



Australian Government

MEM18083 Handle fluorocarbon refrigerants according to regulations

Release: 1

MEM18083 Handle fluorocarbon refrigerants according to regulations

Modification History

Release 1. New Unit

Application

The unit of competency defines the knowledge and skills required to undertake work on refrigeration and air conditioning in a manner consistent with requirements of the Australian Refrigeration Council (ARC) for working with ozone depleting refrigerants. The unit's focus is on compliance and awareness of global warming and the dangers of ozone depleting substances. The unit does not cover the technical skills required for typical refrigeration and air conditioning trade tasks such as installing, servicing, repair or decommissioning of equipment or the testing, recovering, evacuating or charging of refrigerants.

This unit should be selected in conjunction with relevant technical units if the learner intends to apply to the ARC for a Refrigerant Handling Licence – qualified persons (ARCTICK licence). Other MEM units are specified where a person intends to apply for other ARC licences, including those covering vehicle or split system related work.

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: 1

Pre-requisite Unit

MEM13015	Work safely and effectively in manufacturing and engineering
MEM16006	Organise and communicate information

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	Demonstrate	1.1	Identify the role of the ozone layer in the earth's climate

Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
knowledge of global warming and ozone layer depletion	and human health
	1.2 Explain effects of global warming and consequences of ozone layer depletion
	1.3 Explain role of ozone depleting substances (ODS) and synthetic greenhouse gas (SGG) emissions in global warming
2 Demonstrate knowledge of regulatory requirements in regards to fluorocarbon refrigerants	2.1 Explain ARC licence classes and relationship to HVAC/R equipment
	2.2 Identify requirements to apply for a Refrigerant Handling Licence – Qualified Persons Licence
	2.3 Explain licence period and procedures to obtain or renew a licence
	2.4 Explain refrigerant coding and numbering system, including classification for toxicity and flammability
	2.5 Identify the range of refrigerants covered by ARC licencing
	2.6 Identify role of ODS and SGG handling licences and trading authorisations in refrigerant handling and disposal
	2.7 Access information in the Australia and New Zealand Refrigerant Handling Code of Practice relating to specific work tasks
3 Determine job requirements	3.1 Identify job requirements from customer order, work specification or other enterprise procedure
	3.2 Determine if required work includes risk of refrigerant emission
	3.3 Check refrigerant handling equipment is available and serviceable
	3.4 Plan work tasks to conform to regulatory requirements

Elements describe the essential outcomes.

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

- | | | |
|---|--|---|
| 4 | Assess equipment and refrigerant status prior to commencement of work | <p>4.1 Check refrigerant label on equipment and confirm refrigerant is appropriate for equipment</p> <p>4.2 Adjust work plan to avoid any venting if refrigerant is unable to be positively identified</p> <p>4.3 Identify if refrigerant is flammable and if so check for potential ignition sources and provide appropriate ignition source protection or elimination</p> <p>4.4 Conduct visual check and other tests for gross leaks</p> <p>4.5 Conduct other appropriate leak tests</p> <p>4.6 Adjust work plan to include rectification of leaks</p> |
| 5 | Apply regulations, codes and standards to refrigeration and air conditioning work | <p>5.1 Apply regulations, codes and standards to installation, servicing, repair or decommissioning of equipment and systems</p> <p>5.2 Establish or maintain appropriate ventilation and temporary flammable zone for equipment with flammable refrigerant</p> <p>5.3 Set and locate gas detectors appropriately for type of equipment</p> <p>5.4 Conduct leak testing according to regulations, codes and standards</p> <p>5.5 Evacuate equipment according to regulations, codes and standards</p> <p>5.6 Charge and recover refrigerants using prescribed methods and equipment</p> <p>5.7 Ensure work on piping, valves and gauges is consistent with regulations, codes and standards</p> |

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.

- | | |
|---|--|
| Handle refrigerant includes the following: | <ul style="list-style-type: none">• any actions with an ARC prescribed refrigerant, or a component of refrigeration and air conditioning equipment, that carries the risk of its emission |
| Prescribed methods and equipment include the following: | <ul style="list-style-type: none">• methods and equipment as described in ARC codes and regulations or referenced by the ARC• manufacturer's instructions where available except where the instructions would lead to emission of refrigerant |
| Refrigerant handling equipment includes the following: | <ul style="list-style-type: none">• cylinders |
| Contamination includes one or more of the following: | <ul style="list-style-type: none">• moisture• non-condensables• solids and acids• refrigerants or mixed refrigerants that are not specified for the refrigeration equipment |
| Prescribed refrigerant includes the following: | <ul style="list-style-type: none">• chlorofluorocarbons (CFCs)• hydrochlorofluorocarbons (HCFCs)• hydrofluorocarbons (HFCs)• any other refrigerant prescribed by the ARC |
| Refrigeration equipment includes one or more of the following: | <ul style="list-style-type: none">• compressors• air/water cooled condensers,• liquid receivers• chilled water heat exchangers• evaporators• air/water cooled condensing units• associated piping and valves |

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.

Reclaim includes the following:

- to reprocess used refrigerant to a new product specification by means which may include distillation. This term usually implies the use of processes or procedures available only at a specialised reclaim or manufacturing facility

Recovery includes the following:

- removing refrigerant in any condition from a system and storing it in an external cylinder, without necessarily testing or processing it in any way

Self-contained low charge systems include the following:

- appliances which contain a fluorocarbon refrigerant charge of two kilograms or less, and do not require any work to be done on the refrigeration system at the time of installation

Unit Mapping Information

No equivalent unit.

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 MEM18083 Handle fluorocarbon refrigerants according to regulations

Modification History

Release 1. New Unit

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 at least one (1) instance of application on a system other than a self-contained low charge system:

- following work instructions, standard operating procedures (SOPS) and safe work practices
- identifying and applying regulations, codes and standards relevant to handling and/or disposal of fluorocarbons in regards to:
 - removing refrigerant from a self-contained low charge system and store it in an external cylinder
 - pumping-down refrigerant from a non self-contained low charge system, including:
 - complying with code limits for receivers
 - ensuring auxiliary receivers are fitted and suitable
 - inspecting joints, seals, gaskets and flanges for traces of refrigerant oil and repairing as necessary
 - leak testing evaporator, heat exchanger, expansion valve, solenoid valve, and other components, including placing low pressure side into positive pressure before testing
 - using air purgers in negative pressure systems
 - fitting of gauge isolation valves
 - mounting compressors, including anti vibration mountings and mufflers
 - aligning shafts
 - tensioning compressor drive belts
 - evacuating a factory matched evaporator and condenser system
- identifying coding and classification for at least six:
 - chlorofluorocarbons (CFCs)
 - hydrochlorofluorocarbons (HCFCs)
 - hydrofluorocarbons (HFCs)
- identifying flammable refrigerants and taking recommended actions as per fact sheets and Flammable Refrigerants Safety Guide published by The Australian Institute of Refrigeration, Air Conditioning And Heating (AIRAH).

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 fluorocarbon refrigerants
- consequences of releasing quantities of ozone depleting refrigerants into the atmosphere
- ARC licensing criteria and regulations relating to handling fluorocarbon refrigerants
- methods of identifying and labelling stored refrigerants and the type of refrigerant used in a refrigeration system
- methods for recovery, storage and dispatch of fluorocarbon refrigerants to licensed reclamation facilities
- mandatory and recommended procedures in regulations, codes and standards for self-contained and non self-contained refrigeration and air conditioning systems work, including:
 - leak testing
 - charging of systems
 - recovery/pump down of refrigerants
 - evacuation
 - minimising refrigerant content of lubricant oil
 - aligning shafts
 - tensioning compressor belts
 - cleaning contaminated systems
- codes and standards for pipe joints and mountings
- safe handling and storage procedures for refrigerant cylinders
- rules and safe handling procedures for flammable refrigerants as published by AIRAH
- causes of contamination in refrigeration and air conditioning systems and their effect on refrigeration system performance
- relevant codes and regulations applying to fluorocarbon refrigeration and air conditioning systems not specifically mentioned above.

Assessment Conditions

- Assessors must:
 - have vocational competency in refrigeration system maintenance 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
- Assessment should be co-assessed with one or more MEM HVAC/R trade units applying to work on systems other than a self-contained low charge system

- 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.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>