



Australian Government

Assessment Requirements for AURETR007 Apply knowledge of automotive electrical circuits and wiring systems

Release: 1

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Modification History

Release	Comment
Release 1	New unit of competency.

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 and performance criteria, range of conditions and foundation skills:

- apply knowledge of automotive electrical circuits and wiring systems during the testing and repair of the electrical systems of three different vehicles, vessels or machinery
- evaluate and expand knowledge of automotive electrical circuits and wiring systems, including demonstrating knowledge of one of the following:
 - a new automotive electrical or electronic testing procedure
 - a new automotive electrical or electronic repair procedure
 - a new item of automotive electrical or electronic technology.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- types and location of sources of technical information relating to automotive electrical systems, including:
 - workplace service information
 - automotive engine mechanical texts
 - vehicle workshop manuals
 - service bulletins
 - technical articles
 - automotive textbooks
- features of vehicle electrical circuits, including:
 - voltage source
 - current load devices
 - resistive devices

- circuit protection devices
- switching circuit devices
- series circuits
- parallel circuits
- series parallel circuits
- relationships between:
 - volts, amps and ohms in vehicle electrical circuits
 - current flow and required wire gauge to carry the current
 - voltage drop across resistive load and current flowing in the circuit
- common fault types found in vehicle electrical circuits, including:
 - open circuit to power, signal and ground
 - short circuit to power, signal and ground
 - high resistance to power, signal and ground
- types and construction of vehicle electrical wiring systems, including:
 - common multi-strand conductor
 - various wire gauges and insulation types
 - controller area network databus (CAN-bus) twisted pair wiring
 - audio speaker shielded wiring
- principles of electricity, including:
 - alternating current (AC)
 - direct current (DC)
 - Ohm's law
 - Watts law
 - Kirchhoff's voltage law
 - Kirchhoff's current law
- identification, location and function of major components of common automotive electrical systems:
 - engine electrical systems, including:
 - battery
 - ignition
 - charging
 - starting
 - vehicle body electrical systems, including:
 - exterior lighting
 - internal lighting
 - vehicle access
 - washer and wiper
 - vehicle entertainment
 - wiring harness and loom assembly.

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 knowledge of electrical circuits and wiring systems that they have applied, e.g. work 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:

- technical information relating to automotive electrical circuits and wiring systems
- automotive tools and electrical test equipment
- three different vehicles, vessels or machinery with functional electrical systems.

Links

Companion Volume implementation guides are found in VETNet -

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

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