



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM18022B Maintain fluid power controls**

**Release: 2**

## **MEM18022B Maintain fluid power controls**

### **Modification History**

Single band identifier removed to clarify dual status

## Unit Descriptor

|                        |                                                                                                                                                    |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unit descriptor</b> | This unit covers installing and repairing and/or rectifying fluid power controls, and adjusting fluid power system control sequence and operation. |
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## Application of the Unit

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Application of the unit</b> | <p>It also covers fault finding of fluid power systems control circuits, maintaining and repairing or replacing system control components and checking and adjusting the sequence 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.</p> <p>Work is undertaken using predetermined standards of quality, safety and work procedures, autonomously or in a team environment.</p> <p>Installation, adjustment, repairs, replacements and overhauls are undertaken to site or manufacturers' specifications using working knowledge and application of principles of fluid power systems control sequencing which may include: PLCs, relay logic control systems, unitised/modular sensors, transducers, timers, counters and associated equipment.</p> <p>If skills beyond the sequencing of PLC controls are required, then Units MEM10004B (Enter and change programmable controller operational parameters) and/or Unit MEM10005B (Commission programmable controller programs) should also be accessed.</p> <p><b>Band:</b></p> <p>This unit has dual status and is to be regarded as both a Specialisation band A unit and Specialisation band B unit for progression to C5 (AQF level V).</p> <p><b>Unit Weight: 8</b></p> |
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## Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

| Prerequisite units |           |                                                        |
|--------------------|-----------|--------------------------------------------------------|
| <b>Path 1</b>      | MEM09002B | Interpret technical drawing                            |
|                    | MEM12023A | Perform engineering measurements                       |
|                    | MEM18001C | Use hand tools                                         |
|                    | MEM18002B | Use power tools/hand held operations                   |
|                    | MEM18003C | Use tools for precision work                           |
|                    | MEM18006C | Repair and fit engineering components                  |
|                    | MEM18018C | Maintain pneumatic system components                   |
|                    | MEM18019B | Maintain pneumatic systems                             |
|                    | MEM18055B | Dismantle, replace and assemble engineering components |
| <b>Path 2</b>      | MEM09002B | Interpret technical drawing                            |
|                    | MEM12023A | Perform engineering measurements                       |
|                    | MEM18001C | Use hand tools                                         |
|                    | MEM18002B | Use power tools/hand held operations                   |
|                    | MEM18003C | Use tools for precision work                           |
|                    | MEM18006C | Repair and fit engineering components                  |
|                    | MEM18020B | Maintain hydraulic system components                   |
|                    | MEM18021B | Maintain hydraulic systems                             |

|                           |           |                                                        |
|---------------------------|-----------|--------------------------------------------------------|
| <b>Prerequisite units</b> |           |                                                        |
|                           | MEM18055B | Dismantle, replace and assemble engineering components |

## Employability Skills Information

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|-----------------------------|------------------------------------------|
| <b>Employability skills</b> | 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. Install/replace fluid power systems and controls                   | 1.1. Fluid power control principles and system/circuit diagrams are interpreted and understood.<br>1.2. System/circuit components are identified and inspected for compliance with specifications.<br>1.3. Sequential installation is undertaken according to manufacturers' specifications and standard operating procedures.                                                                                                                                                                                                                                                                       |
| 2. Check and adjust fluid power system control sequence and operation | 2.1. Controls and system operation is checked against operational specifications using appropriate test equipment and application principles/techniques.<br>2.2. Adjustments are performed to sequence system to meet/align to operational requirements and specifications.<br>2.3. Modifications/alterations are recorded and reported in accordance with standard operating procedures.<br>2.4. Controls and system operation is checked and commissioned to specifications.                                                                                                                       |
| 3. Fault find fluid power systems control circuit                     | 3.1. System/circuit diagrams and data sheets are interpreted and understood.<br>3.2. System/circuit components are identified and inspected.<br>3.3. System/circuit is traced and action of components is diagnosed to identify and localise faults.<br>3.4. System/circuit parts are tested using appropriate test equipment and application principles.<br>3.5. System/circuit parts are assessed against operational specifications.<br>3.6. Fault condition is localised at the component level.<br>3.7. Faulty condition is evaluated, root cause is analysed and corrective action is planned. |
| 4. Maintain and repair or rectify system control components           | 4.1. Correct maintenance procedures are applied according to standard operating procedures.<br>4.2. Repair procedures are selected and applied using correct and appropriate techniques, tools and equipment.<br>4.3. Faulty items are tested, repaired or replaced using sequential installation procedures according to manufacturers' recommendations.<br>4.4. Replacement items are selected from manufacturers' catalogues to meet specifications.                                                                                                                                              |

| ELEMENT                                                     | PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                             | 4.5. System control components are reassembled using appropriate principles and procedures according to specifications required.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 5. Check and adjust sequence of fluid power system controls | 5.1. Using circuit diagrams and fluid power system control principles, circuit sensors and controllers are identified.<br>5.2. Necessary adjustments to sequence system control circuit are made to meet operational specification.<br>5.3. Correct operation of system control circuit is checked against operational specification.<br>5.4. Correct operation is confirmed.<br>5.5. Fluid power system controls are commissioned to specifications.<br>5.6. Appropriate follow-up procedures are adopted.<br>5.7. Service/maintenance report is completed to standard operating procedures. |

## 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:

- obtaining and interpreting system/circuit diagrams, system operation data sheets and control data
- planning and sequencing operations
- checking/inspecting system/circuit components for compliance with specifications
- undertaking installation of the fluid power system and controls in accordance with manufacturers' specifications and work site procedures
- using test equipment to check control and system operation against specification
- adjusting the system where appropriate, to ensure that the sequence of operations conforms to operational requirements
- recording/reporting any modifications/alterations to the system
- checking the operation of the controls and system for conformance to specification
- commissioning the system in accordance with work site procedures
- identifying and localising components not conforming to operational specification
- conducting appropriate maintenance in accordance with work site procedures

## REQUIRED SKILLS AND KNOWLEDGE

- repairing control components where appropriate
- testing faulty items for conformance to specification
- installing repaired/replaced components
- selecting replacement items from manufacturers' catalogues
- reassembling control components
- initiating maintenance and/or service follow-up procedures
- completing maintenance and/or service reports

## Required knowledge

Look for evidence that confirms knowledge of:

- system operational and control requirements and specifications
- the application of common fluid power system components and controllers
- the system/circuit components
- any special installation requirements
- fluid power test equipment and application
- the correct operational sequence of the system
- typical adjustments to correct sequencing variations from specification
- the consequences of not recording/reporting modifications to systems
- the procedures for recording/reporting modifications/alterations
- the fluid power system commissioning procedures
- common test equipment and its application
- the component(s) not complying with operational specification
- typical causes of component failure
- the cause of the faulty condition in the component(s)
- appropriate procedures for rectifying the faulty condition
- the appropriate maintenance schedule and procedures
- appropriate control component repair procedures
- typical test equipment and its application
- circuit sensors and controllers
- common adjustments that can be made to control systems and their effect
- any maintenance/service follow-up procedures
- the maintenance/service recording/reporting requirements
- hazards and control measures associated with maintaining and rectifying fluid power controls, including housekeeping
- safe work practices and procedures

## Evidence Guide

### EVIDENCE GUIDE

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.

#### Overview of assessment

A person who demonstrates competency in this unit must be able to maintain fluid power controls. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

#### Critical aspects for assessment and evidence required to demonstrate competency in this unit

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.

#### Context of and specific resources for assessment

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.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with maintaining and rectifying fluid power controls or other units requiring the exercise of the skills and knowledge covered by this unit.

#### Method of assessment

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.

**EVIDENCE GUIDE****Guidance information for assessment****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.

**Fluid power control principles**

PLCs, relay logic control systems, unitised/modular sensors, transducers, timers, counters and associated equipment

**Unit Sector(s)****Unit sector****Co-requisite units****Co-requisite units**

## Competency field

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