

Title	Overhaul heavy duty electric pre-engaged and axial-type starter motors		
Level	4	Credits	5

Purpose	<p>This unit standard is intended for people in the automotive electrical repair industry.</p> <p>People credited with this unit standard are able to: test and inspect heavy duty electric pre-engaged and axial-type starter motors; rectify faults in starter motors; and assemble and test starter motors.</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 5458, *Demonstrate knowledge of heavy duty starter motor operation* 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.
Heavy duty starter motor refers to starter motors used in heavy equipment, vehicles, and machines.
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

Test and inspect heavy duty electric pre-engaged and axial-type starter motors.

Performance criteria

- 1.1 The starter motor is bench tested for operation to determine if it is faulty, and any faults are identified and noted.
- Range free running, current draw, noise, pinion condition and travel, obvious signs of wear and damage.
- 1.2 The starter motor is disassembled, and any indication of the cause of faults noted.
- 1.3 Mechanical components are inspected for wear and damage. The need for repair or replacement is determined in accordance with the extent of wear and damage.
- Range case, shafts, gears, bushes, clutch, engagement mechanism, brushes, brush holders.
- 1.4 Electrical parts are tested for open, short, and ground faults, and the need for repair or replacement is determined in accordance with the extent of the fault.
- Range solenoids, relays, commutator, brush holders, field and armature windings.

Outcome 2

Rectify faults in starter motors.

Performance criteria

- 2.1 Repairable components are reconditioned to within manufacturer limits and to restore full serviceability.
- Range machining, soldering.
- 2.2 Non-repairable faulty components are replaced with serviceable parts.

Outcome 3

Assemble and test starter motors.

Performance criteria

- 3.1 The starter motor is assembled, without damage to parts, in the sequence and manner prescribed by the manufacturer.
- 3.2 Bench test is performed.
- Range free running, current draw, pinion setting.
- 3.3 Any necessary rectifications and adjustments are made to ensure that the starter motor complies with manufacturer specifications for a fully serviceable unit.

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	29 October 1993	31 December 2022
Review	2	4 October 1996	31 December 2022
Review	3	26 February 1999	31 December 2022
Review	4	25 January 2008	31 December 2022
Review	5	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.