



Australian Government

MEM18090 Maintain and repair industrial refrigeration systems and components

Release: 1

MEM18090 Maintain and repair industrial refrigeration systems and components

Modification History

Release 1. Supersedes and is equivalent to MEM18090B Maintain and repair industrial refrigeration systems and components

Application

This unit of competency defines the skills and knowledge required to maintain and repair industrial refrigeration systems.

It applies to industrial refrigeration systems that include large capacity plant typically used for product/process, temperature/environment control, including retrofitting existing industrial refrigeration systems and reconditioning components.

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
MEM09002	Interpret technical drawing
MEM10002	Terminate and connect electrical wiring
MEM10010	Install pipework and pipework assemblies
MEM11011	Undertake manual handling
MEM12002	Perform electrical/electronic measurement
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
MEM18049	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.
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	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, drawings, job sheets or work instructions
2	Undertake preventive maintenance checks/adjustments	2.1	Check the temperature and properties of the controlled medium/s for conformance to specification
		2.2	Check the noise/vibration levels of the industrial refrigeration system components for conformance to specification
		2.3	Perform preventative maintenance tasks and plant room safety equipment checks according to manufacturers' specifications using refrigeration principles techniques/practices
3	Undertake fault	3.1	Identify system components

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

	finding on industrial refrigeration systems and components	3.2	Interpret the characteristics and operation of each component
		3.3	Inspect and test the operational function of each component and assess correct operation against specification
4	Repair/replace faulty industrial refrigeration components	4.1	Localise faulty components and confirm malfunction
		4.2	Remove the refrigerant safely from the system and contain in accordance with procedures and regulatory requirements, where appropriate
		4.3	Dismantle faulty components and repair to manufacturers' specifications, as required
		4.4	Select replacement parts from manufacturers' catalogues
5	Return to service industrial refrigeration systems and components	5.1	Reassemble components and test for correct operation and assess against specification
		5.2	Charge the system safely with correct refrigerant and in accordance with procedures and regulatory requirements, where appropriate
		5.3	Verify correct operation of the equipment
		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.

- Controlled mediums include one (1) or more of the following:**
- process chilling
 - secondary refrigerants, including:
 - glycol
 - brine
 - air
 - water
 - ice

- Test equipment includes one (1) or more of the following:**
- measuring instruments/equipment for checking:
 - temperatures
 - properties
 - noise and vibration levels
 - multimeter
 - ampmeter
 - insulation resistance tester

- Preventative maintenance tasks include one (1) or more of the following:**
- check/adjust fan belts
 - check/clean filters
 - check/clean heat exchangers (evaporator and condenser)
 - overhaul of major system components
 - cleaning of major system components
 - testing operation of all safety devices

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18090B Maintain and repair industrial refrigeration systems and components

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 MEM18090 Maintain and repair industrial refrigeration systems and components

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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, on at least two (2) systems, and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting charts, lists, catalogues, specifications, drawings and relevant legislation with respect to maintaining and repairing industrial refrigeration systems and components
- checking the temperature and properties of controlled mediums for conformance with specifications
- carrying out preventative maintenance tasks according to manufacturers' specifications using refrigeration techniques/practices
- checking components for correct operation using appropriate tools, techniques and test equipment and assessing component performance/operation against specifications
- identifying and localising faulty components and confirming malfunction by inspection/testing, and making required adjustments to achieve specifications
- removing the refrigerant from the system and containing in accordance with procedures and regulatory requirements
- 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 and repairing industrial refrigeration systems and components
- charging the system and verifying correct operation of the equipment 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)
- measuring instruments/equipment, specifications and procedures for checking temperatures
- properties of controlled mediums

- measuring instruments/equipment, specifications and procedures for checking components noise and vibration levels
- tools, equipment, techniques and procedures for performing preventative maintenance on air conditioning systems and sequence of implementation
- procedures for safely removing the refrigerant and charging the system and all legislative and regulatory requirements
- tools, equipment, techniques and procedures for dismantling, repairing, reassembling and testing components
- specifications, operational characteristics and process for identifying system components
- process for localising and confirming faulty components
- procedures for completing maintenance records/service reports and reporting non-conformances.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining and repairing industrial refrigeration systems and components 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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