

<b>Title</b>	<b>Demonstrate knowledge of electric motors and motor faults</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>3</b>

<b>Purpose</b>	People credited with this unit standard are able to demonstrate knowledge of: <ul style="list-style-type: none"> <li>– starting, controlling, and protection of electric motors; and</li> <li>– motor faults, their diagnoses, and appropriate remedies.</li> </ul>
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<b>Classification</b>	Electrical Engineering > Core Electrical
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<b>Available grade</b>	Achieved
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### Guidance Information

- 1 Unit standard or equivalent prior knowledge and skills recommended:  
Unit 32626, *Demonstrate knowledge of capacitors, inductors, and electronics in the electrical trade*;  
Unit 32629, *Demonstrate knowledge of electric motors and alternators*.
- 2 Reference  
AS/NZS 3000 (version as cited in the Electricity (Safety) Regulations), *Electrical Installations (known as the Australian/New Zealand Wiring Rules)*;  
or any current subsequent amendments and replacements.
- 3 This unit standard can be used together with other relevant unit standards, additional learning and workplace training to meet the requirements of the Electrical Workers Registration Board (EWRB) core competencies, available at <https://www.e wrb.govt.nz>.
- 4 This unit standard applies to installations and equipment rated above extra-low voltage unless specifically stated.

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### Outcomes and performance criteria

#### Outcome 1

Demonstrate knowledge of starting, controlling, and protection of electric motors.

**Performance criteria**

- 1.1 Describe common methods of starting, controlling and protecting electric motors.
- Range one single-phase motor, one three-phase motor; may include but is not limited to – direct online, reduced voltage, soft start, variable speed drive.
- 1.2 Identify the requirements for motors from AS/NZS 3000.
- Range two requirements.
- 1.3 Explain an electricity distributor restriction for limiting motor starting currents.

**Outcome 2**

Demonstrate knowledge of motor faults, their diagnoses, and appropriate remedies.

**Performance criteria**

- 2.1 Explain the effects of factors that can damage electric motors.
- Range two factors and their effects; factors may include but are not limited to – reduced supply voltage, harmonics, multiple quick succession starts, current and cooling at reduced speeds, overloading.
- 2.2 Describe the symptoms, likely causes, and remedies of electric motor faults.
- Range two motor faults; electric motor faults may include but are not limited to — field, armature, stator, rotor, mechanical.

<b>Planned review date</b>	31 December 2026
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	24 March 2022	N/A

<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>.

**Comments on this unit standard**

Please contact Waihanga Ara Rau Construction and Infrastructure Workforce Development Council at [qualifications@waihanga.nz](mailto:qualifications@waihanga.nz) if you wish to suggest changes to the content of this unit standard.