



Australian Government

MEM18104 Dismantle, replace and assemble electrical components and equipment

Release: 2

MEM18104 Dismantle, replace and assemble electrical components and equipment

Modification History

Release 2. Prerequisite units updated

Release 1. New unit

Application

This unit has been developed for Engineering Tradesperson - industrial electrician apprenticeship training and the recognition of trade-level skills in dismantling, replacing and assembling electrical components and equipment which are designed to operate at voltages greater than 50 V alternating current (AC) or 120 V direct current (DC).

It covers dismantling and identifying faulty components, selecting replacements, and assembling electrical components into assemblies or sub-assemblies, including the safe use of hand and power tools and interpretation of mechanical drawings/diagrams.

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

Band: A

Unit Weight: 3

Pre-requisite Unit

Path 1	MEM12023	Perform engineering measurements
	MEM18001	Use hand tools

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.

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|-------------------------------|--|
| 1. Determine job requirements | 1.1 Follow standard operating procedures (SOPs) |
| | 1.2 Comply with work health and safety (WHS) requirements at all times, including appropriate risk |

- control measures
- 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. Dismantle electrical components and equipment
- 2.1 Obtain all necessary tools, equipment and measuring devices needed to dismantle electrical components and equipment
 - 2.2 Isolate and tag circuits and equipment in accordance with procedures
 - 2.3 Inspect electrical component/equipment and analyse task requirements
 - 2.4 Select the appropriate tools and equipment
 - 2.5 Ensure all applicable handheld power tools are tested and tagged and are checked for correct operation and safety
 - 2.6 Dismantle the item according to engineering drawings, manufacturer requirements and SOPs
 - 2.7 Mark electrical components to aid in reassembly
3. Identify faulty components and select replacement
- 3.1 Obtain and interpret specifications for components from appropriate source
 - 3.2 Assess damaged or faulty components against specifications in accordance with procedures and manufacturer requirements
 - 3.3 Identify faulty components and arrange for repair, replacement or adjustment in accordance with procedures and manufacturer requirements
 - 3.4 Select replacement and/or repaired parts for reassembly in accordance with specifications and procedures
4. Assemble electrical
- 4.1 Apply appropriate techniques to assemble electrical

components and equipment

components/equipment using fastening equipment and methods which ensure conformance to specifications and operational performance

- 4.2 Select, where appropriate, correct lubrication, packing and sealing materials and apply them in accordance with job specifications
- 4.3 Inspect, test and adjust assembled electrical component/equipment as necessary for compliance with operational specifications and return to use in accordance with procedures
- 4.4 Complete documentation, including all necessary remedial action and reasons why they were carried out, 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.

Electrical components and equipment include one or more of each of the following:

- single-phase appliances – hand held power tools, fridges, microwaves, TV's, lighting motors, air conditioning units, air compressors, portable pumps, pedestal drills, lathes, bench grinders, motors, fans and fan motors
- three phase appliances – freezer units, welding machines, fan and pump motors, heaters, general commercial kitchen equipment, generators, air conditioning units, air compressors and air blowers
- DC machines
- non-rotating AC and DC equipment and components

Appropriate tools and equipment include one or more of the following:

- a range of hand and power tools
- bearing pullers
- special purpose dismantling and assembly tools

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.

Testing and tagging requirements of portable tools include:

- Those identified in AS/NZS 3760:2010 In-service safety inspection and testing of electrical equipment

Unit Mapping Information

No equivalent unit

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 MEM18104 Dismantle, replace and assemble electrical components and equipment

Modification History

Release 2. Prerequisite units updated

Release 1. New unit

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 occasions and include:

- Following work instructions, SOPs and safe work practices
- identifying and interpreting circuits, drawings and specifications relevant to the work to be undertaken
- preparing component/equipment for dismantling
- ensuring all handheld power tools are tested and tagged to the requirements of AS/NZS 3760:2010 In-service safety inspection and testing of electrical equipment
- dismantling component/equipment using appropriate techniques, tools and equipment
- marking component/equipment parts appropriately to aid in reassembly
- checking components visually and dimensionally for conformance to specifications
- selecting and confirming replacement parts to specifications from supplier catalogues
- preparing and assembling component/equipment using appropriate techniques and procedures
- undertaking shaft and coupling alignment, where appropriate
- applying lubricants, packing and/or sealing materials, where appropriate, in accordance with the job specifications
- inspecting and checking the final assembly for conformance with operational specifications and returning to use
- documenting all necessary remedial action and reasons why they were carried out 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
- mechanical drawing interpretation, including:
 - application of AS 1100.101-1992 Technical drawing – General principles, in accordance with SOPs
 - conventions used in technical drawings, including relationship between the views contained in the drawing, objects represented, units of measurement, and dimensions of the key features and symbols used

- correct interpretation of instructions contained in drawings
- materials from which drawing objects are made and their features and manufacturing/assembly requirements
- power tools, including:
 - application of different power tools, including electric or pneumatic/hydraulic drills, grinders, jigsaws, nibblers, cutting saws, sanders, planers, routers, pedestal drills and grinders
 - clamping/securing methods, including multigrips, vices, jigs, fixtures and clamps
 - adjustments/alignments to a range of power tools
 - common faults and/or defects in power tools
 - procedures for marking unsafe or faulty power tools for repair
 - routine maintenance requirements and cleaning of a range of power tools, including lubricating, tightening, simple tool repairs and adjustments using engineering principles, tools, equipment and procedures to statutory and regulatory requirements
 - tool sharpening techniques for a range of power tools
 - storage location and procedures of a range of power tools
 - safety precautions when using power tools
- precautions to be observed when drilling materials containing asbestos, including the following:
 - undertaking a risk assessment prior to commencement of work
 - a non-powered hand drill or low speed battery-powered drill or drilling equipment fitted with local exhaust ventilation (LEV) dust control hood wherever possible
 - safe working procedures, including applicable PPE
- portable tool safety and tagging system in accordance with the requirements of AS/NZS 3760:2010 In-service safety inspection and testing of electrical equipment
- correct procedures for storage of hand and power tools
- types of seals, bearings, fans and pulleys commonly found in electrical equipment
- non-rotating DC equipment and components, including construction, operation and application of:
 - solenoids, relays and contactors
 - linear actuators
 - Hall effect devices
 - magnetic sensing devices
 - magnetostriction equipment
- dismantling and assembly techniques, including:
 - marking component/equipment parts to aid in reassemble
 - selecting appropriate hand and power tools used in dismantling and assembling electrical components
 - procedures for safe handling and storage of dismantled components.

Assessment Conditions

Assessors must:

- have vocational competency in dismantling, replacing and assembling electrical components and equipment 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* and comply with the *National Vocational Education and Training Regulator Act 2011* or equivalent legislation covering VET regulation in a non-referring State 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 that 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 manufacturer 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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