Section 12
LPG, NG, Hydrogen and Electric Vehicles

Objective:
To conduct a visual inspection of a liquefied petroleum gas (LPG)/natural gas (NG) fuel system and the associated components.

Australian Design Rules relevant to this section:
ADR 42 General safety requirements
ADR 44 Specific purpose vehicle requirements
ADR 80 Emission control for heavy vehicles

Note: ADR 80 applies to vehicles operating on LPG or NG with a GVM in excess of 3500kg as of 1 January 2004.

Compressed natural gas (CNG) is also known as natural gas for vehicles (NGV).
Natural gas (NG) means both CNG and liquid natural gas (LNG).
Hydrogen powered vehicle means a vehicle powered by and fitted with one or more hydrogen fuel containers
Electric powered vehicle means a vehicle that is powered by one or more electric or traction motors.

⚠ Important note
The Australian Design Rules and Heavy Vehicle (Vehicle Standards) National Regulation requires gas fuel systems fitted to vehicles to comply with the relevant Australian Standards.

Inspection of a gas system as part of a vehicle safety inspection is a visual inspection only. Should a person inspecting a gas system have concerns over the system or require more information about gas systems, please contact a licensed gas fitter/installer in your state or territory.

If a gas system inspection is required for registration purposes, and a copy of a current gas system certificate issued by a licensed gas fitter/installer is provided, inspection of the gas system during the vehicle safety inspection is not necessary.
12.1 Visually inspect for the presence of an approved LPG or NG system identification

Visually inspect for the presence of an approved LPG or NG compliance plate and number plate labels.

A vehicle which has an LPG or NG fuel system fitted must have a metal plate (compliance plate) fitted in a prominent position near the installation, showing:

- a statement that the installation complies with the Standards Australia code for the fuel type (Australian/New Zealand Standard AS/NZS 1425 for LPG and Australian Standard AS 2739 for NG)
- the date the installation was commissioned
- the state or territory where installation was made
- the vehicle identification number (VIN) or chassis number
- the identification number of the suitably qualified installer.

There is no requirement for a modification plate to be fitted to a vehicle with an approved LPG or NG system unless structural modifications were undertaken to the vehicle to install the LPG or NG system.

Reason for rejection

a) Vehicle does not have an approved LPG or NG compliance plate. Acceptable plates are either:

- A plate fitted by a state or territory authorised/licensed gas fitter/installer, or
- A plate fitted by the vehicle manufacturer, where the LPG or NG system was installed by the original vehicle manufacturer.

The following are examples of acceptable compliance plates that have been fitted by vehicle manufacturers:

Figure 12.1 Acceptable LPG or NG compliance plate examples for in-service fitments

![Example of a compliance plate for in-service fitments]

Figure 12.2 Acceptable LPG or NG compliance plate examples for OEM fitments

![Example of a compliance plate for OEM fitments]

b) For installations after 1999, a vehicle does not have acceptable, durable and reflective number plate labels fitted to the front and rear of the vehicle indicating it is LPG or NG fuelled.
Acceptable number plate labels are shown in Figure 12.3.

**Table: Number Plate Labels for Different Fuels**

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPG</td>
<td>(a) Metal plate and label size: not less than 25mm square mounted as a diamond&lt;br&gt;b) Label colour: retroreflective red, complying with AS/NZS 1906.1, Class 2&lt;br&gt;c) Label content: 'LPG' in white, at least 10mm in height.</td>
</tr>
<tr>
<td>CNG</td>
<td>(a) Metal plate and label size: a circle not less than 35mm diameter&lt;br&gt;b) Label colour: retroreflective red, complying with AS/NZS 1906.1, Class 2&lt;br&gt;c) Label content: 'CNG' in white, at least 10mm in height.</td>
</tr>
<tr>
<td>LNG</td>
<td>(a) Metal plate and label size: a circle not less than 35mm diameter&lt;br&gt;b) Label colour: standard green, complying with AS/NZS 1906.1, Class 2&lt;br&gt;c) Label content: 'LNG' in white, at least 10mm in height.</td>
</tr>
<tr>
<td>H</td>
<td>(a) Metal plate and label size: regular pentagon shape&lt;br&gt;b) Label colour: retroreflective yellow, complying with AS/NZS 1906.1, Class 2&lt;br&gt;c) Label content: ‘H’ in a black capital letter, at least 10mm in height</td>
</tr>
<tr>
<td>EV</td>
<td>(a) Metal plate and label size: equilateral triangle shape&lt;br&gt;b) Label colour: retroreflective blue, complying with AS/NZS 1906.1, Class 2&lt;br&gt;c) Label content: ‘H’ in a black capital letter, at least 10mm in height</td>
</tr>
</tbody>
</table>

12.2 Visually inspect for the presence of an approved hydrogen number plate label

Visually inspect for the presence of an approved hydrogen number plate labels.

Acceptable hydrogen number plate labels are shown in Figure 12.3.

**Reasons for rejection**

a) A vehicle manufactured from 1 January 2019 does not have acceptable, durable and reflective number plate labels fitted to the front and rear of the vehicle indicating it is hydrogen fuelled.

b) The number of labels on the front and rear number plates do not correspond with:
   - 1 acceptable label on each number plate if the vehicle is fitted with 1 hydrogen fuel container; or
   - 2 acceptable labels on each number plate if the vehicle is fitted with 2 or more hydrogen fuel containers.

12.3 Visually inspect for the presence of an approved electric vehicle number plate label

Visually inspect for the presence of an approved electric vehicle number plate labels.

Acceptable electric vehicle number plate labels are shown in Figure 12.3.

**Reasons for rejection**

a) A vehicle manufactured from 1 January 2019 does not have acceptable, durable and reflective number plate labels fitted to the front and rear of the vehicle indicating its means of propulsion is electric powered/assisted.

12.4 Visually inspect the LPG or NG system

**Reasons for rejection**

a) The container has:
   - advanced corrosion or fire damage
   - cuts or dents which penetrate the surface of the container
   - any dent on the container which is deeper than 10% of the width of the dent, or which is located on a weld and exceeds 6.5mm in depth
   - any sharp impression or crease on the container which is longer than 75mm or is deeper than 25% of the wall thickness.

b) The statutory life of the container has expired:
   - LPG every 10 years
   - NG steel containers every 5 years
• Fibreglass reinforced plastic (FRP) containers every 3 years.

**Note:** It is a statutory requirement for an LPG or NG container to be checked for continued service life.

c) Any metal parts contact the container (excluding clamping bands)

d) The container:
  • is not securely restrained
  • is only restrained by a single strap
  • is restrained by straps that are damaged or have deteriorated
  • is not attached to the vehicle structure at least at 4 points.

e) Wiring is not insulated or is secured at intervals of more than 600mm

f) Where the vehicle body or chassis members do not provide protection for fuel lines under the vehicle, the piping is not shielded or encased in a protective sleeve

g) If fitted the sleeving of any fuel line routed under the vehicle is damaged such that the fuel line is exposed

h) Any supporting clips (required to be spaced at intervals of 600mm) are missing or do not provide effective support to the fuel line

i) Any provision has been made to allow use of the gas fuel for purposes other than as automotive fuel

j) Any fuel lines, joints, connections or gas carrying components leak

**Note:** Extreme caution should be taken if a gas leak is identified. If possible shut/close-off the manual gas isolation valve and contact local emergency services.

k) Any other component of the fuel system is cracked, broken, distorted, missing or corroded to the point where it is weakened or failure is likely to occur

l) The container or gas carrying components are located within 150mm of a heat source and there is no heat shield.