

# GAS UNITS KITS & ACCESSORIES

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Supersedes 01/2019

## GAS CHANGEOVER KIT

**INSTALLATION INSTRUCTIONS FOR NATURAL TO LP/PROPANE GAS CHANGEOVER KIT (77W07) FOR EL280 AND SL280 FURNACES AND REGULATED LP/PROPANE TO NATURAL CHANGEOVER KIT (77W09) FOR EL280, SL280, EL296, 95AF2 AND ML296 FURNACES WITH WHITE RODGERS GAS VALVES**

### **⚠ 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 the following:

- 2 - LP/Propane regulator springs (77W07)
- 2 - Natural regulator springs (77W09)
- 12 - Main burner orifices (Natural 0.063 77W09)  
or (LP 0.039 77W07)
- 1 - Gas converter sticker
- 1 - Nameplate conversion sticker

### Application

Use natural to LP/Propane gas conversion kit **77W07** to convert EL280 and SL280 series units from natural gas to regulated LP/Propane.

Use LP/Propane to natural gas conversion kit **77W09** to convert EL280, SL280, EL296, 95AF2 and ML296 series units from regulated LP/Propane to natural gas.

### **⚠ IMPORTANT**

DO NOT use gas conversion kit 77W07 to convert natural to LP gas for the EL296, 95AF2 or ML296 models. Gas conversion kit 77W07 is for the EL280 and SL280 models only.

### Installation

- 1 - Set thermostat to lowest Wsetting. The gas supply must be shut off prior to disconnecting the electrical power and proceeding with the conversion.

### **⚠ CAUTION**

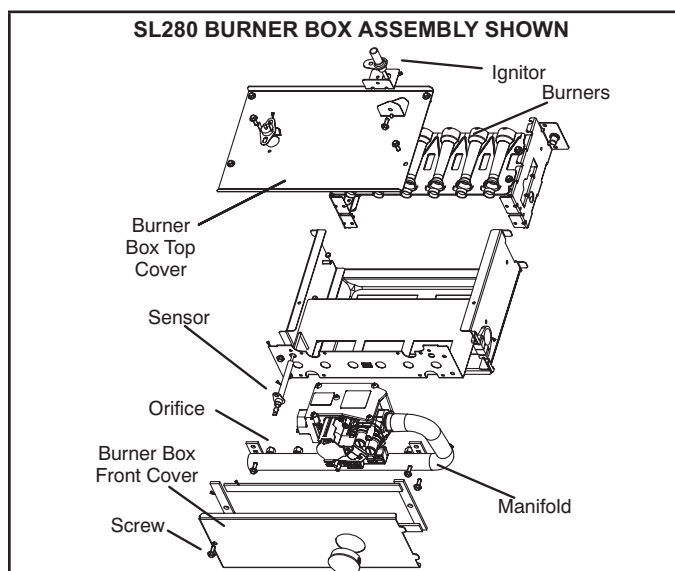
As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

- 2 - Turn automatic gas valve knob to **OFF** position.
- 3 - Disconnect the gas supply from the gas valve. Disconnect the wiring harness at the gas valve.
- 4 - Remove the screw that secures the burner box front cover and remove front cover. See figure 1.
- 5 - 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.

**NOTE** - LP/Propane orifices will be labeled (LP .039).

### **⚠ IMPORTANT**

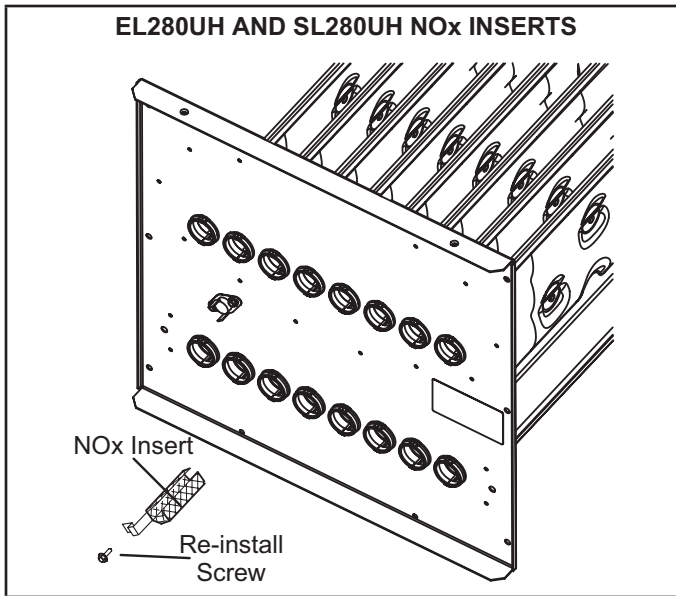
DO NOT use pipe dope or any pipe sealant on gas orifice threads.



6 - **The following steps apply to EL280UH(X) and SL280UH(X) NOX units being converted from natural to LP/Propane.**

- a - Remove the burner assembly from the vestibule panel.
- b - Remove the screw which secures each of the NOx inserts to the clamshell. Remove the NOx insert and reinstall the screw.
- c - Re-install the burner assembly in the vestibule panel.

**NOTE** - When converting an EL280UH(X) and SL280UH(X) NOx unit from LP/Propane back to use with natural gas, the original NOx inserts must be reinstalled. 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 2**

- 7 - Reinstall the manifold/valve assembly and the burner box cover. Re-connect wiring harness to the gas valve.

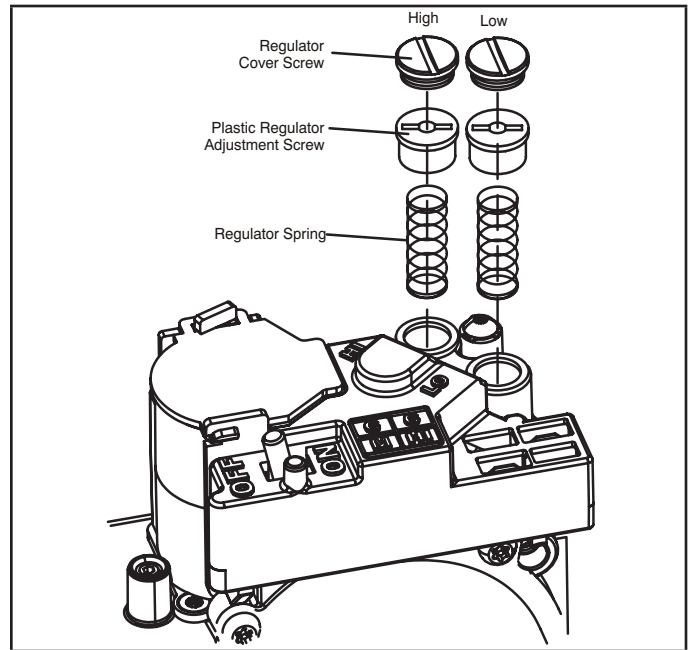
**Natural gas to LP/Propane EL280 and SL280 models only**

- a - Remove both high fire and low fire springs from the gas valve. See figure 3.
- b - Replace both high fire and low fire springs with the provided LP springs color-coded white.
- c - Install the high fire adjustment screw and adjust approximately 12 turns.
- d - Install the low fire adjustment screw and adjust approximately 8 turns.
- e - Install both regulator screw covers.

**LP/Propane to Natural EL280, SL280, ML296, EL296 and 95AF2 Models**

- a - Remove both high fire and low fire springs from the gas valve. See figure 3.
- b - Replace both high fire and low fire springs with the provided natural spring color-coded silver/plain.

- c - Install the high fire adjustment screw and adjust approximately 14 turns.
- d - Install the low fire adjustment screw and adjust approximately 10 turns.
- e - Install both regulator screw covers.



**FIGURE 3**

- 8 - Re-connect the gas supply line to the gas valve and turn on gas supply to unit.

**⚠ 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. Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed.

- 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.

**Start-Up & Adjustment**

**BEFORE PLACING THE UNIT INTO OPERATION-** Smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.

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 a two-stage integrated ignition system. The integrated ignition control automatically lights the burners each time the thermostat calls for heat.

- 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 4.

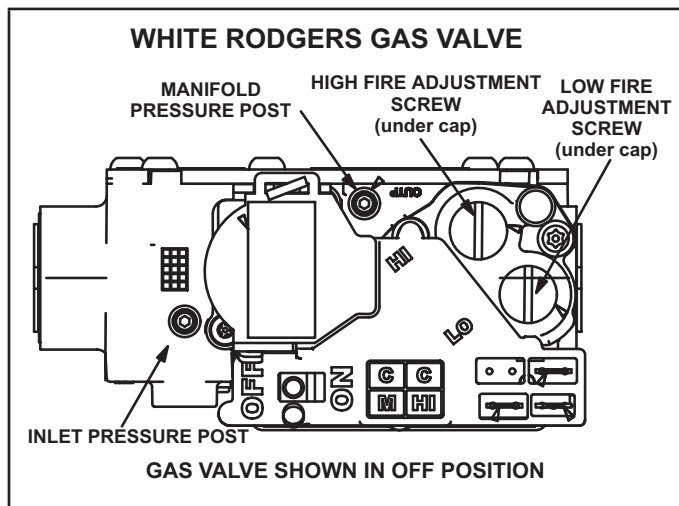


FIGURE 4

- 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.
- 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 E- "Turning Gas Off to the Unit" and call the gas supplier.

## Gas Pressure Measurement

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

### A - Supply Pressure Measurement

An inlet pressure post located on the gas valve provides access to the supply pressure. See figure 4. Back out the 3/32 hex screw one turn, connect a piece of 5/16 tubing and connect to a manometer to measure supply pressure. Check unit on high fire. On multiple units installations, check unit separately and with other units operating. See table 1 for supply line pressure. Following supply pressure check, turn off unit, remove manometer and tighten pressure post hex screw.

### B - Measuring & Adjusting the Manifold Pressure EL280 and SL280 Models

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

A manifold pressure post located on the gas valve provides access to the manifold pressure. See figure 4. Back out the 3/32 hex screw one turn, connect a piece of 5/16 tubing and connect to a manometer to measure manifold pressure.

- 1 - Connect test gauge to manifold pressure post (figure 4) on gas valve.
- 2 - Ignite unit on low fire 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 1.
- 4 - If necessary, make adjustments. Figure 4 shows location of high fire and low fire adjustment screws.
- 5 - Repeat steps 2, 3 and 4 on high fire. See values in table 1.

### C - Measuring & Adjusting the Manifold Pressure ML296, EL296 & 95AF2 Models

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

A manifold pressure post located on the gas valve provides access to the manifold pressure. See figure 4.

Back out the 3/32 hex screw one turn, connect a piece of 5/16 tubing and connect to a manometer to measure manifold pressure.

To correctly measure manifold pressure, the differential pressure between the positive gas manifold and the negative burner box must be considered.

- 1 - Connect the test gauge positive side "+" to manifold pressure tap on gas valve as noted above.
- 2 - Tee into the gas valve regulator vent hose and connect to test gauge negative "-".
- 3 - Ignite unit on low fire and let run for 5 minutes to allow for steady state conditions.

- 4 - After allowing unit to stabilize for 5 minutes, record manifold pressure and compare to value given in table 1.
- 5 - If necessary, make adjustments. Figure 4 shows location of high fire and low fire adjustment screws.
- 6 - Repeat steps 3, 4 and 5 on high fire. See values in table 1.

**TABLE 1**  
**Manifold and Gas Line Pressures**

Gas	Manifold Pressure in.wg.		Gas Line Pressure in.wg.	
	low fire	high fire	minimum	maximum
Natural	1.7	3.5	4.5	10.0
LP/Propane	4.5	10.0	11.0	13.0

**C - 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 2 below. If manifold pressure matches table 1 and rate is incorrect, check gas orifices for proper size and restriction. Remove temporary gas meter if installed.

**TABLE 2**  
**GAS METER CLOCKING CHART**

Unit Capacity	Seconds for One Revolution			
	Natural		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    Propane - 2500 btu/cu ft				

**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. See tables 3, 4 and 5.

**NOTE - Shut unit off and remove manometer as soon as supply line pressure, manifold pressure and combustion sample have been obtained. Take care to replace pressure tap plug.**

**TABLE 3**  
**EL280/SL280 Natural and LP/Propane**

All EL280 SL280 Models	Firing Rate	CO <sub>2</sub> % For Nat	CO <sub>2</sub> % For L.P.
Upflow Horizontal	High Fire	6.8 - 7.4	7.5 - 9.0
	Low Fire	4.2 - 5.7	5.0 - 6.0
Downflow	High Fire	6.0 - 7.4	6.9 - 8.4
	Low Fire	4.8 - 6.0	5.7 - 7.0
The carbon monoxide reading should not exceed 100 ppm.			

**TABLE 4**  
**ML296UHV, EL296UHV & 95AF2UHV Natural**

Capacity	CO <sub>2</sub> % For Nat	
	Low Fire	High Fire
045	5.4 - 6.4	7.5 - 8.5
070	5.3 - 6.3	7.4 - 8.4
090	5.8 - 6.8	7.6 - 8.6
110	6.1 - 7.1	8.0 - 9.0
135	6.1 - 7.1	7.8 - 8.8
The carbon monoxide reading should not exceed 100 ppm.		

**TABLE 5**  
**ML296DFV, EL296DFV & 95AF2DFV Natural**

Capacity	CO <sub>2</sub> % For Nat	
	Low Fire	High Fire
045	5.6 - 6.6	7.8 - 8.8
070	5.5 - 6.5	7.3 - 8.3
090	5.9 - 6.9	7.8 - 8.8
110	6.3 - 7.3	8.2 - 9.2
The carbon monoxide reading should not exceed 100 ppm.		

**E - Turning Off Gas To the Unit**

- 1 - Set the thermostat to its lowest setting.
- 2 - Turn off all the electrical power to the unit.
- 3 - Remove the access panel.
- 4 - Move the switch on the gas valve to OFF. Do not force the switch.