



**Australian Government**

**Assessment Requirements for MEM27006  
Diagnose and rectify batteries, low voltage  
sensors and circuits**

**Release: 1**

# Assessment Requirements for MEM27006 Diagnose and rectify batteries, low voltage sensors and circuits

## Modification History

Release 1. Supersedes and is equivalent to MEM18030B Diagnose and rectify low voltage electrical systems

## 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
- identifying and interpreting specifications, charts, lists, SOPs, electrical drawings and diagrams to diagnose and rectify batteries, low voltage sensors and circuits
- selecting and using the correct test instrument, including multimeters, amp meters and circuit testers, for a variety of electrical circuits to measure current, voltage and resistance of specified circuit components or sections of circuitry
- applying Ohm's Law to determine the required values of current, voltage and resistance of a range of electrical circuits, including series, parallel and series parallel
- connecting electrical test instruments into given circuits to determine the required values of current, voltage and resistance in a safe and effective manner
- determining the specific gravity of the electrolyte for temperature variations using a hydrometer
- preparing dry batteries for charging and recharging and performing discharge testing of batteries
- fault finding using fault-finding techniques to identify wiring faults in electrical circuits
- selecting appropriate replacement cables according to size, rating and insulation resistance from supplier catalogues
- making up replacement wiring looms, stripping and preparing cable ends for termination and terminating to specifications
- testing terminations for continuity and compliance with requirements
- removing and/or neutralising corrosion from terminals and connections and applying appropriate protective coating
- testing and fault finding a range of circuits components, including sensors, relays, solenoids, contacts for repair/replacement.

## 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 personal protective equipment (PPE)

- principles of electron theory
- definitions of current, voltage and resistance in terms of electrical circuits
- Ohm's Law and the relationships between current, voltage and resistance for a variety of given electrical circuits
- instruments and procedures to be used to measure current, voltage and resistance and safety precautions to be taken
- procedures for maintaining electrical test equipment
- function of a variety of electrical circuits identified from given electrical drawings/diagrams
- symbols used in electrical drawings/diagrams
- components of a variety of electrical circuits identified by given electrical drawings/diagrams
- differences between series and parallel electrical circuits
- function of a general purpose oscilloscope and procedures for connecting a general purpose oscilloscope into given electrical circuits
- use of wave forms in the testing of electrical circuits
- accuracy to which a range of electrical test equipment can be read
- procedures for:
  - using multipliers and shunts in the measurement of electrical circuits
  - measuring the specific gravity of the electrolyte and the effect of temperature on the specific gravity of the electrolyte
  - preparing and recharging dry batteries
  - discharge testing of batteries and purpose
  - making up and fixing wiring looms can be given
  - stripping, fitting and preparing wiring terminations
  - soft and hard soldering/crimping of wiring terminations
  - corrosion removal and/or neutralisation
- operation of a chemical battery and the function of the electrolyte in batteries and specifications applied to batteries
- examples and causes of common faults in electrical wiring and test procedures for isolating wiring faults
- specifications of cables and wires, including insulation resistance used in given electrical circuits
- test procedures for terminated wiring and cables
- effect of corrosion on the performance of electrical circuits and connections
- coatings available to stop/inhibit corrosion
- correct operational principles of sensors, relays, solenoids and contacts
- common faults and causes in sensors, relays, solenoids, contacts and circuits and procedures for testing circuit components.

## Assessment Conditions

- Assessors must:

- have vocational competency in diagnosing and rectifying low voltage 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.

## Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>