of new sections.</p> <p>AUR26708A.1.6 Jig alignment fixtures are prepared and adjusted in accordance with equipment manufacturer specification.</p> <p>AUR26708A.1.7 Replacement sections are aligned and secured within the tolerance specified for the particular vehicle.</p> <p>AUR26708A.1.8 Sections are refitted using approved methods, materials and equipment.</p> <p>AUR26708A.1.9 Sealant is selected and applied according to the manufacturer specification for type method of application and thickness.</p> <p>AUR26708A.1.10 Removal and fitting activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- tool and equipment manufacturer specifications
- repair quotations
- product manufacturer specifications
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, and equipment
- heating and welding equipment including: oxy, arc, MIG, TIG
- lifting and hydraulic push/pull equipment
- measuring system
- vehicle alignment bench including a range of clamping and anchoring procedures/methods

Methods include:

- heating, hydraulic re-forming, sectional repair including a range of joins, eg staggered and Traffic Authority approved methods
- visual, mechanical and physical examination
- measurements in conjunction with alignment equipment including identification of under-body damage, sway, sag and/or twist
- panel beating, welding, mechanical fastening, riveting metal cutting
- removal and replacement of mechanical, suspension, steering transmissions etc.

Methods should be applied under normal operating conditions.

Specific requirements:

- In-situ panels, double panels, box panels, sill panels, chassis, frame, turrets, high stress steels and plastic body panels.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle and personal safety procedures
- equipment safety requirements
- manual handling techniques
- sectional repair methods

Underpinning knowledge:

- OH&S requirements/regulations
- Equipment/material safety requirements
- Personal safety procedures
- Use of relevant tools and equipment
- Relevant manufacturer specifications
- Manual handling techniques
- Relevant alignment methods/techniques and procedures
- Relevant sealant selection and application
- Relevant sectional repair procedures

Practical assessments:

- Access and apply safety and technical information
- Apply personal safety requirements
- Apply equipment/material safety procedures
- Apply manual handling techniques
- Use relevant tools and equipment
- Correctly apply appropriate sealants
- Apply relevant alignment methods and procedures
- Apply relevant sectional repair procedures

Key Competencies:

	Level
Collect, analyse and organise information	2
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	2
Use mathematical ideas and techniques	2
Solve problems	1
Use technology	2

AUR26864A**REMOVE AND REPLACE VEHICLE BODY PANELS, PANEL SECTIONS AND ANCILLARY FITTINGS**

UNIT DESCRIPTOR: This unit identifies the competence required to replace with new or repaired body panels, body sections, and ancillary fittings in readiness for repairs/painting.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26864A.1 Remove and replace/refit body panels, panel sections and ancillary fittings.	AUR26864A.1.1 Removal and replacing/refitting of body panels, panel sections and ancillary fittings is completed without causing damage to any component or system. AUR26864A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR26864A.1.3 Protective clothing and equipment appropriate to the replacement activities are used. AUR26864A.1.4 Replacement components and ancillary fittings meet specifications for dimensions, materials and functional capability. AUR26864A.1.5 Components and ancillary fittings are refitted using approved methods, materials and equipment. AUR26864A.1.6 Sealant is selected and applied according to the product manufacturer specification for type, method of application and thickness. AUR26864A.1.7 Where there is a potential disturbance to electrical, mechanical, electronic or other systems, appropriate assistance is sought, if required. AUR26864A.1.8 Replacement activities including bolt on, weld on and bond on procedures are completed within established industry guidelines. AUR26864A.1.9 Replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- product manufacturer specifications
- repair quotations
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, and equipment
- heating and welding equipment including: oxy, arc, MIG, TIG and spot welding
- templates and lifting equipment
- sealing and adhesive equipment

Methods include:

- heating
- visual, mechanical and physical examinations
- measuring
- welding, mechanical fastening, riveting metal cutting
- removal and replacement/refitting of components
- adhesive bonding

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle and personal safety procedures
- equipment safety requirements
- protection of electrical/electronic equipment and systems
- relevant replacement/refitting procedures
- identification of appropriate parts/components

Underpinning knowledge:

- OH&S requirements/regulations
- Protection procedures for electrical/electronic systems and equipment
- Equipment/material safety requirements
- Personal safety procedures
- Use of relevant tools and equipment
- Manual handling techniques
- Relevant sealant selection and application
- Relevant removal and replacement procedures for body panels and sections
- Relevant removal and replacement procedures for ancillaries

Practical assessments:

- Access and apply safety and technical information
- Apply personal safety requirements
- Apply equipment/material safety procedures
- Apply manual handling techniques
- Use relevant tools and equipment
- Correctly apply appropriate sealants
- Remove and replace body panels and sections
- Remove and replace ancillary fittings

Key Competencies:	Level
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR26965A**REMOVE AND REPLACE/FIT PROTECTOR MOULDINGS, TRANSFERS AND DECALS**

UNIT DESCRIPTOR: This unit identifies the competence required to remove and replace/fit decals, transfers and protector mouldings.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26965A.1 Remove protector mouldings, transfers and decals.	<p>AUR26965A.1.1 Work is completed without causing damage to any component, system or protector mouldings, transfers and decals.</p> <p>AUR26965A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR26965A.1.3 Protective clothing, tools and equipment appropriate to the removal activities are used.</p> <p>AUR26965A.1.4 Removal and replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR26965A.2 Replace/fit protector mouldings, transfers and decals.	<p>AUR26965A.2.1 Work is completed without causing damage to any component, system or protector mouldings, transfers and decals.</p> <p>AUR26965A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR26965A.2.3 Protective clothing, tools and equipment appropriate to the removal activities are used.</p> <p>AUR26965A.2.4 Protector mouldings, transfers and decals meet specifications for dimensions, material and functional capability.</p> <p>AUR26965A.2.5 Protector mouldings, transfers and decals are fitted using approved methods, materials and equipment.</p> <p>AUR26965A.2.6 Adhesives are selected and applied according to the product manufacturer specification for type, method, application and thickness.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR26965A.2 (continued) Replace/fit protector mouldings, transfers and decals.	AUR26965A.2.7 Removal and replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- product manufacturer specifications
- repair quotations
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, adhesive equipment
- measuring equipment, special tools for removal

Methods include:

- adhesive bonding, mechanical fastening

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- removal of protector mouldings, transfers and decals
- replace/fit protector mouldings, transfers and decals

Underpinning knowledge:

- Equipment/material safety requirements
- Types of mouldings, transfers and decals
- Adhesives necessary for relevant application
- Use of relevant tools and equipment
- Relevant methods for fitting mouldings, transfers and decals
- Mechanical fasteners relevant
- Personal safety procedures
- Fastening methods (Adhesives and Mechanical methods)
- OH&S Requirements
- Removal procedures
- Replacement/fitting procedures

Practical assessments:

- Access and apply safety and technical information
- Use relevant tools and equipment
- Apply personal safety requirements
- Attach various materials including decals stripes and protector strips
- Remove protector mouldings, transfers and decals
- Replace/fit protector mouldings, transfers and decals

Key Competencies:

	Level
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR27064A**REMOVE AND REPLACE MECHANICAL UNITS/ASSEMBLIES**

UNIT DESCRIPTOR: This unit identifies the competence required to remove and replace units/assemblies such as suspension assemblies, final drives, engines, etc. to facilitate body repair activities. The appropriate assistance is to be sought in relation to air conditioning and LPG/NGV system/components and in the re-commissioning of all systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR27064A.1 Remove and replace mechanical units/assemblies.	AUR27064A.1.1 Removal and replacement is completed without causing damage to any component or system. AUR27064A.1.2 Protective clothing and equipment appropriate to the replacement activities are used. AUR27064A.1.3 Mechanical units/assemblies are removed and replaced using approved methods, tools and equipment. AUR27064A.1.4 Appropriate assistance is sought in relation to air conditioning and LPG/NGV system/components and in the re-commissioning of all systems. AUR27064A.1.5 Removal and replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR27064A.2 Remove and replace electrical units/assemblies.	AUR27064A.2.1 Removal and replacement is completed without causing damage to any component or system. AUR27064A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR27064A.2.3 Protective clothing and equipment appropriate to the replacement activities are used. AUR27064A.2.4 Electrical units/assemblies are removed and replaced using approved methods, tools and equipment. AUR27064A.2.5 Appropriate assistance is sought in relation to air conditioning and LPG/NGV system/components and in the re-commissioning of all systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR27064A.2 (continued) Remove and replace electrical units/assemblies.	AUR27064A.2.6 Removal and replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- product manufacturer specifications
- repair quotations
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, jacking, support and lifting equipment
- special equipment for removal and replacement

Methods include:

- visual, mechanical and physical examinations
- removal and replacement/refitting of components

Methods should be applied under normal operating conditions.

Specific requirements:

- Appropriate assistance is sought in relation to air conditioning and LPG/NGV system/components and in the re-commissioning of all systems

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- safe working practices
- vehicle and personal safety procedures
- equipment safety requirements
- removal and replacement of mechanical and electrical/electronic units/assemblies

Underpinning knowledge:

- OH&S requirements/regulations
- Equipment/vehicle safety requirements
- Personal safety procedures
- Use of relevant tools and equipment
- Manual handling techniques
- Removal and replacement procedures for mechanical units/assemblies

Practical assessments:

- Access and apply safety and technical information
- Apply personal safety requirements
- Apply equipment/material safety procedures
- Apply manual handling techniques
- Use relevant tools and equipment
- Remove and replace mechanical units/assemblies

Key Competencies:

	Level
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR27164A**REMOVE AND REPLACE ELECTRICAL/
ELECTRONIC UNITS/ASSEMBLIES**

UNIT DESCRIPTOR: This unit identifies the competence required to remove and replace units/assemblies such as head lights, tail lights, electrical components, computer control units to facilitate body repair activities. The appropriate assistance is to be sought in relation to air conditioning and LPG/NGV system/components and in the re-commissioning of all systems.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR27164A.1 Remove and replace electrical/electronic units/ assemblies.	<p>AUR27164A.1.1 Removal and replacement is completed without causing damage to any component or system.</p> <p>AUR27164A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR27164A.1.3 Protective clothing and equipment appropriate to the replacement activities are used.</p> <p>AUR27164A.1.4 Electrical units/assemblies are removed and replaced using approved methods, tools and equipment.</p> <p>AUR27164A.1.5 Appropriate assistance is sought in relation to air conditioning and LPG/NGV system/components and in the re-commissioning of all systems.</p> <p>AUR27164A.1.6 Removal and replacement activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- insurance company instructions
- industry/workplace codes of practice
- product manufacturer specifications
- repair quotations
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, jacking, support and lifting equipment
- special equipment for removal and replacement

Methods include:

- visual, mechanical and physical examinations
- removal and replacement/refitting of components

Methods should be applied under normal operating conditions.

Specific requirements:

- Appropriate assistance is sought in relation to air conditioning and LPG/NGV system/components and in the re-commissioning of all systems

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- vehicle and personal safety procedures
- removal and replacement of electrical/electronic units/assemblies

Underpinning knowledge:

- OH&S requirements/regulations
- Equipment/vehicle safety requirements
- Personal safety procedures
- Use of relevant tools and equipment
- Relevant sealant selection and application
- Removal and replacement procedures for electrical/electronic units/assemblies

Practical assessments:

- Access and apply safety and technical information
- Apply personal safety requirements
- Apply equipment/material safety procedures
- Use relevant tools and equipment
- Remove and replace electrical/electronic units/assemblies

Key Competencies:

	Level
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	2

AUR27231A**INSTALL VEHICLE COMPONENT SEALS**

UNIT DESCRIPTOR: This unit identifies the competence required to identify, fit and/or repair faulty vehicle component seals.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR27231A.1 Test, install, repair and or replace vehicle component seals.	AUR27231A.1.1 Work is completed without causing damage to any vehicle section, system or component. AUR27231A.1.2 Information is accessed and applied in accordance with vehicle/component manufacturer specifications. AUR27231A.1.3 All testing, repair and installation procedures are carried out in accordance with manufacturer specifications. AUR27231A.1.4 Appropriate fittings, tools and equipment are used. AUR27231A.1.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body streams

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- industry/workplace codes of practice
- customer report
- Australian Standards

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power/air tools, cleaning equipment, sealing equipment, cutting equipment, adhesives, solvents, resins

Methods include:

- clamping, crimping, gluing

Methods should be applied under normal operating conditions.

Other variables may include:

- heavy vehicles
- plant and agricultural
- recreational
- mining
- marine
- aircraft

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating information
- identifying and testing vehicle component seal faults
- safe working practices
- application of relevant vehicle component/seals

Underpinning knowledge:

- Dismantling and assembling vehicle component relevant to application
- Relevant technical information
- Types of adhesives and their application
- Component seal securing methods and procedures
- Personal safety requirements
- Equipment safety requirements
- Relevant manufacturer/company policies

Practical assessments:

- Access, interpret and apply technical information
- Apply vehicle component testing methods
- Use relevant tools and equipment
- Maintain customer records
- Fit seals where required

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Use mathematical ideas and techniques	1
Use technology	2

AUR28166A**REPAIR AND ALIGN MOTOR CYCLE FRAMES**

UNIT DESCRIPTOR: This unit identifies the competence required to carry out inspection and determine repairs required, replace and/or repair components and align frame/components.

PRE-REQUISITES: AUR23608A Carry out welding, soldering, thermal cutting and thermal heating procedures

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28166A.1 Inspect and measure to determine repair requirements.	<p>AUR28166A.1.1 Work is completed without causing damage to any component or system.</p> <p>AUR28166A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR28166A.1.3 Written inspection report is prepared to guide the assessment of repair options.</p> <p>AUR28166A.1.4 Permission is obtained to partly dismantle the vehicle to permit an accurate inspection of the repairs necessary, if required.</p> <p>AUR28166A.1.5 Inspection activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR28166A.2 Replace or repair frame components.	<p>AUR28166A.2.1 Repair/replacement is completed without causing damage to any component or system.</p> <p>AUR28166A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR28166A.2.3 Appropriate workplace documentation is completed and dealt with relevant to replacing and repairing outcomes.</p> <p>AUR28166A.2.4 Replacement and repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR28166A.3 Align frame and components.	<p>AUR28166A.3.1 Alignment is completed without causing damage to any component or system.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28166A.3 (continued) Align frame and components.	<p>AUR28166A.3.1 Alignment is completed without causing damage to any component or system.</p> <p>AUR28166A.3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications</p> <p>AUR28166A.3.3 Alignment of frame and components is carried out in accordance with vehicle manufacturer current specifications for methods, equipment used and tolerances relative to the vehicle/system.</p> <p>AUR28166A.3.4 Appropriate workplace documentation is completed and dealt with relevant to aligning frame and component outcomes.</p> <p>AUR28166A.3.5 All alignment activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to the motor cycle frame repair and alignment

Sources of information/documents may include:

- vehicle manufacturer specifications
- enterprise operating procedures
- industry/workplace codes of practice
- product manufacturer specifications
- customer requirements

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, special tools for removal/adjustment, measuring equipment, pressing equipment, heating equipment, pullers, welders - arc, oxy, MIG, TIG, lifting equipment, testing equipment and air operated equipment

Methods include:

- visual, aural and functional assessment (including: damage, wear and breakage)
- using principles, angles and geometry of vehicle wheel and frame alignment
- measuring

Methods should be applied under normal operating conditions.

Specific requirements:

- Frame, body, forks, wheels, plastic body panels and accessories.

Other variables may include:

- side cars, carrying compartments

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience on a range of system types. The assessment must take place in the workplace.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating overhaul/repair information
- repair procedures
- frame alignment and measurement procedures
- safe working practices
- vehicle protection methods

Underpinning knowledge:

- Industry code of practice
- Principles of steering geometry
- Frame alignment and measurement procedures
- Dismantling and assembling procedures (relevant to application)
- Frame component repair and adjustment procedures (relevant to application)
- Personal safety requirements
- Manual handling procedures

Practical assessments:

- Industry code of practice
- Equipment safety requirements
- Statutory legislation where applicable
- Inspect and measure frame to determine misalignment
- Carry out frame alignment
- Replacement and repair frames/components
- Relevant technical information
- Vehicle safety requirements
- Relevant manufacturer/company policies

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR28266A**REPAIR BICYCLE FRAMES**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect, plan, and safely repair and test bicycle frames and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28266A.1 Inspect bicycle frame.	<p>AUR28266A.1.1 Bicycle frame is inspect for faults and worn or damaged components.</p> <p>AUR28266A.1.2 Repairs required are determined by visual, aural, tactile inspections and measurements.</p> <p>AUR28266A.1.3 Conditions found are compared with bicycle frame specifications and customer use requirements.</p> <p>AUR28266A.1.4 Repair options for frame are identified following workplace procedures.</p> <p>AUR28266A.1.5 Repairs required are documented and costed for customer approval.</p> <p>AUR28266A.1.6 Customer approval is obtained and checked against repair work to be undertaken.</p>
AUR28266A.2 Prepare for the repair of a bicycle frame.	<p>AUR28266A.2.1 Repair sequence is planned and availability of required tools and equipment determined.</p> <p>AUR28266A.2.2 Planned repair sequence includes post repair testing and checking process.</p> <p>AUR28266A.2.3 Parts list is prepared and availability of replacement components determined.</p> <p>AUR28266A.2.4 Additional personnel required to assist in the repair process are identified and permission obtained.</p> <p>AUR28266A.2.5 Tools and equipment are selected to meet job requirements.</p> <p>AUR28266A.2.6 Tools and equipment are regularly checked to ensure they are in good working order.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28266A.2 (continued) Prepare for the repair of a bicycle frame.	AUR28266A.2.7 Tools and equipment are handled and used in accordance with OH&S requirements. AUR28266A.2.8 Daily maintenance of tools and equipment is performed as specified by enterprise.
AUR28266A.3 Repair and test bicycle frame.	AUR28266A.3.1 Repair operation for bicycle frame is performed according to plan. AUR28266A.3.2 Repair operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR28266A.3.3 Customer requirements and bicycle frame specifications are checked following repair procedures. AUR28266A.3.4 Repaired bicycle frame is tested through full range, noting results, including non-conformity. AUR28266A.3.5 Repaired bicycle frame is checked, adjustments completed and unit prepared for delivery. AUR28266A.3.6 Work site is cleared of waste and spills at regular intervals in accordance with enterprise procedures. AUR28266A.3.7 Portable tools and equipment are stored in approved designated areas. AUR28266A.3.8 Workplace records, customer file and warranty information are updated, as required by enterprise. AUR28266A.3.9 Accounts and invoices are prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to all-terrain, touring, racing, recumbent, and BMX bicycles, seat pillars and fasteners, bottom brackets, cartridge, cup, loose and caged bearings, left and right hand thread types, composite materials, welding, brazing, bonding processes, painted, anodized, natural state and polished surface finishes.

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific repair and general workshop equipment and tools
- welding, brazing, bonding equipment and materials
- enterprise documentation and reporting systems
- floor stands
- workbench
- pneumatic air tools
- area for safe testing of bicycle frames

Methods include:

- on and off site repairs
- repair, replacement and refinishing of frame components
- communicating with customers
- documenting and reporting repairs

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle frame configurations and finishes requiring repair

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- repairing bicycle frames

Underpinning knowledge:

- Purpose and requirements of bicycle frame systems and their relationship to braking, wheels, drive train, and steering
- The materials used in bicycle frames
- Use of tools and equipment
- The application of frame design principles
- Classification of bicycle frames and the identification of system components

Practical assessments:

- Gather information on bicycle frames
- Check bicycle frames for damage
- Plan bicycle frame repair procedures
- Join frame components by welding, brazing and bonding
- Repair and refinish bicycle frames

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR28270A**SERVICE BICYCLE FRAMES**

UNIT DESCRIPTOR: This unit identifies the competence required to plan, and safely service and test bicycle frames and complete required documents.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28270A.1 Gather information on bicycle frame.	<p>AUR28270A.1.1 Customer requirements are checked following workplace procedures.</p> <p>AUR28270A.1.2 Intended use of the unit being serviced is confirmed by discussions with customer.</p> <p>AUR28270A.1.3 Bicycle frame service requirements are researched, and specifications accessed and checked.</p> <p>AUR28270A.1.4 Tools and equipment are checked prior to use, for conformity with specifications and safe condition.</p> <p>AUR28270A.1.5 Condition of system is determined by visual, aural, tactile inspections and measurements.</p> <p>AUR28270A.1.6 Conditions found are compared with bicycle frame specifications and customer use requirements.</p>
AUR28270A.2 Prepare for the service of a bicycle frame.	<p>AUR28270A.2.1 Service sequence is planned and availability of required tools and equipment determined.</p> <p>AUR28270A.2.2 Planned service sequence includes post service testing and checking process.</p> <p>AUR28270A.2.3 Materials list is prepared and availability determined.</p> <p>AUR28270A.2.4 Tools and equipment are selected to meet job requirements.</p> <p>AUR28270A.2.5 Tools and equipment are regularly checked to ensure they are in good working order.</p> <p>AUR28270A.2.6 Tools and equipment are handled and used in accordance with OH&S requirements.</p> <p>AUR28270A.2.7 Daily maintenance of tools and equipment is performed as specified by enterprise.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28270A.3 Service and test bicycle frame.	AUR28270A.3.1 Service operation for bicycle frame is performed according to plan. AUR28270A.3.2 Service operations are performed using all required personal safety equipment and precautions required to protect others in the workplace. AUR28270A.3.3 Customer requirements and bicycle frame specifications are checked following service procedures. AUR28270A.3.4 Serviced bicycle frame is operated through full range, noting test results, including non-conformity. AUR28270A.3.5 Serviced bicycle frame is checked, adjustments completed and unit prepared for delivery. AUR28270A.3.6 Portable tools and equipment are stored in approved designated areas. AUR28270A.3.7 Workplace records, customer file and warranty information are updated, as required by enterprise. AUR28270A.3.8 Accounts and invoices are prepared as required by enterprise.

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- all-terrain, touring, racing, recumbent, and BMX bicycles, seat pillars and fasteners, bottom brackets, cartridge, cup, loose and caged bearings, left and right hand thread types, composite materials, painted, anodized, natural state and polished surface finishes

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- specific service and general workshop equipment and tools
- enterprise documentation and reporting systems
- floor stands
- workbench
- pneumatic air tools
- area for safe testing of bicycle frames

Methods include:

- on and off-site servicing
- servicing and manual adjustments of frame components
- communicating with customers
- documenting and reporting on service

Methods should be applied under normal operating conditions.

Specific requirements:

- A range of bicycle frame configurations requiring servicing

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- service bicycle frames

Underpinning knowledge:

- Purpose and requirements of bicycle frame systems and their relationship to suspension, wheels, and drive train
- The materials used in bicycle frames
- Use of tools and equipment
- The application of frame design principles
- Classification of bicycle frames and the identification of system components

Practical assessments:

- Gather information on bicycle frames
- Test bicycle frames
- Plan bicycle frame service procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1
Use technology	1

AUR28366A**REPAIR CHASSIS/FRAME AND ASSOCIATED COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect/replace, repair and align chassis/frame and/or components applicable to vehicles with separate frame construction. Repairs would traditionally be performed by body makers or heavy vehicle mechanics.

PRE-REQUISITES: AUR23708A Carry out welding, thermal cutting and heating procedures

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
<p>AUR28366A.1 Inspect to determine repairs required.</p>	<p>AUR28366A.1.1 Inspection is completed without causing damage to any component or system.</p> <p>AUR28366A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR28366A.1.3 Written inspection report is prepared during inspection.</p> <p>AUR28366A.1.4 Authority is obtained to partly dismantle the vehicle to permit an accurate inspection of the repairs necessary, if required.</p> <p>AUR28366A.1.5 Inspection activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
<p>AUR28366A.2 Replace or repair chassis/frame components.</p>	<p>AUR28366A.2.1 Replacement of or repairs to components are achieved without causing damage to any component or system.</p> <p>AUR28366A.2.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR28366A.2.3 Repair and replacements of chassis/frame components are carried out in accordance with vehicle manufacturer specifications and tolerances relative to the vehicle.</p> <p>AUR28366A.2.4 Appropriate workplace documentation is completed and dealt with relevant to replacement or repair outcomes.</p> <p>AUR28366A.2.5 All repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28366A.3 Align chassis/frame components.	<p>AUR28366A.3.1 Alignment is achieved without causing damage to any component or system.</p> <p>AUR28366A.3.2 Correct information is accessed and interpreted from appropriate manufacturer specifications.</p> <p>AUR28366A.3.3 Alignment of frame components is carried out in accordance with vehicle manufacturer specifications and tolerances relative to the vehicle.</p> <p>AUR28366A.3.4 Appropriate workplace documentation is completed and dealt with relevant to chassis alignment outcomes.</p> <p>AUR28366A.3.5 All repair activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R Body and Heavy Mechanical stream

Sources of information/documents may include:

- vehicle manufacturer specifications
- product manufacturer specifications
- enterprise operating procedures
- industry codes of practice
- customer requirements
- Statutory legislation

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, measuring equipment, pressing equipment, heating equipment, welding equipment may include - arc, oxy, MIG, TIG
- chassis aligning equipment
- special tools for removal/alignment
- lifting equipment
- wheel alignment equipment

Methods include:

- visual, aural and functional assessments (including: damage, wear and breakage)
- the principles, angles and geometry of vehicle wheel and chassis alignment
- measuring

Methods should be applied under normal operating conditions.

Specific requirements:

- Chassis, body, wheels, body panels, accessories, body frames.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- inspecting, replacing/repairing and aligning of chassis/frame components

Underpinning knowledge:

- Equipment safety requirements
- Alignment procedures
- Inspection and measuring procedures
- Repair/replacement procedures
- Relevant technical information
- Vehicle safety requirements
- Relevant manufacturer/company policies
- Manual handling techniques
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools/equipment
- Inspect vehicle to determine repairs required
- Carry out alignment of chassis/frame
- Use manual handling techniques
- Carry out personal safety requirements
- Apply repair/replacement procedures

Key Competencies:

	Level
Collect, analyse and organise information	1
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	2
Use technology	2

AUR28603A**APPLY RELEVANT LEGAL REQUIREMENTS
FOR VEHICLE DISMANTLERS**

UNIT DESCRIPTOR: This unit identifies the competence required to assess, interpret and apply relevant legal requirements.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28603A.1 Apply relevant legal requirements for vehicle dismantlers.	<p>AUR28603A.1.1 Relevant legal requirements for vehicle dismantlers are identified and accessed where necessary.</p> <p>AUR28603A.1.2 Vehicle/component is dismantled according to industry/enterprise guidelines.</p> <p>AUR28603A.1.3 Customer is serviced according to consumer legislation.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to vehicle dismantlers

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- relevant tools and equipment to dismantle vehicle
- vehicle/component to be dismantled
- enterprise policies and procedures
- relevant legislation and regulations, training videos, enterprise documentation
- Trade Practices/Fair Trading legislation
- Consumer Protection documentation

Methods include:

- advising customers on components/parts
- removing components from vehicles
- advising customers on warranties/replacements

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating relevant information
- safe working practices
- applying relevant legal requirements for vehicle dismantler

Underpinning knowledge:

- Legal requirements for vehicle dismantlers
- Equipment/Material safety requirements
- Consumer legislation
- Industry codes of practice

Practical assessments:

- Access, interpret and apply legal information
- Make recommendations to customers based on legal requirements
- Apply consumer legislation to customer situations
- Dismantle vehicles/components

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Solve problems	1

AUR28617A**DISASSEMBLE AND TEST VEHICLE UNITS/COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to dismantle and test removed vehicle units/components. It also involves cleaning and testing units/components for suitability for future use.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28617A.1 Dismantle relevant units/components.	<p>AUR28617A.1.1 Component to be dismantled is correctly identified from customer or enterprise information.</p> <p>AUR28617A.1.2 Correct methods for dismantling component(s) are determined according to enterprise policies and procedures and appropriate manuals/specifications.</p> <p>AUR28617A.1.3 Component(s) are dismantled and tolerances/wear checked against manufacturer specifications.</p> <p>AUR28617A.1.4 Decision to retain/replace/repair/ adjust/service component is correctly determined according to enterprise policies and procedures.</p>
AUR28617A.2 Clean and test units/components.	<p>AUR28617A.2.1 Correct cleaning procedure is determined from manufacturer specifications and/or in accordance with enterprise policies and procedures.</p> <p>AUR28617A.2.2 Component is cleaned using correct procedures, materials, tools and equipment.</p> <p>AUR28617A.2.3 Component is tested for correct operation and future use.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- Administration component sales

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- vehicle units/components
- cleaning and testing tools, materials and equipment
- hand tools, power tools, relevant testing equipment, pullers, extractors, presses, steam cleaners, detergent cleaners; including high pressure units, chemical baths, kero baths, parts washers
- compressors, air guns

Methods include:

- dismantling of removed units/components
- checking, repairing/replacing worn/damaged parts
- cleaning units/components
- testing assembled units/components for correct operation

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- following specification to disassemble units/components
- correctly cleaning and testing operation of units/components
- interpreting and using relevant information
- safe working practices
- vehicle protection methods
- dismantling, cleaning and testing units/components

Underpinning knowledge:

- Component dismantling and reassembling procedures
- Equipment/material safety requirements
- Relevant cleaning materials procedures
- Industry codes of practice
- Tools and equipment safety requirements
- Relevant component checking/testing procedures
- Manual handling methods
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment safely
- Maintain records
- Dismantle units/components and clean and test parts
- Assemble units/components and test for correct operation
- Apply manual handling methods
- Apply personal safety requirement

Key Competencies:	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Solve problems	1
Use technology	1

AUR28630A**INSPECT VEHICLE FOR SALEABLE ITEMS AND DETERMINE THEIR VALUE**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect a vehicle to identify serviceable components and value the same.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28630A.1 Carry out inspection of vehicle to identify serviceable/saleable components.	AUR28630A.1.1 Inspection is completed without causing damage to any component or system. AUR28630A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR28630A.1.3 Vehicle/components inspected to identify serviceable components. AUR28630A.1.4 Actions performed and results achieved relative to this competency element is recorded in preparation for final cost calculations. AUR28630A.1.5 Inspection activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.
AUR28630A.2 Determine vehicle/component retail price.	AUR28630A.2.1 Valuation of identified serviceable components carried out in preparation to calculating purchase price of vehicle/components. AUR28630A.2.2 Calculation of identified serviceable components made and retail prices estimated.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R mechanical and body streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- calculation stationery/paperwork
- vehicle buying guides, parts listing/prices, inventory systems, parts catalogues, calculators, computers, phones, faxes, tools and equipment necessary to remove/replace components

Methods include:

- visual inspection
- evaluation of vehicle/component
- calculation of cost
- removing/replacing components

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- accurately estimating and calculation of vehicle/component retail value
- interpreting and using relevant information

Underpinning knowledge:

- Motor vehicle systems basic operating principles
- Vehicle/Equipment/Material safety requirements
- Various price details of motor vehicles/components
- Industry codes of practice
- Estimating current value and calculating vehicle/component cost procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools, equipment and appropriate paperwork
- Maintain enterprise records
- Cost vehicles/components prior to purchase
- Purchase vehicles/components for resale

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	2
Plan and organise activities	1
Work with others and in teams	1
Use mathematical ideas and techniques	1
Solve problems	1

AUR28662A**REMOVE SALVAGEABLE COMPONENTS**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect and remove from the vehicle, relevant salvageable components and present for sale.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28662A.1 Remove salvageable components, clean and present for sale.	AUR28662A.1.1 Work is completed without causing damage to any component or system. AUR28662A.1.2 Correct information is accessed and interpreted from appropriate manufacturer specifications. AUR28662A.1.3 Salvageable components from vehicle are removed according to enterprise/manufacturer procedures. AUR28662A.1.4 Components are cleaned and prepared for sale. AUR28662A.1.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R mechanical and body streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- industry/workplace codes of practice
- Statutory legislation (including ADRs)

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- hand tools, power tools, pullers, extractors, levers, porta powers, press, jacks, stands, oxy acetylene equipment, angle grinders, steam cleaner, detergent cleaners, including high pressure units, parts washers, chemical baths

Methods include:

- inspection of vehicle components
- deciding on salvageable items
- removal of salvageable items
- cleaning and presentation of salvageable items

Methods should be applied under normal operating conditions.

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- removal and cleaning of components without causing damage or injury to tools, equipment and personnel

Underpinning knowledge:

- Relevant dismantling methods
- Vehicle/Equipment/Material safety requirements
- Relevant cleaning methods, materials and equipment
- Sales preparation procedures
- Industry codes of practice
- Inspection procedures
- Manual handling methods
- Personal safety requirements

Practical assessments:

- Access, interpret and apply technical information.
- Use relevant tools and equipment safely
- Maintain records
- Use relevant dismantling methods
- Use relevant cleaning methods
- Remove salvageable components from vehicle
- Apply manual handling methods
- Apply personal safety requirements

Key Competencies:

	Level
Communicate ideas and information	1
Plan and organise activities	1
Work with others and in teams	1
Use technology	1

AUR28916A**DETERMINE VEHICLE RESCUE METHOD AND ASCERTAIN COST**

UNIT DESCRIPTOR: This unit identifies the competence required to inspect the damaged vehicle(s), determine appropriate rescue method and ascertain cost of recovery for the RS&R Crash Repair stream.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28916A.1 Survey accident scene and decide vehicle rescue method.	<p>AUR28916A.1.1 Work is completed without causing damage to any component or system.</p> <p>AUR28916A.1.2 Relevant details are obtained by visual surveillance of rescue scene.</p> <p>AUR28916A.1.3 Details are obtained from appropriate personnel where necessary.</p> <p>AUR28916A.1.4 All areas of surveillance are conducted within legal parameters and enterprise guidelines.</p> <p>AUR28916A.1.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR28916A.2 Prepare rescue cost details.	<p>AUR28916A.2.1 Information is accessed from appropriate sources to enable preparation of costing details.</p> <p>AUR28916A.2.2 Options for vehicle recovery are considered.</p> <p>AUR28916A.2.3 Costing of rescue operation is carried out using approved methods in accordance with legislative requirements and enterprise guidelines.</p> <p>AUR28916A.2.4 Costing is forwarded for processing/invoicing/filing.</p> <p>AUR28916A.2.5 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:**Range of contexts:**

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams applicable to crash repairs

Sources of information/documents may include:

- company operating procedures
- customer requirements
- industry codes of practice
- Statutory legislation.

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- industry specific stationery, torch, watch, work light, gloves, calculator, communication equipment, pen, paper

Methods include:

- visual, audio, writing

Methods should be applied under normal operating conditions.

Specific requirements:

- Location details (eg, in ditch, traffic hazards) type of load, size and type of vehicle to be rescued, type of tow (accident roster or general tow)
- Tow truck driver's licence

EVIDENCE GUIDE:**Context:**

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- determining appropriate vehicle rescue method
- detailing accurate rescue costing

Underpinning knowledge:

- Relevant technical information
- Equipment safety requirements
- Vehicle safety requirements
- Relevant manufacturer/company policies
- Relevant pick up/loading procedures
- Relevant towing procedures
- Relevant costing procedures
- Relevant legislation
- Relevant industry practices
- Personal safety procedures

Practical assessments:

- Access, interpret and apply technical information
- Use relevant tools and equipment
- Maintain customer records
- Apply relevant costing procedures
- Apply personal safety requirements
- Apply relevant costing procedures
- Apply relevant legal requirements

Key Competencies:	Level
Collect, analyse and organise information	2
Communicate ideas and information	2
Plan and organise activities	2
Work with others and in teams	1
Solve problems	2

AUR28961A**RECOVER VEHICLE**

UNIT DESCRIPTOR: This unit identifies the competence required to prepare for towing or transporting a vehicle.

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28961A.1 Ascertain type of recovery required.	<p>AUR28961A.1.1 Relevant details are obtained by visual surveillance of recovery scene.</p> <p>AUR28961A.1.2 Information is obtained from officials at scene where necessary.</p> <p>AUR28961A.1.3 Hazards are recognised and included in requirements for recovery.</p> <p>AUR28961A.1.4 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR28961A.2 Prepare vehicle to be recovered for tow/lift.	<p>AUR28961A.2.1 Vehicle is prepared without causing damage to any component or system.</p> <p>AUR28961A.2.2 Vehicle is prepared for tow/lift using recognised enterprise guidelines and legislative requirements.</p> <p>AUR28961A.2.3 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR28961A.3 Prepare recovery vehicle for tow/lift.	<p>AUR28961A.3.1 Recovery vehicle is prepared without causing damage to any component or system.</p> <p>AUR28961A.3.2 Rescue vehicle is prepared using recognised enterprise guidelines and legislative requirements.</p> <p>AUR28961A.3.3 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR28961A.4 Operate recovery vehicle.	<p>AUR28961A.4.1 Vehicle is operated without causing damage to any component or system.</p> <p>AUR28961A.4.2 Vehicle/equipment is operated using recognised industry guidelines and legislative requirements.</p>

ELEMENT OF COMPETENCY	PERFORMANCE CRITERIA
AUR28961A.4 (continued) Operate recovery vehicle	<p>AUR28961A.4.3 Relevant lifting, loading procedures are followed (procedures ascertained in previous elements of this competency).</p> <p>AUR28961A.4.4 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>
AUR28961A.5 Clean up recovery site.	<p>AUR28961A.5.1 Site is cleaned without causing any damage to any component or system.</p> <p>AUR28961A.5.2 Area of recovery and its near vicinity is cleared of debris and dangerous objects/hazardous materials.</p> <p>AUR28961A.5.3 Clean-up procedures are completed within recognised enterprise guidelines and legislative requirements.</p> <p>AUR28961A.5.4 All activities are carried out according to industry regulations/guidelines, OH&S legislation, statutory legislation and enterprise procedures/policies.</p>

RANGE OF VARIABLES:

Range of contexts:

This competency standard applies to the following and should be contextualised to the qualification to which it is being applied:

- RS&R streams

Sources of information/documents may include:

- manufacturer specifications
- enterprise operating procedures
- product manufacturer specifications
- customer requirements
- industry/workplace codes of practice

OH&S practices must abide by:

- State/industry OH&S legislation
- Award provisions

Resources may include:

- tow truck, tilt tray, trailer, dolly wheels, low loader, hand tools, chains, slings, ropes, safety equipment, towing bar, jack, gloves, shovel, broom, remote lights, street directory, signs, torch, watch, work light, air lines and fittings, industry-specific stationery, reduction blocks, hand tools, communication equipment, tow truck driver's licence

Methods include:

- preparation for lifting, loading and towing
- lifting, loading, towing, securing, cleaning up recovery area (eg, broken glass, debris etc.)

Methods should be applied under normal operating conditions.

Specific requirements:

- Damaged/broken down or transportation of vehicle

EVIDENCE GUIDE:

Context:

- The underpinning knowledge and skills may be assessed on or off-the-job.
- The assessment of practical skills must take place only after a period of supervised practice and repetitive experience. If workplace conditions are not available, assessment in simulated workplace conditions is acceptable.
- The prescribed outcome must be able to be achieved without direct supervision.

Critical aspects:

It is essential that competence is fully observed and there is the ability to transfer the competency to changing circumstances and to respond to unusual situations in the critical aspects of:

- interpreting and communicating operational information
- relevant pick up/loading procedures
- relevant towing procedures
- safe working practices
- vehicle protection methods
- equipment safety requirements

Underpinning knowledge:

- Pick up/loading procedures
- Towing procedures
- Manufacturer-recommended towing procedures
- Hazard identification procedures
- Procedures to overcome hazards
- Relevant technical information
- Relevant environmental regulations
- Equipment safety requirements
- Vehicle safety requirements
- Personal safety requirements
- Manual handling procedures

Practical assessments:

- Access, interpret and apply operational information
- Apply relevant pick up/loading procedures
- Use relevant tools and equipment
- Apply towing procedures
- Apply relevant hazard rectification procedures
- Apply personal safety requirements
- Apply manual handling procedures
- Apply relevant environmental regulations
- Apply vehicle/equipment safety requirements

Key Competencies:

	Level
Collect, analyse and organise information	1
Communicate ideas and information	1
Plan and organise activities	2
Work with others and in teams	1
Solve problems	1

