Diagnose and rectify vehicle emission control system faults

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**Purpose**

This unit standard is for people in the automotive repair industry. People credited with this unit standard are able to diagnose and rectify faults in: vacuum and solenoid operated emission control systems; an exhaust emission control system; and an evaporative emission control system, on a vehicle.

**Classification**

Motor Industry > Engines

**Available grade**

Achieved

**Guidance Information**


2. Land Transport Rules are produced for the Minister of Transport by Land Transport New Zealand. These rules are available online at http://www.landtransport.govt.nz/rules/.

3. Definitions

   - Company requirements refer to instructions to staff on policy and procedures which are documented in memo or manual format and are available in the workplace. These requirements include but are not limited to – company specifications and procedures, work instructions, manufacturer specifications, product quality specifications, and legislative requirements.

   - Service information may include but is not limited to – technical information of a vehicle, machine, or product detailing operation; installation and servicing procedures; manufacturer instructions and specifications; technical terms and descriptions; and detailed illustrations. This can be accessed in hard copy or electronic format and is normally sourced from the manufacturer.

   - 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 in a professional and competent manner with due regard to safe working practices.

4. For this unit standard, it is essential that the practical assessment evidence is obtained in the workplace under normal workplace conditions.

5. It is recommended that people hold credit for Unit 5461, Demonstrate knowledge of fuel emissions, and vehicle emission controls, or demonstrate equivalent knowledge and skills.
Outcomes and performance criteria

Outcome 1

Diagnose and rectify faults in vacuum and solenoid operated emission control systems on a vehicle.

Performance criteria

1.1 Safe working practices are observed throughout the task in accordance with legislative requirements.

Range personal safety, safety of others, vehicle safety, workshop safety, environmental safety, tools and equipment safety.

1.2 Emission test data is obtained in order to perform tests in accordance with service information.

1.3 Suitable tools and equipment are selected and used to enable control systems faults to be diagnosed and rectified in accordance with service information.

1.4 The vacuum and solenoid operated emission control system is inspected visually, and obvious componentry faults are identified and rectified in accordance with service information.

Range loose and damaged hoses, wires, switches and solenoids.

1.5 The vacuum system is tested in accordance with service information, to ensure that the vacuum supply meets manufacturer specifications.

Range specified level at source and devices, at correct time.

1.6 Vacuum devices are tested for operation in accordance with service information, and results noted.

Range dashpots, diaphragm units, vacuum operated valves.

1.7 Solenoid operated switches and valves are tested for operation in accordance with service information, and results noted.

Range operation of device, supply of correct signal.

1.8 Temperature controlled switches and valves are tested for operation in accordance with service information, and results noted.

1.9 The test results are analysed for faults and their causes are identified in accordance with service information.

1.10 Any remedial work necessary to rectify faults and their causes is carried out to restore normal system operation in accordance with company requirements.
Outcome 2

Diagnose and rectify faults in an exhaust emission control system on a vehicle.

Performance criteria

2.1 Safe working practices are observed throughout the task in accordance with legislative requirements.

Range personal safety, safety of others, vehicle safety, workshop safety, environmental safety, tools and equipment safety, handling catalytic converters.

2.2 Emission test data is obtained in order to perform tests in accordance with service information.

2.3 Suitable tools and equipment are selected and used to enable emission control system faults to be diagnosed and rectified in accordance with service information.

Range either 4 or 5-gas analyser or on-board diagnostic equipment, handtools, workshop equipment.

2.4 The exhaust emission control system is inspected visually, and obvious faults are identified and rectified in accordance with service information and legislative requirements.

Range loose and damaged pipes and mufflers, wires, flange connections.

2.5 The exhaust emission control system is tested, readings are recorded, and faults are identified in accordance with service information and legislative requirements.

Range either 4 or 5-gas analyser or on-board diagnostics, smoke check, catalytic converter operation.

2.6 Faults in the exhaust emission control system are rectified to restore full serviceability in accordance with service information and legislative requirements.

Range may include but is not limited to – faulty components are removed, and cleaned or replaced; leaks are sealed; blockages are rectified.

2.7 Vehicle information is updated in accordance with company requirements.

2.8 Self-test codes are cleared if required, and the vehicle is operated to ensure the exhaust emission control system meets the manufacturer specifications.

Outcome 3

Diagnose and rectify faults in an evaporative emission control system on a vehicle.
Performance criteria

3.1 Safe working practices are observed throughout the task in accordance with legislative requirements.

Range personal safety, safety of others, vehicle safety, workshop safety, environmental safety, tools and equipment safety.

3.2 Suitable tools and equipment are selected and used to enable control system faults to be diagnosed and rectified in accordance with service information.

3.3 Pipes and hoses connecting the evaporative emission control system components are inspected for security, leaks, and blockages, and any faults are rectified in accordance with service information.

3.4 The evaporative emission control system is inspected for damage, leaks, and flooding and, if unserviceable, is replaced with a new part that meets manufacturer specifications.

3.5 The fuel tank is inspected for damage in accordance with service information, and the feasibility of repair or replacement is determined based on relevant factors.

Range relevant factors include but are not limited to – type and extent of repair, safety factors, cost of repair and outwork, availability and cost of replacement, closed and open venting, hosing.

3.6 Any valves in the system are tested for satisfactory operation in accordance with service information. Faulty valves are replaced to meet manufacturer specifications.

3.7 The vehicle is operated to ensure the evaporative emission control system meets company requirements.

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**Replacement information**

This unit standard was replaced by unit standard 31049.

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This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.
### Status information and last date for assessment for superseded versions

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#### Consent and Moderation Requirements (CMR) reference

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