



Australian Government

AURETR008 Remove and replace electrical units and assemblies

Release: 1

AURETR008 Remove and replace electrical units and assemblies

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to remove and replace electrical units and assemblies. Electrical units and assemblies include headlights, tail-lights, and vehicle and machinery control modules that do not require programming procedures on replacement. These electrical units and assemblies are not connected to vehicle controller area network databus (CAN-bus) topography.

It applies to those working in the automotive service and repair industry. The electrical units and assemblies include those fitted to agricultural machinery, heavy commercial vehicles, light vehicles, vessels, motorcycles, mobile plant machinery or outdoor power equipment.

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

Competency Field

Electrical

Unit Sector

Technical - Electrical and Electronic

Elements and Performance Criteria

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
1. Prepare to remove and replace electrical unit and assemblies	1.1 Job requirements are determined from workplace instructions 1.2 Workplace procedures and manufacturer specifications are accessed and interpreted

Elements	Performance Criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold and italicised text is used, further information is detailed in the range of conditions section.
	1.3 Hazards associated with the work are identified and risks are managed 1.4 Tools and equipment are selected and checked for serviceability
2. Remove electrical unit and assembly	2.1 Removal information is accessed and interpreted from manufacturer and component supplier specifications 2.2 Electrical unit and assembly are removed using approved methods, tools and equipment and according to manufacturer specifications, workplace procedures and safety requirements 2.3 Unit and assembly are handled and stored according to manufacturer and component supplier requirements
3. Replace electrical unit and assembly	3.1 Replacement information is accessed and interpreted from manufacturer and component supplier specifications 3.2 Electrical unit and assembly are replaced using approved methods, tools and equipment and according to manufacturer specifications and workplace procedures
4. Test electrical unit and assembly	4.1 Replaced electrical unit and assembly are checked and tested to confirm correct operation and that no other problems are present, according to workplace procedures and without causing damage to components or systems 4.2 Test results are reported according to workplace procedures, including recommendations for repairs or adjustments as required
5. Complete work processes	5.1 Final inspection is made to ensure work is to workplace expectations and vehicle or machinery is presented ready for use 5.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 5.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 5.4 Workplace documentation is processed according to workplace procedures

Foundation Skills

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

Skills	Description
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Skills	Description
Learning skills to:	locate appropriate sources of information efficiently.
Reading skills to:	interpret text, symbols and diagrams in manufacturer specifications, safe operating procedures, and other workplace information.
Writing skills to:	legibly and accurately fill out workplace documentation relating to removing and replacing electrical units and assemblies.
Oral communication skills to:	clarify instructions.
Numeracy skills to:	- match component part numbers to workplace instructions and vehicle and component part lists - interpret measurements of voltage, current and resistance relating to electrical units and assemblies - measure materials and components to determine compliance with manufacturer specifications.
Planning and organising skills to:	plan own work requirements and prioritise actions to achieve required outcomes and ensure tasks are completed within workplace timeframes.
Technology skills to:	use specialised testing equipment, such as multimeters.

Range of Conditions

This section specifies work environments and conditions that may affect performance.

Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included. Bold italicised wording, if used in the performance criteria, is detailed below.

<i>Safety requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for identifying hazards and controlling risks associated with: - working with vehicle ignition systems with injector high voltages - wearing jewellery while working around high current wiring systems.
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Unit Mapping Information

Equivalent to AURETR2008 Remove and replace electrical units and assemblies

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b4278d82-d487-4070-a8c4-78045ec695b1>

Assessment Requirements for AURETR008 Remove and replace electrical units and assemblies

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Performance Evidence

Before competency can be determined, individuals must demonstrate they can perform the following according to the standard defined in the unit's elements, performance criteria, range of conditions and foundation skills:

- remove and replace two of the following systems on the non controller area network databus (CAN-bus) circuits of two different vehicles or machinery:
 - headlight or tail-light assembly
 - windscreen washer and wiper motor assembly
 - door and window motor assembly
 - central door locking system
 - electric mirror assembly
 - electric brake controllers.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to removing and replacing electrical units and assemblies, including procedures for identifying hazards and controlling risks associated with:
 - working with vehicle ignition systems with injector high voltages
 - wearing jewellery while working around high current wiring systems
- procedures for removing, replacing, and testing electrical units and assemblies, including procedures for adjusting and calibrating systems and components
- key features of basic non CAN-bus networked electrical units and assemblies, including:
 - headlight assemblies
 - tail-light assemblies
 - side and rear vision mirrors

- windscreen washer and wiper motor assemblies
- door and window motor assemblies
- central door locking systems
- electric brake controllers
- types of wiring systems found in vehicles, including:
 - basic wiring
 - twisted pair
 - shielded wiring
 - CAN-bus wiring
- options for diagnosing faults, including:
 - continuity testing
 - insulation testing
 - isolating possible faults
 - replacing blown fuses or circuit breakers
 - replacing damaged connectors or terminals
 - visually inspecting and evaluating components
- location and content of technical information, wiring diagrams and graphic symbols relating to electrical units and assemblies
- procedures for testing electrical systems, including:
 - accessing electrical terminals and using test probes without damaging connectors, fuse holders and wiring
 - checking resistance, current flow and voltage drop of system circuits.

Assessment Conditions

Assessors must satisfy NVR/AQTF assessor requirements.

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

Assessment must include direct observation of tasks.

Where assessment of competency includes third-party evidence, individuals must provide evidence that links them to having removed and replace electrical units and assemblies in vehicles or machinery, e.g. repair orders.

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

The following resources must be made available:

- automotive repair workshop or simulated workplace
- workplace instructions
- manufacturer specifications relating to removing and replacing electrical units and assemblies
- two different vehicles or machinery with faults in their electrical systems

- tools and electrical test equipment appropriate for diagnosing electrical units and assemblies.

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