

<b>Title</b>	<b>Demonstrate knowledge of electrical cables and accessories</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>7</b>

<b>Purpose</b>	<p>This unit standard is intended for people in the electrical and related trades, who need to be able to select and install power cables and associated accessories.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> <li>– identify electrical cables and their characteristics;</li> <li>– identify electrical accessories and their applications;</li> <li>– install and terminate electrical cables for permanent wiring;</li> <li>– select cables for given applications; and</li> <li>– joint electrical cables.</li> </ul>
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<b>Classification</b>	Electrical Engineering > Electrical Installation and Maintenance
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<b>Available grade</b>	Achieved
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### Guidance Information

- 1 This unit standard has been developed for learning and assessment off-job.
- 2 Achievement of this unit standard does not by itself imply that trainees may legally perform prescribed electrical work in their own right. Until they are registered and licensed under the Electricity Act 1992, trainees are assisting, and must work under the supervision of a Supervisor of Electrical Work when carrying out prescribed electrical work. If the prescribed electrical work in question is carried out for reward the Supervisor of Electrical Work must hold a valid practising licence.
- 3 References  
 Electricity (Safety) Regulations 2010;  
 Health and Safety at Work Act 2015;  
 AS/NZS 3000:2018, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*, including Amendment 1;  
 AS/NZS 3008.1.2:2017 *Electrical installations – Selection of cables – Cables for alternating voltages up to and including 0.6/1 kV – Typical New Zealand condition*; and all subsequent amendments and replacements.
- 4 The term *current regulations and standards* is used in this unit standard to refer to the requirements of the above references.
- 5 The term *safe and sound practice* is defined in AS/NZS 3000:2018.

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## Outcomes and performance criteria

### Outcome 1

Identify electrical cables and their characteristics.

#### Performance criteria

- 1.1 Type of cable is identified by sight.
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|-------|---|
| Range | flexible cords and cables – flat-section (Tru-rip), circular construction; polyvinyl chloride (PVC), tough plastic-sheathed (TPS), rubber sheathed; cables for fixed wiring – tough plastic-sheathed (TPS), conduit wire, neutral-screened (co-axial) cable, cross-linked polyethylene (XLPE), steel-wire armoured (SWA). |
|-------|---|
- 1.2 Cable conductor size is determined for an assortment of common flexible cords and fixed wiring cables by sight, comparison with known cables, by interpretation of markings on cable or cable drum, or by measurement.
- 1.3 The characteristics unique to each type of cable are stated and a typical application given according to industry practice.
- 1.4 Restrictions on the use of Tru-rip and other single insulation types of flexible cords is stated according to current regulations and standards.

### Outcome 2

Identify electrical accessories and their applications.

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| Range | accessories – toggle, rocker, push-button, pull-cord, single-pole, double-pole, intermediate, one-way and two-way switches and switch mechanisms, timers, time delay switches, light dimmers, one-gang, two-gang, flush box, surface box, permanent connection unit, socket outlet (power point), junction box; watertight, hose-proof, or weather-protected accessories; batten holder, recessed light (down-light), passive infrared (PIR) sensor, strip light, pendant and ceiling rose, bayonet-cap and Edison-screw lamps, fluorescent light, starters and tubes. |
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#### Performance criteria

- 2.1 Electrical accessories are identified by name.
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|-------|---|
| Range | identification could be by any one of the following – description, pictorial display, physical display, recall. |
|-------|---|
- 2.2 An application is identified for each accessory according to industry practice and in accordance with the manufacturer's specification.

2.3 Manufacturers' ratings are identified from accessory markings or data sheets.

Range a.c. and d.c. current ratings, voltage rating, power rating, environmental restrictions.

### Outcome 3

Install and terminate electrical cables for permanent wiring.

Range cables – TPS, conduit wire, neutral-screened (co-axial) cable, XLPE, SWA.

#### Performance criteria

3.1 Cables are surface mounted using accessories appropriate to the cable type, according to current regulations and standards, and safe and sound practice.

3.2 Cables are terminated at accessories according to current regulations and standards, and safe and sound practice.

### Outcome 4

Select cables for given applications.

Range typical applications – mains cable for an average-size house, fixed wiring supply to a heating or cooking appliance, submain for small building, lighting circuit, three-phase fixed wired appliance; evidence of three applications is required.

#### Performance criteria

4.1 Type of cable is matched to the application in terms of operating conditions and environment.

4.2 Cable size is determined from given data in accordance with current regulations and standards and manufacturer's data.

Range given data – maximum demand, maximum permissible volt-drop, length of run, class of excess-current protection, grouping, installation method.

### Outcome 5

Joint electrical cables.

Range any three of – PVC, TPS, co-axial (neutral-screened), XLPE, SWA.

#### Performance criteria

5.1 Jointing method is matched to the cable in accordance with safe and sound practice and current regulations and standards, and may use proprietary jointing systems.

- 5.2 Jointing process is carried out in accordance with safe and sound practice, current regulations and standards, and according to manufacturer's instructions where applicable.

Range joints are located so as to remain accessible, jointing materials are assembled, insulation is removed no further than required, conductors are joined, cable insulation is restored to original, joints are sealed against the ingress of moisture, metallic sheathing (where used) is restored and made electrically continuous.

- 5.3 Completed joint is tested for continuity and insulation resistance and measured values are at least as good as those of the original cable.

<b>Replacement information</b>	This unit standard replaced unit standard 752, unit standard 2015, and unit standard 2025.
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**This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.**

#### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	10 February 1999	31 December 2013
Revision	2	3 April 2001	31 December 2013
Review	3	26 May 2005	31 December 2027
Rollover and Revision	4	15 March 2012	31 December 2027
Revision	5	15 January 2014	31 December 2027
Rollover and Revision	6	28 January 2021	31 December 2027
Review	7	25 May 2023	31 December 2027

<b>Consent and Moderation Requirements (CMR) reference</b>	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.