



Australian Government

MEM18089 Maintain and repair central air handling systems

Release: 1

MEM18089 Maintain and repair central air handling systems

Modification History

Release 1. Supersedes and is equivalent to MEM18089B Maintain and repair central air handling systems

Application

This unit of competency defines the skills and knowledge required to maintain and repair large central air handling systems.

A Refrigerant Handling Licence must be held by any person who carries out work in relation to refrigeration and air conditioning equipment.

Band: A

Unit Weight: 6

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

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 | Undertake preventive maintenance checks/adjustments | 2.1 | Check the temperature, humidity, quality, pressure and flow of air delivered to zones by the air handling system for conformance to specification |
| | | 2.2 | Check the noise/vibration levels of the air handling sub-systems for conformance to specification |
| | | 2.3 | Perform preventative maintenance tasks according to manufacturers' specifications using appropriate refrigeration and air conditioning techniques/practices |
| | | | |
| 3 | Undertake fault finding on large central air handling systems | 3.1 | Identify components of sub-systems |
| | | 3.2 | Interpret the characteristics and operation of each sub-system component |
| | | 3.3 | Inspect and test the operational function of each sub-system component and assess correct operation against specification |
| | | | |
| 4 | Repair/replace | 4.1 | Localise faulty components and confirm malfunction |

Elements describe the essential outcomes.

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

	faulty air handling components	4.2	Dismantle faulty components and repair to manufacturers' specifications, as required
		4.3	Select replacement parts from manufacturers' catalogues
5	Return to service large central air handling systems	5.1	Reassemble components and test for correct operation and assess against specification
		5.2	Verify correct operation of the equipment
		5.3	Complete maintenance records/service reports according to SOPs and legislative requirements

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.

Air handling systems include two (2) or more of the following:

- boilers
- chillers
- secondary refrigeration pumps
- dehumidifiers
- odour control
- complex filtering systems
- multi-zone distribution systems

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

- measuring instruments/equipment for checking:
 - air temperatures
 - humidity

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- air flows
- air quality
- air pressure
- noise and vibration levels
- multimeter
- ampmeter
- insulation resistance tester

Preventative maintenance tasks include one (1) or more of the following:

- 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 Mapping Information

Release 1. Supersedes and is equivalent to MEM18089B Maintain and repair central air handling systems

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 MEM18089 Maintain and repair central air handling systems

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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 (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 central air handling systems
- selecting and using appropriate tools, techniques and equipment necessary to check and assess large central air conditioning system, sub-system and components for conformance against specifications, legislation and regulations
- carrying out preventative maintenance tasks according to manufacturers' specifications using refrigeration/air conditioning techniques/practices
- identifying and localising faulty components and confirming malfunction by inspection/testing, making required adjustments to achieve specifications
- removing/dismantling and reassembling faulty components and selecting replacement parts from manufacturers' catalogues to meet the required specifications
- undertaking calculations and numerical operations associated with maintaining and repairing central air handling
- verifying correct operation of the equipment to meet specifications
- completing all maintenance records/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)
- appropriate measuring instruments/equipment and specifications for checking humidity, air temperatures, air flows, air quality and air pressure
- tools, equipment, techniques and procedures for performing preventative maintenance on an air conditioning system and sequence of implementation
- procedures for localising and confirming faulty components
- tools, equipment, techniques and procedures for dismantling and repairing faulty components and selecting replacement parts

- measuring instruments/equipment and specifications required for checking sub-system noise and vibration levels
- techniques and procedures for inspecting, testing and assessing each sub-system components against specifications
- specifications of, and process for, identifying primary and secondary refrigerant, or air distribution/reticulation systems
- operational characteristics of each sub-system component
- codes and regulations relevant to the refrigeration/air conditioning industry, including environmental and ozone and greenhouse substance legislation
- procedures for completing maintenance records/service reports and reporting non-conformances.

Assessment Conditions

- Assessors must:
 - have vocational competency in maintaining and repairing central air handling systems 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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