Australian Government

Department of Education, Employment and Workplace Relations

MEM18085A Install, service and repair domestic air conditioning and refrigeration appliances

Release: 2

MEM18085A Install, service and repair domestic air conditioning and refrigeration appliances

Modification History

Prerequisite unit MEM05006B updated to MEM05006C

Unit Descriptor

Unit descriptor	This unit covers installing, servicing and repairing domestic air conditioning and refrigeration appliances to relevant standards, codes and local regulations.

Application of the Unit

Application of the unit	This competency is limited to domestic air conditioning and refrigeration systems only. It includes the application of safe working practices, following standard procedures to perform functional checks, test system performance and carry out straightforward maintenance. This unit refers to plug in appliances only. For hard wired installations a licensed electrical tradesperson must undertake connection and disconnection. Aspects of this unit may require a restricted electrical license in some jurisdictions. **Band**: **A** **Unit Weight**: **6**

Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM05006C	Perform brazing and/or silver soldering
	MEM12002B	Perform electrical/electronic measurement
	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.

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.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Install and remove domestic refrigeration and air conditioning appliances	1.1. Appliance location is identified and sited in accordance with customer requirements, regulations, standards, codes of practice and industry guidelines 1.2. Site is prepared for installation of appliance 1.3. Appliance is installed and secured in accordance with manufacturer instructions and industry best practice 1.4. Operation of the appliance is checked in accordance with manufacturer instructions 1.5. Waste materials and products are disposed of in accordance with Commonwealth and State legislation, environmental and industry codes of practice
2. Determine operating condition of domestic refrigeration and air conditioning appliances	2.1. Established procedures and standard electrical tests are carried out to determine actual operating condition 2.2. Established OHS risk control measures and procedures are followed to enable the system to be isolated and checked where necessary 2.3. Tools, equipment and testing devices needed to determine the basic refrigeration operating conditions are obtained and checked for correct operation and safety 2.4. Industry codes of practice and manufacturer service instructions are followed
3. Carry out routine maintenance of domestic refrigeration and air conditioning appliances	3.1. Safety hazards are identified and recorded and established risk control measures implemented 3.2. Routine maintenance procedure is performed as per manufacturer and client scheduling 3.3. Routine maintenance records are maintained and faults recorded
4. Fault-find and troubleshoot domestic refrigeration and air conditioning appliance faults	4.1. OHS requirements are determined 4.2. Equipment and testing devices needed to determine fault are selected 4.3. Apply standard test procedures to determine faults against equipment specifications 4.4. Test data and faults are recorded as required
5. Replace, repair or service faulty components in domestic refrigeration and air	5.1. Plug in appliance is electrically disconnected or arrangements made for appropriately licensed person to isolate hard-wired appliances 5.2. Electrical components are replaced in accordance with manufacturer recommendation and industry best

ELEMENT	PERFORMANCE CRITERIA
conditioning appliances	practice 5.3. Refrigeration system replacement components are selected and prepared 5.4. Refrigerants are recovered, stored and disposed of in accordance with Commonwealth legislation and industry codes of practice 5.5. Refrigeration system components are installed in accordance with industry best practice, standards and codes 5.6. Refrigeration system is returned to operating condition using standard refrigeration return to service procedures

ELEMENT	PERFORMANCE CRITERIA
6. Return to service domestic refrigeration and air conditioning appliances	6.1. Standard electrical tests are applied to identify electrical faults before operating 6.2. Appliance is started and operated in accordance with manufacturer standards 6.3. Standard tests are carried out to confirm system performance to manufacturer specifications 6.4. Appliance operating data is recorded as required 6.5. Worksite is cleaned and left in presentable condition in accordance with original presentation, client requirements, industry standards and organisational requirements

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:

- 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 and clarifying task related information
- attaching ancillary devices
- using tools, techniques and equipment necessary to check for correct operation
- comparing system and component performance/ operation against specification
- identifying faulty components and non compliances
- using appropriate test equipment to identify non compliance
- safely remove, contain or add refrigerant to relevant Australian Standards or codes and regulations
- 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
- completing relevant standard, code or local required documentation

Required knowledge

REQUIRED SKILLS AND KNOWLEDGE

Look for evidence that confirms knowledge of:

- procedures and industry best practice for brazing refrigeration pipework
- procedures for evacuating system
- procedures for pressure and leak testing
- procedures for handling and adding refrigerant
- safety and legislative requirements for handling refrigerants
- procedure for checking air flow
- standard electrical measurements for earth continuety, insulation resistance, circuit resistance, supply voltage and current
- measuring instruments/equipment, specifications and procedures for checking temperature and system performance
- measuring instruments/equipment, specifications and procedures for checking and testing components
- procedures for reporting non-conformances
- specifications, operational characteristics and process for identifying system components
- process for identifying refrigerant type
- procedures complying to all legislative and regulatory requirements for safely removing the refrigerant and charging and evacuating the system
- procedures for completing documentation
- hazards and control measures associated with installing split air conditioning systems, including housekeeping

Evidence Guide

EVIDENCE GUIDE	
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.	
Overview of assessment	A person who demonstrates competency in this unit must be able to install service and repair domestic refrigerators and air conditioners to manufacturer specifications, safely, to relevant Australian Standards, codes and regulations. Competency in this unit cannot be claimed until all prerequisites have been satisfied.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	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.
Context of and specific resources for assessment	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. This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with installing, servicing and repairing domestic refrigerators and air conditioners or other units requiring the exercise of the skills and knowledge covered by this unit.
Method of assessment	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 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

EVIDENCE GUIDE	
	permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE	
Guidance information for assessment	

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.	
Routine maintenance	Electrical testing of the appliance, polarity testing, cleaning condensers, clearing drains, checking temperatures, pressures, component operation, air flow and system capacity, cleaning filters.
Standard electrical tests	Earth continuity, Insulation resistance, and Circuit resistance to meet electrical equipment regulations and codes (AS3000). Testing of supply voltage and the appliance or individual component current draw.
Equipment and testing devices	Refrigeration gauge manifold, Schraeder access valves; quick connect couplings, thermometer/thermocouple temperature measuring devices; analogue and digital vacuum measuring gauges; digital scales; refrigerant recovery unit; vacuum pump; electronic leak detectors, refrigerant containers/cylinders.
Industry best practice	Pipe fabrication techniques and industry best practice for pipe brazing.
Standard refrigeration return to service procedures	Leak detection, evacuation, and refrigerant charging of domestic air conditioning and refrigeration plug in appliances.
Commonwealth, **State and Territory legislation**, **regulations**, **standards and codes**	The Ozone Protection and Synthetic Greenhouse Gas Legislation Amendment Bill 2003; air conditioning residential best practice guidelines

RANGE STATEMENT	
of practice, **industry guidelines**	(AIRAH); State and local building regulations; Codes of Practice for domestic refrigeration and air conditioning. (HB40)
System performance	Pressure; temperature; sub cooling; superheating; evaporator coil to air temperature difference
Domestic refrigeration and air conditioning appliances	Self contained plug in appliances primarily designed for domestic and residential situations: • refrigerators - single door, two door and two door side by side • freezers - chest and vertical door using, for example, refrigeration systems with cyclic defrost, frost-free with electric and hot-gas defrost, and manual defrost. • air conditioners (window and wall mounted self-contained room air conditioners)

Unit Sector(s)

Unit sector	

Co-requisite units

Co-requisite units		

Competency field

Competency field	Installation and commissioning