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NOTE: For further information on Servicing the fuel system, refer to Manufacturer's Service Information.

GENERAL INFORMATION

System Operation – LPG

	WARNING:	
WHEN INSTALLING ANY LIQUID PETROLEUM GAS/FUEL SYSTEMS, FOLLOW ALL COUNTRY AND LOCAL CODES.		
IN THE USA FOLLOW ALL REGULATIONS AND STANDARDS MANDATED BY THE NATIONAL FIRE PROTECTION ASSOCIATION, INC. INCLUDING NEPA 37, NFPA 52, AND NFPA 58, PLUS ANY OTHER STANDARDS. YOU CAN OBTAIN COPIES FROM YOUR LOCAL FIRE DEPARTMENT.		
FOR CANADIAN CODES SEE NATIONAL STANDARDS OF CANADA.		
IN THE UNITED KINGDOM FOLLOW THE CODE OF PRACTICE ELEVEN PRODUCED BY THE LPG/NG ASSOCIATION.		

Since your LPG & NG units are not purchased through Ford Power Products, they are not calibrated specifically to your application. It is a requirement that each of these units are calibrated by the customer within the acceptable limits provided by Ford Power Products Engineering.

Development testing is underway to provide the customer with appropriate guidelines to successfully calibrate their LPG & NG fuel systems. Recommendations may include but are not limited to: air-fuel ratios, exhaust temperatures, and mixer/regulator orientation.

High pressure liquefied Petroleum Gas passes through a solenoid operated fuel shut-off valve into an engine coolant heated vaporizer/regulator unit where it is converted into a low pressure gas. This gas is then fed into the carburetor body/mixer where a vacuum operated gas metering valve ensures that the correct air-to-fuel ratio is maintained.

When the engine is switched off, the electrical supply to the fuel shut-off solenoid is disconnected and the valve closes, cutting off the high pressure fuel supply to the vaporizer/regulator. The electrical supply to fuel shut-off valve passes through a vacuum operated safety switch. Should the engine stall, the vacuum switch opens and cuts off the electrical supply to the fuel shut-off valve. When starting the engine, there is sufficient vacuum present, even at cranking speed, to close the safety switch.

FUEL SYSTEMS – FIELD CALIBRATIONS/GENERAL

When performing field calibrations on LPG & NG systems, it should be noted that improper fuel calibrations and/or improper hardware installation may result in decreased durability/life of the cylinder head valve train. Validation testing on the valve train was conducted in a controlled laboratory environment with proper air-fuel distribution and proper air-fuel ratios which fall within acceptable ranges.

System Operation – Natural Gas

	WARNING:	
<p>WHEN INSTALLING ANY NATURAL GAS/FUEL SYSTEMS, FOLLOW ALL COUNTRY AND LOCAL CODES.</p> <p>IN THE USA FOLLOW ALL REGULATIONS AND STANDARDS MANDATED BY THE NATIONAL FIRE PROTECTION ASSOCIATION, INC. INCLUDING NEPA 37, NFPA 52, AND NFPA 58, PLUS ANY OTHER STANDARDS. YOU CAN OBTAIN COPIES FROM YOUR LOCAL FIRE DEPARTMENT.</p> <p>FOR CANADIAN CODES SEE NATIONAL STANDARDS OF CANADA.</p> <p>IN THE UNITED KINGDOM FOLLOW THE CODE OF PRACTICE ELEVEN PRODUCED BY THE LPG/NG ASSOCIATION.</p>		

sufficient vacuum present, even at cranking speed, to open the fuel shut-off valve.

The system is similar to the LPG system, except a convertor (vaporizer) is not used, and the coolant connections are also not needed. A regulator is required and must be supplied by the OEM to suit the mains gas supply pressure.

Natural gas passes through a vacuum operated fuel shut-off valve into a regulator unit where it is converted into a low pressure gas. This gas is then fed into the mixer where a vacuum operated gas metering valve ensures that the correct air-to-fuel ratio is maintained.

When the engine is switched off, vacuum supply to the fuel shut-off vacuum is disconnected and the valve closes, cutting off the fuel supply to the regulator.

Should the engine stall, the loss of vacuum will close the fuel shut-off valve. When starting the engine, there is

DIAGNOSIS AND TESTING

Pinpoint Test A - Fuel Pressure Check

Inspection and Verification

1. Visually inspect for obvious signs of mechanical and electrical damage.
2. Visually inspect for and note auxiliary system connections not shown on the **Recommended Customer Connections Wiring Schematic**.

Normal Operation

Fuel pressure is customer supplied. The following test is a generalized procedure, which should be completed prior to all test.

Step	Action	Values	Yes	No
1	<ol style="list-style-type: none"> 1. Key Off, Engine Off 2. Check the fuel supply line and shut-off valve for proper operation. <p>Is the fuel supply line in the open position and the shut-off valve operating properly?</p>		GO to Step 2	Repair or replace any inoperative component and Retest
2	<ol style="list-style-type: none"> 1. Check the fuel system pressure. <p>Is the fuel supply pressure within the specified value?</p>	LPG: System Pressure CNG: 120-150 psi NG: 15"of water column	GO to Step 3	Correct fuel pressure and Retest
3	<ol style="list-style-type: none"> 1. Note: This test may require an assistant depending on the application. 2. Key Off. 3. Hold the fuel lockout device. 4. Key On. 5. Vacuum controlled fuel lockout units require the engine to be cranked. <p>Does the fuel lockout unit open?</p>		GO to Step 7	For electric lockout units GO to Step 4 For Vacuum controlled units GO to Step 6
4	<ol style="list-style-type: none"> 1. Disconnect the fuel lockout unit connector. 2. KOEO 3. Check for battery voltage. <p>Is battery voltage present?</p>		GO to Step 5	REPAIR the circuit(s) in question. TEST the system for normal operation.
5	<ol style="list-style-type: none"> 1. Key Off 2. Check the other side of the fuel lockout connector pin for continuity to a known good ground. <p>Is the resistance less than 5 ohms?</p>		Check for fuel line blockage Refer to the Fuel Systems Manufacturing Information and Test	Is the resistance less than 5 Ohms?
6	<ol style="list-style-type: none"> 1. Key Off 2. Inspect all vacuum hoses for damage. 3. Disconnect the vacuum hose to the fuel lockout unit. 4. Using a manual vacuum tester, connect to the lockout unit. 5. While holding the lockout device apply vacuum to the fuel lockout unit. <p>Does the lockout device hold vacuum and is fuel present?</p>		Go to Step 7	Refer to the Fuel Systems Manufacturing Information and Test
7	<ol style="list-style-type: none"> 1. Inspect the throttle plate. 2. Verify that the throttle plate is moving during crank. <p>Is the throttle plate moving?</p>		Return to Symptom Chart	Refer to the Fuel Systems Manufacturing Information and Test