Australian Government

MEM27001 Maintain and repair stationary and mobile plant engine cooling systems

Release: 1

MEM27001 Maintain and repair stationary and mobile plant engine cooling systems

Modification History

Release 1. Supersedes and is equivalent to MEM18024B Maintain engine cooling systems

Application

This unit of competency defines the skills and knowledge required to maintain and repair the cooling systems of combustion engines used in mobile and stationary plant and equipment.

It covers servicing, preventative maintenance, diagnosis and repair of combustion engine cooling systems and components in vehicles and plant used to support manufacturing, maintenance and engineering related operations.

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

Band: **A**

Unit Weight: **2**

Pre-requisite Unit

MEM09002	Interpret technical drawing
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
MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components

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.	
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 personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
		1.5	Identify required test equipment
2	**Assess cooling system operation**	2.1	Identify normal cooling system operational performance from manufacturer specifications and work procedures
		2.2	Undertake system checks using specified test procedures and equipment
		2.3	Determine and record water/air flows, pressures and temperatures
		2.4	Isolate faults to component level and determine appropriate corrective action
		2.5	Obtain and evaluate coolant samples
		2.6	Assess component parts for reuse, repair or replacement
3	**Rectify faulty components**	3.1	Determine component wear and clearances using appropriate test equipment and manufacturer recommendations
		3.2	Remove components selected for repair or replacement
		3.3	Repair components to manufacturer specifications where required
		3.4	Select replacement components using manufacturers' data where required

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
	3.5 Refit repaired or replacement components to engine
	3.6 Record test, repair and replacement activities as required
	3.7 Ensure engine is free of coolant leaks and the cooling system contains the correct level of additive/inhibitor after repair work is carried out

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.

Cooling systems include one (1) or more of the following:	• engine or vehicle cooling • large stationary plant combustion engine cooling • cooling towers • shutter type systems or fan drive • water type inter/after coolers • oil coolers

Cooling system testing includes one (1) or more of the following:	• air and/or water flows
	• temperatures
	• pressures
	• assess serviceability and repair on a range of:
	  • flow/pressure actuators
	  • sensors
	  • actuators and solenoids

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.

Typical system faults include one (1) or more of the following:	• coolant pressures
	• the presence of:
	  • steam
	  • gases
	  • oil
	  • fuel
	  • air
	• corrosion
	• contamination

Testing coolant condition includes testing for one (1) or more of the following:	• correct additives including anti-corrosion and anti-freeze
	• contamination, including:
	  • oil
	  • metal
	  • other particles

Components include one (1) or more of the following:	• sensors • caps • gauges • pumps • fan drives and motors

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