Australian Government

Department of Education, Employment and Workplace Relations

MEM18092B Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls

Release: 1

MEM18092B Maintain and repair commercial and/or industrial refrigeration and/or air conditioning controls

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers repairing or replacing commercial and/or industrial refrigeration and/or commercial air conditioning controls.

Application of the Unit

Application of the unit	This unit applies to the installation, adjustment, repairs, replacements and overhauls undertaken to site or manufacturers' specifications, using application of principles of domestic refrigeration and/or commercial air conditioning control sequencing which may include: PLCs, relay logic control systems, unitised/modular sensors, transducers, timers, counters and associated equipment. System circuit components are identified, traced, inspected and operational function is assessed and verified using refrigeration/air conditioning principles to predetermined specifications, interpreted from data sheets and circuit diagrams. The application of this competency must cover a variety of refrigeration equipment and systems. 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 C7 (AQF level IV). **Band**: **A** **Unit Weight**: **6**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12002B	Perform electrical/electronic measurement
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18055B	Dismantle, replace and assemble engineering components
	MEM18086B	Test, recover, evacuate and charge refrigeration systems
	MEM18088B	Maintain and repair commercial air conditioning systems and components
Path 2	MEM09002B	Interpret technical drawing
	MEM12002B	Perform electrical/electronic measurement
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18055B	Dismantle, replace and assemble engineering components
	MEM18086B	Test, recover, evacuate and charge refrigeration systems
	MEM18090B	Maintain and repair industrial refrigeration systems and 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. Install/replace refrigeration/air conditioning controls	1.1. Refrigeration/air conditioning control principles and system diagrams are interpreted. 1.2. Control circuit components are identified and inspected for compliance to specification. 1.3. Sequential installation is undertaken according to manufacturers' specifications and standard operating procedures.
2. Check and adjust refrigeration/air conditioning control sequence and operation	2.1. The temperature, quality, pressure and properties of the air delivered by the air conditioning system are checked for conformance to specification. 2.2. Controls operation is checked against operational specifications using appropriate test equipment and application principles/techniques. 2.3. Adjustments are performed to control sequence to meet/align to operational requirements and specifications. 2.4. Modifications/alterations are recorded and reported in accordance with standard operating procedures. 2.5. Controls operation is checked and returned to service to specification.
3. Fault find refrigeration/air conditioning control circuits	3.1. Control circuit diagrams and data sheets are interpreted. 3.2. Control circuit components are identified and inspected. 3.3. Control circuit is traced and action of components is diagnosed to identify and localise faults. 3.4. Control circuit parts are tested using appropriate test equipment and application principles. 3.5. Control circuit parts are assessed against operational specification. 3.6. Fault condition is localised at the component level. 3.7. Faulty condition is evaluated, root cause is analysed and corrective action is planned.
4. Maintain, repair/replace control components	4.1. Correct maintenance procedures are applied according to standard operating procedures. 4.2. Repair procedures are selected and applied using correct and appropriate techniques, tools and equipment. 4.3. Faulty items are tested, repaired or replaced using sequential installation procedures according to manufacturers' specifications. 4.4. Replacement items are selected from manufacturers' catalogues to meet specification.

ELEMENT	PERFORMANCE CRITERIA
	4.5. Control components are reassembled using appropriate principles and procedures according to specification.

ELEMENT	PERFORMANCE CRITERIA
5. Check and adjust sequence of refrigeration/air conditioning controls	5.1. Sensors and controllers are identified using circuit diagram and refrigeration/air conditioning system control principles. 5.2. Necessary adjustments to sequence control circuit are made to meet operational specification. 5.3. Correct operation of control circuit is checked and confirmed against operational specification. 5.4. Refrigeration/air conditioning controls are returned to service to specification. 5.5. Appropriate follow-up procedures are adopted. 5.6. 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:

- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- using tools, techniques and equipment necessary to check commercial and/or industrial refrigeration and/or air conditioning controls for correct operation
- comparing system, controls and component performance/operation against specifications
- identifying faulty components and non-compliances
- making required adjustments to achieve specifications
- sourcing and using relevant catalogues/lists
- applying safety procedures, standard operating procedures and legislative requirements to all work undertaken
- documenting results of the adjustments
- planning and sequencing operations
- checking task-related information
- undertaking calculations and numerical operations within the scope of this unit

Required knowledge

Look for evidence that confirms knowledge of:

REQUIRED SKILLS AND KNOWLEDGE

- refrigeration/air conditioning system operational requirements and specifications
- application of common system/circuit components and controllers
- the importance of following installation procedures in terms of control operation, safety and reliability
- measuring instruments/equipment and specifications for checking air temperatures, air flows, air quality and air properties
- procedures for reporting non-conformances
- operational sequence of the system
- typical adjustments to correct sequencing variations from specification
- procedures for recording/reporting modifications/alterations/maintenance etc.
- typical causes of component failure
- procedures for rectifying faulty conditions and components
- maintenance requirements
- procedures for returning to service and commissioning refrigeration/air conditioning control systems
- hazards and control measures associated with maintaining and repairing commercial and/or industrial refrigeration and/or air conditioning controls, including housekeeping
- safe workplace practices and procedures
- codes and regulations relevant to the refrigeration / air conditioning industry including environmental and ozone and greenhouse substance legislation

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 and repair commercial and/or industrial refrigeration and/or air conditioning 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 the repair/replacement of commercial and/or industrial refrigeration and/or commercial air conditioning 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,

EVIDENCE GUIDE	
	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.	
Appropriate test equipment	Pressure gauges, multimeters, ampmeters, megohm meter, analyser
Modifications/alterations	• Pressure control settings, timer settings, thermostat settings • Must comply with manufacturers' specifications, and all changes in site drawings/documents should be documented
Corrective action	Replacement, repair, adjustment
Maintenance procedures	Overhaul of major system components, cleaning of major system components, testing operation of all control and safety devices

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics