

Title	Remove and install an engine assembly from and to a light vehicle		
Level	3	Credits	2

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: remove an engine assembly from a light vehicle; prepare an engine compartment of a light vehicle for engine assembly installation; and install an engine assembly in a light vehicle.</p>
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Classification	Motor Industry > Engines
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Available grade	Achieved
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Guidance Information

- 1 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.
- 2 Performance of the outcomes of this unit standard must comply with the following:
Health and Safety at Work Act 2015;
Ozone Layer Protection Act 1996;
Resource Management Act 1991, s15 Discharge of contaminants into environment.
- 3 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.
- 4 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.
Light vehicle refers to classes MA, MB, MC, MD, MD1, MD2 and NA as specified in the Vehicle equipment standards classifications at <https://www.nzta.govt.nz/vehicles/vehicle-types/vehicle-classes-and-standards/vehicle-classes/>.
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.

- 5 Assessment against this standard includes both inline and transverse engined light vehicles.
- 6 For this unit standard, it is essential that the practical assessment evidence is obtained in the workplace under normal workplace conditions.

Outcomes and performance criteria

Outcome 1

Remove an engine assembly from a light vehicle.

Performance criteria

- 1.1 The bonnet and battery of the light vehicle are removed and stored without damage to components, spillage of acid, and arcing at terminals.
- 1.2 The light vehicle is raised to allow access to the underneath areas of the engine, and supported to make it safe to work under.
- 1.3 The coolant, engine, and transmission oils are drained, collected, and disposed of, and the air conditioning refrigerant recovered.
- 1.4 Driveshafts are removed from the transmission.
- 1.5 Services and controls are disconnected from the engine and transmission assembly, without damage to parts.

Range may include but is not limited to – exhaust system, gear linkage, air cleaner or filter, fuel system controls, electrical connections, vacuum hoses, clutch controls, water hoses, oil cooler hoses, power steering and air conditioning systems.
- 1.6 Components that could hamper engine removal are removed and stored without damage.

Range may include but is not limited to – pumps, radiator, coolers.
- 1.7 A lifting fixture is attached to the engine, to ensure that it will take the weight of the engine assembly without damage to the fixture and engine.
- 1.8 The engine assembly is supported with lifting equipment, the engine and transmission mounts are removed, and the engine assembly is removed from the light vehicle.
- 1.9 The engine assembly is lowered into a secure position, and the lifting fixture is removed without damage to the assembly.

Outcome 2

Prepare an engine compartment of a light vehicle for engine assembly installation.

Performance criteria

- 2.1 The engine compartment is cleaned of unwanted dirt, oil, and grease, without damage to electrical and other components from water, solvents, and detergents.
- 2.2 Any surface rust and acid corrosion are removed from the engine compartment and neutralised, and the affected area is painted to prevent further corrosion and to match the surrounding area.
- 2.3 Faults in electrical connectors and wires are rectified to restore full serviceability.

Outcome 3

Install an engine assembly in a light vehicle.

Performance criteria

- 3.1 A lifting fixture is attached to the engine to ensure that it will take the weight of the engine assembly without damage to the fixture and engine.
- 3.2 The engine, or engine and transmission assembly, is raised with suitable lifting equipment, lowered into the engine compartment of the vehicle, and secured in position on its mounts in a safe manner without damage.
- 3.3 The mounts are neutralised before being tightened to the torque specified by the manufacturer.
- 3.4 The lifting fixture is removed without damage to the assembly and the vehicle.
- 3.5 All components previously removed during removal of the engine assembly are refitted without damage to components.
- 3.6 The driveshafts or axle shafts are fitted.
- 3.7 The cooling system is filled with coolant, and the system is checked to ensure that there are no leaks.
- 3.8 The engine and transmission are filled with oils.
- 3.9 The vehicle is lowered to the ground without damage to the vehicle.
- 3.10 A serviceable battery is fitted and connected without damage to parts, spillage of acid, and arcing at terminals.
- 3.11 The bonnet is fitted without damage to parts or paintwork and adjusted to ensure it is properly aligned.

3.12 The engine is started, warmed-up, and adjusted.

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	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.