



Australian Government

MEM18048 Fault find and repair/rectify basic electrical circuits

Release: 1

MEM18048 Fault find and repair/rectify basic electrical circuits

Modification History

Release 1. Supersedes and is equivalent to MEM18048B Fault find and repair/rectify basic electrical circuits

Application

This unit of competency defines the skills and knowledge required to locate and repair/rectify faults in non-interconnected electrical circuits.

It applies to work on basic circuits which are defined as single circuits with single outputs. The single circuits may be controlled by one or more devices and the output may control one or more devices.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 12

Pre-requisite Unit

MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM10002	Terminate and connect electrical wiring
MEM10003	Install and test electrical wiring and circuits up to 1000 volts a.c. and 1500 volts d.c.
MEM12002	Perform electrical/electronic measurement
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
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

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 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 Use appropriate personal protective equipment (PPE) in accordance with SOPs 1.4 Identify job requirements from specifications, drawings, job sheets or work instructions
2 Locate fault	2.1 Determine circuit function and characteristics by reference to circuit diagrams, specifications, schematics and/or consultation with technical adviser 2.2 Examine and interpret built-in fault indicators and error codes and record results to procedures, where appropriate 2.3 Isolate circuit from power supply 2.4 Verify and localise faults using appropriate tools, test equipment, procedures and techniques 2.5 Record faults in accordance with SOPs
3 Repair/rectify fault	3.1 Repair/replace or adjust circuit/s to specifications or manufacturers' requirements

Elements describe the essential outcomes.

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

- 3.2 Check and test circuit/s for compliance with site or manufacturers' specifications
- 3.3 Record repair/rectification report in accordance with SOPs

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.

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

- legislative acts
- wiring rules
- other standards
- specifications
- electrical and architectural drawings

Appropriate fault-finding techniques include testing for the following:

- voltage
- current
- frequency
- polarity
- phase
- circuit continuity
- insulation resistance
- earth continuity

Test equipment includes one (1) or more of the following:

- continuity testers
- ammeters
- voltmeters
- multimeters

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- tong testers
- wattmeters
- cathode ray oscilloscopes

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM18048B Fault find and repair/rectify basic electrical circuits

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 MEM18048 Fault find and repair/rectify basic electrical circuits

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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
- use appropriate personal protective equipment (PPE)
- identify and interpret specifications, charts, lists, circuit drawings, schematics, regulatory and legislative requirements to fault find and repair/rectify basic electrical circuits
- check and record built-in fault indicators and error codes to site requirements
- checking that the electrical circuit is isolated and tagged where necessary in strict accordance with work health and safety (WHS) requirements and procedures
- using diagnostic skills to locate faulty operation using appropriate fault-finding techniques and test equipment to verify faults
- test, adjust or set basic controls (e.g. pressure controls thermostats, timers and overloads)
- repairing/replacing or adjusting electrical circuits to specifications and verifying using appropriate test equipment that the electrical circuit is operating to manufacturers specifications
- recording rectification activities in accordance with SOPs.

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
- circuit characteristics
- relevant regulatory requirements
- errors indicated by built-in devices
- circuit isolation and tagging procedures
- common electrical test instruments and their application
- common techniques for testing electrical circuits
- recording/reporting requirements for electrical circuit faults
- appropriate techniques/procedures for returning the circuit/s to specification
- site/manufacturers' circuit specifications

- requirements for recording circuit rectifications or replacement.

Assessment Conditions

- Assessors must:
 - have vocational competency in diagnosing, repairing/rectifying basic electrical 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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