

Title	Demonstrate practical application of theory and legislation for electrical appliance servicepersons (endorsed)		
Level	3	Credits	3

Purpose	<p>This unit is not intended for use by electricians. It is designed to meet the practical competencies of the EWRB <i>Teaching Guidelines for Electrical Appliance Serviceperson (endorsed to disconnect and connect)</i>, which is a requirement for registration as an Electrical Appliance Serviceperson (endorsed to disconnect and connect).</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – make up single-phase extension leads; – connect single-phase appliances to the supply using flexible cords, or replace existing flexible cords; – construct and test simple electrical circuits; – connect and test single-phase electric motors; – reinstate circuit protection after operation of protective device; – test single-phase appliances for safety and compliance; – perform supply voltage and current tests on two different single-phase appliances; and – isolate fixed wired electrical appliances.
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Classification	Electrical Engineering > Electrical Appliance Servicing
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Available grade	Achieved
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Guidance Information

- 1 This unit standard is intended for use by technicians for electrical engineering, electronic engineering, or telecommunications courses at certificate level, and has been developed for learning and assessment on-job or off-job.
- 2 Under the Electricity Amendment Act 2006 the Electrical Workers Registration Board (EWRB) has a responsibility to set registration criterion for electrical workers and ensure that all persons applying for electrical registration are competent.
- 3 To be eligible for registration as an Electrical Appliance Serviceperson (EAS) or an Electrical Appliance Serviceperson (endorsed to disconnect and connect), candidates must complete a competency-based programme of learning approved by the EWRB and must pass the EWRB examination for the registration class, which is based on the requirements of the EWRB *Teaching Guidelines* available at EWRB - Publications for the registration class required. Candidates also need to pass the practical skill assessment programme or an EAS (endorsed) practical examination.

The examination prescription and practical skill assessments prescribed in the EWRB *Electrical Appliance Serviceperson (endorsed to disconnect and connect)* are structured around the essential capabilities and critical items that are considered relevant to this class of registration.

- 4 Performance in relation to the outcomes of this unit standard must meet the needs at an introductory level of relevant competencies 1 to 8; 15; 17 to 20; 30 to 34; 40 to 49; 51; 52 and 54 of the 55 Essential Capabilities for Registration as defined by the EWRB under the Rules of the Board.
- 5 Test result documentation for performance criterion 6.3 shall not be substantially different from the test sheets published by the [EWRB](#).
- 6 References
AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*;
AS/NZS 3760:2003, *Safety and inspection of electrical equipment*;
AS/NZS 5761:2005, *In-service safety inspection and testing of electrical equipment – Second-hand electrical equipment prior to sale*;
AS/NZS 5762:2005 *In-service safety inspection and testing of electrical equipment – Repaired electrical equipment*;
Electricity (Safety) Regulations 2010 Schedule 2 Standards;
Electricity (Safety) Regulations 2010;
Electricity Act 1992;
Electricity Amendment Act 2006.
EWRB *Teaching Guidelines* available from [EWRB](#);
The New Zealand Electrical Codes of Practice (Ministry of Economic Development, ISSN 0114-0663);
Rules of the Board – as available from [EWRB](#);
and all subsequent amendments and replacements.
- 7 Definitions
HRC – high rupturing capacity.
Industry practice – those practices that competent practitioners within the industry recognise as current industry best practice.
Safe and sound practice – as it relates to the installation of electrical equipment is defined in AS/NZS 3000:2007, *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*.
- 8 Range
 - a Candidates must refer to current legislation and Standards during assessment.
 - b Demonstration of safe working practices in accordance with *safe and sound practice* are essential components of assessment of this unit standard.
 - c All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with:
 - i legislation;
 - ii policies and procedures;
 - iii ethical codes;
 - iv Standards – may include but are not limited to those listed in Schedule 2 of the Electricity (Safety) Regulations 2010;
 - v applicable site, enterprise, and industry practice; and,
 - vi where appropriate, manufacturers' instructions, specifications, and data sheets.

Outcomes and performance criteria

Outcome 1

Make up single-phase extension leads.

Performance criteria

- 1.1 Select flexible cord to match the plug and cord connectors, length, and environment in accordance with current regulations and standards.
- 1.2 Terminate flexible cord at plug and cord connector according to current regulations and standards, and industry practice.
- Range termination considerations may include, but are not limited to – matching conductors to terminations, colour code, strands are not weakened by being nicked or cut from conductors, no stray strands protruding, strands are twisted, and where necessary doubled over, terminal screws are tightened, earth conductor is installed so that it will suffer least or last under cord tension, fabric covered cords are sleeved or whipped, cord clamp arrangement is secured so that conductors are not strained, cord protector shroud is replaced, flexible cord insulation integrity is maintained.
- 1.3 Test extension lead for continuity, polarity, and insulation resistance, and record results in accordance with current regulations and standards.

Outcome 2

Connect single-phase appliances to the supply using flexible cords, or replace existing flexible cords.

Range appliances – metal framed, double insulated;
connections – appliance to three-pin plug, appliance to permanent wired connection point, by means of an appliance cord;
terminations – evidence of the use of two types of crimp connectors is required;
evidence of six examples is required.

Performance criteria

- 2.1 Confirm appliance is isolated from the supply.
- 2.2 Confirm permanent wired connection point is isolated from the supply and tagged.
- 2.3 Select flexible cord to match the appliance.
- 2.4 Terminate flexible cord at both ends.
- 2.5 Complete crimp terminations using the appropriate crimping tool for the type of termination.

- 2.6 Visually check and electrically test earthing, continuity, polarity, and insulation resistance to confirm that it is safe to reconnect the supply and record test results.
- 2.7 Connect appliance to the supply and where necessary remove the tag and restore the supply.
- 2.8 Confirm operation of the appliance.

Outcome 3

Construct and test simple electrical circuits.

Range circuits – one-way and two-way lamp switching circuits employing Edison screw and bayonet cap lamp fittings, electronic control module, energy regulator (simmerstat), fluorescent light fitting, double-pole switching circuits, replacement of a three-heat switch with an energy regulator (simmerstat); candidates may be supplied with circuit diagrams; evidence of five examples is required.

Performance criteria

- 3.1 Assemble and wire components.
- 3.2 Test circuits for safety.
- 3.3 Verify circuit operation.

Outcome 4

Connect and test single-phase electric motors.

Performance criteria

- 4.1 Confirm that the motor is safe to connect to the supply in accordance with safety inspection and testing requirements of AS/NZS 3760.
- 4.2 Connect motor to the electricity supply.
- 4.3 Confirm safe motor operation using observation and electrical testing.

Range tests – polarity, continuity of earthing, on/off switching, live rated-voltage, no-load current, full-load current, comparison with name plate values.
observation – direction of motor rotation, smooth and quiet running, operation of centrifugal starter switches where appropriate;

- 4.4 Reverse direction of rotation of the motor.

Outcome 5

Reinstate circuit protection after operation of protective device.

Range rewirable fuse links, HRC fuse, plug-in type miniature circuit breaker.

Performance criteria

5.1 Turn off and disconnect defective appliance and turn off main switch before removal of protective device if possible.

5.2 Replace fuse wire in rewirable fuse.

Range fuse carrier is cleaned of fragments of old fuse wire, fuse wire matches the current rating marked on the carrier, fuse carrier is free of protruding ends of fuse wire and is fully seated in its base.

5.3 Replace HRC fuse.

Range fuse cartridge is replaced in carrier with one of same size, characteristic, and rating; fuse carrier is fully seated in its base.

5.4 Replace and re-set plug-in type of miniature circuit breakers.

Range replacement circuit breaker matches the base and has the same characteristic and rating as the original protective device, circuit breaker is fully seated in its base.

Outcome 6

Test single-phase appliances for safety and compliance.

Range standards – AS/NZS 3760; AS/NZS 5761; AS/NZS 5762; AS/NZS 4701;
appliances – Class 1; Class 2;
evidence of at least one non-compliant appliance is required.

Performance criteria

6.1 Complete visual inspections and safety checks.

6.2 Complete electrical tests.

Range electrical tests – earth continuity, polarity where appropriate and accessible, insulation resistance or earth current leakage;
evidence of at least one earth current leakage test is required.

6.3 Record test results in accordance with industry best practice.

6.4 Label or tag appliances.

Outcome 7

Perform supply voltage and current tests on two different single-phase appliances.

Performance criteria

- 7.1 Carryout voltage and current measurements and record the results.
- 7.2 Confirm measurements are within acceptable norms for the type of appliance, and are in accordance with values on the manufacturer's plate.

Outcome 8

Isolate fixed wired electrical appliances.

Range evidence of one single-phase and one poly-phase supplied appliance is required.

Performance criteria

- 8.1 Switch appliance off before isolation.
- 8.2 Identify protective device or point of isolation for the appliance circuit.
- 8.3 Employ safety tag procedure or lockout method as appropriate.
- 8.4 Confirm isolation using the prove-test-prove method and test instruments.

Range tests – phase to neutral, earth to neutral, phase to phase where appropriate, phase to earth.

Planned review date	31 December 2020
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	14 December 2017	N/A

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

Comments on this unit standard

Please contact The Skills Organisation reviewcomments@skills.org.nz if you wish to suggest changes to the content of this unit standard.