



Australian Government

Assessment Requirements for AURETR030 Diagnose and repair starting 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:

- diagnose and repair a fault in two of the following starting system circuits in two different vehicles, vessels or machinery:
 - vehicle starter motor and solenoid circuit
 - vehicle ignition switch to solenoid control circuit
 - vehicle battery to starter motor circuit
 - machinery starting system circuit.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements, including procedures for:
 - using specialised tools and equipment
 - using appropriate personal protective equipment (PPE)
 - identifying hazards and controlling risks associated with:
 - working on high voltage ignition systems
 - wearing jewellery while working around high current wiring systems
- operating principles of starting systems and associated components, including:
 - producing movement due to the force between magnetic fields
 - producing magnetic fields due to current flow through conductors
 - basic direct current motor operation, including simple armature, magnetic field and commutator

- application, purpose and operation of starting systems and components, including:
 - starter motors, including:
 - internal component function and operation, including armature, commutator, field windings
 - starter motor windings, including series wound, shunt wound and compound wound
 - permanent magnet starter motors
 - direct drive and reduction-type starter motors
 - starting electrical systems, including:
 - solenoids
 - shift levers
 - overrunning clutch flywheel ring gears
 - ignition switching, including key start, push-button start, remote start and start-stop systems
 - safety switches, including inhibitor switches and clutch neutral switches
- diagnostic testing procedures for starting systems, including:
 - accessing and interpreting scan tool system data, including:
 - diagnostic trouble codes (DTCs)
 - live data
 - freeze frame data
 - waveforms
 - using diagnostic flow charts
 - testing electrical systems, including procedures for:
 - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
 - resistance, current flow and voltage drop checks of starting system circuits
 - field winding tests
 - armature tests, including using a growler
 - commutator tests
 - brushes and holder tests
 - overrunning clutch and pinion tests
 - flywheel ring gear tests
 - starter motor bench tester operation
- repair procedures for starting systems, including:
 - tightening connections
 - replacing faulty or damaged cable connections
 - removing and replacing faulty or damaged components
- post-repair testing procedures for starting systems, including:
 - DTC clearing procedures
 - checking for electrical connector mating

- static and dynamic performance tests of starting systems.

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 starting systems that they have worked on, 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 specifications for vehicle, vessel or machinery starting systems
- two different vehicles, vessels or machinery with starting system faults
- diagnostic equipment for vehicle, vessel or machinery starting systems, including multimeter
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery starting systems.

Links

Companion Volume implementation guides are found in VETNet -

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

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