



**Australian Government**

**Assessment Requirements for AURETR045  
Inspect, service and repair DC electric  
motor drive systems**

**Release: 1**

# Assessment Requirements for AURETR045 Inspect, service and repair DC electric motor drive systems

## 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 standards defined in this unit's elements, performance criteria, range of conditions and foundation skills:

- inspect, service and repair three of the following direct current (DC) electric motor drive systems in vehicles, vessels or machinery:
  - brush commutator motor
  - stepper motor assembly
  - brushless hall effect motor
  - magnetic flux array motor.

## Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to inspecting, servicing and repairing DC electric motor drive systems, including procedures for:
  - selecting and using personal protective equipment (PPE), including clothing, and eye and hand protection
  - working safely with high current electrical systems
- operating principles of DC electric motor drive systems, including:
  - brush commutator motors, including of:
    - permanent magnet motor
    - series motor
    - shunt motor
    - compound motor
  - brushless motors, including:

- stepper motors, including rotary position actuators
- hall effect motor
- magnetic flux array motors
- application, purpose and operation of DC electric motor drive systems, including:
  - power operated windows, door and roofs
  - power operated seats, mirrors and radio antennas
  - winches and lifting platforms
  - rotary position actuators
  - brushless traction motors
  - magnetic flux array, including wheel hub motors
- inspection procedures for DC electric motor drive systems, including analysing system operation
- procedures for testing DC electric motor drive systems, including:
  - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
  - procedures for using and operating electrical test equipment, including:
    - digital multimeters
    - test lights and probes
    - oscilloscopes
- service and repair procedures for DC electric motor drive systems, including:
  - component removal and replacement procedures
  - component and associated system adjustment procedures
- post-repair testing procedures of DC electric motor drive systems, including:
  - confirming that system is operating to manufacturer specifications
  - confirming that no other problems are present as a result of the repair.

## 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 DC electric motor drive systems that they have inspected, serviced 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 DC electric drive motor specifications
- PPE, including clothing, and eye and hand protection
- three different vehicles, vessels or machinery with the DC electric motor drive systems specified in the performance evidence requiring repair
- tools, equipment and materials appropriate for inspecting, servicing and repairing DC electric motor drive systems, including multimeter.

## **Links**

Companion Volume implementation guides are found in VETNet -

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

Companion Volume implementation guides are found in VETNet -

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