



Australian Government

MEM27002 Test and repair compression ignition systems

Release: 1

MEM27002 Test and repair compression ignition systems

Modification History

Release 1. Supersedes and is equivalent to MEM18026C Test compression ignition fuel systems

Application

This unit of competency defines the skills and knowledge required to assess the operation of compression ignition systems.

It covers the testing and repair of ignition systems used in large compression engines, including direct injection and common rail systems and repair and replacement of components.

Where interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

If the operation of plant and equipment is required, it must only be performed within the person's licensing limits or as determined by relevant regulations.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Fixed and mobile plant

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|---|---|-----|---|
| 1 | Determine job requirements | 1.1 | Follow standard operating procedures (SOPs) |
| | | 1.2 | Comply with work health and safety (WHS) requirements at all times |
| | | 1.3 | Use appropriate personal protective equipment (PPE) in accordance with SOPs |
| | | 1.4 | Identify job requirements from specifications, drawings, job sheets or work instructions |
| 2 | Assess fuel system operation | 2.1 | Apply knowledge of fuel injection principles and component part functions/operation to assess fuel system operation |
| | | 2.2 | Start, operate and shut down diesel plant/equipment |
| | | 2.3 | Undertake checks safely to prescribed procedures |
| | | 2.4 | Determine and record flows, pressures and speeds |
| | | 2.5 | Interpret engine and plant operating characteristics and parameters |
| | | 2.6 | Interpret test results and operational data for faults and serviceability |
| 3 | Repair compression ignition system | 3.1 | Identify components to be repaired or replaced |
| | | 3.2 | Select appropriate tools, equipment and materials |
| | | 3.3 | Repair and replace components according to manufacturer specifications, WHS and environmental requirements |
| | | 3.4 | Time the high-pressure fuel pump or injectors to engine |
| | | 3.5 | Use test equipment to test ignition system and set to specifications |
| | | 3.6 | Record repair according to workplace procedures |

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Fuel system components include the following:

- tank
- filters
- sensors, including:
 - engine position
 - coolant temperature
 - engine mass airflow (MAF)
 - inlet air temperature
 - engine fuel pressure
 - boost pressure
 - fuel delivery
 - fuel rail pressure
- common rail
- electronic and hydraulic electronic injectors
- solenoid and piezoelectric valves
- pumps
- engine control unit (ECU) and associated components

Final adjustment includes the setting of one (1) or more of the following:

- low/high speed
- no load/full load speed
- droop
- sensitivity
- stability
- promptness

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>