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| <b>Title</b> | <b>Disassemble and reassemble a four stroke multi-cylinder engine to a running state</b> |                |          |
| <b>Level</b> | <b>2</b>   | <b>Credits</b> | <b>6</b> |

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| <b>Purpose</b> | People credited with this unit standard are able to disassemble, and reassemble a four stroke multi-cylinder engine to a running state. |
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| <b>Classification</b> | Motor Industry > Engines |
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| <b>Available grade</b> | Achieved |
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### Guidance Information

- 1 It is recommended that people hold credit for Unit 21688, *Demonstrate knowledge of disassembling and reassembling a four stroke multi-cylinder engine*, before being assessed against this unit standard.
- 2 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.
- 3 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.
- 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.

*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.

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### Outcomes and performance criteria

#### Outcome 1

Disassemble the engine.

**Performance criteria**

- 1.1 Engine assembly is cleaned to remove exterior dirt and oil.
- 1.2 Major components, including the cylinder head, are removed.
- 1.3 Cylinder head and cylinder block, and their components, are disassembled.
- 1.4 Care is taken during disassembly to note and preserve any evidence that could help in diagnosing the cause(s) of faults, and to tabulate the parts for easy identification.

**Outcome 2**

Reassemble the engine to a running state.

**Performance criteria**

- 2.1 Engine components are cleaned to remove all old gasket material, sealants, and carbon deposits.
- 2.2 Oil and water passages are identified and the flow-paths of lubricating oil and coolant are determined.
- 2.3 Engine components are assembled, and all tightening torques strictly adhered to.
- 2.4 Clearances, settings, and tensions are adjusted to the vehicle or engine manufacturer's specifications during engine assembly.
- 2.5 Assembled engine is started and run with no leaks and abnormal noises.

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| <b>Planned review date</b> | 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       | 28 February 1993 | 31 December 2018         |
| Review       | 2       | 4 August 1995    | 31 December 2018         |
| Revision     | 3       | 30 October 1997  | 31 December 2018         |
| Revision     | 4       | 28 May 1998      | 31 December 2018         |
| Review       | 5       | 20 December 1998 | 31 December 2018         |
| Revision     | 6       | 13 March 2001    | 31 December 2018         |
| Revision     | 7       | 16 October 2003  | 31 December 2018         |
| Review       | 8       | 27 July 2005     | 31 December 2018         |

| Process               | Version | Date             | Last Date for Assessment |
|-----------------------|---------|------------------|--------------------------|
| Rollover and Revision | 9       | 26 November 2007 | 31 December 2018         |
| Review                | 10      | 21 April 2016    | 31 December 2023         |
| Review                | 11      | 24 March 2022    | N/A                      |

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| <b>Consent and Moderation Requirements (CMR) reference</b> | 0014 |
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

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### Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council [qualifications@hangaarorau.nz](mailto:qualifications@hangaarorau.nz) if you wish to suggest changes to the content of this unit standard.