



Australian Government

**MEM18091 Maintain and repair
multistage, cascade and/or ultra-cold
industrial refrigeration systems**

Release: 1

MEM18091 Maintain and repair multistage, cascade and/or ultra-cold industrial refrigeration systems

Modification History

Release 1. Supersedes and is equivalent to MEM18091B Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems

Application

This unit of competency defines the skills and knowledge required to maintain and repair multistage, cascade and ultra-cold industrial refrigeration systems.

It applies to retrofitting existing multi-stage, cascade and/or ultra-cold industrial refrigeration systems; reconditioning components; returning to service and testing systems; and completing service reports for administrative action.

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

Band: B

Unit Weight: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM10002	Terminate and connect electrical wiring
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

Plus, one or more of the following including prerequisites:

MEM18087 Service and repair domestic and light commercial refrigeration and air conditioning equipment

MEM18088 Maintain and repair commercial air conditioning systems and components

MEM18090 Maintain and repair industrial refrigeration systems and components

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, pressure and properties of the system for conformance to specification
		2.2	Check the noise/vibration levels of the system for conformance to specification
		2.3	Perform preventative maintenance tasks according to manufacturers' specifications using refrigeration

Elements describe the essential outcomes.

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

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|---|--|-----|--|
| 3 | Undertake fault-finding | 3.1 | Identify system 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 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 multistage, cascade and/or ultra-cold refrigeration systems | 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.

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

- measuring instruments/equipment for checking:
 - temperatures
 - pressures
 - 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 MEM18091B Maintain and repair multi stage, cascade and/or ultra-cold industrial refrigeration systems

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 MEM18091 Maintain and repair multistage, cascade and/or ultra-cold industrial refrigeration systems

Modification History

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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 multi-stage, cascade and/or ultra-cold industrial refrigeration systems
- checking the temperature, pressure, properties, noise and vibration levels 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, 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
- 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 and specifications for checking the temperature/s and properties of the controlled medium/s

- tools, equipment, techniques and procedures for performing preventative maintenance and sequence of implementation
- procedures for performing safety equipment checks and sequence of implementation
- tools, equipment, techniques and procedures for dismantling, repairing, reassembling and testing components
- procedures for safely removing the refrigerant from the system and all legislative and regulatory requirements
- measuring instruments/equipment and specifications for checking component noise and vibration levels
- specifications and processes for identifying system components
- operational characteristics of the system components
- procedures for completing maintenance records/service reports and reporting non-conformances.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining and repairing multi-stage, cascade and/or ultra-cold industrial refrigeration systems 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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