

<b>Title</b>	<b>Demonstrate knowledge of diagnosing vehicle or machine cooling system faults and their causes</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>3</b>

<b>Purpose</b>	<p>This theory-based unit standard is intended for people in the automotive repair industry.</p> <p>People credited with this unit standard are able to demonstrate knowledge of diagnosing vehicle or machine cooling system faults and their causes.</p>
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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 30480, *Demonstrate knowledge of automotive cooling systems and engine coolant* 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 following:  
Health and Safety at Work Act 2015;  
Resource Management Act 1991, s15 Discharge of contaminants into environment;  
Land Transport Rule: Vehicle Repair 1998.
- 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 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.

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## Outcomes and performance criteria

### Outcome 1

Demonstrate knowledge of diagnosing vehicle or machine cooling system faults and their causes.

#### Performance criteria

1.1 Cooling system faults are described.

Range includes but is not limited to – overheating, underheating, foreign matter, corrosion, combustion leaks, damage, mountings, wear, incorrect or faulty parts, after-boil, air locks, coolant concentration, thermostat operation, coolant leakage (internal and external), coolant blockages, incorrect water pump operation, incorrect sensor operation, incorrect viscous fan operation.

1.2 Causes of cooling system faults are described.

Range includes but is not limited to – driving or operating conditions, radiator condition, leakage, engine condition, vehicle or machine performance and condition, lack of maintenance, lack of or incorrect inhibitor, replacement engine specifications different to replaced unit.

1.3 Procedures for testing and checking the cooling system for operation are described.

Range includes but is not limited to – air flow and air circulation, coolant circulation, coolant temperature, coolant condition, pressure loss, pulleys, belts, ducting, air fan, air blower, thermostats control, pressure cap valve operation, bonding straps; may include – shrouds, blinds, heat exchanger, cooler.

1.4 Cooling system checks for an engine that has not been operating for some time are described.

Range includes but is not limited to – visual (including dismantling components), flushing, pressure testing, testing operation; may include – shrouds, blinds.

1.5 Methods used to detect the actual engine temperature are described.

Range includes but is not limited to – thermometer, temperature sensor probes, temperature sensitive crayons.

1.6 Cooling system after-boil and its effects on an engine are described.

Range symptoms, causes, damage.

<b>Replacement information</b>	This unit standard, unit standard 24269, and unit standard 24270 replaced unit standard 878, unit standard 965, and unit standard 3391.
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<b>Planned review date</b>	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	25 January 2008	31 December 2022
Review	2	29 April 2021	N/A

<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>.

#### Comments on this unit standard

Please contact MITO New Zealand Incorporated [info@mito.org.nz](mailto:info@mito.org.nz) if you wish to suggest changes to the content of this unit standard.