



Australian Government

MEM18093 Maintain and repair integrated industrial refrigeration and/or large air handling system controls

Release: 1

MEM18093 Maintain and repair integrated industrial refrigeration and/or large air handling system controls

Modification History

Release 1. Supersedes and is equivalent to MEM18093B Maintain and repair integrated industrial refrigeration and/or large handling system controls

Application

This unit of competency covers the skills and knowledge required for repairing/replacing integrated industrial refrigeration and/or air handling system controls.

This unit applies to installation, adjustment, repairs, replacements and overhauls undertaken to site or manufacturers' specifications, using application of principles of industrial refrigeration and/or air handling systems control sequencing.

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: 8

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 their prerequisites

MEM18090 Maintain and repair industrial refrigeration systems and components

MEM18089 Maintain and repair central air handling 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.

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| 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 | Install/replace refrigeration/air handling system controls | 2.1 | Identify control system/circuit components and inspect for compliance to specifications |
| | | 2.2 | Undertake sequential installation according to manufacturers' specifications and procedures |
| 3 | Check and adjust refrigeration/air handling system | 3.1 | Check the temperature, quality, pressure and properties of the air delivered by the air handling system for conformance to specification |

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
control sequence and operation	3.2 Check controls and system operation against operational specifications using appropriate test equipment and application of principles/techniques 3.3 Perform adjustments to sequence system to meet/align to operational requirements and specifications 3.4 Record modifications/alterations and report according to SOPs 3.5 Check controls and system operation and commission to specifications
4 Fault find refrigeration/air handling system control circuits	4.1 Identify and inspect control system/circuit components 4.2 Trace control system/circuit and diagnose action of components to identify and localise faults 4.3 Test control system/circuit parts using appropriate test equipment and application principles 4.4 Assess control system/circuit parts against operational specification 4.5 Localise fault condition at the component level, evaluate faulty condition, analyse root cause and plan corrective action
5 Maintain, repair/replace system control components	5.1 Apply correct maintenance procedures according to procedures 5.2 Use appropriate tools, equipment and techniques to test faulty items, repair or replace using sequential installation procedures according to manufacturers' specifications 5.3 Select replacement items from manufacturers' catalogues 5.4 Reassemble system control components to specification
6 Check and adjust	6.1 Identify circuit sensors and controllers

Elements describe the essential outcomes.

sequence of refrigeration/air handling system controls

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

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|-----|---|
| 6.2 | Make necessary adjustments to sequence system control circuit and check correct operation to meet operational specification |
| 6.3 | Commission refrigeration/air handling system controls to specification |
| 6.4 | Adopt appropriate follow-up procedures |
| 6.5 | Complete service/maintenance report in accordance with SOPs |

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.

Control sequencing includes one (1) or more of the following:

- programmable logic controllers (PLCs)
- relay logic control systems
- unitised/modular sensors
- transducers
- timers
- counters
- associated equipment

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

- pressure gauges
- multimeters
- ampmeters
- insulation resistance tester
- cable analyser

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.

Modifications/alterations include one (1) or more of the following:

- pressure control settings
- timer settings
- thermostat settings

Must comply with manufacturers' specifications, and all changes in site drawings/documents should be documented

Corrective action includes one (1) or more of the following:

- replacement
- repair
- adjustment

Maintenance procedures include the following:

- testing of all control sequences
- testing of all safety devices

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18093B Maintain and repair integrated industrial refrigeration and/or large handling system controls

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 MEM18093 Maintain and repair integrated industrial refrigeration and/or large air handling system controls

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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 integrated industrial refrigeration and/or large air handling system controls
- selecting and using appropriate tools, techniques and equipment necessary to check integrated industrial refrigeration and/or large air handling system controls for conformance against specifications
- checking and performing adjustments to control sequence using appropriate test equipment meeting/aligning to operational requirements and specifications
- recording any modifications complying with manufacturers' specifications and making all changes in site drawings/documents and documenting in accordance with SOPs
- testing and assessing control system/circuit parts using appropriate test equipment and application principles against operational specifications
- performing maintenance procedures, including testing of all control sequences and safety devices to specifications
- identifying and localising faulty components and confirming malfunction by inspection/testing, and making required adjustments to achieve specifications
- undertaking calculations and numerical operations associated with maintaining and repairing integrated industrial refrigeration and/or large air handling system controls
- removing/dismantling and reassembling faulty system control components and selecting replacement parts from manufacturers' catalogues to meet the required specifications
- checking and adjusting sequence system control circuit to meet operational specifications and confirming correct operation
- commissioning refrigeration/air handling system controls to service and adopting appropriate follow-up procedures
- completing all service/maintenance 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)
- system operational requirements and specifications
- application of common refrigeration/air handling system components and controllers
- 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
- tools, equipment, techniques and procedures for rectifying faulty conditions
- procedures for returning to service or commissioning refrigeration/air handling control systems
- refrigeration/air conditioning test equipment and application
- operational sequence of systems
- typical adjustments to correct sequencing variations from specification
- typical causes of component failure
- maintenance schedule and procedures
- common adjustments that can be made to control systems and their effect
- maintenance/service recording/reporting requirements
- procedures for reporting/recording modifications/alterations maintenance and reporting non-conformances.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining and repairing integrated industrial refrigeration and/or large handling system controls 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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