

# GAS UNITS KITS & ACCESSORIES

507370-03

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Supersedes 507370-02

## GAS CHANGEOVER KIT

### INSTALLATION INSTRUCTIONS FOR NATURAL TO REGULATED LP/PROPANE GAS CHANGEOVER KIT (11K51) FOR EL280, SL280, EL296, ML296 & 95AF2 GAS FURNACES

#### **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:

- 2 - LP/Propane regulator springs (77W89)
- 12 -Main burner orifices (0.034)
- 1 - Gas converter sticker
- 1 - Nameplate conversion sticker
- 1 - Low gas inlet pressure switch (S145)
- 1 - Gas valve inlet fitting
- 1 - Wire harness

#### Application

Use natural to LP gas conversion kit 11K51 to convert EL280, SL280, ML296, EL296 and 95AF2 gas furnaces from natural gas to regulated LP/Propane.

#### **WARNING**

##### Danger of explosion.

There are circumstances in which odorant used with LP/propane gas can lose its scent. In case of a leak, LP/propane gas will settle close to the floor and may be difficult to smell. An LP/propane leak detector should be installed in all LP applications.

#### **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.

#### Installation

- 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 8. Disconnect the gas supply from the gas valve.
- 3 - 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 4 or 5.
- 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 4 or 5.

**NOTE** - LP/Propane orifices will be labeled (LP .034).

#### **IMPORTANT**

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

##### 6 - Gas Valve Conversion

- a - Remove both high fire and low fire springs from the gas valve. See figure 7.
- 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.

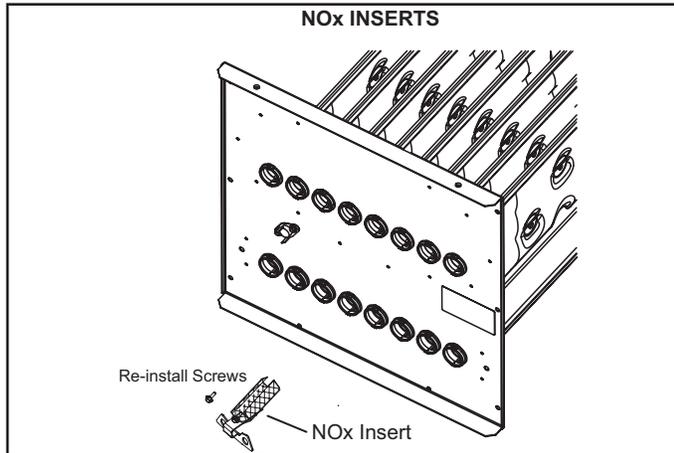
**NOTE** - Step 6 is for gas conversion only. Manifold pressure must be checked as shown on page 4 "Measuring and Adjusting Manifold Pressure".

- 7 - EL280(X) and SL280(X) NOX units being converted from natural to LP /Propane. See figure 1.
  - a - Remove the burner box assembly from the vestibule panel.
  - b - Remove the screws which secures each of the NOx inserts to the clamshell. Remove the NOx inserts and reinstall the screws.
  - c - Re-install the burner box assembly.
- 8 - Re-install the manifold/valve assembly.

- 9 - Thread provided fitting to gas valve inlet until hand tight. Using properly sized wrench, tighten fitting 2 to 3 full turns being careful to position the side port to allow clearance for the pressure switch and harness. See figure 2 or 3.

**NOTE** - Never use channel lock pliers or a pipe wrench on the brass fitting.

**NOTE** - Some installations may require the pressure switch and fitting assembly to be positioned differently than shown in figure 2 and 3.



**FIGURE 1**

- 10 - Thread the gas supply to the fitting until hand tight. A field provided coupling may be needed. See figure 2. Using properly sized wrench to support fitting, tighten supply line into fitting 2 to 3 full turns to achieve leak free joint.

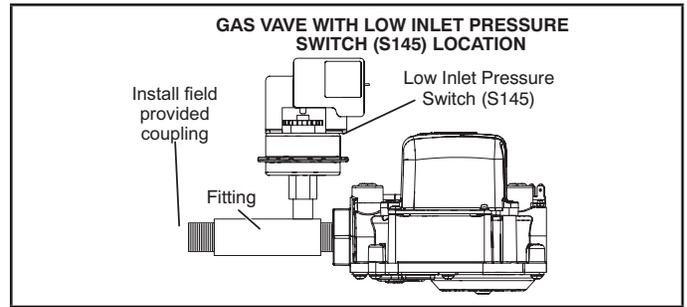
**NOTE** - Do not over tighten. (Maximum 3 full turns past hand tight for 1/2" NPT per ASME B1.20.1-2013)

- 11 - Thread pressure switch (S145) to fitting 2 to 3 turns past hand tight, then wire as shown in figure 6.  
 12 - Restore the electrical power to the unit.  
 13 - Inspect all sides of assembly. Turn on gas supply. **Immediately check the entire fitting surface and assembly joints for gas leaks.**

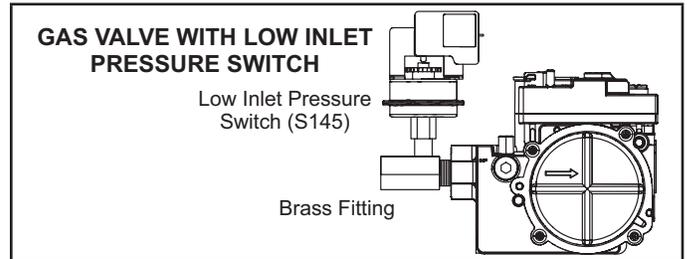
**⚠ IMPORTANT**  
 Carefully check all piping connections at the valve for gas leaks. **DO NOT** use matches, candles, open flames or other means of ignition to check for gas leaks. Use a soap solution or other preferred means.

- 14 - Affix nameplate conversion sticker next to unit nameplate.  
 15 - Complete the information required on the gas converter sticker: date, name, and address. Affix sticker to the exterior of the unit in a visible area.  
 16 - Follow the steps given in the start-up and adjustment section.

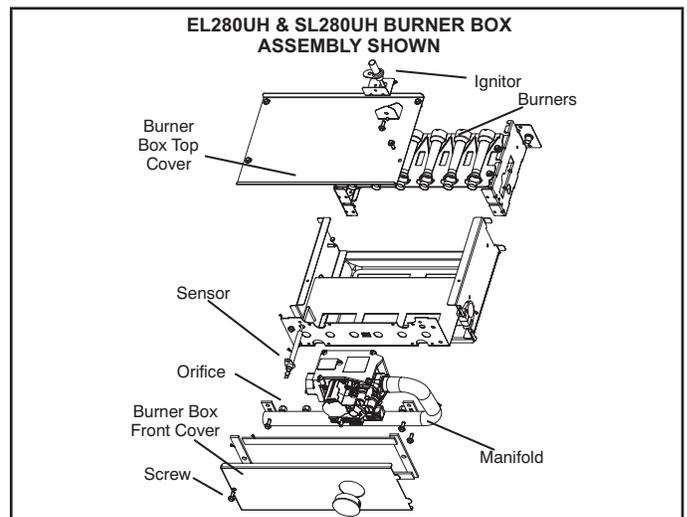
**⚠ CAUTION**  
 Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed



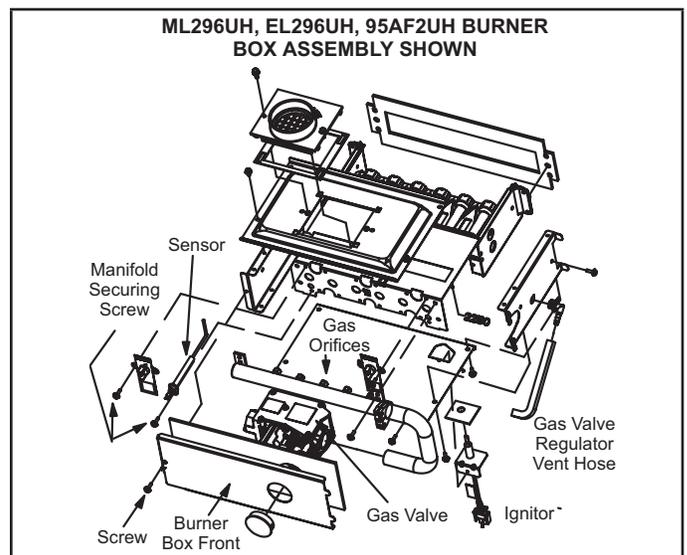
**FIGURE 2**



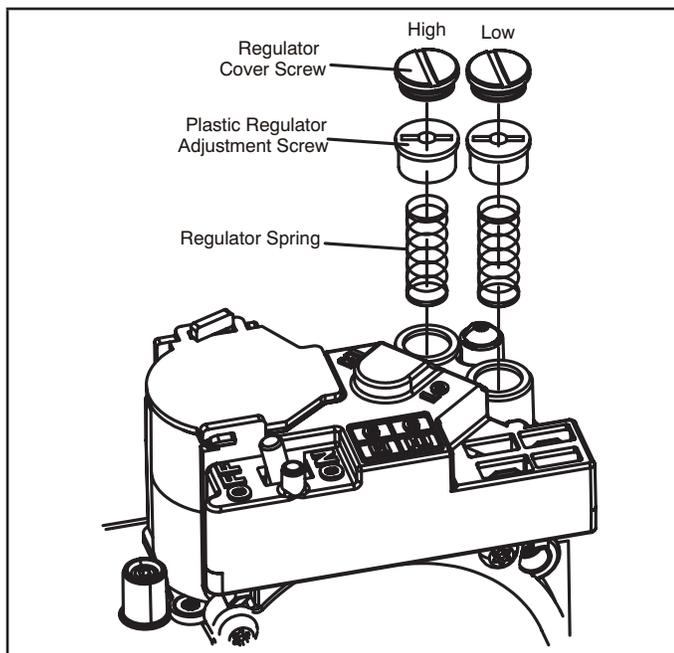
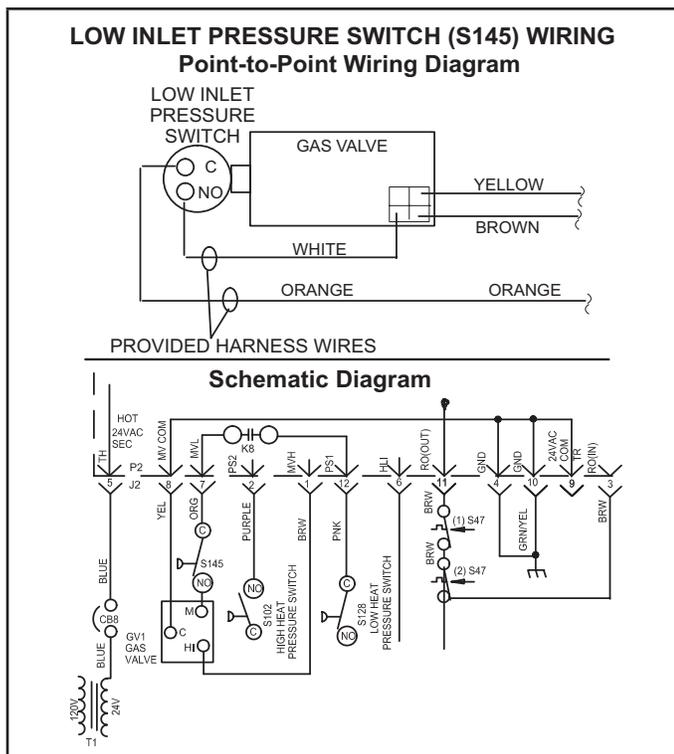
**FIGURE 3**



**FIGURE 4**



**FIGURE 5**



### 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 LP/Propane gas is heavier than air and will settle on the floor.

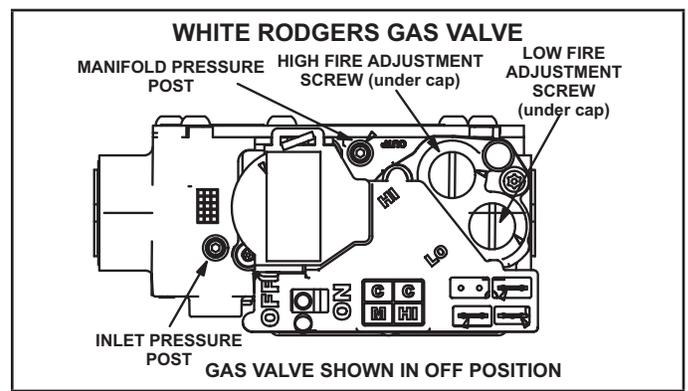
Use only your hand to move the gas control switch. Never use tools. If the switch will not move by hand, do not try to repair it. Force or attempted repair may result in a fire or explosion.

### A - Placing the Unit into Operation

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 8.



- 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 compartment 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

#### A - Supply Pressure Measurement

An inlet pressure post located on the gas valve provides access to the supply pressure. See figure 8. 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 the unit on high fire. On multiple unit installations, check the unit separately and with the other units operating. See table 1 for supply line pressure. Following the supply pressure check, turn off unit, remove manometer and tighten post hex screw.

## B - Measuring & Adjusting the Manifold Pressure

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

**All units** - A manifold pressure post located on the gas valve provides access to the manifold pressure. See figure 8. 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. **ML296/EL296/95AF2** - To correctly measure manifold pressure, the differential pressure between the positive gas manifold and the negative burner box must be considered. Furnace should operate at least 5 minutes before checking manifold pressure.

- 1 - Connect the test gauge positive side "+" to manifold pressure post on gas valve as noted above.
- 2 - **ML296/EL296/95AF2 only** - Tee into the gas valve regulator vent hose and connect to test gauge negative "-".
- 3 - **All units** - 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 low fire manifold pressure and compare to value given in table 1. If necessary, make adjustment. Figure 8 shows location of low fire adjustment screw.
- 5 - Repeat on high fire and compare to value given in table 1. If necessary, make adjustment. Figure 8 shows location of high fire adjustment screw.
- 6 - Shut unit off and remove manometer as soon as an accurate reading has been obtained. Take care to replace pressure tap plug.
- 7 - Start unit and perform leak check. Seal leaks if found.

**TABLE 1**

Manifold Pressure in.wg.		Gas Line Pressure in.wg.	
low fire	high fire	minimum	maximum
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. If manifold pressure matches table 1 and rate is incorrect, check gas orifices for proper size and restriction. Remove temporary gas meter if installed.

## 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 and 4 .

**NOTE** - Shut unit off and remove manometer as soon as supply line pressure, manifold pressure and combustion sample have been

**TABLE 2**

GAS METER CLOCKING CHART		
Unit Capacity	Seconds for One Revolution	
	LP/Propane	
	1 cu ft Dial	2 cu ft Dia/
-045	200	400
-070	136	272
-090	102	204
-110	82	164
-135	68	136
2500 btu/cu ft		

**TABLE 3**

**ML296, EL296 & 95AF2**

Upflow/Horizontal Unit Capacity	CO <sub>2</sub> % For L.P.	
	Low Fire	High Fire
045	6.4 - 7.4	8.8 - 9.8
070	6.3 - 7.3	8.7 - 9.7
090	6.8 - 7.8	8.9 - 9.9
110	7.1 - 8.1	9.3 - 10.3
135	7.1 - 8.2	9.1 - 10.1
Downflow Unit Capacity	CO <sub>2</sub> % For L.P.	
	Low Fire	High Fire
045	6.6 - 7.6	9.1 - 10.1
070	6.5 - 7.5	8.6 - 9.6
090	6.9 - 7.9	9.1 - 10.1
110	7.3 - 8.3	9.5 - 10.5
The carbon monoxide reading should not exceed 100 ppm.		

**TABLE 4**

**EL280/SL280**

All Models	Firing Rate	CO <sub>2</sub> % Nat	CO <sub>2</sub> % 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.			

## 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 unit access panel.
- 4 - Move the switch on the gas valve to **OFF**.