

<b>Title</b>	<b>Demonstrate knowledge of engine tuning procedures and equipment malfunction causes on LPG fuelled vehicles</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>2</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 tuning procedures and equipment malfunction causes on liquefied petroleum gas (LPG) fuelled vehicles.</p>
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<b>Classification</b>	Motor Industry > Automotive Fuel Systems and Exhaust
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<b>Available grade</b>	Achieved
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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, and company requirements and legislative requirements. This includes the knowledge and use of suitable tools and equipment.
- 2 Performance of the outcomes of this unit standard must comply with the following:  
Health and Safety at Work Act 2015;  
Traffic Regulations 1976;  
Land Transport Rule: Vehicle Repair 1998;  
Land Transport Rule: Vehicle Standards Compliance 2002;  
New Zealand Standard AS/NZS 1425:2013 *LP Gas fuel systems for vehicle engines*.
- 3 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.
- 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 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 tuning procedures and equipment malfunction causes on LPG fuelled vehicles.

#### Performance criteria

- 1.1 Problems that may affect engine operation following the fitment of conversion systems are identified.
- Range malfunctions related to fuel supply and gas usage.
- 1.2 Problems that may occur with LPG components in service are described.
- Range mechanical and electrical faults, lack of servicing, external problems affecting performance.
- 1.3 The procedure to perform on-road acceleration tests is described.
- Range hesitation, misfiring, flat spots, overall performance.
- 1.4 The use of a rolling chassis dynamometer and an infra-red exhaust gas analyser for carrying out adjustment and test procedures on an engine operating on dual fuel is explained.
- Range engine under load conditions throughout RPM (revolutions per minute) range.
- 1.5 The modification requirements required for vehicles to run on dedicated LPG are explained.
- Range removal of existing petrol system components, fitting of gas components, alterations to compression ratio, ignition components, ignition timing, exhaust emission controls, air intake systems, valve and valve seat modifications, turbocharging, intercooling.
- 1.6 Legislative requirements when carrying out repairs and maintenance to vehicles equipped with LPG fuels system are described.
- Range AS/NZS 1425, Traffic Regulations, Land Transport Rules (Vehicle Repair, Vehicle Standards Compliance).
- 1.7 Procedures to maintain an LPG fuel system are described.
- Range filter cleaning, regulator draining, air filter, leak detection, security of components, hose condition, mixer attachment.

<b>Replacement information</b>	This unit standard and unit standard 24182 replaced unit standard 951.
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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.