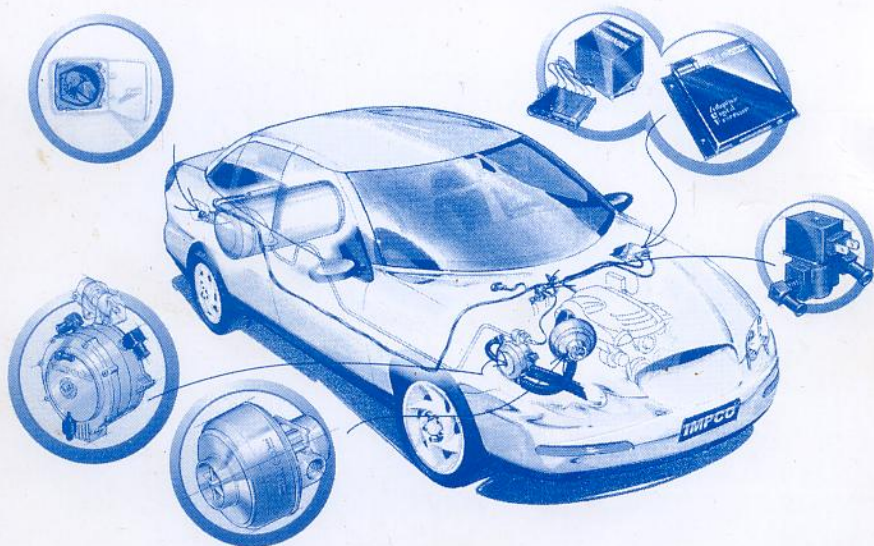


IMPCO[®]

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

CLEAN FUELS OWNERS MANUAL



LPG Equipment proudly supplied by

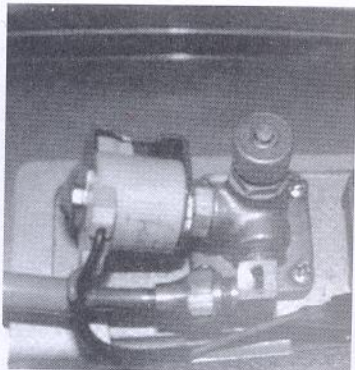
**Victorian
Autogas
Supplies**

A.B.N. 71 075 343 476
Unit 2, 13 Brett Drive
Carrum Downs 3201
Vic. Australia
Tollfree: 1800 620 945
Tel: (03) 9775 1900
Fax: (03) 9775 1577
email: sales@vags.net.au
www.vags.net.au

Emergency Procedures

LPG is artificially odourised in order to allow for easy 'leak detection' .
In the event of a suspected gas leak, accident, fire or other major concern with the LPG system fitted;

1. Turn the vehicle off.
2. Turn the manual service valve to OFF, shown in picture on right (clockwise direction). Note! The valve is located in the sub compartment on the LPG storage cylinder.
3. Refer to page 13 for further instructions.



LPG is heavier than air and if not dispersed tends to collect in low lying areas.

The information contained in this manual is designed to cover a typical IMPCO LPG system installation. Information provided was accurate at the time this manual was approved for printing. IMPCO Technologies Pty Ltd., reserves the right, subject to all applicable laws and regulations, to change specifications at any time without incurring any liability whatsoever.

Contents

Preface	3
Installation Details	4
Changing Fuels and Starting	5
Fuel Indication	6
Refuelling	7
Service and Maintenance	8
Maintenance Schedule	9
Service Coupons	10
Emergency Procedures	13
Warranty Information	14
Your Installer Information	15

Congratulations on choosing IMPCO LPG equipment for your LPG installation.

Whether this is your first vehicle with IMPCO LPG or you have owned others in the past you will appreciate the immediate savings in fuel costs.

We believe just as importantly, there is long term reliability, performance and simplicity of operation built into this IMPCO LPG system.

Equally we know that your decision to use IMPCO LPG will result in reduced tailpipe emissions and for that, your children and future generations will always be grateful.

'Single Fuel' means that your vehicle is only capable of operating on one fuel, LPG or Petrol, whichever fuel system is installed.

'Dual Fuel' means that your vehicle is capable of being operated either with LPG or with petrol, depending on your selection. Once started on either fuel the vehicle will operate on 100% of the fuel selected. Correctly maintained (ref: pages 9 &10) your LPG system will provide the same engine durability as that of the base petrol engine.

The IMPCO system installed in your vehicle should comply with the relevant Australian/ New Zealand Standard AS/NZS 1425 - 2003 if correctly installed by appropriately accredited personnel



You are required to advise your insurance company that your new vehicle operates on LPG or both petrol and LPG, and to ensure that an LPG decal is fitted to both front and rear number plates.

Your LPG Equipment Installation Details

The IMPCO LPG equipment installed on your vehicle has been designed in the USA by IMPCO Technologies Inc., to the highest quality standards.

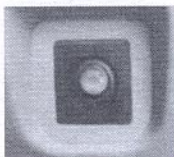
Installation of an LPG system may alter the manufacturer's warranty conditions on your vehicle. IMPCO therefore recommends checking with the vehicle manufacturer prior to installing an LPG system.

New Engine Run-In Procedure.

If the LPG equipment is installed on your vehicle from new, it is recommended that the new engine is 'run-in' by operating on petrol for the first 1500km to assist in the 'bedding in' of the piston rings.

Fuel Selector Switch

The fuel selector switch is normally located on the instrument panel of the vehicle. A typical switch has three (3) positions described as follows;



LPG. In this position the engine will operate on LPG fuel. The engine will automatically receive a small amount of petrol during start to ensure smooth starting operation.
(EFI & Dual Fuel only)

Centre. In this position the engine will not operate on either fuel. If this position is selected whilst in motion fuel supply to the engine will be shut-off. If desired, this position can be used as a simple anti-theft engine isolator when away from the vehicle.

ULP. In this position the engine will operate on petrol.

Changing Fuels and Starting

Changing Fuels



It is recommended that fuel changeover is attempted only whilst the vehicle is stationary.

Engine Running

- When safe to do so, pull over to the side of the road and stop the vehicle. Engage 'P' (Park) on automatic transmission vehicles, or neutral position on manual vehicles, firmly apply the park brake.
- Increase engine speed to 2,000 - 2,500 rpm.
- Press the fuel selector switch to the centre position until you feel a drop in engine speed then press to the desired fuel.

Note - Time spent in the centre position of the switch, will be dependent on whether the system is installed to a vehicle fitted with a carburetor or an Electronic Petrol Fuel Injection system. Please check with the personnel installing your LPG system.

Starting the Engine

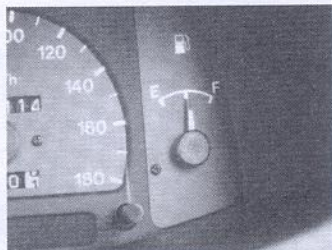
There are no special requirements for starting your Single or Dual Fuel engine on either fuel, however you should note the following points;

- When starting the vehicle on LPG, to avoid potential backfires **do not depress the accelerator.**
- Ensure that the park brake is firmly applied and that 'P' (Park) / 'N' (Neutral) is selected on automatic vehicles, or neutral position selected on manual vehicles whilst starting.
- If the engine fails to start after five (5) seconds of cranking, release the ignition key and try again after a few moments.

Fuel Indication

LPG Fuel Indication

There are two options available, either the use of the original fuel gauge or the addition of a specific LPG gauge.



Original Gauge

The fuel gauge on the instrument panel will show petrol tank contents when the system is switched to petrol, or LPG cylinder contents when switched to LPG.

Specific Gauge

The gauge will show LPG cylinder contents only.

Petrol Usage

The petrol tank on your vehicle should always be kept at least 1/4 full. Petrol does deteriorate over time, so it is recommended that you use approximately 20 litres of petrol every 30-40 days.

EFI Operation

When the engine is starting on LPG a small amount of petrol is used to ensure quick, reliable starting, as a result, operating the vehicle continuously with no petrol in the fuel tank will have a detrimental effect on starting, and may cause damage to the petrol fuel pump.

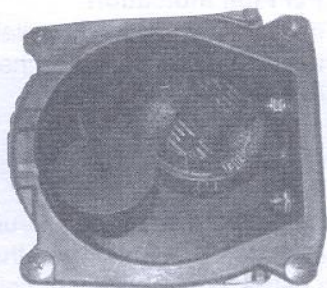
Re-fueling

Re-fuelling

LPG or petrol may be added, regardless of the fuel selected. As with any fuel, take care not to have flames, sparks etc. near the area when refuelling.



Carefully observe the filling instructions and warnings displayed at the filling station.



The LPG filler is located either in the original petrol filler compartment as shown, or a remote filling point.

Petrol Re-fuelling

Refuel the vehicle in the normal manner. Refer the vehicle owner's manual.

LPG Re-fuelling

- Switch off the engine.
- Remove the LPG filler cap.
- Connect the LPG filler nozzle.
- Release the trigger when it shuts off. The AFL (Automatic Fill Limiter) shuts off the LPG flow when your car's cylinder is 80% full, this is to allow for liquid expansion.
- Disconnect the LPG filler nozzle.
- Screw the LPG filler cap back on.



In the unlikely event of AFL failure and tank overfill (verify fuel level (via sight glass gauge on valve pad of the tank) is higher than 80%), release the fuel dispenser handle and seek advice from the filling station attendant immediately. The cylinder is also fitted with a pressure relief valve, which is designed to relieve pressure in an overfilled cylinder in an emergency situation

Vehicle Storage

If the vehicle is to be stored for a prolonged period, turn off the Service Valve, located on the LPG valve pad, inside the LPG storage tank Sub compartment.

Service and Maintenance

Scheduled Maintenance

For your safety, if repair work or checking is required it must be performed by a properly trained specialist. If the repair work involves opening the high pressure LPG lines or associated components to the atmosphere, an authorised LPG motor technician must perform the work and carry it out as specified by the Australian/ New Zealand Standard AS/NZS 1425 - 2003.

State/Territories Regulations

The following coupons cover the servicing of LPG as required by IMPCO Technologies, in addition to the maintenance stated in the Original Vehicle's Owners Handbook.

Different states/territories may have additional needs, and therefore the coupons should only be used where they do not conflict with state/territories regulations.

Ignition System

Running the vehicle on LPG places a greater demand on the ignition system (as compared to Petrol). Accordingly the ignition system must be maintained to an extremely high standard.

The spark plugs must be replaced every 20,000kms.

LPG Cylinder

The LPG cylinder must be removed and pressure tested by an authorised LPG tank test centre once every 10 years from the original test date. The original test date is located on a plate attached to the cylinder. Removal and retest of cylinders must only be carried out by suitably registered operators.

Maintenance Interval

ITEMS	km x 1000	1.0	20	40	60	80	100
HIGH PRESSURE LEAK CHECK:							
Converter and lock-off		I	I	I	I	I	I
All service line connections		I	I	I	I	I	I
Filler valve		I	I	I	I	I	I
LPG Tank Connections		I	I	I	I	I	I
Fuel Selector Operation		I	I	I	I	I	I
All mounting points for tightness		I					I
Filter/Lock-Off - Inspect Filter		I*					I*
Auto Fill Limiter Operation							I
Spark Plugs			R	R	R	R	R
Ignition Leads - Condition		I	I	C	I	C	I
Fuel System Adjustment		CA	CA	CA	CA	CA	CA
Fuel Control Valve			C		C		
Function Controller		CA		CA		CA	
Converter							IR*

LEGEND

- I Inspect
- I* Inspect and replace as required
- R Replace
- C Check resistance of HT leads, replace as required
- CA Check and adjust as required
- IR* Inspect, rebuild if required

NOTE: Engine coolant must be replaced every 3 years/60,000kms

LPG Service Coupons

1,000 Km Service

- High Pressure Leak Check
 - Converter and lock-off
 - All service line connections
 - Filler valve
 - LPG Tank connections
- Fuel Selector Operation
- All Mounting Points for tightness
- Filter/Lock-Off - Inspect Filter
- Ignition Leads - Condition
- Fuel System Adjustment
- Function Controller

The above LPG maintenance should take approx. 0.5 hours

Date: 7/12/06 Km: 32254

Servicing Dealer: Jefferson Ford Moorabbin

JEFFERSON FC
MOORABBIN SERV
DEALER CODE: 3144

20,000 Km Service

- High Pressure Leak Check
 - Converter and lock-off
 - All service line connections
 - Filler valve
 - LPG Tank connections
- Fuel Selector Operation
- Replace Spark Plugs
- Ignition Leads - Condition
- Fuel System Adjustment
- Fuel Control Valve

The above LPG maintenance is additional to the petrol service schedule and should take approx. 0.6 hours.

Date: / / Km:

Servicing Dealer:

LPG Service Coupons

40,000 Km Service

- High Pressure Leak Check
 - Converter and lock-off
 - All service line connections
 - Filler valve
 - LPG Tank connections
- Fuel Selector Operation
- Replace Spark Plugs
- Ignition Leads Resistance Check
- Fuel System Adjustment
- Function Controller

The above LPG maintenance is additional to the petrol schedule and should take approx. 0.6 hours.

Date: ___ / ___ / ___ Km: _____

Servicing Dealer: _____

60,000 Km Service

- High Pressure Leak Check
 - Converter and lock-off
 - All service line connections
 - Filler valve
 - LPG Tank connections
- Fuel Selector Operation
- Replace Spark Plugs
- Ignition Leads - Condition
- Fuel Control Valve
- Fuel System Adjustment
- Inspect the LPG converter. Rebuild if necessary

The above LPG maintenance is additional to the petrol service schedule and should take approx. 1.0 hours. Additional time will be charged if the converter requires a rebuild.

Date: 11/1/08 Km: 60598

Servicing Dealer: _____

Ph: 03 95850150

LPG Service Coupons

80,000 Km Service

- High Pressure Leak Check
 - Converter and lock-off
 - All service line connections
 - Filler valve
 - LPG Tank connections
- Fuel Selector Operation
- Replace Spark Plugs
- Ignition Leads Resistance Check
- Function Controller
- Fuel System Adjustment

The above LPG maintenance is additional to the petrol service schedule and should take approx. 0.6 hours.

Date: __/__/__ Km: _____

Servicing Dealer: _____

100,000 Km Service

- High Pressure Leak Check
 - Converter and lock-off
 - All service line connections
 - Filler valve
 - LPG Tank connections
- Fuel Selector Operation
- Mounting Points
- Filter/Lock-Off - Inspect Filter
- Auto Fill Limiter Operation
- Replace Spark Plugs
- Ignition Leads - Condition
- Fuel Systems Adjustment

The above maintenance is additional to the petrol service schedule and should take approx. 1.0 hours.

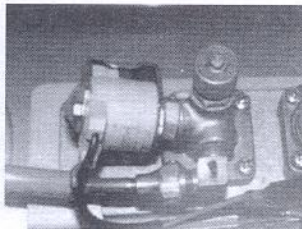
Date: __/__/__ Km: _____

Servicing Dealer: _____

Emergency Procedures

LPG is artificially odourised in order to allow for easy 'leak detection'. In the event of a suspected gas leak, accident, fire, drive-off or other major concern with the LPG system.

1. Turn the vehicle ignition OFF (0).
2. Locate the LPG Sub compartment on the LPG storage cylinder. Turn the manual service valve to OFF, shown in picture on right (Clockwise direction).



LPG is heavier than air and if not dispersed tends to collect in low lying areas.

Suspected Gas Leak

Once the above two(2) steps have been followed, select petrol operation with the fuel selector switch and take the vehicle to the nearest authorised IMPCO LPG repairer for advice

Accident or Fire

Call the emergency fire services to the scene and keep people away from the vehicle.

'Drive-Off' Whilst Filling

Ensure there is no gas leakage. Notify the filling station operator. If no leaks are detected, select petrol operation with the fuel selector switch and take the vehicle to the nearest authorised IMPCO LPG repairer for advice.

AFL Failure (LPG Tank Overfilling)

Verify fuel level (via sight gauge on valve pad of the tank) is higher than 80%. If so drive vehicle without stopping the engine to consume excess LPG (until level is lower than 80%). Select petrol operation with the fuel selector switch and take the vehicle to the nearest IMPCO LPG repairer for advice.

If this is not possible, move the vehicle to a cool shaded area, away from residences. Contact the nearest authorised IMPCO LPG repairer for advice.

Warranty

IMPCO Technologies Pty Ltd., 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 **IMPCO Component** which, under normal conditions of use and services, proves to be faulty because of defect in either material or workmanship.

NOTE:

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