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| Title | Replace faulty motors in electrical appliances | | |
| Level | 4 | Credits | 4 |

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| Purpose | <p>This unit standard covers replacement of faulty electric motors in electrical appliances and is intended for use in the training of electrical technicians and service persons.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – diagnose a faulty motor in an electrical appliance; – isolate the electrical appliance; – replace faulty motor in an electrical appliance; and – test and commission the replaced motor and return the electrical appliance to service. |
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| Classification | Electrical Engineering > Electrical Appliance Servicing |
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| Available grade | Achieved |
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| Prerequisites | <p>For safety reasons, competency in this unit standard should be assessed only after competency in the following unit standards has been achieved or equivalent knowledge and skills demonstrated:</p> <p>Unit 750, <i>Demonstrate knowledge of electrical test instruments and take measurements;</i></p> <p>Unit 15851, <i>Demonstrate knowledge of electrical safety and safe working practices for electrical workers;</i></p> <p>Unit 17799, <i>Demonstrate knowledge of testing for electrical safety for electrical appliance servicing - single-phase, or Unit 15852, Isolate and test low-voltage electrical subcircuits;</i></p> <p>Unit 17802, <i>Replace fuses and plug-in miniature circuit breakers;</i></p> <p>Unit 17803, <i>Select and connect flexible cords in single-phase plug-in and fixed wired applications;</i></p> <p>Unit 17804, <i>Test single-phase electrical appliances;</i></p> <p>Unit 17806, <i>Demonstrate knowledge of protection from the harmful effects of electricity;</i></p> <p>Unit 17808, <i>Isolate electrical appliances from the supply;</i></p> <p>Unit 26551, <i>Provide first aid for life threatening conditions;</i></p> <p>Unit 26552, <i>Demonstrate knowledge of common first aid conditions and how to respond to them.</i></p> |
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Guidance Information

- 1 This unit standard has been developed for learning and assessment on-job under adequate supervision as defined in the Electricity Act 1992.
- 2 Competency under this unit standard does not entitle the candidate to legally perform prescribed electrical work without adequate supervision until the candidate has been registered and licensed under the Electricity Act 1992.
- 3 **References**
Electricity (Safety) Regulations 2010;
Electricity Act 1992;
Health and Safety in Employment Act 1992, and associated regulations;
New Zealand Electrical Codes of Practice (Ministry of Business, Innovation and Employment, ISSN 0114-0663);
and all subsequent amendments and replacements.
- 4 **Definitions**
Current regulations and standards – refers to the requirements of the above legislation and standards, applied to the context in which the term is used.
Electrical technicians and service persons – for the purposes of this unit standard means, people who hold or who are working towards electrical registration as an Electrical Service Technician, Electrical Appliance Serviceperson (endorsed to disconnect and connect), or Electrical Appliance Serviceperson.
Industry practice – those practices; which competent practitioners within the industry recognise as current industry best practice.
- 5 **Range**
 - a Typical electrical appliances fitted with motors include but are not limited to fan heaters, fan ovens, range hoods, microwave ovens, refrigerators, freezers, air conditioning units, dehumidifiers, vacuum cleaners, fans, washing machines, clothes dryers, dishwashers, waste disposal units, electric powered tools.
 - b Appliances may be single-phase or three-phase, fixed-wired or connected by means of a plug top. Permanent cabling to the switchboard is excluded.
 - c Evidence of motors in four different appliances is required. One of these may be a direct current motor.

Outcomes and performance criteria

Outcome 1

Diagnose a faulty motor in an electrical appliance.

Performance criteria

- 1.1 Motor is run off load and on load where practicable, and visible and audible defects are identified while running and at standstill, and, where appropriate and accessible, direction of motor rotation is identified.

- 1.2 The need to replace the motor is established using logical analysis of symptoms and other methods where appropriate.

Range methods may include – measurements, other diagnostic techniques.

- 1.3 Viability of motor replacement is assessed taking into account cost of motor replacement compared to cost of appliance, availability of spare motor, and supervisor or customer instructions.

Outcome 2

Isolate the electrical appliance.

Performance criteria

- 2.1 Appliance is isolated from the mains supply and any potentially live parts are made safe in accordance with industry practice and current regulations and standards.
- 2.2 Appliance is clearly tagged as being out of service in accordance with industry practice and current regulations and standards.

Outcome 3

Replace faulty motor in an electrical appliance.

Performance criteria

- 3.1 Faulty motor is removed without damage to other components and conductor connections are noted.
- 3.2 Replacement motor is selected to match the electrical and mechanical specifications of the original motor.
- 3.3 Replacement motor is fitted without damage to other components and in accordance with manufacturer's instructions and industry practice.

Outcome 4

Test and commission the replaced motor and return the electrical appliance to service.

Performance criteria

- 4.1 Electrical connections and earthing of exposed metal parts are verified according to industry practice.
- 4.2 Testing confirms that all requirements of current regulations and standards have been met and that the motor and appliance are safe to reconnect to the supply.
- 4.3 Operational testing confirms that motor and appliance operate in accordance with manufacturer's specifications and operating instructions.

4.4 Test results are documented according to company requirements.

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 | 28 January 2001 | 31 December 2013 |
| Review | 2 | 20 June 2006 | 31 December 2022 |
| Rollover and Revision | 3 | 20 September 2012 | 31 December 2022 |
| Revision | 4 | 15 January 2014 | 31 December 2022 |
| Review | 5 | 28 January 2021 | 31 December 2022 |

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| 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>.