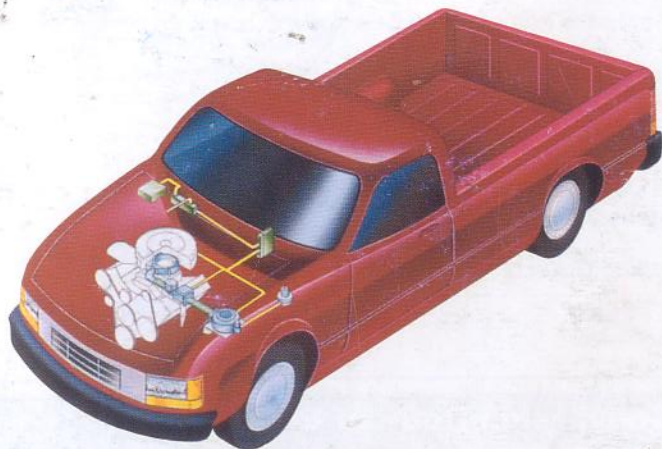
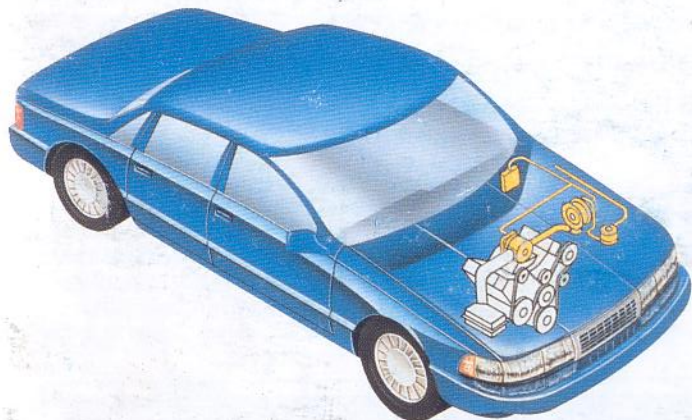


CLEAN FUELS

OWNER'S MANUAL SUPPLEMENT



ISO 9002 & QS 9000
LIC QS 10004



IMPCO[®]

"A company dedicated to a better world through cleaner air"

Dear Customer

Congratulations for having chosen IMPCO gaseous fuel equipment for installation in your vehicle. Not only will you appreciate the savings in fuel costs, but just as important, you will recognise IMPCO's unparalleled contributions to your driving pleasure. The sheer simplicity, reliability and performance of the IMPCO system make it a world leader in gaseous fuel systems, allowing you to enjoy the optimum performance of the vehicle and breathe cleaner air.

Thank you and yours faithfully,
IMPCO Technologies Pty Ltd



Managing Director

Conversion Code of Ethics

IMPCO Technologies require that conversion work be performed in such a manner that the vehicle:

- a) complies with Australian Standards 1425;
- b) invokes no infringement of ADR, or other relevant directions by statutory authorities;
- c) complies with pollution requirements;
- d) as closely as possible, operates on L.P. Gas in accordance with the performance specifications and expectations of the vehicle manufacturer.

General Information

The following information may answer some of the questions that become apparent to the operator of an IMPCO LPG fuelled vehicle during use.

What is LPG?

LPG is an abbreviation for Liquefied Petroleum Gas which is a mixture of mainly Propane and Butane, these being hydrocarbons which can easily be liquefied at normal temperatures and moderate pressure (normally about 850KPa or 120psi). LPG is obtained as a by-product from natural gas and oil production and Australia has abundant supplies. The use of this fuel for transport is a positive step in the conversion of our indigenous fuel supplies and its ability to burn cleanly will help to reduce atmospheric pollution.

Power

Because of the nature of the fuel, a small loss of power may be experienced under heavy accelerator conditions. Do not be concerned, this is expected and quite normal.

Economy

Your decision to convert your vehicle to LPG enables you to operate on a significantly lower priced fuel. Experience has shown that your LPG consumption may be slightly higher than your petrol consumption over a given distance. This increased consumption varies from vehicle to vehicle, however the substantial fuel price difference will more than make up for this.



Insurance

In general, insurance companies accept the concept of LPG conversion on vehicles and will continue insurance coverage with no additional premiums. IMPCO is an accepted conversion when carried out by an approved/licensed installer, who will fit IMPCO in accordance with Australian Standard 1425. You are required to advise your Insurance Company of the modifications to your vehicle due to the conversion.

Registration

Information on registering the LPG conversion with pertinent State statutory bodies is available from your IMPCO installer.

Emission Control Systems

In the case of a conversion it is illegal for the emission control equipment to be removed or tampered with. It has therefore been left intact and fully operative.

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The LPG Container and its Components

Container Design

The LPG container is designed and manufactured to the strict requirements of Australian Standard 1210, which ensure the highest safety standards are maintained.

Safety Valve

A safety valve is fitted which protects the container from an over-pressure situation. This valve, which is vented to outside the vehicle, is set to relieve at 2.55 megapascals (370psi).

Filling System

The filling system has check valves at the container and filler valve to ensure no fuel loss can occur from this point.

Automatic Fill Limiter

The filling connection at the container is fitted with an automatic valve that will stop the container begin filled more than 80% volume level. Therefore a 90 litre capacity cylinder will only take approximately 72 litres of fuel if fully empty before automatic closing of the valve on the tank. After filling this allows an adequate volume for liquid expansion which may occur with temperature variation.

Service Valve

The service valve is fitted with a manual shut-off valve to allow the fuel container to be isolated in the case of a fuel leak, or for vehicle servicing, and should be used when the vehicle is garaged for extended periods.

Excess Flow Valve

The service valve is fitted with a device that will stop the main fuel supply in case of a fuel line rupture.

Sub-Compartment

The container valves are located in a sealed compartment (sedans only) that is ventilated to outside the vehicle. Thus if any fuel leak was to occur it would be safely vented outside the vehicle. For station wagons the LPG fuel container may be located under the rear floor, space permitting.

Emergency Procedures

The LP Gas fuel system has a number of inherent safety advantages over a conventional petrol system in a vehicle accident.

The fuel container is manufactured as an approved high quality pressure vessel and is most unlikely to split in an accident.

The fuel supply is shut-off if the engine stops or the ignition is switched off. The manual service valve at the tank allows the system to be easily and securely isolated.

In the case of a fire the container will safely vent its contents from the vent tube to avoid any over-pressure situation.

In Case of Accident or Fire

If the vehicle is involved in an accident:

1. Turn off the ignition.
2. Turn off the manual service valve located on the fuel container in the boot on sedans or under the rear on station wagons.
3. Ensure there are no ignition sources near the vehicle.

In case of a Gas Leak

If you detect a strong smell of LP Gas:

1. Turn off the ignition.
2. Turn off the manual service valve.
3. Ensure there are no ignition sources near the vehicle.
4. If the smell of gas dissipates then drive the vehicle on petrol to the nearest gas service garage for repair.
5. If you are unsure or the leak does not stop, then call your local gas service agent.

NOTE: LP Gas is heavier than air and in the absence of dispersal tends to accumulate in low lying areas.

Operating Instructions

Carburetted Vehicles

STARTING – Depress accelerator to half opening and hold. This assists starting by opening the air/gas valve further, drawing mixture into the engine.

CHANGEVER –

LPG to PETROL

Depress switch from LPG to Petrol.

PETROL to LPG

Move switch from Petrol to mid-position, wait for petrol to clear from carburettor. Move switch to LPG.

DO NOT ATTEMPT TO CHANGE OVER WHILE THE VEHICLE IS MOVING.



Operating Instructions

Fuel Injected Vehicles

STARTING – **DO NOT DEPRESS ACCELERATOR** – refer to vehicle owner's manual.

CHANGEVER –

LPG to PETROL

Depress switch from LPG to mid-position until LPG clears. Move to Petrol.

PETROL to LPG

Depress switch from Petrol to LPG.

DO NOT ATTEMPT TO CHANGE OVER WHILE THE VEHICLE IS MOVING.

Care of Fuel System

Fuel Injected Vehicles – When fuel is stored in the petrol tank or is recirculated within the fuel system, the volatile components are lost and significant 'gum' deposits will form and with fuel recirculation, gum formation is accelerated. Where only a small quantity of fuel is present, condensation occurs with the eventual result that the fuel system components will suffer corrosion damage.

Therefore: —

1. The petrol tank must be maintained between $\frac{1}{4}$ and $\frac{1}{2}$ filled at all times, to avoid damage as a consequence of operating 'dry'.
2. Use petrol regularly and then fill to $\frac{1}{4}$ and $\frac{1}{2}$ full with fresh petrol.
3. Petrol should be used frequently to 'flush' the system. Use petrol at a minimum rate of 20 litres every 30 to 45 days.
4. Petrol pump must not operate during LPG operation. Start up on petrol will ensure that residual fuel within injectors will be regularly flushed.

Service and maintenance plus care of the LPG System

Service

Always follow the vehicle manufacturer's recommendations on the periodic servicing of your vehicle.

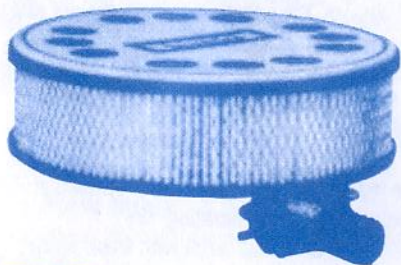
As LPG is a dry, clean burning fuel, it is recommended that the use of high grade oil is continued in order to give engine protection.

Maintenance

For safe and reliable operation of your LPG system ensure that repairs are carried out by a properly trained specialist. They will understand the equipment fitted and do the work in accordance with Australian Standard 1425.

As with a petrol powered vehicle regular tuning by an LPG specialist will ensure that your vehicle operates at maximum efficiency.

Some states require the inspection of the LPG System annually with the registration.

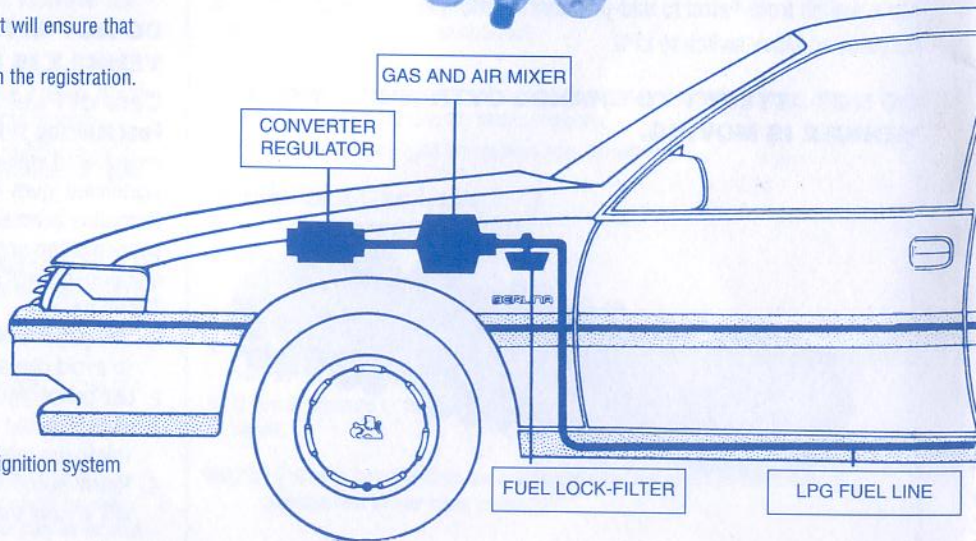
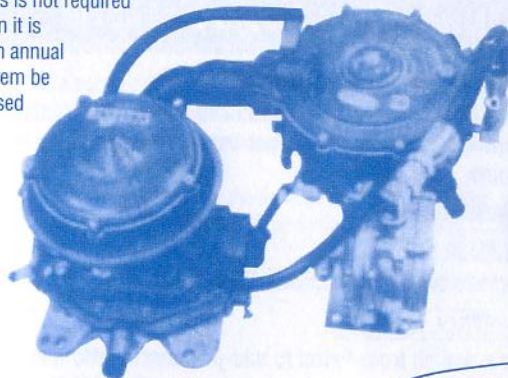


IMPORTANT!

To ensure trouble free operation of the LPG system, the secondary ignition system should be well maintained.

Refer to the Service Schedule Section in this manual.

inspection. Where this is not required under State legislation it is recommended that an annual inspection of the system be carried out by a licensed installer.



Care of Fuel System

Carburetted Vehicles

Your vehicle should be operated on petrol at regular intervals (say once a week).

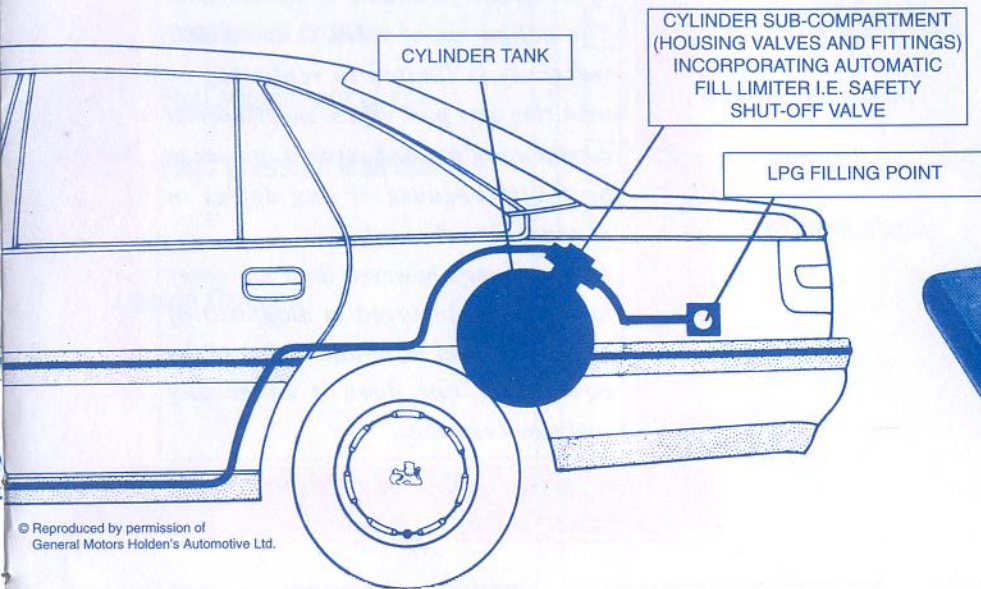
A period of operation on petrol will ensure the system remains operative and minimise shrinkage of diaphragms and gaskets in the petrol system.

This is best achieved by running the engine for approximately thirty (30) minutes once per week and/or leaving the vehicle to stand overnight, after the engine has operated on petrol for approximately 30 minutes.

Care of Straight LPG System

If your vehicle is converted to run solely on LPG, there are a few points we would like you to understand about the conversion:

1. About 10 litres of petrol should remain in the petrol tank. This will help to combat any condensation that would occur.
2. Periodically check for any leaks that may arise in the petrol fuel system.
3. Only an approved LP Gas motor mechanic can repair and replace your under bonnet LP Gas equipment. This includes tune-up work.
4. Should modification to the fuel system (either petrol or gas) be required, this must only be done by an approved LP Gas motor mechanic.



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Conversion Systems

Conversion Identification

Your vehicle has been converted to the highest possible engineering standards in accordance with Australian Standard 1425. It has been identified in two ways:

- (a) A compliance plate has been fitted to the vehicle.
- (b) An LPG external identification symbol has been fitted to front and rear number plates.

Warranty

IMPCO TECHNOLOGIES warrant all IMPCO products to be free of defects in material and workmanship for a period of 18 months from date of manufacture. The obligation of IMPCO under this warranty is limited to replacing or repairing any part which under normal conditions of use and services, proves to be faulty because of any defect in material or workmanship.

This warranty, however, does not cover labour costs incurred in diagnosis of defects, removal or re-installation of the equipment, nor does it cover any contingent expenses.

MAINTENANCE SCHEDULE

1,500 km or 1 month service

(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- Installation check
- Fuel adjustment check
- High pressure leak check

Servicing Dealer

20,000 km or 12 months service

(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- High pressure leak check
- Auto fill limiter check
- Replace spark plugs
- Fuel adjustment check

Servicing Dealer

40,000 km or 2 year service

(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- High pressure leak check
- Auto fill limiter check
- Replace spark plugs
- Secondary ignition check
- Control Valve resistance check
- Fuel adjustment check

Servicing Dealer

60,000 km or 3 year service
(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- High pressure leak check
- Auto fill limiter check
- Replace spark plugs
- Converter/Lock off inspection, rebuild if required
- High tension lead check
- Fuel adjustment check

Servicing Dealer

80,000 km or 4 year service
(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- Replace spark plugs
- Secondary ignition check
- Auto fill limiter check
- High pressure leak check
- Control valve resistance check
- Fuel adjustment check

Servicing Dealer

100,000 km or 5 year service

(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- High pressure leak check
- Auto fill limiter check
- Replace spark plugs
- Fuel adjustment check

Servicing Dealer

120,000 km or 6 year service

(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- High pressure leak check
- Auto fill limiter check
- Replace spark plugs
- Secondary ignition check
- Control valve resistance check
- Converter/Lock off inspection, rebuild if required
- High tension lead resistance check
- Fuel adjustment check

Servicing Dealer

140,000 km or 7 year service
(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- High pressure leak check
- Auto fill limiter check
- Replace spark plugs
- Fuel adjustment check

Servicing Dealer _____

160,000 km or 8 year service
(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- High pressure leak check
- Auto fill limiter check
- Replace spark plugs
- Secondary ignition check
- Control Valve resistance check
- Fuel adjustment check

Servicing Dealer _____

180,000 km or 8¹/₂ year service
(whichever comes first)

Date _____ km _____

- Cylinder bolt tightness check
- High pressure leak check
- Auto fill limiter check
- Replace spark plugs
- Control Valve resistance check
- High tension lead check
- Fuel adjustment check

Servicing Dealer _____



*For a complete list of authorised distributors
and installer network please contact*

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IMPCO TECHNOLOGIES PTY LTD

A.C.N. 074 106 880

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