CNG/LPG Vehicles
Emergency First Response Guide
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INTRODUCTION

Never take safety for granted. This alternative fuel system conforms to all applicable safety standards and specifications in force at time of manufacture.

⚠️ CAUTION!

Failure to follow this warning may result in bodily injury or death.

Compressed Natural Gas (CNG) is a colorless and odorless vapor or gas that has been compressed to 3600psi. For safety reasons, a distinct odorant, with a sulfur-like or rotten egg smell, is added to alert the operator and passengers of a possible leak in the CNG system. In its gaseous form is lighter than air. Leaking gases can collect in overhead ceilings or other confined areas. If the gases contact an ignition source, a fire or explosion could result.

Liquefied Propane Gas (LPG) is a colorless and odorless liquid. For safety reasons, a distinct odorant, with a sulfur-like smell, is added to alert the operator and passengers of any leak in the LPG system. In its gaseous form is heavier than air. Leaking gases can pool in low lying regions and depressions in buildings or other confined areas. If the gases contact an ignition source, a fire or explosion could result.

IN CASE OF FIRE:

1) Stop the flow of gas as soon as possible. Never attempt to put out the flame unless the gas can be stopped. A spark or other source of ignition could cause an explosion.

2) Evacuate the immediate area of all people and animals and call the fire department.
IDENTIFYING A CNG/LPG VEHICLE

Alternative Fuel vehicles will be marked as such by placing a label on the right rear corner of the vehicle see below for labels.

CNG:

LPG:
CNG SAFETY INFORMATION

Natural Gas is extremely flammable. If ignited, you could be badly burned. Keep sparks flames and smoking material away from natural gas. Do not smoke if you are near natural gas vapors or refueling your vehicle.

The CNG system is under High Pressure (3600psi). A sudden escape of CNG can cause injury. Never disconnect a fuel line or remove a fuel system component. Service and repair of the system should only be performed by a trained CNG certified service technician with the proper knowledge and tools.

IN CASE OF A CNG LEAK:

1) If driving, pull off the road immediately and park the vehicle in an open, well-ventilated area.
2) Shut the engine off and exit the vehicle.
3) Close the CNG Manual Shut-off Valve (page 9) or disable the CNG Electronic Lock-off. (page 10)
4) Eliminate all potential sources of ignition such as burning cigarettes, sparks, etc.

The CNG fuel system is equipped with a CNG Manual Shut-off Valve (page 9) which houses the excess flow safety valve and serves two functions:

1) In normal operation, it allows fuel from the tank to flow through the fuel lines to the engine.
2) In the event of an accident where a fuel line is disconnected or ruptured, the rapid discharge of fuel from the tank will cause the excess flow safety valve to close, shutting off the flow of fuel.
LPG SAFETY INFORMATION

LPG is extremely flammable. If ignited, you could be badly burned. Keep sparks, flames and smoking material away from LPG. Do not smoke if you are near LPG vapors or refueling your vehicle.

When liquid LPG is exposed to the atmosphere it becomes extremely cold. A sudden escape of LPG can cause injury. Never disconnect a fuel line or remove a fuel system component. Service and repair of the system should only be performed by a trained LPG certified service technician with the proper knowledge and tools.

IN CASE OF AN LPG LEAK:

1) If driving, pull off the road immediately and park the vehicle in an open, well-ventilated area.
2) Shut the engine off and exit the vehicle.
3) Close the LPG Manual Shut-off Valve. (page 18)
4) Eliminate all potential sources of ignition such as burning cigarettes, sparks, etc.

The LPG fuel system is equipped with a LPG Manual Shut-off Valve (page 18) which houses the excess flow safety valve and serves two functions:

1) In normal operation, it allows fuel from the tank to flow through the fuel lines to the engine.
2) In the event of an accident where a fuel line is disconnected or ruptured, the rapid discharge of fuel from the tank will cause the excess flow safety valve to close, shutting off the flow of fuel.
Typical CNG Cylinder and Manual Shutoff Valve Locations:

The CNG fuel system may be equipped with a CNG Manual Tank Valve (page 9) located on one end of the CNG Cylinder. **CLOSE THE VALVE BY TURNING CLOCKWISE.** There is usually also a ¼ turn valve (page 11) turning it a ¼ turn (or 90 degrees) will shut off the flow of fuel from the supply line. The ¼ turn valve is typically located on the driver’s side below the door and should be labeled “Manual Shutoff Valve”. (page 12)
CNG System Components:

- Fill Port
- Fuel Lines
- Cylinders/Tanks
- Manual Tank Valve or Electric Tank Valve
- Pressure Relief Device (PRD)
- ¼ Turn Shut-Off Valve
- High Pressure Filter
- High Pressure Regulator (HPR)

**Fill Port** this is where the CNG is added to the tank. If a leak is present there is one-way check valve designed to stop reverse flow through the valve. If equipped close the CNG Manual Tank Valve. *(page 9)*

*Equipment and locations may vary by vehicle.*
Fuel Lines:

**Stainless Steel Tubing** designed for the high pressure of CNG, allows the transfer of CNG between system components.

**Hose** made of various materials, designed for the high pressure of CNG, allows the transfer of CNG between system components.

Cylinder/Tank:

There are 4 designations based on material used. All four are designed to store the CNG at a working pressure up to 3600 psi. **As a safety precaution all cylinders are designed to hold pressures at least 1.25 times the working pressure (8100 psi for the 3600 psi systems).**

*Example of typical tank mounting (cover removed). Equipment and locations may vary by vehicle.*
Manual Tank Valve with Electronic Lock-Off:

Turn the Manual Valve Knob Clockwise to close.
Equipment and locations may vary by vehicle.

Manual Shut-Off valve is located on one end of the cylinder and can be closed by turning the knob clockwise.

Electronic Lock-Off is energized by CNG module. If the ignition key is off, the solenoid should be De-energized.

Excess flow valve is integrated of the Tank Manual Shut-Off Valve it will prevent excess CNG from flowing out of the tank if a part or line fails.

Internal PRD is integrated into the tank valve. (page 11)
Electronic Lock-Off is integral to the tank valve

External PRD is attached directly to the Electronic Tank Valve in this picture may have more than one. (page 11)
Pressure Relief Devices (PRD):

*External PRD Mounted Mid-tank for Thermal Protection.*
*Equipment and locations may vary by vehicle*

There are two styles of PRD depending on the application, an **Internal PRD** and an **External PRD**. Both will relieve pressure in the tank due to an over pressure condition or thermal event.

**Internal PRD** is part of the **CNG Manual Tank Valve (page 9)** and GFI regulator. (page 13)

**External PRD** remotely mounted usually used on large tank and multiple tank systems (see above photo)

Both will relieve pressure at: 108 Deg C +/- - 6 Deg C (226.4 Deg F +/- - 42.8 Deg F)
¼ Turn (Service) Shut-Off Valve

<table>
<thead>
<tr>
<th>LABEL</th>
<th>OPEN/ON</th>
<th>CLOSED/OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANUAL CNG SHUT-OFF</td>
<td></td>
<td></td>
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Equipment and locations may vary by vehicle.

To isolate the high pressure side of the system from the low pressure side of the system, turn the ¼ turn valve 90 degrees clockwise so the valve handle is perpendicular to the line.

**CNG High Pressure Filter:**

SUBJECT TO FULL TANK PRESSURE. (3600psi)

Equipment and locations may vary by vehicle.

Filters particulates and oil from the CNG.
High Pressure Regulator with Electronic Lock-Off:

**GFI Regulator**

**Zenith Regulator**

*Typical Firewall Mounted Regulators.*  
*Equipment and locations may vary by vehicle.*

**Regulator** reduces the high pressure (3600 psi) CNG down to lower pressure (120psi or less).

**Electronic Lock off** is energized by CNG module. If the ignition key is off, the solenoid should be De-energized.

**Internal PRD** is part of the GFI Regulator only. *(page 11)* It uses an attached hose or tubing to direct CNG out of engine compartment if needed.
Typical LPG Cylinder and Manual Tank Valve Locations:

Equipment and locations may vary by vehicle.

The LPG fuel system may be equipped with a Manual Tank Valve (page 18) located in the middle LPG Tank/Cylinder.

CLOSE THE VALVE BY TURNING CLOCKWISE.
LPG System Components Overview:

- Fill Port
- Fuel Lines
- Cylinders/Tanks
- Manual Tank Valve with Lock-Off
- LPG Vaporizer/Regulator

**Fill Port** this is where the LPG is added to the tank. It may be on the tank or remotely mounted for ease of filling (commonly under the rear bumper).
Cylinder/Tank:

Auto LPG tank is designed to hold fuel at a pressure of around 105 psi. For safety it is tested to an internal pressure of up to 672 psi.

**Typical Truck Bed Mounting (cover removed).**
*Equipment and locations may vary by vehicle.*

**Typical LPG Tank Component Locations Shown.**
*Equipment and locations may vary by vehicle.*
Fuel Lines:

Hose made of various materials, designed for use with LPG, allows the transfer of LPG between system components.

Pressure Relief Devices (PRD):

Designed to safely relieve excess pressure from LPG tank, see above picture for location.

PRD will activate around 250-275 psi.
Manual Tank Valve with Electronic Lock-Off:

*Turn the Manual Valve Knob Clockwise to Close.*

*Equipment and locations may vary by vehicle.*

**Manual Shut-Off valve** is usually located in the center of the cylinder but may also be located on either of the ends and can be closed by turning the knob clockwise.

**Electronic Lock-Off** is energized by LPG module. If the ignition key is off, the solenoid should be De-energized.
LPG Vaporizer/Regulator:

Typical Firewall Mounted Vaporizer/Regulator. Equipment and locations may vary by vehicle.

Vaporizer/Regulator heats the Liquid Propane till it becomes a gas then regulates the LPG pressure (usually 40psi or less).

Electronic Lock off is energized by CNG module. If the ignition key is off, the solenoid should be De-energized.
CNG/LPG ROADSIDE EMERGENCY GUIDES

⚠️ WARNING!

Failure to follow these warnings may result in bodily injury or death.

⚠️ WARNING!

In Case Of CNG/LPG Leak:
1. If driving, pull off the road immediately and park the vehicle in an open, well-ventilated area.
2. Shut the engine off and exit the vehicle.
4. Eliminate all potential sources of ignition such as burning cigarettes, sparks, etc.
5. Call emergency response personnel.

In Case Of Fire:
1. Stop the flow of gas as soon as possible. Never attempt to put out the flame unless the gas can be stopped. A spark or other source of ignition could cause an explosion.
2. Evacuate the immediate area of all people and animals.
If You Need to Jump-Start the Vehicle:

**WARNING!**

Failure to follow this warning may lead to bodily injury or death.

**WARNING!**

Before attempting to jump-start your vehicle, check carefully for the smell of CNG/LPG. A spark may cause an explosion and fire. If you smell the odor of CNG/LPG or hear a hissing sound, turn off the manual shutoff valve. **Do not attempt to jump-start the vehicle.** Contact an authorized repair facility and have a trained technician test or repair the possible leak.

Refer to the section on jump-starting in your vehicle manufacturer owner’s guide for the proper procedures.
If You Need to Jack Up the Vehicle:
Refer to the section on changing a tire in your vehicle manufacturer owner’s guide for proper procedures. During the addition of the CNG/LPG package to your vehicle, fuel lines and other components have been installed under the vehicle.

⚠️ WARNING!

Use only those jacking points indicated in the vehicle manufacturer owner’s guide. Use of unapproved jacks and jacking points may damage the fuel lines and valves and create a hazardous condition that may lead to personal injury.

If You Need to Have Your Vehicle Towed:
Refer to the section on towing in your vehicle manufacturer owner’s guide for the proper procedures. During the addition of the CNG/LPG package to your vehicle, fuel lines and other components have been installed under the vehicle.

⚠️ WARNING!

Use only those towing points indicated in the vehicle manufacturer owner’s guide. The use of unapproved lifts and towing points may damage the fuel lines and valves, creating a hazardous condition which may cause personal injury.
Painting Your Vehicle:

⚠️ WARNING!

DO NOT PUT CNG/LPG CYLINDERS IN A PAINT OVEN

⚠️ WARNING!

Failure to follow these warnings may result in bodily injury or death.

In the event your vehicle should require painting, the CNG/LPG fuel cylinder must be removed by an authorized service technician from the vehicle before placing the vehicle in the paint oven. Exposing the CNG fuel cylinder to the high temperatures that occur during the paint baking process could activate the pressure relief valve on the CNG fuel cylinder, creating a hazardous condition.