

Service automotive cooling systems

Level 2

Credits 3

Purpose This unit standard is for people who wish to enter or are employed in the automotive repair industry. People credited with this unit standard are able to service an indirect (coolant filled) cooling system, and determine the condition of the coolant and renew to specifications.

Subfield Motor Industry

Domain Engines

Status Registered

Status date 27 July 2005

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Entry information Recommended: Unit 21686, *Demonstrate knowledge of automotive cooling systems*, or demonstrate equivalent knowledge and skills.

Replacement information This unit standard and unit standard 21686 replaced unit standard 236.

Accreditation Evaluation of documentation by NZQA and industry.

Standard setting body (SSB) NZ Motor Industry Training Organisation (Incorporated)

Accreditation and Moderation Action Plan (AMAP) reference 0014

This AMAP can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Special notes

- 1 Enactments relevant to this unit standard include but are not limited to – Health and Safety in Employment Act 1992; Resource Management Act 1991, s15 discharge of contaminants into environment; local body regulations.
- 2 Reference to *suitable tools and equipment* means industry approved tools and equipment that are recognised within the industry as being the most suited to complete the task to a professional and competent manner with due regard to safe working practices.

Elements and performance criteria

Element 1

Service an indirect (coolant filled) cooling system.

Performance criteria

- 1.1 Safe working practices are observed throughout the task according to legislative requirements.

Range personal safety, safety of others, no damage to equipment, vehicle safety.
- 1.2 Suitable tools and workshop equipment are selected and used that enable the cooling system to be serviced.
- 1.3 The coolant level is checked and, if necessary, topped up to the level as indicated by the vehicle or engine manufacturer.
- 1.4 Temperature gauge is checked to ensure reading is indicative of actual engine temperature.
- 1.5 The cooling system is pressure tested to the vehicle or engine manufacturer's specified operating pressure, and pressure loss and leaks are located and reported to the supervisor.
- 1.6 The hoses are inspected and any faults are located, hose leaks are rectified, and faulty hoses are replaced with new ones of the vehicle or engine manufacturer's specifications.
- 1.7 The radiator is inspected visually and any external faults are located and reported to the supervisor.
- 1.8 Dirt and debris clogging the cooling fins of the radiator are removed without damaging the fins.
- 1.9 The cooling fan is inspected and damage to the blades and hub is located and reported to the supervisor.

Range mechanical type, electrical type.
- 1.10 The operation of an electric cooling fan is checked in accordance with the vehicle or engine manufacturer's instructions, and faults are located and reported to the supervisor.
- 1.11 A fan belt is checked for condition and a faulty one is replaced with a new one of the vehicle or engine manufacturer's specifications.
- 1.12 Fan belt tension is checked and adjusted to the vehicle or engine manufacturer's specifications.

- 1.13 A pressure cap is inspected and tested for serviceability.
- 1.14 A thermostat is inspected and tested for serviceability, and a faulty one replaced with a new one that meets the vehicle or engine manufacturer's specifications.
- 1.15 The engine is tested to ensure that the cooling system operates efficiently.

Element 2

Determine the condition of the coolant and renew to specifications.

Performance criteria

- 2.1 Safe working practices are observed throughout the task according to legislative requirements.

Range personal safety, safety of others, no damage to equipment, vehicle safety.
- 2.2 The coolant is inspected visually and tested for specific gravity, and its suitability for further use is determined.
- 2.3 The cooling system is flushed to remove all contaminants and in accordance with the vehicle or engine manufacturer's instructions and legislative requirements.
- 2.4 The need for antifreeze and inhibitor is determined, and a coolant complying with the vehicle or engine manufacturer's specifications is selected.
- 2.5 The cooling system is filled with the manufacturer's recommended coolant to the vehicle or engine manufacturer's specified level.
- 2.6 The cooling system is bled of all air according to the vehicle or engine manufacturer's specifications.

Please note

Providers must be accredited by NZQA, or an inter-institutional body with delegated authority for quality assurance, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the NZ Motor Industry Training Organisation (Incorporated) info@mito.org.nz if you wish to suggest changes to the content of this unit standard.