



Australian Government

MEM27033 Perform advanced equipment testing and diagnostics on mobile plant and equipment

Release: 1

MEM27033 Perform advanced equipment testing and diagnostics on mobile plant and equipment

Modification History

Release 1. Supersedes and is equivalent to MEM18073A Perform advanced equipment testing and diagnostics on mobile plant and equipment

Application

This unit of competency defines the skills and knowledge required to obtain and interpret information to diagnose mobile plant and equipment faults, determine the cause, and make recommendations, and includes the use of electronic and analog diagnostic tools.

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

Band: B

Unit Weight: 8

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
MEM16008	Interact with computing technology
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components
MEM27006	Diagnose and rectify batteries, low voltage sensors and circuits
MEM27016	Diagnose and maintain electronic controlling systems on mobile and stationary plant

Competency Field

Maintenance and diagnostics

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 appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Obtain information on mobile plant and equipment performance	2.1	Access and interpret job-related information and use information management systems to access data on plant and equipment performance
		2.2	Review previous service records to access data on plant and equipment performance
		2.3	Review equipment systems operation, testing and adjusting procedure and identify troubleshooting procedure
		2.4	Identify hazards associated with plant and equipment tests
3	Identify equipment fault/s	3.1	Interpret data from information management system and determine fault symptoms, including carrying out a visual inspection on equipment operation
		3.2	Install all test equipment at the correct test point locations and conduct performance tests, as required
		3.3	Analyse information from tests and test equipment and identify fault
		3.4	Plot data and record on performance analysis report forms
4	Determine cause of fault/s and	4.1	Identify possible causes and conduct diagnostic tests to confirm cause

Elements describe the essential outcomes.

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

	make recommendations	4.2	Analyse test result and compare with specifications
		4.3	Locate cause of fault and document
		4.4	Make recommendations for repair and implement rectification strategy
5	Check and document repairs	5.1	Check repairs for completion
		5.2	Re-test equipment to ensure compliance
		5.3	Prepare and complete service report and complete required documentation in accordance with 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.

- Mobile plant faults occur within one (1) or more of the following:**
- hydraulics
 - engine
 - power train
 - electronic systems

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Hazards include one (1) or more of the following:

- ventilation hazards, including battery gas leaks and (freon) paint emission
- excessive noise
- fluid spillage
- electrical hazards from generator sets and water
- lifting hazards caused by the removal and replacement of heavy components (e.g. engines and transmissions)
- hydraulic hazards (e.g. high oil pressure and temperature)
- drive trains hazards (e.g. tail shaft wind up)
- fire hazards from the activation of fuel and temperature

Information management systems include one (1) or more of the following:

- retrieving test data from the service information system (SIS)
- equipment management systems
- factory passwords
- finding test data through, microfiche and SIS
- obtaining relevant flash file information
- finding full load settings (FLS) and full torque settings (FTS), SIS or similar
- using the dynamometer and windows performance analysis reporting programs
- producing performance analysis report

Test equipment includes one (1) or more of the following:

- dynamometer
- electronic technician
- multimeter
- flow meter
- pressure gauges
- communication adaptors
- scroll box
- stop watch

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Performance tests include one (1) or more of the following:

- rocker checks for oil
- fluid level checks
- fuel and cooling system checks
- emergency shutdown operation checks
- final walk around inspection
- manual and/or electronic tests of equipment and/or components
- cylinder cut out tests
- solenoid tests
- cycle times
- sensor tests
- lubrication pressure checks
- leak checks
- power checks using the dynamometer program, engine performance tools, transmission and hydraulic test equipment
- checks on alignments between components

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18073A Perform advanced equipment testing and diagnostics on mobile plant and equipment

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for MEM27033 Perform advanced equipment testing and diagnostics on mobile plant and equipment

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting charts, lists, manufacturer specifications, drawings, personnel accounts/descriptions, history, log books and job records and obtaining and accessing relevant data manually or by electronic means on mobile plant and equipment performance
- identifying hazards associated with mobile plant and equipment and implementing appropriate risk control measures and procedures
- identifying faults by checking equipment for compliance with specifications using appropriate test equipment and appropriate fault-finding techniques
- identifying possible causes for fault and making recommendations for rectifying faults using a rectification strategy, including referral, replacement or dispatch to other personnel
- undertaking calculations and numerical operations associated with advanced equipment testing and diagnostics on mobile plant and equipment
- checking equipment for compliance with specifications after rectification of faults
- documenting all findings and outcomes in accordance with SOPs.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- tests to be conducted to diagnose faults at equipment and component level
- sources of information available to assist in fault finding
- uses and parameters of information management systems
- required rectification for equipment faults
- practices and procedures in root cause analysis
- equipment performance specifications
- documentation requirements.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing advanced equipment testing and diagnostics on mobile plant and equipment at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires
- Where possible assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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