



Australian Government

Department of Education, Employment and Workplace Relations

MEM18053B Modify fluid power control systems

Release: 1

MEM18053B Modify fluid power control systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers checking and testing software programs, controlling system inputs and outputs, repairing faulty system inputs and outputs, and preparing a service report.
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Application of the Unit

Application of the unit	This unit covers the skills required to alter the control parameters of fluid power control systems by system modification; this includes the ability to assess system performance based on sound working knowledge of established principles, methods and procedures. System specifications are interpreted/understood from data sheets, circuit diagrams and flow diagrams. Corrections, modifications/alterations are undertaken to specifications to parts of the control system including software timers, gates, associated equipment, flow, ladder and logic diagrams. Fault finding of system hardware input/outputs includes input/output circuitry, cards, external sensors, limits, mnemonic coding and associated equipment. Service reports are prepared according to standard operating procedure. Programmable controllers include PLC and DCS or similar. Band: B Unit Weight: 6
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM12024A	Perform computations
	MEM12025A	Use graphical techniques and perform simple statistical computations
	MEM14005A	Plan a complete activity
	MEM16010A	Write reports
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18003C	Use tools for precision work
	MEM18006C	Repair and fit engineering components
	MEM18010C	Perform equipment condition monitoring and recording
	MEM18016B	Analyse plant and equipment condition monitoring results
	MEM18018C	Maintain pneumatic system components
	MEM18019B	Maintain pneumatic systems
	MEM18020B	Maintain hydraulic system components
	MEM18021B	Maintain hydraulic systems
	MEM18022B	Maintain fluid power controls
	MEM18023B	Modify fluid power system operation

Prerequisite units		
	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. Check/test control software program	1.1. Program steps are checked against manufacturers' and site specifications using schematics, circuit and ladder diagrams. 1.2. Deviations are determined and recorded.
2. Correct or modify control system software/program	2.1. Program deviations are corrected and aligned to specification requirements using standard operating procedures. 2.2. <i>Modifications</i> to program are undertaken to specification requirements using standard operating procedures. 2.3. Modification is recorded to standard operating procedures. 2.4. Modified program is backed up to standard operating procedures.
3. Check/test control system inputs/outputs	3.1. Input/output signals are checked and assessed against operational specifications using correct and appropriate techniques, tools and equipment. 3.2. Faulty signals are identified, repaired and recorded/reported to appropriate personnel.
4. Repair faulty control system input/output	4.1. Faulty signal source is repaired and/or replaced. 4.2. Repaired/replaced signal source is tested for correct operation in system and commissioned in conformance to operational specifications.
5. Prepare service report	5.1. Service report is prepared and completed following standard operating procedure. 5.2. Recommendations for improvement and repeat downtime avoidance analysis are included.

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,

REQUIRED SKILLS AND KNOWLEDGE

- specifications, standard operating procedures, charts, lists, drawings, circuit and ladder diagrams and other applicable documents
- planning and sequencing operations
- checking and clarifying task-related information
- identifying, recording and correcting deviations of control software program from specification
- modifying control system software/program and recording modifications
- backing up the modified control system program
- checking the input and output signals for conformance to specification using appropriate tools, equipment and techniques in accordance with standard operating procedures
- identifying, recording and correcting faulty signals
- marking the source of the faulty signal for repair or replacement
- obtaining and using supplier catalogues
- testing repaired/replaced signal source for correct operation in accordance with specifications and standard operating procedures
- commissioning the repaired/replaced signal source
- documenting all required service details

Required knowledge

Look for evidence that confirms knowledge of:

- the operational specifications of the control system
- the program steps and their function
- the procedures for recording deviations of the control software program from specification
- the procedures for correcting deviations of the control system software from specification
- the modifications to be made to the control system software and reasons for modifying the control system software
- the procedures for recording control system software modifications
- the procedures for backing up modifications to control system programs
- the tools, equipment and techniques to be used to check input and output signals for conformance to specification
- the procedures for recording/reporting faulty input/output signals
- the procedures for marking items for repair or replacement
- the tools, equipment and techniques necessary to repair the signal source
- the disassembly/assembly procedures to be followed when repairing signal sources
- the specifications of the signal source
- the procedures for testing signal sources
- the procedures for commissioning signal sources into operation
- the procedures for reporting service undertaken on control systems

REQUIRED SKILLS AND KNOWLEDGE

- any trends and probable causes, evident in the data collected and collated
- reasons for recommended improvements
- safe work practices and procedures
- hazards and controls associated with modifying fluid power controls, including housekeeping

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 modify fluid power control systems. 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. 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.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with modifying fluid power control systems 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 should not require language, literacy and numeracy skills beyond those required in this unit. 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.

Control system

PCs, programmable controllers, DCS, relay logic (electric-hydraulic-pneumatic) etc.

Modifications

Modifications covered by this unit are changes to fluid power control systems that lead to desired changes in system performance

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

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics
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