

Title	Carry out basic tuning on a four stroke petrol engine under supervision		
Level	2	Credits	4

Purpose	People credited with this unit standard are able to: perform a pre-tuning visual inspection and service; service an ignition system; service the air and fuel filters; check and adjust valve clearances; and check engine idle speed on a four stroke petrol engine.
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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 21687, *Demonstrate knowledge of basic tuning on a four stroke petrol engine* 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: Health and Safety at Work Act 2015; and any subsequent amendments or replacements.
- 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 information such as 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 refers 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

Perform a pre-tuning visual inspection and service on a four stroke petrol engine.

Performance criteria

- 1.1 The engine and cooling system are inspected and any oil, coolant, and fuel leaks, and any signs of overheating, are reported to the supervisor.
- 1.2 The driving belts are checked for condition and tension, and are adjusted to the vehicle or engine manufacturer's specifications.
- 1.3 Loose and disconnected wires and connectors are connected securely.
- 1.4 Oil and coolant levels are topped up to the vehicle or engine manufacturer's specifications.
- 1.5 A compression test is carried out to the vehicle or engine manufacturer's instructions; the results are recorded and compared to vehicle or engine manufacturer's specifications, and reported to the supervisor.
- 1.6 A cylinder leakage test is carried out to equipment manufacturer's instructions; the results are recorded and interpreted for each cylinder, and reported to the supervisor.

Outcome 2

Service an ignition system on a four stroke petrol engine.

Performance criteria

- 2.1 The spark plugs are removed without breakage, ensuring no foreign matter enters the plug holes, and any signs indicating engine faults are reported to the supervisor.
- 2.2 Spark plug face appearance is analysed according to the manufacturer's diagnostic charts.

Range may include but is not limited to - normal condition, sooted-carbon fouled, oil fouled, formation of ash, partially melted electrodes, heavy wear on ground electrode.
- 2.3 Spark plugs are selected, adjusted, and fitted to the vehicle or engine manufacturer's specifications.
- 2.4 HT (high tension) and LT (low tension) checks are made according to the vehicle or engine manufacturer's instructions and specifications, and any faults found are reported to the supervisor.

- 2.5 The initial ignition timing is checked using the manufacturer's recommended procedure. The setting is compared to the vehicle or engine manufacturer's specifications and reported to the supervisor.

Outcome 3

Service the air and fuel filters on a four stroke petrol engine.

Performance criteria

- 3.1 The air filter is removed and checked for cleanliness and against expiry date, and a report is given to the supervisor.
- 3.2 A replacement air filter element is selected and fitted to the vehicle or engine manufacturer's specifications.
- 3.3 A replacement fuel filter is selected and fitted to the vehicle or engine manufacturer's specifications.

Outcome 4

Check and adjust valve clearances on a four stroke petrol engine.

Performance criteria

- 4.1 The engine temperature specified by the vehicle or engine manufacturer is obtained and the necessary engine components are removed to give access for measuring the valves.
- 4.2 The valves are checked for clearance and adjusted to the vehicle or engine manufacturer's specifications.
- 4.3 The engine is reassembled and run ensuring no abnormal condition as a result of the job is present.

Range oil leaks, coolant leaks, valve noise.

Outcome 5

Check engine idle speed on a four stroke petrol engine.

Performance criteria

- 5.1 The engine idle speed is measured with the engine at the specified temperature and loading.

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	28 February 1993	31 December 2023
Review	2	4 August 1995	31 December 2023
Revision	3	30 October 1997	31 December 2023
Revision	4	28 May 1998	31 December 2023
Review	5	20 December 1998	31 December 2023
Revision	6	13 March 2001	31 December 2023
Revision	7	16 October 2003	31 December 2023
Review	8	27 July 2005	31 December 2023
Rollover and Revision	9	26 November 2007	31 December 2023
Review	10	16 December 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 the Hanga-Aro-Rau Manufacturing, Engineering, and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.