



Australian Government

Department of Education, Employment and Workplace Relations

MEM18090B Maintain and repair industrial refrigeration systems and components

Release: 2

MEM18090B Maintain and repair industrial refrigeration systems and components

Modification History

Prerequisite unit MEM05006B updated to MEM05006C

Unit Descriptor

Unit descriptor	The unit covers maintaining and repairing industrial refrigeration systems. It includes interpreting drawings and diagrams of industrial refrigeration systems; utilising fault finding procedures and testing equipment to identify and diagnose faults in systems and isolate faulty components; rectifying faults; returning to service; testing the systems; and completing service reports.
------------------------	--

Application of the Unit

Application of the unit	This unit applies to industrial refrigeration systems that may include large capacity plant typically used for product/process temperature/environment control. Work may also include retrofitting existing industrial refrigeration systems and reconditioning components. The application of this competency must cover a variety of refrigeration and air conditioning equipment and systems. Prerequisite pathways must be applied within a refrigeration/air conditioning context. Band: A Unit Weight: 6
--------------------------------	--

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05006C	Perform brazing and /or silver soldering
	MEM09002B	Interpret technical drawing
	MEM10002B	Terminate and connect electrical wiring
	MEM10010B	Install pipework and pipework assemblies
	MEM12002B	Perform electrical/electronic measurement
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18049C	Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.
	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.
-----------------------------	--

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.
---	--

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Undertake preventive maintenance checks/adjustment on industrial refrigeration systems and components	1.1. The temperature and properties of the controlled medium/s are checked for conformance to specification. 1.2. The noise/vibration levels of the industrial refrigeration system components are checked for conformance to specification. 1.3. Preventative maintenance tasks and plant room safety equipment checks are performed according to manufacturers' specifications using refrigeration principles techniques/practices.
2. Undertake fault finding on industrial refrigeration systems and components	2.1. System components are identified correctly. 2.2. The characteristics and operation of each component is understood. 2.3. The operational function of each component is inspected and tested. 2.4. Correct operation of each component is assessed against specification.
3. Repair/replace faulty industrial refrigeration components	3.1. Faulty components are localised and malfunction is confirmed by inspection and testing using industrial refrigeration principles, procedures and safety requirements. 3.2. The refrigerant is removed safely from the system and contained in accordance with standard operating procedures and regulatory requirements where appropriate. 3.3. Faulty components are dismantled and repaired to manufacturers' specifications as required. 3.4. Replacement parts are selected from manufacturers' catalogues according to required specifications.
4. Return to service industrial refrigeration systems and components	4.1. Components are reassembled and tested for correct operation and assessed against specification. 4.2. The system is charged with correct refrigerant safely and in accordance with standard operating procedures and regulatory requirements where appropriate. 4.3. Using industrial refrigeration principles and system application techniques, correct operation of the equipment is verified. 4.4. 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 industrial refrigeration systems and components for correct operation
- comparing system and component performance/operation against specification
- identifying faulty components and non-compliances
- 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
- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- planning and sequencing operations
- checking task-related information
- undertaking calculations and numerical operations within the scope of this unit

Required knowledge

Look for evidence that confirms knowledge of:

- measuring instruments/equipment, specifications and procedures for checking temperature(s)
- properties of controlled medium(s)
- measuring instruments/equipment, specifications and procedures for checking components noise and vibration levels
- procedures for reporting non-conformances
- procedures and sequence for performing preventative maintenance on air conditioning systems
- specifications, operational characteristics and process for identifying system components
- process for localising and confirming faulty components
- 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
- hazards and control measures associated with maintaining and repairing industrial

REQUIRED SKILLS AND KNOWLEDGE

- refrigeration systems and components
- safe work practices and procedures

Evidence Guide

EVIDENCE GUIDE

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.

Overview of assessment

A person who demonstrates competency in this unit must be able to maintain and repair industrial refrigeration systems and components. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

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.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then 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. 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 and repair of industrial refrigeration systems, or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

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, standards, manuals and reference materials.

EVIDENCE GUIDE**Guidance information for assessment****Range Statement****RANGE STATEMENT**

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.

Controlled medium/s

Process chilling, secondary refrigerants e.g. glycol, brine, air, water, ice etc.

Preventative maintenance tasks

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 Sector(s)**Unit sector****Co-requisite units**

Co-requisite units		

Competency field

Competency field	Maintenance and diagnostics
------------------	-----------------------------