



Australian Government

Assessment Requirements for MEM10020

Install low voltage cabling and fit-off accessories, appliances and equipment

Release: 3

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Modification History

Release 3. Prerequisite units updated

Release 2. Minor adjustments to reflect ERAC requirements for electrician licensing and revision of Essential Performance Capabilities

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 (2) occasions and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- identifying and interpreting circuits, drawings, plans and specifications relevant to the work to be undertaken
- planning the cable routes in accordance with legislative and customer requirements
- installing cable support systems
- complying with the following cable support system requirements:
 - bending steel conduits (where applicable) such that the internal diameter is not significantly reduced
 - preparing entry joints and joints to ensure cable insulation is not damaged
 - joining steel conduits together using appropriate accessories or if required through a welding process
 - ensuring that they are adequately sealed against entry of water or rain
- installing wiring systems using applicable cable support systems according to the electrical installation requirements and standards paying particular attention to factors effecting cable current-carrying capacity
- maintaining fire integrity
- terminating cables and conductors to switchboard protective devices
- terminating cables and conductors at switchboards, accessories and appliances according to legislative, regulatory and manufacturer requirements
- installing all accessories, appliances and equipment square and straight and in the required location using appropriate hand and power tools
- ensuring appropriate Ingress Protection (IP) rating when selecting suitable electrical equipment
- inspecting and testing installed and terminated cables to ensure they comply with continuity and insulation resistance and are safe to connect to the supply
- rectifying any defects and retesting to ensure compliance

- connecting and terminating consumers mains to an installation
- completing appropriate documentation 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 personal protective equipment (PPE)
- Australian Standards, codes and requirements applicable to the installation for:
 - thermoplastic sheathed (TPS - flat and circular) and thermoplastic insulated (TPI) cables
 - fire protection and mineral insulated metal sheathed (MIMS) cables
 - steel wired armoured (SWA)
 - flexible cords used as fixed wiring
 - trailing cable and catenary wire systems
 - cables support systems
 - protection against mechanical damage
 - wiring systems likely to be disturbed
 - wiring systems installed vertically
 - change of direction
 - prohibited cable locations
 - selection and installation to minimise the spread of fire
 - limitation of circulating and eddy currents
- Australian/New Zealand Wiring Rules requirements for enclosure of cables, including:
 - types of wiring enclosures – change of wiring enclosures, entry of water and support of cables
 - installation of wiring enclosures – support, continuity, bending, passage of conductors, terminations, in direct sunlight, provision for expansion and cable trunking
 - factors effecting cable current-carrying capacity
- dissimilar metals in a corrosive environment
- application of protective coatings, e.g. paint, galvanizing and powder coatings
- techniques, tools and equipment required to install conduit (metallic and non-metallic), enclosures and support systems
- Australian Standards, codes and requirements applicable to the installation of electrical equipment, including:
 - appliances
 - switchgear, controlgear and accessories
 - switchboards – location and access, physical and circuit arrangements
 - socket outlets
 - lighting equipment and accessories, lamps and luminaires
 - smoke and fire detectors

- cooking appliances
- appliances producing hot water or steam
- room, space and duct heaters
- electric heating cables for floors and ceilings
- electricity converters
- motors, transformers, capacitors and batteries
- control, switching and over current and residual current device (RCD) protection
- required and permitted locations for current-using equipment and accessories
- suitable IP rating
- correct marking of equipment
- terminal configuration of phase, neutral and protective earthing conductors for each type of equipment
- installation standards called up by the Australian/New Zealand Wiring Rules for special situations, including:
 - movable premises and caravan parks
 - shows and carnivals
 - boating marinas
 - electromedical treatment areas
 - outdoor sites under heavy conditions
 - cranes and hoists
 - lifts
 - cold cathode illumination systems
 - electric fences
 - construction and demolition sites
 - film, video and television sites
 - telecommunications networks power supplies
 - hazardous areas e.g. AS/NZS 2430:2004 Classification of hazardous areas, AS/NZS 2381 Set:2008 Electrical equipment for explosive gas atmospheres – Selection, installation and maintenance Set (or their equivalent updated versions)
- Australian/New Zealand Wiring Rules requirements for special electrical installations or locations, including:
 - baths, showers or other fixed water containers
 - swimming pools, paddling pools and spa pools or tubs
 - sauna heaters
 - refrigeration rooms
 - locations where water general hosing down operations are carried out
 - fountains and water features
 - extra-low voltage electrical installations
 - high voltage electrical installations
 - hazardous areas
 - emergency systems

- additional training required to work competently with electrical equipment for hazardous areas
- underground wiring systems, including:
 - arrangements and installation requirements
 - spacing from other underground services
 - consumer mains
- aerial wiring systems, including:
 - types of conductor
 - arrangements, clearances, distance between supports (spans), aerial conductor supports, poles and posts and joints and connections
 - Australian/New Zealand Wiring Rules and local supply authority requirements
 - testing of installed cables in compliance with Australian Standards
- cables supported by catenary, including:
 - types of cables
 - catenary supports
- tools, techniques and procedures for installing cables and wiring systems
- testing and verification of installed and terminated cables to ensure they comply with a visual inspection, all mandatory and optional tests and are safe to connect to the supply
- installation of underground and overhead consumer mains
- termination of consumer mains at pillars, pits, mains connection boxes and consumers switchboard
- installation of unprotected consumers mains to reduce the risk of short circuit to a minimum
- installation of bonding conductors, where required.

Assessment Conditions

- Assessors must:
 - have vocational competency in installing low voltage cabling and fitting off accessories, appliances 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. 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>