



Australian Government

Department of Education, Employment and Workplace Relations

MEM18089B Maintain and repair central air handling systems

Release: 1

MEM18089B Maintain and repair central air handling systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers maintaining and repairing large central air handling systems. It includes interpreting drawings and diagrams of large central air handling 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.
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Application of the Unit

Application of the unit	<p>This unit applies to air handling systems including boilers, chillers, secondary refrigeration pumps, dehumidifiers, odour control, complex filtering systems, multi zone air distribution systems, etc., typically used for comfort air conditioning. 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.</p> <p>Band: A</p> <p>Unit Weight: 6</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM10002B	Terminate and connect electrical wiring
	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
Path 2	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM13007B	Maintain water treatment systems for cooling towers
	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. Undertake preventive maintenance checks/adjustment on large central air handling systems	1.1. The temperature, humidity, quality, pressure and flow of air delivered to zones by the air handling system are checked for conformance to specification. 1.2. The noise/vibration levels of the air handling sub-systems are checked for conformance to specification. 1.3. Preventative maintenance tasks are performed according to manufacturers' specifications using appropriate refrigeration and air conditioning techniques/practices.
2. Undertake fault finding on large central air handling systems	2.1. Components of sub-systems are correctly identified. 2.2. The characteristics and operation of each sub-system component can be explained. 2.3. The operational function of each sub-system component is inspected and tested. 2.4. Correct operation of each component is assessed against specification.
3. Repair/replace faulty air handling components	3.1. Faulty components are localised and malfunction is confirmed by inspection and testing using air conditioning principles, procedures and safety requirements. 3.2. Faulty components are dismantled and repaired to manufacturer' specifications as required. 3.3. Replacement parts are selected from manufacturers' catalogues according to required specifications.
4. Return to service large central air handling systems	4.1. Components are reassembled and tested for correct operation and assessed against specification. 4.2. Correct operation of the equipment is verified using air handling principles and techniques. 4.3. 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 AND KNOWLEDGE**Required skills**

Look for evidence that confirms skills in:

- using tools, techniques and equipment necessary to check large central air conditioning system, sub-systems and components for correct operation
- obtaining, reading and interpreting specifications
- comparing system, sub-systems 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
- using tools, techniques and equipment necessary to check large central air conditioning system, sub-systems and components for correct operation

Required knowledge

Look for evidence that confirms knowledge of:

- appropriate measuring instruments/equipment and specifications for checking humidity, air temperatures, air flows, air quality and air pressure
- procedures for reporting non-conformances
- measuring instruments/equipment and specifications required for checking sub-system noise and vibration levels
- procedures and sequence for performing preventative maintenance on an air conditioning system
- specifications of and process for identifying primary and secondary refrigerant, or air distribution/reticulation systems
- operational characteristics of each sub-system component
- procedures and specifications for inspecting and testing each sub-system component
- process for localising and confirming faulty components
- procedures for dismantling and repairing faulty components
- procedures for selecting replacement parts
- procedures for completing maintenance records/service reports

REQUIRED SKILLS AND KNOWLEDGE

- hazards and control measures associated with maintaining and repairing large central air handling systems
- safe work practices and procedures
- codes and regulations relevant to the refrigeration/air conditioning industry including environmental and ozone and greenhouse substance legislation

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 maintain and repair large central air handling systems. 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 the maintenance and repair of large central air handling systems 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.

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	
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Co-requisite units

Co-requisite units	

Competency field

Competency field	Maintenance and diagnostics
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