



Australian Government

**Assessment Requirements for AURETR124
Diagnose and repair compression ignition
engine management 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 compression ignition engine management systems of three different vehicles or machinery, including:
 - faults in two of the following:
 - engine position sensor
 - throttle position sensor
 - engine coolant temperature sensor
 - engine mass airflow (MAF) sensor
 - inlet air temperature (IAT) sensor
 - faults in one of the following:
 - fuel injector
 - engine fuel pressure sensor
 - boost pressure sensor
 - low pressure fuel delivery pump
 - high pressure fuel rail pump
 - electronic control unit (ECU)
- carry out a diagnostic test in the course of the above for at least one of the following faults:
 - low or high pressure in the fuel system
 - damaged sensors, connectors or wiring
 - leaking or restricted injectors.

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 compression ignition engine management systems, including:
 - information provided by customers and supervisors
 - manufacturer specifications and procedures or equivalent documentation
- workplace procedures required to diagnose and repair compression ignition engine management systems, including:
 - establishing serviceability of tools and equipment
 - documentation procedures
 - housekeeping procedures, including:
 - examination of tools and equipment
 - use of specialised tools and equipment, including multimeters, scan tools and oscilloscope
 - 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 compression ignition engine management systems, including procedures for identifying hazards and controlling risks associated with:
 - working with high pressure diesel fuel systems
 - wearing jewellery while working around high current wiring systems
- environmental requirements relating to diagnosing and repairing compression ignition engine management systems
- key features of compression ignition engine management systems and components, including common rail fuel systems and unit injection systems:
 - low pressure stage
 - high pressure stage, including:
 - high pressure injection pump
 - injectors
 - high pressure fuel line
 - compression ignition engine management systems, including:
 - sensors
 - actuators
 - wiring harness
 - electronic control module (ECM)
 - associated vehicle systems
- diagnostic testing procedures for compression ignition engine management systems, including:
 - diagnostic flow charts
 - fuel system testing, including:
 - low pressure fuel system testing

- high pressure fuel system testing
- testing electrical systems, including procedures for:
 - accessing electrical terminals and using test probes without damaging connectors or wiring
 - injector testing
 - sensor testing
 - actuator testing
- accessing and interpreting industry-relevant test equipment data, including:
 - fault codes
 - live data
 - freeze frame data
 - waveforms
- repair for compression ignition engine management systems, including procedures for:
 - removing and replacing sensors
 - removing and replacing actuators, including fuel injectors and fuel pumps
 - adjusting and recalibrating components and their associated systems
- post-repair testing procedures, including procedures for:
 - checking fault codes
 - assessing engine performance
 - checking for electrical connector mating
- operating principles of diesel fuel injection systems and associated components, including:
 - phases of combustion
 - composition of diesel fuel, including cetane and sulphur content.

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 compression ignition engine management 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 compression ignition engine management systems
- three different vehicles or machinery with compression ignition engine management system faults

- diagnostic equipment for compression ignition engine management systems, including:
 - multimeter
 - scan tool
- tools, equipment and materials appropriate for repairing compression ignition engine management 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>