



**Australian Government**

**Department of Education, Employment and Workplace Relations**

**MEM10003B Install and test electrical  
wiring and circuits up to 1000 volts a.c. and  
1500 volts d.c.**

Release: 1

## **MEM10003B Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.**

### **Modification History**

Not Applicable

### **Unit Descriptor**

<b>Unit descriptor</b>	This unit covers installing and testing electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.
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### **Application of the Unit**

<b>Application of the unit</b>	<p>This unit applies to installation of electrical wiring/systems and/or enclosures, including specialist cables, using the full range of installation materials and techniques to any wiring circuits which are directly or indirectly connected to a power supply system. The scope of work includes electrical installation work and electrical equipment work.</p> <p>Specifications/regulations and drawings can refer to legislative acts, SAA Wiring Rules Standards specifications, and electrical and architectural drawings. Where precision electrical/electronic measurement is required, see Unit MEM12004B (Perform precision electrical/electronic measurement).</p> <p>For specialist cables, Unit MEM10011B (Terminate and connect specialist cables) should be included.</p> <p><b>Band: A</b> <b>Unit Weight: 12</b></p>
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### **Licensing/Regulatory Information**

Not Applicable

## Pre-Requisites

Prerequisite units		
<b>Path 1</b>	MEM09002B	Interpret technical drawing
	MEM10002B	Terminate and connect electrical wiring
	MEM12002B	Perform electrical/electronic measurement
	MEM12023A	Perform engineering measurements
	MEM18001C	Use hand tools
	MEM18002B	Use power tools/hand held operations
	MEM18049C	Disconnect/reconnect fixed wired equipment (up to 1000 volts a.c. and 1500 volts d.c.)

## Employability Skills Information

<b>Employability skills</b>	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. Plan the installation	<p>1.1. Special work, hazard and safety requirements are determined and incorporated in plan.</p> <p>1.2. Work plan/strategy is devised and confirmed in accordance with legislative and regulatory requirements and standard operating procedures.</p>
2. Prepare for electrical installation	<p>2.1. All work is undertaken safely and to workplace procedures, State/Territory regulations and legislative requirements.</p> <p>2.2. Materials are checked for correct specifications.</p>
3. Install the wiring/enclosures and/or support systems	<p>3.1. All cables/conductors/conduit/enclosures and support systems are installed to specifications using correct appropriate techniques, tools and equipment.</p> <p>3.2. Cabling is marked or labelled for identification and to specification.</p>
4. Commission and test the installed wiring system	<p>4.1. All completed wiring/systems and enclosures are tested for compliance with specifications, regulations, and legislative requirements, utilising appropriate test procedures and equipment.</p> <p>4.2. Where appropriate, the installation may be energised and tested for compliance with specifications.</p> <p>4.3. Faults are rectified to specification.</p> <p>4.4. Documentation is completed correctly to required specifications.</p>
5. Perform emergency first aid	<p>5.1. Situation is assessed to identify points of danger to the injured person and potential rescuer, including the assessment of electrical hazards.</p> <p>5.2. Electrical hazards are isolated in accordance with established procedures for electrical rescue.</p> <p>5.3. Rescue/recovery of injured person, or assistance to injured person, is undertaken in accordance with recognised standards/procedures. Contact is made with appropriate medical and rescue authorities.</p> <p>5.4. Details of first aid given are recorded.</p>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

## REQUIRED SKILLS AND KNOWLEDGE

### Required skills

Look for evidence that confirms skills in:

- interpreting circuits, drawings, specifications and instructions
- preparing work plans in accordance with legislative and regulatory requirements and standard operating procedures and hazard and safety requirements
- following relevant legislative and regulatory requirements and standard operating procedures to work practices
- using measurement for installing and testing electrical wiring and circuits
- checking materials for conformance to specification
- selecting cables
- installing cables/wires/conduit/enclosures and support systems
- marking and labelling cabling for identification
- testing wiring/systems and enclosures for compliance with specifications, relevant regulatory and legislative requirements
- energising and testing installation
- identifying and rectifying faults
- completing reports and documentation using short descriptions, comments and relevant terminology
- considering potential points of danger when planning a rescue or provision of assistance
- isolating electrical hazards in accordance with safety procedures
- applying procedures for the movement/treatment of injured, including:
  - clearing of airways
  - CPR (cardio-pulmonary resuscitation)
  - care of spinal injuries
  - treatment of cuts/lesions etc.
  - treatment of burns/scalds
  - treatment of shock
  - rescue from a live situation
- reading/interpreting specifications, test procedures, labelling, reference documentation and emergency first aid documents

### Required knowledge

Look for evidence that confirms knowledge of:

- hazard control measures and safety requirements applicable to the work undertaken
- work permit requirements
- safe work practices and procedures
- cable selection/support fit for purpose
- the legislative and regulatory requirements appropriate to the work to be done

## **REQUIRED SKILLS AND KNOWLEDGE**

- 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
- the marking and/or labelling requirements for cabling
- the reasons for marking and/or labelling cables
- the procedures and equipment to test before and after energising wiring and systems
- reasons for carrying out all tests
- common wiring system faults
- method(s) for rectifying faults
- the documentation to be completed
- dangers present in electrical rescue
- appropriate standards and procedures for first aid recording procedures
- recognised procedures for the movement and treatment of injured persons
- local medical and rescue services
- the reasons for recording first aid
- requirements for approval to work

## 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 will be able to install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c. 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 and testing electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c. 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'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,

<b>EVIDENCE GUIDE</b>
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	standards, manuals and reference materials.
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<b>EVIDENCE GUIDE</b>	
<b>Guidance information for assessment</b>	

## Range Statement

<b>RANGE STATEMENT</b>	
<p>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.</p>	
<b>Installation</b>	Applies to electrical installation work and electrical equipment work. Involves utilisation of a range of methods, tools and equipment appropriate to the work
<b>Cables/conductors</b>	Single insulated, thermoplastic insulated and sheathed, flat and circular, MIMS, steel wire armoured, flexible cords and cables, copper and aluminium, catenary systems, shielded
<b>Conduit/enclosures</b>	Metallic and non-metallic
<b>Support systems</b>	Trunking, ducting, cable tray/ladder, catenaries
<b>Documentation</b>	Forms, short reports requiring comments etc., according to regulatory requirements

## Unit Sector(s)

<b>Unit sector</b>	
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## Co-requisite units

<b>Co-requisite units</b>		

## Competency field

<b>Competency field</b>	Installation and commissioning
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