



Australian Government

Department of Education, Employment and Workplace Relations

MEM18096A Maintain, repair/replace and adjust refrigerant flow controls and associated equipment

Release: 1

MEM18096A Maintain, repair/replace and adjust refrigerant flow controls and associated equipment

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers performing the selection, maintenance, repair/replacement and adjustment of refrigerant flow controls, either liquid or vapour (mechanical or electronic types) to achieve desired operational performance.
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Application of the Unit

Application of the unit	<p>The selection, maintenance, repair, replacement and adjustment of refrigerant flow controls are conducted according to refrigeration principles and practices. Adjustments are made to manufacturers' specifications. All work is conducted according to safety regulations and Australian standards and codes.</p> <p>The associate equipment may include controllers and/or valves required to ensure proper operation of the flow device.</p> <p>Where any rectification, modification involves electrical disconnection and reconnection, then Unit MEM18049C (Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.) should also be considered.</p> <p>Band: A Unit Weight: 6</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05006B	Perform brazing and/or silver soldering
	MEM10010B	Install pipework and pipework assemblies
	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

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. Undertake preventative maintenance checks on refrigerant flow controls	1.1. The location and operation of the control is understood. 1.2. The operational parameters of the refrigerant control are understood. 1.3. Visual inspection and testing with appropriate test equipment is carried out by following refrigeration principles, procedures and safety requirements. 1.4. The refrigerant type is correctly identified.
2. Undertake fault finding on refrigerant flow controls	2.1. Flow control is identified correctly. 2.2. The characteristics of the flow control are understood. 2.3. The operational function of the flow control and associated valves are inspected and tested. 2.4. Appropriate test equipment can be selected/used safely. 2.5. Correct operation of the flow control is assessed against specification.
3. Repair or replace refrigerant flow control	3.1. Using manufacturers' catalogues and specifications, appropriate flow control or components relevant to system operation are selected for replacement/repair. 3.2. The refrigerant is removed/contained safely from the system in accordance with refrigeration principles and procedures and relevant standards and codes. 3.3. Faulty components are dismantled and repaired /replaced to manufactures' specifications as required. 3.4. Replacement parts are selected from manufactures catalogues according to required specifications.
4. Return to service refrigerant flow control	4.1. System is evacuated and recharged with refrigerant safely, in accordance with refrigeration principles and procedures and relevant standards and codes. 4.2. System is leak tested in accordance with refrigeration principles/procedures and relevant standards and codes. 4.3. Flow control is adjusted to manufactures' specifications in accordance with refrigeration principles and procedures and relevant standards and codes. 4.4. Performance check is undertaken in accordance with refrigeration principles and procedures and relevant standards and codes. 4.5. Maintenance records service reports are completed by appropriate designated means.

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:

- using tools, techniques and equipment necessary to check for correct operation
- obtaining and interpreting specifications
- comparing system and component performance/operation against specification
- select replacement controls and/or components
- identifying faulty components and non-compliances
- using appropriate test equipment to identify non-compliance
- safely remove, contain or add refrigerant to relevant Australian standards or codes
- 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

Required knowledge

Look for evidence that confirms knowledge of:

- operation of refrigerant flow controls including:
 - TEV
 - internal equalised
 - external equalised
 - direct operating
 - servo operated
 - pilot operated
- MOP
- cross charged
- gas charged
- capillary tube
- thermo electric
- electronic TEV and controllers
- low side floats
- high side floats
- distributors

REQUIRED SKILLS AND KNOWLEDGE

- reversing valves
- solenoid valves
- non return valves
- EPR
- CPR
- condenser bypass valves
- liquid level controllers
- AX valves
- hand expansion valves
- measuring instruments/equipment, specifications and procedures for checking temperature(s)
- measuring instruments/equipment, specifications and procedures for checking components
- procedures for reporting non-conformances
- procedures and sequence for performing preventative maintenance
- specifications, operational characteristics and process for identifying system components
- process for localising and confirming faulty components
- process for identifying refrigerant type
- procedures and all legislative and regulatory requirements for safely removing the refrigerant and charging the system
- procedures for dismantling, repairing, reassembling and testing components
- procedures for selecting replacement parts
- procedures for completing maintenance records/service reports

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, adjust, repair or replace refrigerant flow controls, either liquid or vapour, to manufactures' specifications safely to relevant Australian standards codes and regulations. 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 the maintenance, repair/replacement or adjustment of refrigerant flow controls, 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,</p>

EVIDENCE GUIDE	
	standards, manuals and reference materials.
Guidance information for assessment	

Range Statement

RANGE STATEMENT	
<p>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.</p>	
Control	Selected from required knowledge list
Parameters	Operational values
Refrigerant control	Could be any selected from list in required knowledge
Characteristics	Operational parameters of the flow control
Associated valves	Check valves, solenoid valves
Test equipment	Refrigeration gauges, thermometers, multimeter, vacuum pump, leak detector, associated hand tools, specialised hand tools
Components	Any part of any flow control selected from list in required knowledge
Performance	Pressures, temperatures and relationships

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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