



Australian Government

MEM27025 Maintain, diagnose and rectify fluid power controls in mobile equipment

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Modification History

Release	Comments
2	Unit title for the unit code MEM27017 corrected in the prerequisites.
1	This unit of competency was first released in MEM Manufacturing and Engineering Release 2.0.

Application

This unit of competency defines the skills and knowledge required to install and repair and/or rectify fluid power controls used in mobile equipment applications.

It applies to hydraulic fluid power systems control circuits and may also apply to mobile equipment using pneumatic systems. Where pneumatic controls are also to be maintained, relevant pneumatic units should also be selected.

It covers fault finding of fluid power systems control circuits, maintaining and repairing or replacing system control components, and checking and adjusting the operation of fluid power system controls. System circuit/components are identified, traced, inspected and operational function is assessed and verified using fluid power principles to predetermined specifications interpreted from data sheets and circuit diagrams.

Band: B

Unit Weight: 6

Licensing/Regulatory Information

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

Pre-requisite unit(s)

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

MEM27006 Diagnose and rectify batteries, low voltage sensors and circuits

MEM27017 Maintain, fault find and rectify hydraulic systems for mobile plant

Competency field(s)

Fixed and Mobile Plant

Unit sector(s)

N/A

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. Identify/inspect or install fluid power systems and controls	2.1 Interpret and apply fluid power control principles and system/circuit diagrams 2.2 Identify control modules, fieldbus wiring, sensors and control module locations for fluid power systems 2.3 Conduct initial inspection of fluid power system/circuit components for compliance with specifications 2.4 Undertake sequential installation according to manufacturer specifications and SOPs
3. Check and adjust fluid power system control sequence and operation	3.1 Check controls and system operation against operational specifications using appropriate test equipment and application principles/techniques 3.2 Perform adjustments to sequence system to meet/align to operational requirements and specifications 3.3 Report modifications/alterations and according to SOPs

	3.4 Check controls and system operation and commission to specifications
4. Fault find fluid power systems control circuit	4.1 Interpret and apply system/circuit diagrams and data sheets 4.2 Identify and inspect system/circuit components 4.3 Trace system/circuit and diagnose action of components to identify and localise faults 4.4 Test system/circuit parts using appropriate test equipment and application principles 4.5 Assess system/circuit parts against operational specifications 4.6 Localise fault condition at the component level 4.7 Evaluate faulty condition, analyse root cause and plan corrective action
5. Maintain and repair or rectify system control components	5.1 Apply correct maintenance procedures 5.2 Select and apply repair procedures using appropriate tools, equipment and techniques 5.3 Test faulty items, repair or replace using sequential installation procedures according to manufacturer recommendations 5.4 Select replacement items from appropriate sources 5.5 Reassemble system control components according to specifications
6. Check and adjust sequence of fluid power system controls	6.1 Identify circuit sensors and controllers using circuit diagrams and fluid power system control principles 6.2 Make necessary adjustments to sequence system control circuit to meet operational specification 6.3 Check and verify correct operation of system control circuit against operational specification 6.4 Commission fluid power system controls to specifications 6.5 Adopt appropriate follow-up procedures 6.6 Complete service/maintenance report

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.

Fluid power system controls include one (1) or more of the following:

- fieldbus system control unit
- integrated or separate measurement/testing/data logging equipment
- electronic proportioning and bus systems
- proportional and servo controlled valving and the associated electronic amplifiers and drivers
- joystick
- controller variable and/or digital inputs and outputs
- sensors
- digital/analog transducers and proximity switches
- transducers
- timers
- counters
- ancillary equipment

Unit Mapping Information

Current Code and Title	Previous Code and Title	Comments	Equivalence
MEM27025 Maintain, diagnose and rectify fluid power controls in mobile equipment		This unit has been created to address a skill or task required by industry that is not covered by an existing unit of competency	Newly created

Assessment Requirements for MEM27025 Maintain, diagnose and rectify fluid power controls in mobile 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
- obtaining and interpreting specifications system/circuit diagrams, system operation and control data records and identifying and inspecting system components for compliance with specifications
- planning and undertaking sequential installation of fluid power systems and controls in accordance with manufacturer specifications and procedures
- checking and adjusting control and system operation using appropriate test equipment ensuring that the sequence of operations conforms to specifications and operational requirements
- recording/reporting any modifications/alterations to the system in accordance with SOPs
- fault finding fluid power systems control circuits and controllers using fault-finding techniques and appropriate test equipment and identifying and localising components not conforming to operational specifications for repair/replacement
- repairing/replacing faulty items after testing for compliance to specifications using appropriate tools, equipment and techniques
- reassembling control components to meet specifications
- verifying correct operation of system power control circuit and commission the fluid power system controls to specifications
- initiating maintenance and/or service follow-up procedures and completing maintenance and/or service reports according to 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)
- system operational and control requirements and specifications
- application of common fluid power system components and controllers
- basic electronic concepts, including current/voltage/power and solenoid coils
- pulse width modulation (PWM) and its function/application
- function of analogue controllers in simple fluid power systems
- digital controllers in mobile fieldbus systems (e.g. controller area network (CAN) bus) and their function and capabilities
- controller fault code interrogation and interpretation, where available
- circuit sensors and controllers
- temperature transducers
- data loggers – types and basic function
- special installation requirements
- fluid power and common test equipment and their application
- correct operational sequence of the system
- typical adjustments to correct sequencing variations from specification
- procedures for recording/reporting modifications/alterations and consequences of not recording/reporting
- fluid power system commissioning procedures
- components not complying with operational specification and typical causes of component failure
- cause of the faulty condition in the components and appropriate procedures for rectifying the faulty condition
- appropriate maintenance schedule and procedures
- appropriate control component repair procedures
- typical test equipment and its application
- common adjustments that can be made to control systems and their effect
- any maintenance/service follow-up procedures
- maintenance/service recording/reporting requirements.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining, diagnosing and rectifying fluid power controls in mobile 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.

Link

Companion volumes, including implementation guides, are found on the national training register - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>.