



Australian Government

AURETR006 Solder electrical wiring and circuits

Release: 1

AURETR006 Solder electrical wiring and circuits

Modification History

Release	Comment
Release 1	New unit of competency.

Application

This unit describes the performance outcomes required to solder electrical components, electrical circuits and system wiring. It involves preparing for the task, preparing components, circuits and wiring for soldering, carrying out soldering, and completing workplace processes and documentation.

It applies to those working in the automotive service and repair industry. The electrical wiring and circuits include those in agricultural machinery, heavy commercial vehicles, light vehicles, vessels, mobile plant machinery, motorcycles 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 solder electrical wiring and circuits	1.1 Job requirements are determined according to workplace instructions 1.2 Technical procedures and information 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. Prepare components, circuits and wiring for soldering	2.1 Materials and components to be joined are selected and prepared according to workplace procedures and <i>safety and environmental requirements</i> 2.2 Solder and flux type are identified and prepared 2.3 Soldering equipment is cleaned and prepared ready for use
3. Carry out soldering of components, circuits and wiring	3.1 Soldering is carried out according to workplace quality expectations, and without causing damage to vehicle, components, electrical circuits and system wiring 3.2 Soldered connection is inspected visually and checked to ensure effectiveness
4. Complete work processes	4.1 Final inspection is made to ensure work is to workplace expectations and vehicle, vessel or machinery is presented ready for use 4.2 Work area is cleaned, waste and non-recyclable materials are disposed of, and recyclable material is collected 4.3 Tools and equipment are checked and stored and any faulty electrical equipment is identified, tagged and isolated according to workplace procedures 4.4 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
Learning skills to:	locate appropriate sources of information efficiently.
Reading skills to:	interpret text, symbols and wiring diagrams relating to soldering repair information in manufacturer specifications, and workplace instructions and procedures.
Writing skills to:	legibly and accurately fill out workplace documentation, recording parts and material used.

Skills	Description
Numeracy skills to:	- interpret measurements of wire size and gauge relating to electrical wiring and circuits to select correct items - measure 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 workplace technology, including soldering irons and heat guns.

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 and environmental requirements</i> must include:	- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for: - using safety data sheets (SDS) - selecting and using personal protective equipment (PPE) - safely handling materials during solder process - safely operating soldering equipment - identifying and using firefighting and first aid equipment - environmental requirements, including procedures for trapping, storing and disposing of material released during soldering process.
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Unit Mapping Information

Equivalent to AURETR2006 Carry out soldering of electrical wiring and circuits

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 AURETR006 Solder electrical wiring and circuits

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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:

- solder the wiring of six different electrical components, in which the work must involve:
 - different sized gauge wires
 - electrical terminals
 - resin core solder
 - heat shrink sleeving.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to soldering electrical wiring and circuits, including procedures for:
 - using safety data sheets (SDS)
 - selecting and using personal protective equipment (PPE)
 - safely handling materials during solder process
 - safely operating soldering equipment
 - identifying and using firefighting and first aid equipment
- environmental requirements, including procedures for trapping, storing and disposing of material released during soldering process
- location and content of workplace preparation and soldering procedures, SDS and manufacturer specifications
- procedures for preparing to solder electrical wiring and circuits, including:
 - preparing and cleaning components to be soldered, including selecting appropriate cleaning solutions

- methods of holding components to be soldered
- soldering fluxes and their application
- resin core solder types, diameter and application
- types and applications of soldering irons
- procedures for soldering electrical wiring and circuits, including:
 - applying heat and solder to the parts to be joined
 - allowing cooling without movement
- work completion procedures for soldering electrical wiring and circuits, including procedures for final visual inspection of soldered connections, including:
 - manufacturer and workplace specifications for acceptable soldering standard
 - post-soldering insulation, including heat shrink sleeving and application of electrical tape.

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 the electrical wiring and circuits that they have soldered, 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 workplace or simulated workplace
- workplace instructions
- six different electrical components requiring soldering of their wiring
- tools, equipment and material appropriate for soldering electrical components, circuits and system wiring, including:
 - automotive wiring
 - range of electrical terminals
 - resin core solder
 - heat shrink sleeving
 - soldering iron.

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