

Title	Rectify heavy vehicle diesel engine short block faults		
Level	4	Credits	8

Purpose	<p>This unit standard is intended for people in the automotive repair industry.</p> <p>People credited with this unit standard are able to: disassemble and inspect a heavy vehicle diesel engine short block; rectify heavy vehicle diesel engine short block faults; and reassemble a heavy vehicle diesel engine short block.</p>
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Classification	Motor Industry > Engines
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Available grade	Achieved
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Guidance Information

- 1 It is recommended that people hold credit for Unit 24287, *Demonstrate knowledge of disassembling, inspecting, and reassembling an engine short block* 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;
Resource Management Act 1991, s15 Discharge of contaminants into environment;
Land Transport Rule: Vehicle Repair 1998.
- 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 Vehicle refers to classes MD3, MD4, ME, NB, TC and TD as specified in the Vehicle equipment standards classifications at <https://www.nzta.govt.nz/vehicles/vehicle-types/vehicle-classes-and-standards/vehicle-classes/>; or has a gross vehicle mass that exceeds 3500kg and is not of a class specified in the Vehicle equipment standards classifications.

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 refer to 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

Disassemble and inspect a heavy vehicle diesel engine short block.

Performance criteria

- 1.1 Coolant is drained from the short block.
- 1.2 Cylinder block is disassembled in the manner and sequence prescribed by the manufacturer.
- 1.3 Components are stored in parts trays to prevent loss and damage.
- 1.4 Care is taken during disassembly to note and preserve any evidence that could help in diagnosing the causes of faults, and to label the parts for easy identification.
- 1.5 Component parts are cleaned of oil, dirt, and carbon to reveal their condition.
- 1.6 Pistons and piston rings are inspected for damage, wear, and for the fit of the gudgeon pin into the piston, and their condition noted.
- 1.7 Connecting rods and crankshaft are inspected for bend, bow, twist, bearing and journal wear, and their condition noted.
- 1.8 Camshaft bearing surfaces, lobes, and followers are inspected for signs of wear and damage, and their condition noted.
- 1.9 Timing gears, water pump, and oil pump are inspected for signs of damage and wear, and their condition noted.
- 1.10 Cylinder block is inspected for signs of bore and sleeve wear; flatness and damage to machined surfaces; corrosion, erosion, electrolysis and cavitation of water jackets, passages and components; and its condition noted.
- 1.11 Wet or dry sleeves are inspected for signs of wear and damage to machined surfaces and for signs of corrosion, erosion, electrolysis, and cavitation, and their condition noted.
- 1.12 Core plugs are inspected for signs of leakage and their condition noted.
- 1.13 Studs and threaded holes are inspected for signs of damage, clogging, and breakage and their condition noted.

1.14 A decision as to repair or replace the short block and components is made based on relevant factors.

Range relevant factors include but are not limited to – extent of damage, cost, availability of parts, warranty.

Outcome 2

Rectify heavy vehicle diesel engine short block faults.

Performance criteria

2.1 Faulty pistons and piston rings are replaced, to match the size of the cylinder bores.

2.2 Wet or dry sleeve faults are rectified to restore serviceability, or replaced, if worn or damaged beyond manufacturer’s specifications.

Range sleeve protrusion, sealing, machined surfaces.

2.3 A recommendation on the method of repair required is made.

Range connecting rods, camshaft, timing gears, oil pump.

2.4 Leaking core plugs are removed and replaced.

2.5 Clogged threads are cleaned out, and broken studs are replaced.

Outcome 3

Reassemble a heavy vehicle diesel engine short block.

Performance criteria

3.1 The engine short block is reassembled to restore full serviceability in the manner and sequence prescribed by the manufacturer.

3.2 Adjustments are carried out in the manner and sequence prescribed by the manufacturer.

Range piston ring clearances, bearing clearances, sleeve protrusion, end float, torque settings.

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	27 February 1995	31 December 2022
Review	2	21 February 1999	31 December 2022
Review	3	25 January 2008	31 December 2022
Review	4	29 April 2021	N/A

Consent and Moderation Requirements (CMR) reference

0014

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.