

# GAS UNITS KITS & ACCESSORIES

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## GAS CHANGEOVER KIT

### INSTALLATION INSTRUCTIONS FOR REGULATED LP/PROPANE GAS TO NATURAL CHANGEOVER KIT (73W81) USED WITH ML180, EL180, ML193, ML195, EL195 & 80AF1, 92AF1, 95AF1 SERIES UNITS

#### **⚠ WARNING**

This conversion kit is to be installed by a licensed professional service technician (or equivalent) or other qualified agency in accordance with the manufacturer's instructions, all codes and requirements of the authority having jurisdiction in the USA, and the requirements of the CSA-B149 installation codes in Canada. If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or loss of life. The qualified agency performing this work assumes responsibility for this conversion.

#### Shipping and Packing List

##### Package 1 of 1 contains:

- 12 -Main burner orifices (.063)
- 1-Gas valve regulator spring
- 1-Gas converter sticker
- 1-Nameplate conversion sticker

#### Application

Use LP Propane to natural gas conversion kit 73W81 to convert ML180, EL180, ML193, ML195, EL195 & 80AF1, 92AF1, 95AF1 units from LP/Propane to natural gas.

Units installed in applications of 4501 ft and above may require a pressure switch change, which is ordered separately. See unit installation instructions.

#### Installation

#### **⚠ CAUTION**

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

- 1 - Set the thermostat to the lowest setting. Shut off the gas supply to the furnace, then turn off the electrical power at the unit disconnect switch.

- 2 - Remove the access panel. Move the automatic gas valve switch to **OFF**. See figure 7.
- 3 - Disconnect the gas supply from the gas valve. Disconnect the wires at the gas valve.
- 4 - Remove the four manifold securing screws. Remove the manifold/gas valve assembly. Replace the main burner orifices with the provided orifices. Torque to approximately 35 in-lbs. See figure 1 or 2.
- 5 - ML193/ML195/EL195 and 92AF1/95AF1 Units - Remove the pressure switch from the inlet pressure port on gas valve. Remove the fitting supplied with the switch and re-install in the open inlet pressure port on the gas valve. See figure 3. Wire as shown in figure 4.
- 6 - Replace the gas valve regulator spring. See figure 5.

#### **⚠ IMPORTANT**

**DO NOT use pipe dope or any pipe sealant on gas orifice threads.**

#### MANIFOLD/GAS VALVE ASSEMBLY (80% Furnace)

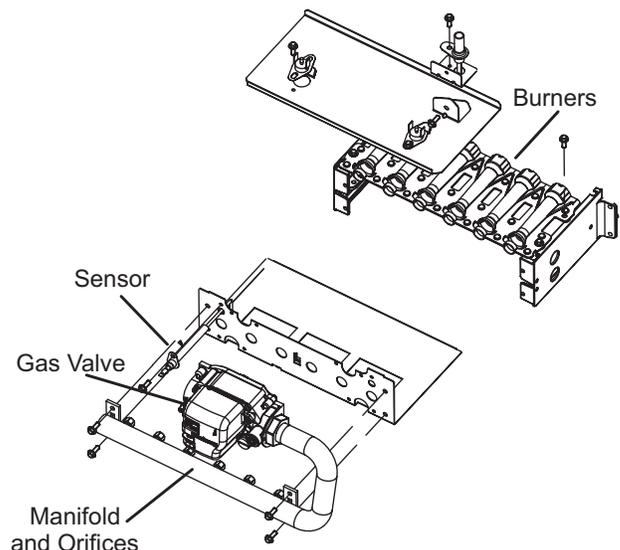
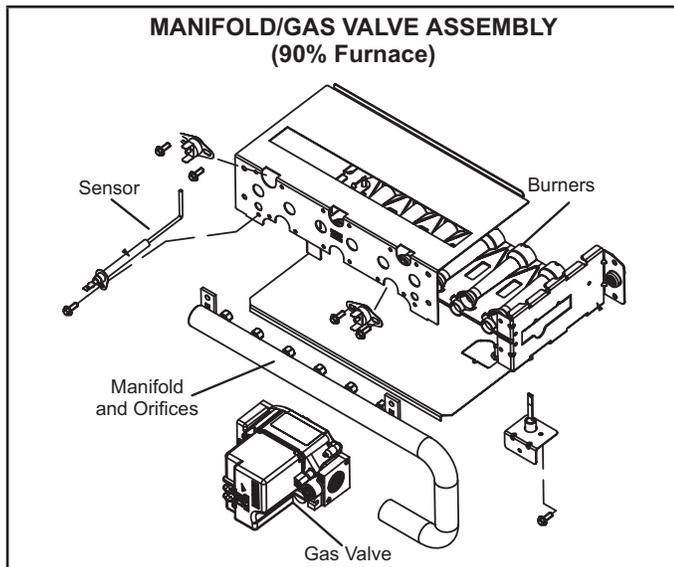
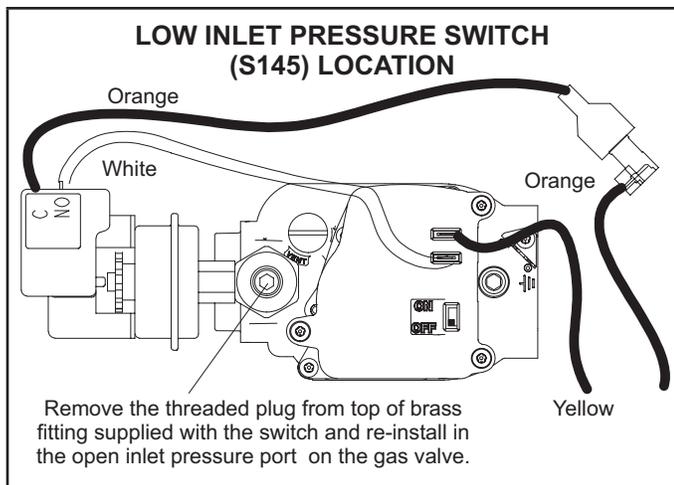


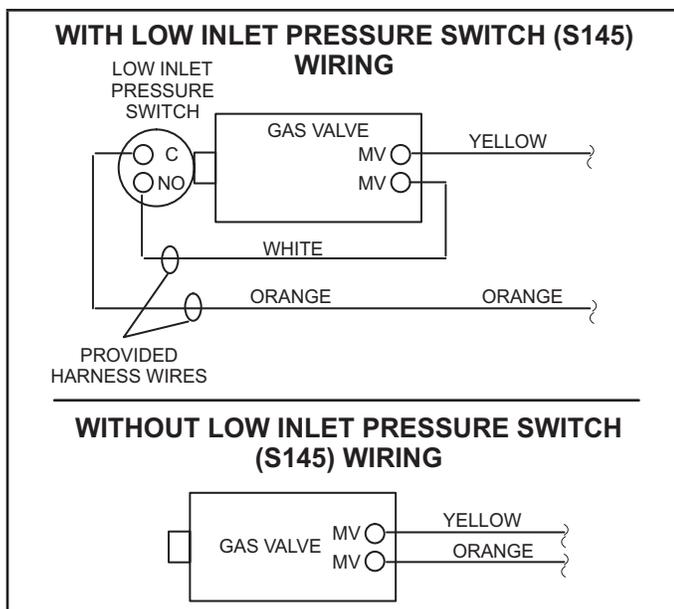
FIGURE 1



**FIGURE 2**



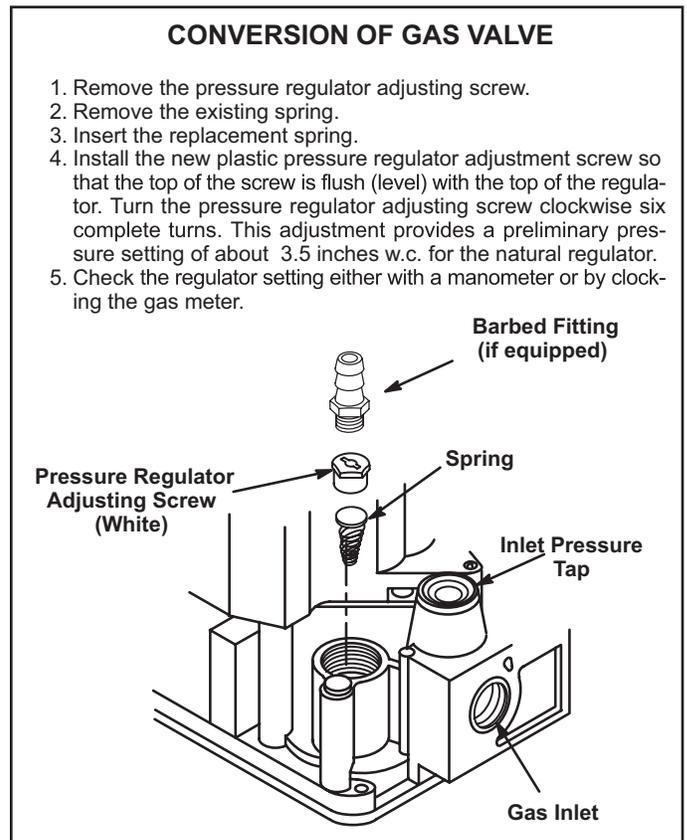
**FIGURE 3**



**FIGURE 4**

- 7 - Reinstall the manifold/valve assembly. Re-connect wires to the gas valve as shown in figure 4.
- 8 - Re-connect the gas supply line to the gas valve and turn on gas supply to unit.
- 9 - On the nameplate conversion sticker, mark the appropriate box that corresponds to the unit model number. Affix the sticker next to unit nameplate.
- 10 - Complete the information required on the converter sticker: date, name, and address. Affix sticker to the exterior of the unit in a visible area.
- 11 - Follow the steps given in the start-up and adjustment section.

**NOTE** - When converting an ML180(X), EL180(X) and 80AF1(X) NOx unit from LP/Propane back to use with natural gas, the original NOx inserts must be reinstalled. See figure 6. Secure the original inserts if available, using the original screws that were re-installed in the vestibule panel. If the original inserts are not available, order replacement kit (70W15).



**FIGURE 5**

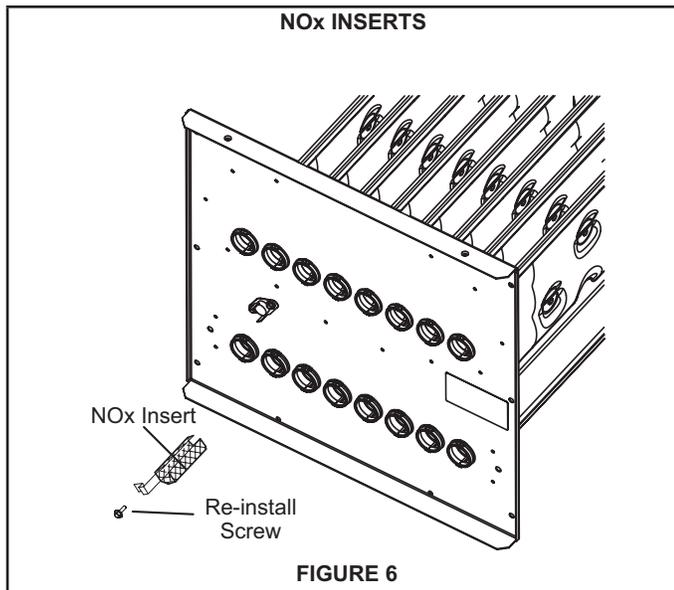


FIGURE 6

### ⚠ IMPORTANT

Carefully check all piping connections at the valve for gas leaks. **DO NOT** use matches, candles, open flames or other means of ignition to check for gas leaks. Use a soap solution or other preferred means.

### ⚠ CAUTION

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

### Start-Up & Adjustment

#### BEFORE PLACING THE UNIT INTO OPERATION -

Smell all around the appliance area for gas.

Use only your hand to move the gas control switch. Never use tools. If the switch will not move by hand, do not try to repair it. Force or attempted repair may result in a fire or explosion.

#### A - Placing the Unit into Operation

### ⚠ IMPORTANT

Follow the lighting instructions provided on the unit. If lighting instructions are not available, refer to the following section.

Units are equipped with an automatic ignition system. Do not attempt to manually light burners on these furnaces. Each time the thermostat calls for heat, the burners will automatically light. The ignitor does not get hot when there is no call for heat on units with an automatic ignition system.

- 1 - **STOP!** Read the safety information at the beginning of this section.
- 2 - Set the thermostat to its lowest setting.
- 3 - Turn off all electrical power to the furnace.
- 4 - Do not try to light the burners by hand.
- 5 - Remove the unit access panel.
- 6 - Move the switch on the gas valve to **OFF**. Do not force the switch. See figure 7.
- 7 - Wait five (5) minutes for any gas to clear out. If you then smell gas, **STOP!** Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions. If you do not smell gas, go to the next step.

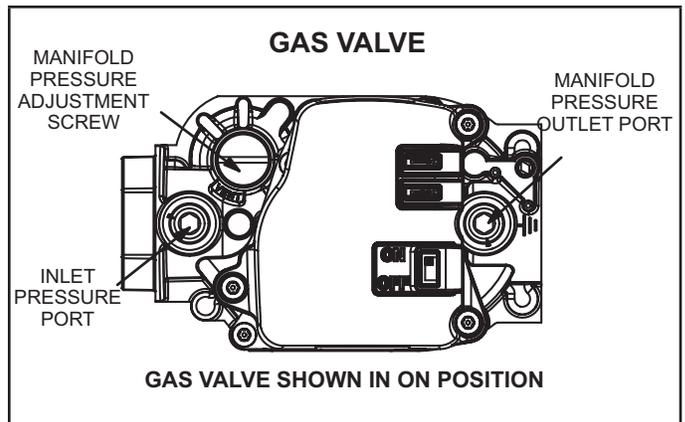


FIGURE 7

- 8 - Move the switch on the gas valve to ON.
- 9 - Replace the unit access panel.
- 10 - Turn on all electrical power to the unit.
- 11 - Set the thermostat to desired setting.
- 12 - If the furnace will not operate, see section D- "Turning Gas Off to the Unit" and call your service technician or gas supplier.

### Gas Pressure Measurement

**NOTE** - To obtain accurate reading, shut off all other gas appliances connected to meter.

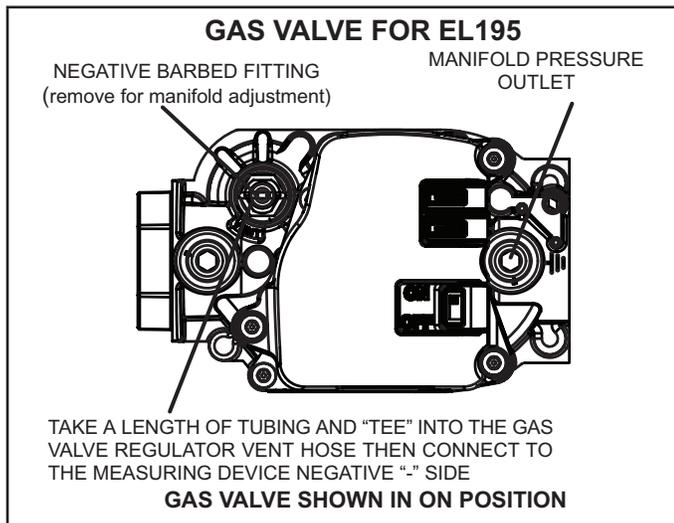
#### A - Supply Pressure Measurement

A threaded plug on the inlet side of the gas valve provides access to the supply pressure tap. Remove the threaded plug, install a field-provided barbed fitting and connect a manometer to measure supply pressure. See table 2.B - **Manifold Pressure Measurement EL195**

When testing manifold gas pressure, use the 1/8" N.P.T. plugged tap (manifold pressure outlet) located on the gas valve to facilitate test measuring device. See figure 8.

- 1 - Remove the threaded manifold pressure outlet plug from the gas valve and install the barbed fitting.

- 2 - Take a length of square tubing and connect one end to the barbed fitting and the other to the positive "+" side of the measuring device.
- 3 - Take another length of tubing and "tee" into the gas valve regulator vent hose. Connect to the measuring device negative "-" side.
- 4 - Start unit and allow 5 minutes for unit to reach steady state.
- 5 - After allowing unit to stabilize for 5 minutes, record manifold pressure and compare to value given in table 2.
- 6 - If necessary make adjustment. Turn off unit and remove the tubing from the negative (-) barbed fitting on the gas valve.
- 7 - Remove the negative barbed fitting as shown in figure 8 and using a screw driver make adjustment to increase or decrease manifold pressure.
- 8 - Repeat steps 1 through 7 until manifold pressure is correct.



**FIGURE 8**

### C - Manifold Pressure Measurement

**ML180, EL180, ML193, ML195, 80AF1, 92AF1, 95AF1**

**NOTE** - Pressure test adapter kit (10L34) is available from Lennox to facilitate manifold pressure measurement.

- 1 - Connect test gauge to manifold pressure tap (figure 7) on gas valve.
- 2 - Ignite unit and let run for 5 minutes to allow for steady state conditions.
- 3 - After allowing unit to stabilize for 5 minutes, record manifold pressure and compare to value given in table 2.
- 4 - If necessary, make adjustments. Figure 7 shows location of manifold adjustment screw.

### D - Gas Flow (Approximate)

Furnace should operate at least 5 minutes before checking gas flow. Determine time in seconds for two revolutions of gas through the meter. (Two revolutions assures a more accurate time.) Divide by two and compare to time in table 1 below. If manifold pressure matches table 2 and rate is incorrect, check gas orifices for proper size and restriction. Remove temporary gas meter if installed.

**TABLE 1**  
GAS METER CLOCKING CHART

Unit	Seconds for One Revolution			
	Natural		LP/Propane	
	1 cu ft Dial	2 cu ft Dial	1 cu ft Dial	2 cu ft Dial
-045	80	160	200	400
-070	55	110	136	272
-090	41	82	102	204
-110	33	66	82	164
-135	27	54	68	136
Natural-1000 btu/cu ft    LP-2500 btu/cu ft				

**TABLE 2**

Supply Line and Manifold Pressure (inches w.c.)

Unit	Manifold Pressure		Supply Line	
	0-4500 ft.	4501- 7500 ft.	Min	Max
All ML193/ EL195 92AF1/95AF1 Models	3.5	3.5	4.5	10.5
ALL ML180, EL180, 80AF1 Models	3.5	3.5	4.5	13.0

### D - Proper Combustion

Furnace should operate minimum 15 minutes with correct manifold pressure and gas flow rate before checking combustion. Take combustion sample beyond the flue outlet and compare to the table 3 below.

**TABLE 3**

Unit	CO <sub>2</sub> % For Nat
All ML180UH, EL180UH, 80AF1UH	7.2 - 7.8
All ML180DF, EL180DF, 80AF1DF	6.8 - 7.4
All ML193, EL195, 92AF1/95AF1	7.5 - 9.0
The carbon monoxide reading should not exceed 50 ppm.	