

Title	Demonstrate knowledge of basic tuning on a four stroke petrol engine		
Level	2	Credits	3

Purpose	People credited with this unit standard are able to describe carrying out a pre-tuning visual inspection and service and demonstrate knowledge of servicing an ignition system, servicing the air and fuel filters, checking and adjusting valve clearances, and checking and adjusting engine idle speed and exhaust emissions.
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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 work 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 Legislation, regulations and/or industry standards relevant to this unit standard may include:
 - Health and Safety at Work Act 2015; and any subsequent amendments and replacements.
- 3 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 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 work practices.

Outcomes and performance criteria

Outcome 1

Describe carrying out a pre-tuning visual inspection and service.

Performance criteria

- 1.1 Procedure for visually inspecting the engine and cooling system are described.
- Range may include – oil, coolant, and fuel leaks; overheating; driving belts tension and condition; loose and disconnected wires and connectors.
- 1.2 Procedure for carrying out a compression test is described.
- 1.3 Procedure for carrying out a cylinder leakage test is described.
- 1.4 Procedure for carrying out an engine vacuum test is described.

Outcome 2

Demonstrate knowledge of servicing an ignition system.

Performance criteria

- 2.1 Safety precautions when servicing an ignition system are identified.
- 2.2 Procedure for removing, checking and refitting spark plugs are described.
- Range may include – no breakage, ensuring no foreign matter enters the plug holes; normal condition, sooted-carbon fouled, oil fouled, formation of ash, partially melted electrodes, heavy wear on ground electrode; adjustment.
- 2.3 Procedure for checking high tension (HT) and low tension (LT) are described.
- 2.4 Procedure for checking the initial ignition timing are described.

Outcome 3

Demonstrate knowledge of servicing the air and fuel filters.

Performance criteria

- 3.1 Safety precautions when servicing the air and fuel filters are identified.
- 3.2 Procedure for removing and replacing an air filter are described.
- Range may include – checking for cleanliness, expiry date.
- 3.3 Procedure for removing and replacing a fuel filter are described.
- Range may include – checking for cleanliness, expiry date.

Outcome 4

Demonstrate knowledge of checking and adjusting valve clearances.

Performance criteria

4.1 Safety precautions when checking and adjusting valve clearances are identified.

4.2 Procedures for checking the valves for clearances, and adjusting them are described.

Range may include – engine temperature, removing necessary components to gain access.

4.3 Procedures for reassembling the engine and checking for abnormal conditions are described.

Range may include – oil leaks, coolant leaks, valve noise.

Outcome 5

Demonstrate knowledge for checking and adjusting engine idle speed and exhaust emissions.

Performance criteria

5.1 Safety precautions when checking and adjusting engine idle speed and exhaust emissions are identified.

5.2 Procedures for measuring and adjusting engine idle speed are described.

Range may include – engine at the specified temperature, fast idle (under systems load), normal idle (at rest).

5.3 Procedures for measuring exhaust emissions are described.

Range may include – carbon monoxide (CO), hydrocarbon (HC); engine at the specified temperature and speed.

Planned review date	31 December 2026
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	27 July 2005	31 December 2018
Rollover and Revision	2	26 November 2007	31 December 2018
Review	3	21 April 2016	31 December 2023
Review	4	24 March 2022	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 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.