

Title	Inspect and machine an engine crankshaft		
Level	4	Credits	25

Purpose	<p>This unit standard is intended for people in the automotive machining industry.</p> <p>People credited with this unit standard are able to inspect and machine an engine crankshaft.</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 32325, *Demonstrate knowledge of automotive engine block reconditioning practices* 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.

Machining refers to inspecting, testing, and machining operations as stated to make the crankshaft fully and safely operational.

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.

- 6 Assessment against this standard includes solid crankshafts from either petrol or diesel fuelled multi-cylinder two- or four-stroke engines.

Outcomes and performance criteria

Outcome 1

Inspect an engine crankshaft.

Performance criteria

- 1.1 The engine crankshaft is cleaned to enable an inspection to be carried out.
- 1.2 An inspection of the engine crankshaft is completed, and a report on the feasibility of repair is completed.
- Range visual inspection, precision measuring;
report includes – estimated cost of repair compared to replacement cost.
- 1.3 The engine crankshaft is crack tested.
- Range one of – dye penetrant test, magnetic particle test.
- 1.4 The engine crankshaft is hardness tested.
- 1.5 Outwork is arranged.

Outcome 2

Machine an engine crankshaft.

Performance criteria

- 2.1 Engine crankshaft is straightened to enable the machining.
- Range determining type and position of the bend, determining original method of heat treatment of the shaft, pre-heating, supporting the shaft and pressing, overcoming springback, relieving stresses.
- 2.2 Engine crankshaft is set up and prepared for grinding.
- 2.3 A journal is reground to a suitable undersize, and the fillet radii is maintained.
- 2.4 Engine crankshaft is pre-heated in a suitable furnace to ensure even heating, and at a temperature that will not affect any induction hardening.
- 2.5 Engine crankshaft journal is built up.
- Range journals – metal spraying;
welding may include either short arc or submerged arc.

- 2.6 Engine crankshaft is rechecked for straightness after the rebuilding operation to ensure that grinding can be carried out.
- 2.7 Engine crankshaft is reground.
- Range stress relieving by heating, post grinding, ensuring fillet radii are maintained (for journals), dressing oil holes (for journals), checking hardness, finish grinding.
- 2.8 Engine crankshaft journals are polished.
- Range main journals, big end journals, thrust surfaces.
- 2.9 Oil plugs are replaced so that no foreign matter can enter the galleries.
- 2.10 Oil seal areas are repaired to prevent oil leakage under operating conditions.
- 2.11 Engine crankshaft snout and keyway are repaired to ensure the crankshaft is fully serviceable.
- 2.12 All oil passages are cleared to enable the lubricant to reach all running surfaces.
- 2.13 The re-machined engine crankshaft is lubricated, protected against damage and foreign matter, and labelled to ensure identification.

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	25 September 1997	31 December 2022
Review	2	28 February 2001	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
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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.