



Australian Government

MEM18086 Test, recover, evacuate and charge refrigeration systems

Release: 1

MEM18086 Test, recover, evacuate and charge refrigeration systems

Modification History

Release 1. Supersedes and is equivalent to MEM18086B Test, recover, evacuate and charge refrigeration systems

Application

This unit of competency defines the skills and knowledge required to test, recover, evacuate and charge refrigeration systems to achieve performance specification.

It applies to refrigeration systems associated with refrigeration and air conditioning in commercial, industrial, domestic, marine and transport applications. This unit does not apply to vehicle in-cab air conditioning systems.

Demonstration of competency must be in accordance with Australian Standards, including AS - HB40 Refrigeration and Air Conditioning codes of practice, and relevant ozone and greenhouse substance legislation.

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: 4

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12023	Perform engineering measurements
MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information
MEM18001	Use hand tools
MEM18002	Use power tools/hand held operations
MEM18055	Dismantle, replace and assemble engineering components

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.

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	Assess refrigeration system operation	2.1	Apply refrigeration system operating principles and terminology to assessment of system operation
		2.2	Access and interpret all relevant information to commencement of work on the refrigeration system
		2.3	Undertake checks on the refrigeration system, including appropriate basic electrical safety checks in accordance with relevant codes and regulations
		2.4	Develop appropriate operating procedures, as required
		2.5	Determine and record pressures and temperatures
		2.6	Isolate faults to component level and determine appropriate corrective action
		2.7	Check the refrigeration system for leaks and any contamination
3	Recover refrigerant and evacuate system	3.1	Recover and contain refrigerant used in the system in accordance with codes and regulations
		3.2	Evacuate the refrigeration system in accordance with codes and regulations

Elements describe the essential outcomes.

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

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| 4 | Charge the refrigeration system | 4.1 | Charge the refrigeration system with the correct refrigerant |
| | | 4.2 | Add appropriate lubricating oil to the refrigeration system |
| | | 4.3 | Check the refrigeration system for leaks |

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.

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| Relevant information includes one (1) or more of the following: | <ul style="list-style-type: none"> • manufacturers' technical data • pressure temperature charts • operating manuals |
| Appropriate corrective action includes: | <ul style="list-style-type: none"> • isolation and tagging of faulty components, repair and/or replacement |
| Contamination includes one (1) or more of the following: | <ul style="list-style-type: none"> • moisture • non-condensables • solids and acids |
| Refrigerant includes one (1) or more of the following: | <ul style="list-style-type: none"> • chlorofluorocarbons (CFCs) • hydrochlorofluorocarbons (HCFCs) • hydrofluorocarbons (HFCs) |

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.

- natural refrigerants
- ammonia

Relevant codes and regulations include:

- Australian Standards, refrigeration and air conditioning codes of practice, relevant ozone and greenhouse substance legislation

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18086B Test, recover, evacuate and charge refrigeration 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 MEM18086 Test, recover, evacuate and charge refrigeration 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 and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting drawings, instructions, specifications, procedures, codes and regulations to test and check refrigeration components and systems
- planning and sequencing refrigeration operations and developing operating procedures for equipment as required in compliance with AS - HB40 Refrigeration and Air Conditioning codes of practice and ozone and greenhouse substance legislation
- performing electrical safety checks and tests for conformance to specifications using appropriate techniques and equipment, determining pressures and temperatures and documenting test results and procedures undertaken
- identifying faulty components and any system contamination and selecting appropriate materials, equipment and refrigerant to recover, evacuate and charge the system
- lubricating and checking the re-charged refrigeration system for leaks and rectifying, where required.

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) when handling or working with refrigerants
- operating principles of refrigeration systems
- characteristics, properties and operating specifications of all types of refrigerant
- methods of identifying stored refrigerants and the type of refrigerant used in a refrigeration system
- relevant codes and regulations applying to refrigeration systems
- procedures and safety precautions for testing/checking refrigeration systems
- corrective actions for system and component faults, including appropriate basic electrical safety checks
- types of refrigerant leak detection equipment/techniques and their applications

- causes of contamination in refrigeration systems and their effect on refrigeration system performance
- procedures for cleaning contaminated systems, tools and equipment used
- care and use of vacuum pumps
- tools, techniques and equipment required to carry out refrigerant recovery procedures
- procedures for charging refrigeration systems and the correct refrigerant for a range of given applications and tools, techniques and equipment to be used
- safety precautions to be taken when charging refrigeration systems with refrigerant by various methods
- procedures for storing and disposing of recovered refrigerant and consequences of releasing quantities of refrigerant into the atmosphere
- properties and uses of refrigeration oil and the procedures to be followed when checking level and adding lubricating oil.

Assessment Conditions

- Assessors must:
 - have vocational competency in testing, recovering, evacuating and charging refrigeration 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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