



Australian Government

Department of Education, Employment and Workplace Relations

MEM18073A Perform advanced equipment testing and diagnostics on mobile plant and equipment

Release: 1

MEM18073A Perform advanced equipment testing and diagnostics on mobile plant and equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers obtaining and interpreting information to diagnose mobile plant and equipment faults, determining the cause, and making recommendations. It includes the use of electronic and analogue diagnostic tools.
------------------------	--

Application of the Unit

Application of the unit	<p>This unit applies to the diagnosis of faults across the mobile plant including faults within the hydraulics, engine, power train and electronic systems and components.</p> <p>It also includes making recommendations for work to be undertaken on faults.</p> <p>Band: B Unit Weight: 8</p>
--------------------------------	--

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM16006A	Organise and communicate information

Prerequisite units	
	MEM16008A Interact with computing technology
	MEM18001C Use hand tools
	MEM18002B Use power tools/hand held operations
	MEM18010C Perform equipment condition monitoring and recording
	MEM18030B Diagnose and rectify low voltage electrical systems
	MEM18047B Diagnose and maintain electronic controlling systems on mobile plant
	MEM18055B Dismantle, replace and assemble engineering components

Employability Skills Information

Employability skills	This unit contains employability skills.
-----------------------------	--

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
---	--

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Obtain information on mobile plant and equipment performance	1.1. Job related information is accessed and interpreted. 1.2. Information management systems are used to access data on plant and equipment performance. 1.3. Previous records are reviewed. 1.4. Equipment systems operation, testing and adjusting procedure is reviewed and troubleshooting procedure is identified. 1.5. Hazards associated with plant and equipment tests are identified.
2. Identify equipment fault/s	2.1. Data from information management system is interpreted. 2.2. Fault symptoms are determined. 2.3. Equipment operation is visually inspected. 2.4. All test equipment is installed at the correct test point locations. 2.5. Performance tests are conducted as required. 2.6. Information from tests and test equipment is analysed. 2.7. Fault is identified. 2.8. Data is plotted and recorded on performance analysis report forms.
3. Determine cause of fault/s	3.1. Possible causes are identified. 3.2. Diagnostic tests are conducted to confirm cause. 3.3. Test results are analysed. 3.4. Test results are compared with specifications. 3.5. Cause of fault is located and documented.
4. Make recommendations	4.1. Recommendations for repair are made. 4.2. Rectification strategy is implemented.
5. Check and document repairs	5.1. Repairs are checked for completion. 5.2. Equipment is re-tested to ensure correct performance. 5.3. Service report is prepared and completed. 5.4. Required documentation is completed.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

REQUIRED SKILLS AND KNOWLEDGE

Required skills

Look for evidence that confirms skills in:

- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- planning and sequencing operations
- checking and clarifying task-related information
- problem solving
- checking for conformance to specifications
- using tools and equipment to conduct performance and fault finding tests
- undertaking root cause analysis
- undertaking calculations and numerical operations within the scope of this unit
- using computer
- using information management systems
- making recommendations for rectifying faults
- implementing and reviewing rectification strategy
- documenting findings and outcomes

Required knowledge

Look for evidence that confirms knowledge of:

- hazards and control measures associated with conducting tests and fault finding across equipment, including housekeeping
- safe work practices and procedures
- 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

Evidence Guide

EVIDENCE GUIDE	
<p>The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to undertake advanced equipment testing and diagnostics. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.</p>
<p>Context of and specific resources for assessment</p>	<p>This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with advanced equipment testing and diagnostics, or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p>Method of assessment</p>	<p>Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.</p>

EVIDENCE GUIDE	
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.</p>	
Mobile plant and equipment	Hydraulics, engine, power train and electronic systems
Job related information	Personnel accounts/descriptions, log books, job records standard operating procedures, manufacturers' specifications
Accessed	By manual or electronic means
Previous records	Equipment logs and history
Hazards	<ul style="list-style-type: none"> • 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 such as high oil pressure and temperature • Drive trains hazards such as tail shaft wind up • Fire hazards from the activation of fuel and temperature
Information management systems include	<ul style="list-style-type: none"> • Retrieving test data from the Service Information System (SIS) • Equipment management systems

RANGE STATEMENT	
------------------------	--

- | | |
|--|---|
| | <ul style="list-style-type: none">• 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 |
|--|---|

RANGE STATEMENT	
Test equipment	Dynamometer, electronic technician, multimeter, flow meter, pressure gauges, communication adaptors, scroll box and stop watch
Performance tests	<ul style="list-style-type: none"> • Rocker checks for oil • Fluid level checks • Fuel and cooling system checks • Emergency shut-down 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
Rectification strategy	Repair, referral, replacement, dispatch to other personnel

Unit Sector(s)

Unit sector	
--------------------	--

Co-requisite units

Co-requisite units	

Competency field

Competency field	Maintenance and diagnostics
------------------	-----------------------------