



**Australian Government**

# **Assessment Requirements for AURETR112 Test and repair basic electrical circuits**

**Release: 1**

# Assessment Requirements for AURETR112 Test and repair basic electrical circuits

## Modification History

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

## Performance Evidence

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

- test the following basic electrical circuits:
  - one short circuit across an electrical resistive load
  - one open circuit before or after an electrical resistive load
  - one high resistance circuit before or after an electrical resistive load
  - current flow across an electrical resistive load
  - voltage drop across an electrical resistive load
- test for continuity in a basic wiring harness and visually check terminals in the wiring harness for moisture ingress and corrosion
- carry out four different circuit repairs in which the work must involve:
  - crimping various terminal sizes
  - soldering wire gauges to terminals
  - applying heat shrink insulation to crimped or soldered joints
  - replacing male and female terminals in a connector housing
  - performing terminal retention checks to replaced terminals.

## Knowledge Evidence

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

- methods to locate and interpret information required to test and repair basic electrical circuits, including:
  - technical information, including:
    - circuit types
    - circuit diagrams
    - circuit symbols

- manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to test and repair basic electrical circuits, including:
  - establishing serviceability of tools and equipment
  - documentation procedures
  - housekeeping procedures, including:
    - examination of tools and equipment
    - storage of equipment
    - identification, tagging and isolation of faulty equipment
    - disposal of excess materials
    - recycling procedures
- workplace health and safety (WHS) requirements relating to testing and repairing basic electrical circuits, including procedures for:
  - using specialised tools and equipment
  - selecting and using personal protective equipment (PPE)
  - identifying hazards and controlling risks associated with wearing jewellery while working around electrical systems
- environmental procedures relating to testing and repairing basic electrical circuits
- basic theory and principles of automotive electrical systems, including:
  - current
    - alternating current (AC)
    - direct current (DC)
  - voltage
  - resistance
  - power
  - Ohm's law
- identification and operation of the following electrical circuits:
  - series circuits
  - parallel circuits
  - series parallel circuits
- key features of basic electrical circuit components, including:
  - cable types, including:
    - cable sizes
    - current carrying capacity
  - circuit protection devices
  - switches
  - relays
  - automotive globes
- procedures for using and operating electrical test equipment, including:
  - digital multimeters

- test lights suitable for circuit testing, including resistive and light emitting diode (LED)
- test probes suitable for testing circuit continuity
- fused test lead
- common types of faults, including:
  - open circuits
  - high resistance circuits
  - short circuits
  - damaged insulation
  - frayed wires
  - burnt wiring
  - water and moisture ingress
  - connector damage
  - terminal damage
- testing procedures for electrical systems, including:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
  - electrical measuring and testing procedures, including:
    - electrical resistance checks
    - open and short circuit tests
    - voltage drop tests
    - current flow tests
  - visual testing procedures, including:
    - component moisture ingress
    - connector damage
- repair procedures for electrical circuits, including:
  - wire soldering procedures
  - terminal crimping procedures
  - replacing male and female terminals in a connector housing
  - connector removal and replacement procedures
  - basic electrical components removal and replacement procedures
- post-repair testing procedures, including:
  - confirming that electrical system is operating to manufacturer specifications
  - confirming that no other problems are present as a result of the repair.

## Assessment Conditions

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 basic electrical circuits they have tested and repaired, 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
- manufacturer electrical system specifications
- vehicle or machinery with faults in the basic electrical circuits specified in the performance evidence
- electrical test equipment to test basic electrical circuits and components
- consumable materials relevant to repairing basic electrical circuits and components, including connectors, terminals, wire, electrical tape and heat shrink sleeving
- electrical repair tools, equipment and materials relating to basic electrical circuits and components.

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

## **Links**

Companion Volume Implementation Guide is found on VETNet -

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