



**CORE CUT
OPERATOR'S MANUAL**

**PROPANE
SUPPLEMENT MANUAL**

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Introduction

This manual addresses some of the physical and operational differences in regard to liquefied petroleum gas (LPG propane) fueled systems versus a standard carbon fuel system. This manual is not intended to be a comprehensive operations and safety document and should not be construed as such. It does not preclude the use of any other procedures that would improve the safe operations of a LPG engine nor does it preclude compliance with any federal, state, or local codes and regulations.

This manual is strictly a supplement to the existing manuals that Diamond Products LLC provides. Diamond Products LLC assumes no liability for reliance on the information provided in this manual.

Your choice in using a LPG powered saw has both economic and environmental benefits that Diamond Products LLC is proud to provide. These engines are similar in performance with standard carbon fueled engines but will provide longer engine life with lower maintenance costs. They have substantially less carbon which creates less wear on the engines with less carbon in the oil. Unlike standard gasoline engines, LPG engines do not have the shellac build up in the carburetors creating fuel jet clogs. LPG propane is produced domestically in the United States and typically costs less per gallon than gasoline.

LPG propane is one of the cleanest burning fuels available. It is considered to be environmentally friendly because the greenhouse gas levels produced from the combustion of LPG propane is much less than that of carbon based fuels.

LPG Propane Fuel System Components

The following is a list of components that comprise a typical LPG propane fuel system for the small engine industry:

- **Propane Regulator** – Controls the flow of propane from the tank to the engine and lower the pressure from the tank to a factory setting of 4 to 5 psi.
- **Lock-Off Safety** - A device that is located on the inlet side of the regulator that opens to let the propane into the regulator when the ignition key is turned ON, or if equipped with an oil switch, when oil pressure reaches approximately 4 psi during startup.
- **Oil Switch** – Optional device that is normally open, and is in some cases wired to the lock-off safety and hot wire from the engine or ignition. During startup, when oil pressure is sufficient, the switch will close allowing the lock-off to send propane from the tank to the regulator. If the engine should stop running, the loss of oil pressure will cause the switch to open preventing the lock-off from sending propane to the regulator.
- **Vacuum Hose** – A 1/4" hose that runs from the regulator to the inlet of the fuel pump on the engine. The fuel pump draws a vacuum on the regulator which allows the regulator to open and supply fuel to the carburetor. If the engine stops running, the vacuum is lost and the regulator will close, stopping fuel to the carburetor.
- **Low Pressure Fuel Hose** – A hose that supplies fuel from the regulator to the carburetor.
- **Propane Carburetor** – A specially designed carburetor for the engine application and is part of the overall fuel system.
- **Propane Fuel Cylinder (Fuel Tank)** – A 20# or 33# propane tank.
- **High Pressure Fuel Hose** – Hose with a special fitting on the end that connects to the propane tank. The hose runs from the tank to the lock-off safety and regulator.
- **Tank Brackets** – Brackets that are designed to hold the propane tank securely to the unit in the proper horizontal position.

Suggested Safety Guidelines for Propane Use:

Operation

Operate your LPG engine exactly as you did when it ran on gasoline or as recommended by manufacturer. As with any engine a warm-up period of a minute or two at fast idle is advisable. Because an LPG fuel system is simple, it is unlikely adjustments will be necessary. However, if they are required, see your LPG carburetion serviceman.

Safe Handling of LPG

These common-sense rules should be observed:

1. Perform service work on an LPG fuel system in an open or well ventilated area. Never allow the gas to escape in a closed area. LPG is heavier than air and may settle in low places.
2. Avoid cutting and welding operations near LPG systems.
3. Handle LPG containers carefully. Do not drop or drag.
4. Installation and repair should be done only by qualified service personnel.
5. Never test for leaks with a flame. Use soap suds test or approved leak detector.
6. Do not fill tanks not properly labeled for LPG. Do not put propane into tanks with working or service pressure less than 240psi. Do not tamper with valves or fitting in the LPG system.

In Case of Accident

LP-Gas, as all fuels, must be treated with respect and care. On detection of escaping gas take the following steps.

1. Immediately shut off the tank service valves.
2. Eliminate all possible outside sources of ignition
3. Summon qualified LPG personnel

In Case of Fire

1. Stop flow of gas as quickly as possible. If fire occurs, never put out flame unless gas can be shut off.
2. Notify fire department and clear immediate area of all people.
3. When gas flow is stopped, put out the fire. Usually when flow of gas is cut off, fire will automatically stop. Carbon Dioxide and dry chemical extinguishers may be used. **DO NOT USE CARBON TETRACHLORIDE EXTINGUISHERS (PYRENE ETC.)**
4. If gas flow cannot be immediately stopped, direct water on tanks to keep them cool, but do not put out fire.

LPG is by nature odorless and invisible. An identifying odor has been added so that the presence of gas can be quickly detected.

REFUELING: Qualified Personnel Only

Questions: Please contact your local qualified gas personnel

Your local fire marshal is the authority having jurisdiction.

Operating

Except for a few differences, a propane fueled saw operates the same as a gasoline fueled saw. The procedures listed below will highlight the operations that are pertinent to the propane application. For all other procedures, refer to the applicable operator's manuals provided with the unit.

Propane in the fuel tanks is at approximately 200 psi. The fuel system is a VAPOR system and the tanks are designed specifically for this application.



WARNING

Use only the tank provided with this unit. It is specifically designed for this application. Using another tank designed for fork lift or other liquid tanks will not work and may cause serious damage to equipment or personnel.

Starting the Engine

1. Open the supply valve on the propane tank.
2. Ensure the throttle is fully closed.
3. Turn the ignition switch to START and release when the engine starts.
4. Use the throttle to adjust the engine speed as necessary for maximum efficiency while operating. Refer to the engine manual for additional information.

Stopping the Engine

Due to the ability of propane to expand when operating in warmer temperatures, it is recommended that the propane tanks be shut off while the engine is operating at normal operating speed. This will allow the propane to evacuate the lines and prevent flooding the engine.

1. With the engine operating at normal speed, close the supply valve on the propane tank.
2. When the engine stops running, turn the ignition switch to OFF and close the throttle.

Maintenance

Setting Pressure Regulator

There are two adjustments on a carbureted propane fuel system and they are both on the pressure regulator. Pressure is set with a large flat slotted screw located on the side of the regulator. It sits in a round 1 inch diameter protrusion and extends 3/4" from the side of the regulator.

The other adjustment is the fuel flow, also known as the low idle screw. The adjustment screw is located to the right of the pressure adjusting screw in a square tower protruding to the right. In the square tower is a small flat blade screw type for adjusting the fuel flow. Next to it is a 1/8" fitting with cap where the pressure gauge will go.

Setting Fuel Pressure

Although the fuel pressure is set at the factory, it may become necessary to adjust it in the field. To set the pressure:

1. Shut the propane supply valve located on the propane tank.
2. Locate and remove the cap on the pressure gauge fitting.
3. Install the pressure gauge on the fitting.

NOTE: The pressure gauge should read 1 – 10 PSI or 0 – 15 PSI.

4. Once the gauge is installed, open the propane supply valve located on the propane tank.

5. Start the engine and check the pressure on the gauge. The pressure for up to 25 HP is typically 3-3.5 PSI, and for 35-36 HP may typically at 4 PSI.
6. To adjust the pressure turn the large pressure screw clockwise to increase pressure, or, counterclockwise to decrease pressure.
7. Once the pressure is set, turn off the engine and close the propane supply valve located on the tank.
8. Remove the pressure gauge and re-install the cap on the pressure gauge fitting.

Setting Fuel Flow

Although the fuel flow is set at the factory, it may be necessary to adjust it in the field. To set the fuel flow:

1. Using a tachometer, adjust the fuel flow using the small setscrew located in the square tower on the regulator. Turning the screw clockwise will make the fuel richer and turning the screw counterclockwise will make the fuel leaner.
2. Turn the set screw as required to find the correct fuel flow at maximum engine idle RPM.

NOTE: This procedure is for setting the fuel flow NOT the max engine idle speed.

TROUBLESHOOTING

Troubleshooting

Symptom	Problem	Solution
1. Engine will not start.	No fuel?	Fill propane tank.
	Fuel supply valve shut?	Open fuel supply valve on tank.
2. Engine turns over but will not start.	Lock-off safety not working?	Check electrically. Repair or replace as required.
	Regulator working?	Check vacuum hose and repair or replace as required.
		Replace regulator.
3. Back fire on startup?	Bad spark plug?	Check, re-gap or replace as required
	Bad cylinder?	Have certified engine mechanic diagnose and correct problem.

EQUIPMENT AND PARTS WARRANTY

Diamond Products warrants all equipment manufactured by it against defects in workmanship or materials for a period of one (1) year from the date of shipment to Customer.

The responsibility of Diamond Products under this Warranty is limited to replacement or repair of defective parts at Diamond Products' Elyria, Ohio factory, or at a point designated by it, of such parts as shall appear to us upon inspection at such parts, to have been defective in material or workmanship, with expense for transportation and labor borne by Customer.

In no event shall Diamond Products be liable for consequential or incidental damages arising out of the failure of any Product to operate properly.

Integral units such as engines, electric motors, batteries, transmissions, etc., are excluded from this Warranty and are subject to the prime manufacturer's warranty.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND ALL SUCH OTHER WARRANTIES ARE HEREBY DISCLAIMED.



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