

<b>Title</b>	<b>Diagnose and repair cooling system faults in electric vehicles</b>		
<b>Level</b>	<b>5</b>	<b>Credits</b>	<b>10</b>

<b>Purpose</b>	People credited with this unit standard are able to diagnose and repair cooling system faults in electric vehicles.
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<b>Classification</b>	Motor Industry > Automotive Electrical and Electronics
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<b>Available grade</b>	Achieved
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<b>Prerequisites</b>	Unit 31416, <i>Depower and reinitialise electric vehicles</i> , or demonstrate equivalent skills or knowledge.
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### Guidance Information

- 1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, 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 include but are not limited to the Health and Safety at Work Act 2015; and any subsequent amendments and replacements.
- 3 Competency under this unit standard does not entitle the learner to legally perform prescribed electrical work. Any prescribed electrical work must be undertaken by a person who has been registered and licensed under the Electricity Act 1992. Prescribed electrical work is defined in [Schedule 1 of the Electricity \(Safety\) Regulations 2010](#).
- 4 Electric vehicles may be hybrid or battery electric.  
Hybrid electric vehicles may include – plug in hybrid electric vehicles (PHEV), fuel cell electric vehicles (FCEV), additional new hybrid technology.  
Battery electric vehicles may include – range extended electric vehicles (REEV), additional new electric vehicle technology.
- 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.  
*Repair* refers to replacement, adjustment or repairs as required.

*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.

*High Voltage (HV)* refers to voltages above 60V.

*Low Voltage (LV)* refers to voltages below 60V.

## 6 Range

Heating, ventilation and air conditioning (HVAC) system, HV cooling system.

## Outcomes and performance criteria

### Outcome 1

Diagnose cooling system faults in electric vehicles.

#### Performance criteria

1.1 Cooling system faults are diagnosed.

Range may include – HV system powered up, HV system powered down.

### Outcome 2

Repair cooling system faults in electric vehicles.

#### Performance criteria

2.1 LV supply is disconnected and the proximity key is removed and secured, where required.

2.2 HV service plug or manual service disconnect is removed and secured to depower the HV system, where required.

2.3 HV system is measured for zero residual AC and DC voltage, where required.

2.4 Cooling system faults are repaired.

2.5 HV service plug or manual service disconnect is reconnected, where required.

2.6 LV supply is reconnected and the system is powered up, where required.

<b>Planned review date</b>	31 December 2023
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	27 September 2018	N/A
Revision	2	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 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.