



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **MEM18088B Maintain and repair commercial air conditioning systems and components**

**Release: 1**

## MEM18088B Maintain and repair commercial air conditioning systems and components

### Modification History

Not Applicable

### Unit Descriptor

<b>Unit descriptor</b>	This unit covers maintaining and repairing commercial air conditioning systems and components.
------------------------	--

### Application of the Unit

<b>Application of the unit</b>	<p>It includes interpreting drawings and diagrams of commercial air conditioning systems; utilising fault finding procedures, service manifolds and test equipment to identify and diagnose faults; rectifying common faults; returning to service; testing systems; and completing service reports.</p> <p>This unit applies to commercial air conditioning systems and components - including heating systems, direct expansion refrigeration systems, and/or simple air distribution systems - typically used for comfort air conditioning.</p> <p>It may also apply to include retrofitting existing commercial air conditioning systems with alternative refrigerants and reconditioning components. The application of this competency must cover a variety of refrigeration and air conditioning equipment and systems.</p> <p><b>Band: A</b> <b>Unit Weight: 4</b></p>
--------------------------------	--

### Licensing/Regulatory Information

Not Applicable

## Pre-Requisites

Prerequisite units		
<b>Path 1</b>	MEM09002B	Interpret technical drawing
	MEM12002B	Perform electrical/electronic measurement
	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

<b>Employability skills</b>	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 commercial air conditioning systems and components	1.1. The temperature, quality, properties and flow of air delivered by the air conditioning system is checked for conformance to specification. 1.2. The noise/vibration levels of the air conditioning system components are checked for conformance to specification. 1.3. Preventative maintenance tasks are performed according to manufacturers' specifications using refrigeration and air conditioning principles and techniques.
2. Undertake fault finding on commercial air conditioning systems and components	2.1. System components are identified correctly. 2.2. The characteristics and operation of each component are explained. 2.3. The operational function of each component is inspected and tested. 2.4. Correct operation of each component is assessed against system specification.
3. Repair/replace faulty commercial air conditioning components	3.1. Faulty components are localised and malfunction confirmed by inspection and testing using air conditioning 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 commercial air conditioning 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. 4.3. Using air conditioning principles, 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:

- selecting and using equipment for testing and checking temperature, flow and quality of the conditioned air
- checking task-related information
- identifying faults and non-compliances
- making required adjustments to achieve specifications
- comparing operation of each system component against system specification
- planning and sequencing operations
- entering routine and familiar information onto proformas and standard workplace forms
- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents

### Required knowledge

Look for evidence that confirms knowledge of:

- measuring instruments/equipment and specifications for checking air temperatures, air flows, air quality and air properties
- procedures for reporting non-conformances
- air properties controlled by the air conditioning system
- measuring instruments/equipment and specifications required for checking component noise and vibration levels
- procedures and sequence for performing preventative maintenance on air conditioning systems
- specifications and process for identifying system components
- operational characteristics of the system components
- procedures for inspecting and testing system components and operational compliance
- procedures for assessing that the operation of system components meet system specification
- appropriate process for localising and confirming faulty components
- procedures and all legislative and regulatory requirements for safely removing the refrigerant from the system and charging the system
- procedures for dismantling and repairing faulty components and selecting replacement parts
- procedures for reassembling and testing components
- procedures for completing maintenance records/service reports

<b>REQUIRED SKILLS AND KNOWLEDGE</b>
--------------------------------------

- |   |
|---|
| <ul style="list-style-type: none"><li>• hazards and control measures associated with maintaining and repairing commercial air conditioning systems and components</li><li>• safe work practices and procedures</li><li>• selecting and using equipment for testing electrical compliance of equipment</li><li>• documenting and reporting</li><li>• calculations and numerical operations within the scope of this unit</li></ul> |
|---|

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
<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><b>Overview of assessment</b></p>	<p>A person who demonstrates competency in this unit must be able to maintain and repair commercial air conditioning systems and components. Competency in this unit cannot be claimed until all prerequisites have been satisfied.</p>
<p><b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b></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><b>Context of and specific resources for assessment</b></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 the maintenance and repair of commercial air conditioning systems and components or other units requiring the exercise of the skills and knowledge covered by this unit.</p>
<p><b>Method of assessment</b></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 should not require language, literacy and numeracy skills beyond those required in this unit. 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</p>

<b>EVIDENCE GUIDE</b>	
	and reference materials.
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. <b>Italicised</b> 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.</p>	
<b>Preventative maintenance tasks</b>	<p>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</p>

## Unit Sector(s)

<b>Unit sector</b>	
--------------------	--

## Co-requisite units

<b>Co-requisite units</b>		



## Competency field

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