



Australian Government

Department of Education, Employment and Workplace Relations

MEM18086B Test, recover, evacuate and charge refrigeration systems

Release: 1

MEM18086B Test, recover, evacuate and charge refrigeration systems

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers testing, recovering, evacuating and charging refrigeration systems to achieve performance specification.
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Application of the Unit

Application of the unit	<p>This unit applies to refrigeration systems associated with refrigeration and air conditioning, including commercial, industrial, domestic, marine and transport applications.</p> <p>The application of this competency must cover a variety of refrigeration equipment and systems.</p> <p>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.</p> <p>Band: A</p> <p>Unit Weight: 4</p>
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM09002B	Interpret technical drawing
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18055B	Dismantle, replace and assemble engineering components

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. Assess refrigeration system operation	1.1.Refrigeration system operating principles and terminology are applied to assessment activities. 1.2.All <i>relevant information</i> is obtained and correctly interpreted prior to the commencement of work on the refrigeration system. 1.3.Refrigeration system checks are undertaken safely in accordance with standard operating procedures, relevant codes and regulations. 1.4.Appropriate operating procedures are developed as required. 1.5.Pressures and temperatures are correctly determined and recorded. 1.6.Faults are correctly isolated to component level and <i>appropriate corrective action</i> is determined. 1.7.The refrigeration system is checked for leaks. 1.8.The refrigeration system is checked for <i>contamination</i> .
2. Recover refrigerant and evacuate system	2.1.The <i>refrigerant</i> in the system is recovered in accordance with standard operating procedures, codes and regulations. 2.2.The refrigerant recovered from the refrigeration system is contained in accordance with the <i>relevant codes and regulations</i> . 2.3.The refrigeration system is evacuated in accordance with standard operating procedures, codes and regulations.
3. Charge the refrigeration system	3.1.The refrigeration system is charged with the correct refrigerant in accordance with standard operating procedures. 3.2.The appropriate lubricating oil is added to the refrigeration system in accordance with standard operating procedures. 3.3.The refrigeration system is checked for leaks.

Required Skills and Knowledge

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:

- planning and sequencing operations
- developing operating procedures for equipment as required
- selecting correct refrigerant for a given system
- obtaining and interpreting drawings, instructions, specifications, procedures, codes and regulations
- testing and checking refrigeration components and systems including electrical safety checks and tests
- checking for conformance to specifications
- undertaking numerical operations within the scope of this unit
- determining pressures and temperatures
- documenting test results and procedures undertaken
- using equipment and test techniques
- identifying faulty components and system contamination
- applying safety procedures, standard operating procedures and legislative requirements to all work undertaken
- selecting appropriate materials, equipment and solutions for specific refrigeration systems

Required knowledge

Look for evidence that confirms knowledge of:

- operating principles of refrigeration systems
- characteristics, properties and operating specifications of each type of refrigerant
- safety precautions and work practices to be undertaken when handling or working with refrigerants
- methods of identifying stored refrigerants
- methods of identifying the type of refrigerant used in refrigeration systems
- 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 leak detection equipment/techniques and their applications
- causes of contamination in refrigeration systems and their effect on refrigeration system performance
- procedures, tools and equipment to be used to clean up contaminated systems
- care and use of vacuum pumps
- tools, techniques and equipment required to carry out recovery procedures

REQUIRED SKILLS AND KNOWLEDGE

- procedures for storing/disposing of recovered refrigerant
- consequences of releasing quantities of refrigerant into the atmosphere
- procedures for charging refrigeration systems
- correct refrigerant for a range of given applications
- tools, techniques and equipment required to charge a refrigeration system with refrigerant
- precautions to be taken when charging by various methods, refrigeration systems with refrigerant
- procedures for checking level and adding lubricating oil
- properties and uses of refrigeration oil
- hazards and control measures associated with handling refrigerants, including housekeeping
- safe work practices and procedures

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 test, recover, evacuate and charge refrigeration 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 assessment, evacuation and charging of refrigeration 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.

Relevant information	Manufacturers' technical data, pressure temperature charts, operating manuals
Appropriate operating procedures	In the case where specific equipment does not have standard operating procedures
Appropriate corrective action	Isolation and tagging of faulty components, repair and/or replacement
Contamination	Moisture, non-condensables, solids, acids etc.
Refrigerant	All refrigerants including CFCs, HCFCs, HFCs, natural refrigerants, ammonia, etc.
Relevant codes and regulations	Australian Standards Refrigeration and Air Conditioning codes of practice, relevant ozone and greenhouse substance legislation

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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