



Australian Government

Department of Education, Employment and Workplace Relations

MEM18052B Maintain fluid power systems for mobile plant

Release: 1

MEM18052B Maintain fluid power systems for mobile plant

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers testing, fault finding and rectifying basic fluid power systems used in the earthmoving, agricultural and transport industries.
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Application of the Unit

Application of the unit	<p>The general servicing of systems is also covered by this unit and includes fluid replacement, filtration requirements and oil sampling.</p> <p>This competency does not cover skills required in the design or modification of systems, component re-manufacture or the diagnosis, maintenance and repair of control systems (solenoid and electro proportional systems).</p> <p>If these skills are required, then Units MEM18023B (Modify fluid power system operation), MEM18047B (Diagnose and maintain electronic controlling systems on mobile plant) and MEM18053B (Modify fluid power control systems) should be selected as appropriate.</p> <p>Where Unit MEM18020B (Maintain hydraulic system components) and/or MEM18021B (Maintain hydraulic systems) are selected, this unit should not be selected.</p> <p>Band: A</p> <p>Unit Weight: 4</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18055B	Dismantle, replace and assemble engineering components

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Secure system from potentially hazardous situations	1.1. Sources of stored energy are identified. 1.2. Mobile plant is assessed for potentially hazardous situations and conditions. 1.3. Accumulators and position actuators are bled down to remove stored energy as per manufacturers' instructions.
2. Check hydraulic system components	2.1. System <i>components</i> are identified correctly, using appropriate circuit diagrams or manufacturers' instruction. 2.2. Faults are traced and localised with reference to manufacturer troubleshooting procedures and flow charts. 2.3. The operational function of components is inspected and tested in accordance with standard operating procedures.
3. Replace faulty system components	3.1. Faulty components are correctly removed from system using appropriate tools, techniques and procedures. 3.2. Replacement components are sourced where appropriate from manufacturer/supplier. 3.3. Hoses, tubes and pipework are prepared and assembled using appropriate tools, techniques and procedures. 3.4. Replacement components and conductors are correctly assembled and refitted to system. 3.5. System is tested and adjusted for correct operation according to standard operating procedures.
4. Dismantle, inspect and rectify linear actuators	4.1. Hydraulic cylinders and rams are dismantled using appropriate tools, techniques and procedures. 4.2. Component parts are evaluated for condition. 4.3. Seals and bearings are fitted as per manufacturer specifications. 4.4. Cylinders/rams are reassembled and fitted as per manufacturer instructions. 4.5. Assembly is tested by use of machine circuit or equivalent.
5. Service hydraulic systems	5.1. Hydraulic systems are serviced according to manufacturers' schedules and instructions.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

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 task-related information
- checking for conformance to specification
- identifying sources of stored energy on mobile plant
- identifying hazardous situations/conditions and applying appropriate safety measures
- bleeding accumulators down and positioning actuators correctly
- tracing faulty components and localising using fluid power principles, procedures and safety requirements
- using equipment for testing hydraulic system component
- inspecting and testing components including hoses, pipes, actuators, pumps, valves, cylinders and rams according to procedure and using fluid power
- removing components from system
- identifying replacement pipes and hoses using catalogues or electronic media
- obtaining replacement parts using appropriate procedures
- selecting appropriate conductors and fittings from manufacturer catalogues and charts
- cutting conductors to length using appropriate tooling/machine
- assembling conductors using correct techniques
- replacing component parts correctly in system using appropriate tools and techniques
- testing and adjusting replacement components for correct operation and conformance to specifications
- conducting conductor assemblies using machine circuits
- dismantling linear actuators without damage, using correct tools, techniques/procedures and safety measures
- locating and using specifications to identify performance/condition of cylinders and rams
- identifying wear and damage to cylinders and rams
- fitting seals and bearings

REQUIRED SKILLS AND KNOWLEDGE

- reassembling cylinder/ram in correct sequence as per manufacturer instruction
- refitting assembly correctly to machine
- testing refitted assemblies and verifying repairs on machine circuit and/or test rig
- carrying out general service procedures correctly
- undertaking calculations and numerical operations within the scope of this unit
- recording/reporting service activities

Required knowledge

Look for evidence that confirms knowledge of:

- different sources of stored energy and their applications
- hazards and control measures associated with maintenance and rectification of fluid power systems, including housekeeping
- the reasons for bleeding accumulators and actuators and the hazards associated with working on pressurised systems
- the full range of hydraulic system components in a mobile plant application
- information on circuit diagram or manufacturer instructions
- the characteristics and operational function of each system component
- methods and techniques for tracing and localising faults
- the procedures and equipment for inspecting and testing hydraulic system components
- problems relating to faulty hydraulic system components/operation
- the specifications of each hydraulic system component
- the reasons for hydraulic components not operating in accordance with specifications
- all safety procedures and precautions
- common faults in hydraulic components
- removal methods for various components
- information in catalogues or electronic media
- procedures to obtain replacement parts
- typical conductor types and fittings their applications
- methods for cutting/assembling hoses/tubes/pipework
- tools and techniques for fitting replacement components and conductors
- the correct operation of hydraulic components and conductors
- the procedures for checking and adjusting the system
- the tools, techniques and procedures used for dismantling
- safety measures for dismantling linear actuators
- the methods of inspection and measurement
- guides and specifications for reusable parts
- the correct procedures for fitting bearings and seals
- the sequence and procedure for reassembly of cylinder/ram

REQUIRED SKILLS AND KNOWLEDGE

- assembly and fitting instructions
- the procedures for refitting rams
- the procedures for testing and verifying repairs using machine circuits and/or test rigs
- necessary remedial action
- manufacturer scheduled service timeframes and service items
- service procedures
- safe work practices and procedures

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 maintain fluid power systems for mobile plant. 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. Where assessment occurs off the job, i.e. the candidate is not in productive work, 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 maintaining fluid power systems for mobile plant, 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	
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Range Statement**RANGE STATEMENT**

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.

Check

Pressure and flow testing, cycle times, basic interrogation of diagnostic system and basic electronic servicing

Components

Hoses, pipes, actuators, pumps, valves, cylinders and rams

Service of hydraulic systems

Change out of hydraulic components such as pumps, valves and actuators and the associated remedial actions required such as system flushing and purging and setting of component parameters

Rectify

May include the assembly and fitting of hydraulic hoses, tubing and pipework. Resealing and repairs to cylinders and rams.

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics
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