



Australian Government

MEM18096 Maintain, repair/replace and adjust refrigerant flow controls and associated equipment

Release: 1

MEM18096 Maintain, repair/replace and adjust refrigerant flow controls and associated equipment

Modification History

Release 1. Supersedes and is equivalent to MEM18096A Maintain, repair/replace and adjust refrigerant flow controls and associated equipment

Application

This unit of competency defines the skills and knowledge required to perform the selection, maintenance, repair/replacement and adjustment of refrigerant flow controls, either liquid or vapour (mechanical or electronic types) to achieve desired operational performance.

The associated equipment includes controllers and/or valves required to ensure proper operation of the flow device.

Where the interpretation of technical drawings is required unit MEM09002 Interpret technical drawing should also be selected.

Where rectification, modification involving electrical disconnection and reconnection is required unit MEM18049 Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c. should also be selected.

A Refrigerant Handling Licence must be held by any person who carries out work in relation to refrigeration and air conditioning equipment.

Band: A

Unit Weight: 6

Pre-requisite Unit

MEM05006	Perform brazing and/or silver soldering
MEM10010	Install pipework and pipework assemblies
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components
MEM18086	Test, recover, evacuate and charge refrigeration systems

Competency Field

Maintenance and diagnostics

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	<table><tr><td>1.1</td><td>Follow standard operating procedures (SOPs)</td></tr><tr><td>1.2</td><td>Comply with work health and safety (WHS) requirements at all times</td></tr><tr><td>1.3</td><td>Use appropriate personal protective equipment (PPE) in accordance with SOPs</td></tr><tr><td>1.4</td><td>Identify job requirements from specifications, job sheets or work instructions</td></tr></table>	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, job sheets or work instructions
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2 Undertake preventative maintenance checks on refrigerant flow controls	<table><tr><td>2.1</td><td>Identify the location and interpret the operational parameters of the refrigerant control</td></tr><tr><td>2.2</td><td>Carry out visual inspection and testing with appropriate test equipment by following refrigeration principles, procedures and safety requirements</td></tr><tr><td>2.3</td><td>Identify the refrigerant type</td></tr></table>	2.1	Identify the location and interpret the operational parameters of the refrigerant control	2.2	Carry out visual inspection and testing with appropriate test equipment by following refrigeration principles, procedures and safety requirements	2.3	Identify the refrigerant type		
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3 Undertake fault finding on refrigerant flow controls	<table><tr><td>3.1</td><td>Identify and interpret flow control and its characteristics</td></tr><tr><td>3.2</td><td>Inspect, test and assess the operational function of the flow control and associated valves using appropriate test equipment and techniques against specifications</td></tr></table>	3.1	Identify and interpret flow control and its characteristics	3.2	Inspect, test and assess the operational function of the flow control and associated valves using appropriate test equipment and techniques against specifications				
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Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
4	Repair or replace refrigerant flow control	4.1	Select for replacement/repair appropriate flow control or components relevant to system operation using manufacturers' catalogues and specifications
		4.2	Remove and safely contain the refrigerant from the system in accordance with refrigeration principles and procedures and relevant standards and codes
		4.3	Dismantle faulty components and repair/replace to manufactures' specifications, as required
		4.4	Select replacement parts from manufactures catalogues
5	Return to service refrigerant flow control	5.1	Evacuate system and recharged with refrigerant safely, in accordance with refrigeration principles and procedures and relevant standards and codes
		5.2	Leak test system and adjust flow control to manufacturers' specifications
		5.3	Undertake performance check and return to service
		5.4	Complete maintenance records/service reports according to SOPs and legislative requirements

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.

Associated valves include one (1) or more

- check valves
- solenoid valves

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of the following:

Test equipment includes one (1) or more of the following:

- refrigeration gauges
- thermometers
- multimeter
- vacuum pump
- leak detector
- associated hand tools
- specialised hand tools

Performance includes:

- pressures, temperatures and relationships

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18096A Maintain, repair/replace and adjust refrigerant flow controls and associated equipment

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM18096 Maintain, repair/replace and adjust refrigerant flow controls and associated 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
- identifying and interpreting charts, lists, catalogues, specifications and relevant legislation with respect to maintaining, repairing/replacing and adjusting refrigerant flow controls and associated equipment
- selecting and using appropriate tools, techniques and test equipment necessary to inspect, test and assess the operational function of the flow control valves and components for correct operation and conformance against specifications
- removing the refrigerant from the system and containing in accordance with procedures and regulatory requirements
- identifying and localising faulty components and confirming malfunction by inspection/testing, and making required adjustments to achieve specifications
- removing/dismantling and reassembling faulty components and selecting replacement parts from manufacturers' catalogues to meet the required specifications
- undertaking calculations and numerical operations associated with maintaining, repairing/replacing and adjusting refrigerant flow controls and associated equipment
- evacuating the system and recharging with refrigerant, and leak testing system and adjusting flow control to manufacturers' specifications in accordance with refrigerant principles and procedures
- undertaking performance check to meet specifications
- completing all maintenance records/reports in accordance with 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)
- operation of refrigerant flow controls, including:
 - Thermal Expansion Valve (TEV)
 - internal equalised

- external equalised
- direct operating
- servo operated
- pilot operated
- Maximum Operating Pressures (MOP), cross charged, gas charged, capillary tube, thermo electric, electronic TEV and controllers, low side floats, high side floats, distributors, reversing valves, solenoid valves, non-return valves, evaporator pressure regulators (EPR) valves, crankcase pressure regulating (CPR) refrigeration valves, condenser bypass valves, liquid level controllers, AX valves and hand expansion valves
- measuring instruments/equipment, specifications and procedures for checking temperature(s)
- measuring instruments/equipment, specifications and procedures for checking components
- tools, equipment, techniques and procedures for performing preventative maintenance and sequence of implementation
- procedures for identifying refrigerant type and safely removing the refrigerant and charging the system including all legislative and regulatory requirements
- tools, equipment, techniques and procedures for dismantling, repairing, reassembling and testing components
- process for selecting replacement parts
- specifications, operational characteristics and process for identifying system components
- procedures for reporting non-conformances and completing maintenance records/service reports.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining, repairing/replacing and adjusting refrigerant flow controls and associated 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.

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