Australian Government

Assessment Requirements for AURETR131 Diagnose and repair ignition systems

Release: 1

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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:

- 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
- carry out a diagnostic test in the course of the above for at least one of the following faults:
  - high resistance in an ignition system
  - loose or damaged connectors or wiring
  - malfunctioning ignition coils.

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 diagnose and repair ignition systems, including:
  - information provided by customers and supervisors
  - manufacturer specifications and procedures or equivalent documentation

- workplace information required to diagnose and repair ignition systems, 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 diagnosing and repairing ignition systems, including procedures for:
  - using specialised tools and equipment, including multimeters, scan tools and oscilloscope
  - 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
- environmental requirements relating to diagnosing and repairing 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
- post-repair testing procedures for ignition systems, including static and dynamic performance tests of ignition systems
- operating principles of ignition systems and associated components, including:
  - generating principles, including Faraday's law and inducing an electromotive force (EMF)
- key features 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
    - firing order
- 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
    - coil on plug ignition systems.

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 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.

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