



Australian Government

Department of Education, Employment and Workplace Relations

MEM10009B Install refrigeration and air conditioning plant and equipment

Release: 2

MEM10009B Install refrigeration and air conditioning plant and equipment

Modification History

Prerequisite unit MEM05006B updated to MEM05006C

Unit Descriptor

Unit descriptor	This unit covers installing refrigeration/air conditioning systems in commercial, industrial, marine and transport applications.
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Application of the Unit

Application of the unit	<p>This unit applies to refrigeration/air conditioning systems in commercial, industrial, marine and transport applications - refer to field definitions.</p> <p>All work is to be undertaken in accordance with all relevant Commonwealth, State or Territory legislation and regulatory requirements.</p> <p>Modifications and alterations are of a minor nature and do not require specification changes or technical recording, for example, the fitting of spacers, relocation of brackets, alignment of holes, etc.</p> <p>Work is undertaken using new or existing internal or external locations and sites. Footings, foundations, beds and frameworks are completed prior to installation.</p> <p>Work is undertaken autonomously or in a team environment using predetermined standards of safety, quality and workshop procedures.</p> <p>This unit should not be selected with Unit MEM10006B (Install machine/plant).</p> <p>Where extensive fitting and alignment is required, then Unit MEM18006C (Repair and fit engineering components) and Unit MEM18009B (Perform levelling and alignment of machines and engineering components) should also be selected.</p> <p>Where modifications involve electrical disconnection and reconnection, then Unit MEM18049C (Disconnect/reconnect fixed wired equipment up to 1000 volts a.c./1500 volts d.c.) should also be selected.</p> <p>Band: A Unit Weight: 4</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05006C	Perform brazing and/or silver soldering
	MEM09002B	Interpret technical drawing
	MEM10010B	Install pipework and pipework assemblies
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	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.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Inspect and prepare installation site	1.1. Site is checked for correct location, dimension and levels, etc. using appropriate measuring equipment and standard refrigeration/air conditioning practices. 1.2. Non-compliance with specification is reported to appropriate authority. 1.3. Alteration/correction is undertaken with approval of appropriate authority. 1.4. All surfaces, materials and components are prepared for use.
2. Install refrigeration/air conditioning plant and equipment	2.1. All work is carried out safely and in accordance with site procedures and to relevant standards. 2.2. Refrigeration/air conditioning plant and equipment/components are organised for correct sequential installation. 2.3. Refrigeration/air conditioning plant and equipment/components are installed in conformance with manufacturers' and site specifications. 2.4. Routine modifications/alterations of the refrigeration/air conditioning plant and equipment are undertaken to standard operating procedures where required. 2.5. Refrigeration/air conditioning plant and equipment are levelled, aligned, coupled and connected in accordance with specifications. 2.6. The refrigeration system is charged with refrigerant and lubricant in accordance with standard operating procedures. 2.7. The site is cleaned and cleared of all debris and left in a safe state.
3. Start up refrigeration/air conditioning plant and equipment and check operation	3.1. Start-up procedure is developed for the refrigeration/air conditioning plant and equipment. 3.2. The refrigeration/air conditioning plant and equipment is operated and assessed for conformance to specification. 3.3. Non-conformances and system faults are identified, and appropriate action/adjustments are taken to specification. 3.4. All reports and documentation are completed correctly to required specifications.

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:

- 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
- checking the site for correct location, dimensions and levels
- detecting and reporting non-conformance to specifications
- preparing surfaces for installation
- checking for conformance to specifications
- preparing plant for start-up
- adjusting refrigeration plant and equipment
- using appropriate tools, techniques and equipment

Required knowledge

Look for evidence that confirms knowledge of:

- procedures for non-compliances
- procedures for checking the refrigeration/air conditioning plant and associated equipment
- procedures for making alterations, corrections or adjustments to the refrigeration/air conditioning plant and associated equipment
- correct sequential installation of all components
- methods of fixing/fastening and locating/holding the components
- procedures for checking refrigeration systems for leaks
- procedures for checking refrigeration/air conditioning plant and associated equipment prior to start-up
- procedures for adjusting the refrigeration/air conditioning plant and associated equipment to specification
- codes and regulations relevant to the refrigeration/air conditioning industry including environmental and ozone and greenhouse substance legislation
- hazards and control measures associated with installing refrigeration and/or air conditioning plant and associated equipment, including housekeeping
- safe work practices and procedures

Evidence Guide

EVIDENCE GUIDE	
<p>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.</p>	
<p>Overview of assessment</p>	<p>A person who demonstrates competency in this unit must be able to install refrigeration and air conditioning plant and equipment. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>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.</p>
<p>Context of and specific resources for assessment</p>	<p>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.</p> <p>This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with installing refrigeration and air conditioning plant and equipment or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p>Method of assessment</p>	<p>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.</p>

EVIDENCE GUIDE

Guidance information for assessment	
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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.

Measuring equipment

Lasers, dumpy levels etc.

Relevant standards

- Australian standards
- Building codes
- Air conditioning/refrigeration standards
- Local authority standards
- Environmental standards
- Greenhouse emission regulations

Refrigeration/air conditioning plant and equipment/components

Compressors, evaporators, condensers, valves, controllers, fans, solenoids, sensors, thermostats, switches, recorders, etc.

Appropriate action

In accordance with urgency requirements to address equipment failure and/or personnel danger

Unit Sector(s)

Unit sector	
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Co-requisite units

Co-requisite units		

Competency field

Competency field	Installation and commissioning
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