

Title	Describe the operation and testing of automotive alternators and alternator controls		
Level	3	Credits	4

Purpose	<p>This theory-based unit standard is intended for people in the automotive repair industry.</p> <p>People credited with this unit standard are able to describe: alternator component operation; rotor excitation; voltage control; and testing an alternator circuit.</p>
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Classification	Motor Industry > Automotive Electrical and Electronics
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Available grade	Achieved
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Guidance Information

- 1 It is recommended that people hold credit for Unit 30563, *Demonstrate knowledge of automotive charging and starting systems* before being assessed against this unit standard.
- 2 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, and company requirements and legislative requirements. This includes the knowledge and use of suitable tools and equipment.
- 3 Performance of the outcomes of this unit standard must comply with the following: Health and Safety at Work Act 2015.
- 4 Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.
- 5 Definitions

Company requirements refer to instructions to staff on policy and procedures that are available in the workplace. These requirements may include – company policies and procedures, work instructions, product quality specifications and legislative requirements.

Service information refers to technical information for a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions; technical terms and descriptions; and detailed illustrations.

Suitable tools and equipment means industry approved tools and equipment that are recognised within the industry as being the most suited to complete the task in a professional and competent manner with due regard to safe working practices.

Outcomes and performance criteria

Outcome 1

Describe alternator component operation.

Performance criteria

- 1.1 The operating principles of stators are described in relationship to voltage and current.
Range star wound, delta wound.
- 1.2 The operating principle of a three phase bridge rectifier is described in respect of current rectification.
- 1.3 The operation of a rotor unit is described in terms of the magnetic field.

Outcome 2

Describe rotor excitation.

Performance criteria

- 2.1 Excitation by means of a relay is described.
- 2.2 Excitation by means of diodes is described.
- 2.3 Excitation by means of warning light and resistor is described.
- 2.4 Excitation by means of computer control is described.

Outcome 3

Describe voltage control.

Performance criteria

- 3.1 The principles and operation of transistor (solid state) control units are described.

Outcome 4

Describe testing an alternator circuit.

Performance criteria

- 4.1 Methods and procedures for testing alternators are described.
- 4.2 Methods of testing regulators off the alternator are described.

- 4.3 Procedures for inspecting mechanical components for wear and damage are described.

Range case, shaft, pulley, bearings, brushes, slip rings, rotor.

Planned review date	31 December 2025
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	31 October 1995	31 December 2022
Review	2	29 March 1999	31 December 2022
Review	3	25 January 2008	31 December 2022
Review	4	25 March 2021	N/A

Consent and Moderation Requirements (CMR) reference	0014
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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 MITO New Zealand Incorporated info@mito.org.nz if you wish to suggest changes to the content of this unit standard.