



Australian Government

MEM10003 Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.

Release: 1

MEM10003 Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.

Modification History

Release 1. Supersedes and is equivalent to MEM10003B Install and test electrical wiring and circuits up to 1000 volts a.c and 1500 volts d.c

Application

This unit applies engineering tradesperson involved in installation of electrical wiring/systems and/or enclosures, including specialist cables, using a full range of installation materials and techniques to any wiring circuits which are directly or indirectly connected to a power supply system of electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c used for heating, ventilation, air conditioning and refrigeration (HVAC/R).

The scope of work includes modifying existing electrical work and electrical equipment work to relevant specifications/regulations and drawings.

Some jurisdictions may require the holder of this unit to be licensed or certified and users should check with the relevant authorities.

Band: A

Unit Weight: 12

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM10002	Terminate and connect electrical wiring
MEM12002	Perform electrical/electronic measurement
MEM12023	Perform engineering measurements
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.

Competency Field

Installation and commissioning

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 Ensure emergency first aid equipment, documentations and procedures are in place and understood |
| | | 1.4 Use appropriate personal protective equipment (PPE) in accordance with SOPs |
| | | 1.5 Identify job requirements from specifications, drawings, job sheets or work instructions |
| | | |
| 2 | Plan the installation | 2.1 Determine special work, hazard and safety requirements and incorporate in plan |
| | | 2.2 Devise work plan/strategy and confirm in accordance with legislative and regulatory requirements and procedures |
| | | |
| 3 | Prepare for electrical installation | 3.1 Undertake all work safely and to workplace procedures, state/territory regulations and legislative requirements |
| | | 3.2 Check materials for correct specifications |
| | | 3.3 Determine the need to test or measure live in strict accordance with WHS requirements and when necessary conducted within established safety procedures |
| | | 3.4 Check that circuits/machines/plant is isolated where necessary in strict accordance WHS requirements and procedures |
| | | |
| 4 | Install the wiring/enclosures and/or support systems | 4.1 Ensure all cables/conductors/conduit/enclosures and support systems are installed to specifications using correct appropriate techniques, tools and equipment |
| | | 4.2 Terminate cables and conductors to accessories and |

Elements describe the essential outcomes.

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

appliances in accordance with manufacturer's specifications and regulatory requirements

4.3 Mark cabling or label for identification and to specification

5 Commission and test the installed wiring system

5.1 Test all completed wiring/systems and enclosures for compliance with specifications, regulations, and legislative requirements, utilising appropriate test procedures and equipment

5.2 Energise the installation and test for compliance with specifications

5.3 Rectify faults as required to meet specification

5.4 Complete documentation to required specifications

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.

Installation includes the following:

- electrical installation work and electrical equipment work 1000 volts a.c. and 1500 volts d.c. to existing HVAC/R system and involving utilisation of a range of methods, tools and equipment appropriate to the work

Specifications/regulations and drawings include one (1) or more of the following:

- legislative acts
- Wiring Rules
- other standards
- specifications

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- electrical and architectural drawings

Cables/conductors include one (1) or more of the following:

- single insulated
- thermoplastic insulated and sheathed
- flat and circular
- MIMS
- steel wire armoured
- flexible cords and cables
- copper and aluminium
- catenary systems
- shielded

Conduit/enclosures include the following:

- metallic and non-metallic

Support systems include one (1) or more of the following:

- trunking
- ducting
- cable tray/ladder
- catenaries

Documentation includes one (1) or more of the following:

- work documentation
- short reports required to meet regulatory requirements
- safe work method statements (SWMS)
- job safety analysis (JSA)
- work permits

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM10003B Install and test electrical wiring and circuits up to 1000 volts a.c and 1500 volts d.c

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 MEM10003 Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.

Modification History

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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
- checking emergency first aid equipment, documentations and procedures are in place according to site/legislative requirements
- using appropriate personal protective equipment (PPE) in accordance with site/legislative requirements
- identifying and interpreting specifications and drawings for installing and testing electrical wiring and circuits for existing heating, ventilation, air conditioning and refrigeration (HVAC/R) system
- coordinating the installation effectively with others affected by the work in accordance with legislative and customer requirements
- checking materials conform to specifications and customer requirements
- assessing the need to test or measure live in strict accordance with work health and safety (WHS) requirements, and when necessary, conducting within established safety procedures
- ensuring HVAC/R system is isolated where necessary in strict accordance with WHS requirements
- planning the cable routes and obtaining the installation materials including accessories and appliances
- installing the wiring, including routing, placing and securing cables in compliance with requirements
- terminating cables and conductors to accessories and appliances in accordance with manufacturer specifications and regulatory requirements
- marking or labelling cabling as required to specification
- inspecting and testing installed and terminated circuits and rectifying any defects and retesting to ensure compliance
- documenting 'as installed' wiring, accessories and appliances in accordance with established procedures and regulatory requirements.

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 PPE
- work permit requirements, including safe work method statement (SWMS) or job safety analysis (JSA)
- statutory and regulatory requirements associated with the installing and testing of electrical wiring and circuits, including AS/NZS 3000:2000 Electrical Installations (known as the Australian/New Zealand Wiring Rules), other Australian/International Standards and codes of practice
- AS/NZS 3008.1.2:2010 Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV and other related standards in regard to the cable selection/support fit for purpose
- other legislative and regulatory requirements appropriate to the work to be done
- work planning procedures
- procedures to be followed if materials and or supports do not conform to specification
- techniques, tools and equipment required to install cables, wires, conduit, enclosures and support systems
- marking and/or labelling requirements for cabling and reasons for marking and/or labelling cables
- procedures and equipment to test before and after energising wiring and systems
- reasons for carrying out all tests
- common wiring system faults and method(s) for rectifying faults
- documentation to be completed
- dangers present in electrical rescue
- local emergency services
- appropriate standards and procedures for recording of first aid treatment
- recognised procedures for the movement and treatment of injured persons
- requirements for approval to work.

Assessment Conditions

- Assessors must:
 - have vocational competency in installing and testing electrical wiring and circuits up to 1000 volts a.c and 1500 volts d.c used in existing HVAC/R 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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