



Australian Government

Assessment Requirements for AURETR031 Diagnose and repair ignition 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 the ignition systems of two different vehicles, vessels or machinery, including faults in two of the following:
 - magneto with contact points
 - magneto with solid state trigger
 - capacitive discharge ignition
 - distributor with contact points
 - distributor with hall effect sensor
 - distributor with induction magnetic trigger
 - distributor with optical sensor
 - waste spark
 - coil on plug.

Knowledge Evidence

Individuals must be able to demonstrate knowledge of:

- work health and safety (WHS) and occupational health and safety (OHS) requirements relating to diagnosing and repairing ignition systems, 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 ignition systems and associated components, including:
 - generating principles, including Faraday's law and inducing an electromotive force (EMF)
- application, purpose and operation of ignition systems and components, including:
 - ignition coils, including:
 - internal component function and operation: primary windings, iron core and secondary windings
 - electromagnetic induction in the coil
 - spark plugs: identification, thread size, reach, heat range, resistance-type plugs, and type and number of earth electrodes
 - ignition leads
 - Kettering ignition system, including:
 - primary section: battery, ignition switch, ballast resistor, ignition coil primary windings, contact breaker point and capacitor
 - secondary section: ignition coil secondary windings, coil high tension lead, rotor button and distributor cap, spark plug high tension leads and spark plugs
 - firing order
 - ignition timing and methods of varying timing according to engine load and speed
 - electronic ignition systems, including:
 - pulse generator systems: stator and rotor units, ignition control units, current limiting and dwell control
 - Hall effect systems: Hall effect device, and permanent magnet and signal waveform
 - optical ignition systems: light emitting diodes (LEDs), rotating disc and optical electronic semiconductors
 - magneto ignition systems: shuttle and inductor magnetos, and energy transfer ignition systems
 - capacitive discharge ignition (CDI) systems:
 - transformer, charging circuit, triggering circuit, main capacitor and rectifier
 - alternating current CDI
 - direct current CDI
 - waste spark ignition systems
 - coil on plug ignition systems
- diagnostic testing procedures for ignition systems, including:
 - using diagnostic flow charts
 - testing electrical systems, including procedures for:
 - accessing electrical terminals and using test probes without damaging connectors, fuse holders or wiring
 - checking resistance, current flow and voltage drop of ignition system circuits
 - testing ignition coils
 - using oscilloscopes, including interpreting ignition system primary and secondary waveforms

- repair procedures for ignition systems, including:
 - removing and replacing faulty or damaged components
 - setting contact breaker gap and checking dwell
 - adjusting ignition system timing
 - removing, replacing and re-timing distributors
- post-repair testing procedures for ignition systems, including static and dynamic performance tests of ignition 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 ignition 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 ignition system specifications
- two different vehicles, vessels or machinery with ignition system faults
- diagnostic equipment for ignition systems, including:
 - multimeter
 - scan tool
 - oscilloscope
- tools, equipment and materials appropriate for repairing vehicle, vessel or machinery ignition 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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