

INSTALLATION INSTRUCTIONS  
NATURAL To L.P. GAS CONVERSION KIT  
For 30,000-75,000 BTU/HR  
Tubular Unit Heaters



**Universal Conversion Kit No. 261R08263**

**NOTICE:** The gas fired unit heater was factory equipped with either a Direct Spark or a Hot Surface Ignition System.

**▲ WARNING** ~~POSITIVELY IDENTIFY THE GAS VALVE TO BE CONVERTED.~~

Conversion kit contains components to convert two, different Natural Gas ignition systems, either:

1. **Direct Spark** ignition system - units equipped with a White-Rodgers valve.

**or**

2. **Hot Surface** ignition system - units equipped with a Honeywell valve.

Use only the components and specific installation instructions to convert unit to Propane (LP) gas. Not all parts will be used.

**▲ WARNING** This conversion kit shall be installed by a qualified service agency in accordance with the manufacturer's instructions and all applicable codes and requirements of the authority having jurisdiction. If the information in these instructions is not followed exactly, a fire, explosion or production of carbon monoxide may result causing property damage, personal injury or loss of life. The qualified service agency performing this work assumes responsibility for the proper conversion of this appliance with this kit.

**AVERTISSEMENT** Cette trousse de conversion ne doit être installée que par le représentant d'un organisme qualifié et conformément aux instructions du fabricant et à tous les codes et exigences pertinentes de l'autorité compétente. Quiconque ne respecte pas à la lettre les instructions du présent guide risque de provoquer un incendie, une explosion ou des fuites de monoxyde de carbone entraînant des dommages matériels, des lésions corporelles ou la perte de vies humaines. L'organisme qualifié qui effectue les travaux est responsable de la conversion correcte de cet appareil à l'aide de cette trousse.

# Universal Conversion Kit

## Converts Direct Spark and Hot Surface Ignition Systems

### 1. Direct Spark Ignition

A White-Rodgers valve is used on Direct Spark Ignition units.

Use only "Parts Required", White-Rodgers instructions and pages 3 thru 5 to convert unit heater to LP gas.

#### Parts Required

Main Burner Orifices (5)\*  
512-08532-002

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White-Rodgers Gas Valve Conversion Kit  
W-R# 92-0659  
J29-02775-001

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Conversion Plate  
J17-02755

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"Notice of Conversion" Label  
J17-02754

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OR

### 2. Hot Surface Ignition

A Honeywell valve is used on Hot Surface Ignition units.

Use only "Parts Required", Honeywell instructions and pages 6 thru 8 to convert unit heater to LP gas.

#### Parts Required

Main Burner Orifices (5)\*  
512-08532-002

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Pilot Burner Orifice  
BBR 11  
J36-00785-014

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Honeywell Gas Valve Conversion Kit  
HW# 393691  
J29-04864-001

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Conversion Plate  
J17-02755

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"Notice of Conversion" Label  
J17-02754

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Direct Spark Units	Common To Both Hot Surface And Direct Spark Units			Hot Surface Units
<b>White-Rodgers Convertible Gas Valve</b>	<b>Input BTU/HR</b>	<b>Orifice Size L.P.</b>	<b>Orifice Quantity</b>	<b>Honywell Convertible Gas Valve</b>
36G22-221	30,000	#57	2	SV9500, SV9501, SV9540
36G22-221	45,000	#57	3	SV9500, SV9501, SV9540
36G22-221	60,000	#57	4	SV9500, SV9501, SV9540
36G22-221	75,000	#57	5	SV9500, SV9501, SV9540

\* This conversion kit includes (5) main burner orifices: see the **quantity of orifices** required per input/heater size shown in the table above. Use only the quantity required.

**READ ALL INSTRUCTIONS COMPLETELY BEFORE BEGINNING ANY WORK!**

1. All work must be performed by a fully qualified, experienced, and trained service technician. It is the responsibility of the installer to follow all instructions. Failure to follow these instructions could result in serious injury or property damage.
2. The qualified agency performing the work assumes responsibility for the conversion.

3. **CAUTION** The gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion. Disconnect all power and gas supplies before installing or servicing the heater. If the power disconnect is out of sight, lock it in the open position and tag it to prevent unexpected application of power. Failure to do so could result in fatal electric shock or severe personal injury.

**\*\*MISE EN GARDE\*\*** Avant d'effectuer la conversion, couper d'abord l'alimentation en gaz, ensuite, couper l'alimentation électrique.

4. Wear safety glasses.
5. Wear gloves when handling the burners.
6. Be sure of ladder placement. Do not allow people to stand below or around the area where the work is being performed.
7. Do not lean ladders or equipment against the heater at any time during the conversion.

**REPLACING THE ORIFICES (See Figures 1-3)**

1. Remove the screws holding the rear and the bottom burner access panels and remove the panels.
2. Remove retaining strip from above main burners.
3. Lift burners up and pull away from manifold to remove.
4. Use the proper size wrench or socket to remove the burner orifices. Remove all the natural gas orifices and keep them separated from the L.P. orifices at all times.

5. Install L.P. gas orifices in manifold, ensuring that the number stamped on the orifice matches the size listed on page one for the appliance being converted. The orifices must be installed finger tight first to avoid cross threading and the possibility of leaking. Tighten securely with wrench or socket. Do not over tighten.

**INSTALLING THE BURNERS**

1. Insert inlet end of burner onto orifice.
2. Lower burner onto burner bracket so that tabs on bracket fit into slots on burner.
3. Repeat with remaining burners.
4. Install retaining strip above burners.
5. Replace burner access panels.

**CONVERSION OF THE GAS VALVE**

1. Follow all instructions provided with the valve conversion kit. Be sure valve conversion kit is for the valve on the appliance. If the instructions are lost or not in the kit **STOP**. Call the Customer Service Department and the instructions will be faxed to you.

**OPERATION**

1. ~~A water-filled U-tube manometer must be used to measure gas pressures.~~ The gauge type is not reliable and may give false readings.
2. Gas inlet pressure must be between 11.0 and 14.0 inches water column (2.7-3.5 kPa). Turn off the gas supply to the heater, connect the manometer to the pressure tap on the inlet side of the gas valve, turn on the gas and observe the pressure with the heater not firing and then firing. If the pressure is not within the specified range under both conditions, contact the gas supplier.
3. The manifold pressure must be adjusted to 10.0 inches water column (2.5 kPa). This manifold pressure applied to #57 main burner orifices assures that the input rating is correct for altitudes up to 2000 feet (610 m). For altitudes above 2000 feet (610 m), see (4) on page 4. This is very critical as overfiring or underfiring can cause problems. Move the manual control on the gas valve to the "Off" position, connect the manometer to the pressure tap on the outlet side of the gas valve, turn the control on, fire the unit and adjust the pressure if necessary. To adjust the pressure, remove the cap from the pressure regulator on the gas valve, turn the regulator screw clockwise to increase pressure or counter clockwise to decrease pressure, then replace the cap.

4. For altitudes above 2000 feet (610 m), heater must be derated 4% for each **1000 feet (305 m)** above sea level. Adjust manifold pressure according to the L.P. Gas High Altitude Manifold Pressure Chart shown below.
5. After manometers have been removed and pressure tap plugs have been reinstalled, fire the heater and check all joints for leaks using a soap solution. **Never use an open flame to check for gas leaks.**
6. Allow the heater to operate for at least 5 minutes, then observe **main burner flames**. A **hard blue** flame extending 18 to 24 inches (457 to 610 mm) into the tube is normal. Slight yellow tipping is acceptable (see Figure 4). There is no air adjustment on inshot burners.
7. After the heater is operating properly, cycle the system using the thermostat to check out the normal operating sequence of the ignition system. The normal sequence is as follows:
  - Thermostat calls for heat, draft inducer fan starts.
  - After a purge period, main gas valve and ignitor are energized.
  - Main flame ignites.
  - Flame travels along burner carryover slots to ignite remaining burners.
  - Sensing circuit senses flame; turns ignitor off.

When thermostat is satisfied, the **gas valve** is de-energized, extinguishing all **main burner flames**.

Apply conversion plate and label to **heater jacket panel**. The conversion plate **must be installed** as closely as possible to the existing **heater rating plate**.

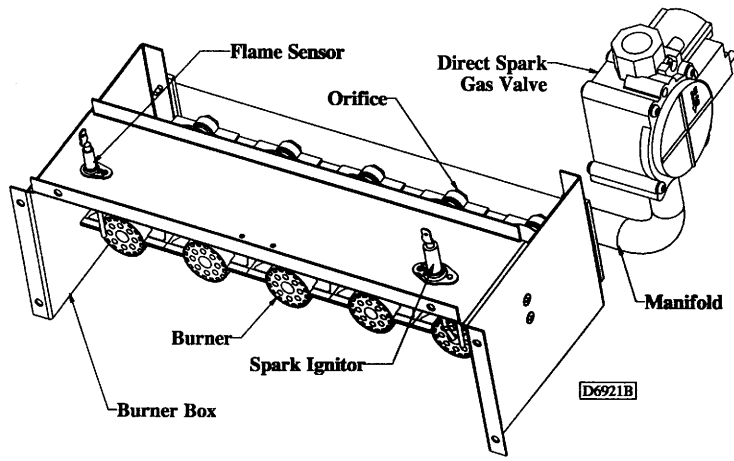
**▲ WARNING Gas Tightness Of The Safety Shut-Off Valves Must Be Checked On At Least An Annual Basis!**

To check gas tightness of the safety shut-off valves, turn off the manual valve upstream of the appliance combination control. Remove the 1/8 inch pipe plug on the inlet side of the combination control and connect a manometer to that tapping. Turn the manual valve on to apply pressure to the combination control. Note the pressure reading on the manometer, then turn the valve off. A loss of pressure indicates a leak. If a leak is detected, use a soap solution to check all threaded connections. If no leak is found, the combination control is faulty and must be replaced before putting appliance back in service.

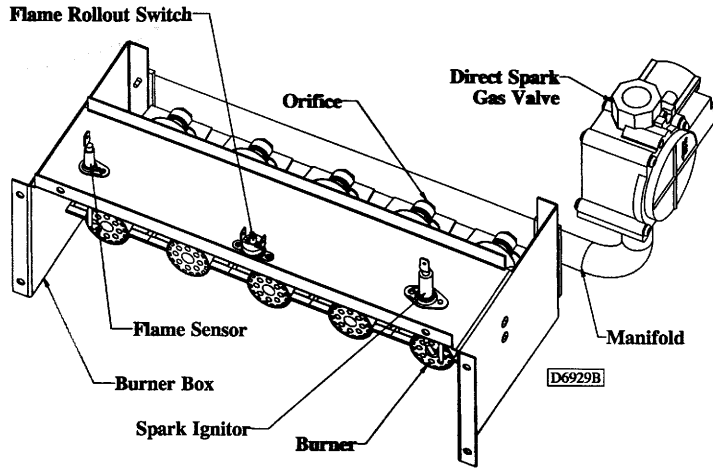
**L.P. Gas High Altitude Manifold Pressure Chart**

Elevation (Ft.)	0-1,999	2,000-2,999	3,000-3,999	4,000-4,999	5,000-5,999	6,000-6,999	7,000-7,999	8,000-8,999	9,000-9,999	10,000-10,999
Manifold (In. WC)	10.0	8.6	8.4	8.2	8.0	7.8	7.5	7.2	6.9	6.6
Pressure (kPA.)	2.49	2.14	2.09	2.04	1.99	1.94	1.87	1.79	1.72	1.64

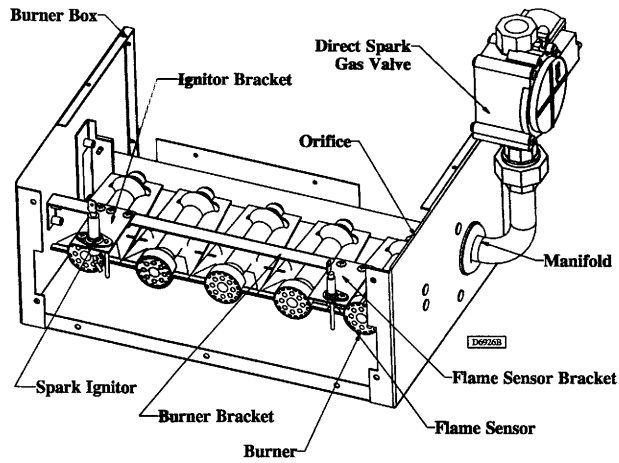
**Figure 1**  
Standard Tubular  
30/75 MBH Unit Heaters



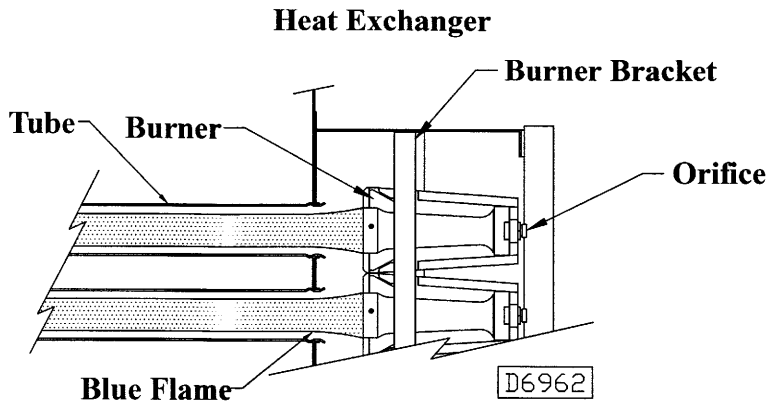
**Figure 2**  
Residential Tubular  
30/75 MBH Unit Heaters



**Figure 3**  
Separated  
Combustion Tubular  
30/75 Unit Heaters



**Figure 4**  
Heat Exchanger Details



**READ ALL INSTRUCTIONS COMPLETELY BEFORE BEGINNING ANY WORK!**

1. All work must be performed by a fully qualified, experienced, and trained service technician. It is the responsibility of the installer to follow all instructions. Failure to follow these instructions could result in serious injury or property damage.
2. The qualified agency performing the work assumes responsibility for the conversion.
3. **▲ CAUTION** The gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion. Disconnect all power and gas supplies before installing or servicing the heater. If the power disconnect is out of sight, lock it in the open position and tag it to prevent unexpected application of power. Failure to do so could result in fatal electric shock or severe personal injury.  
  
**\*\*MISE EN GARDE\*\*** Avant d'effectuer la conversion, couper d'abord l'alimentation en gaz, ensuite, couper l'alimentation électrique.
4. Wear safety glasses.
5. Wear gloves when handling the burners.
6. Be sure of ladder placement. Do not allow people to stand below or around the area where the work is being performed.
7. Do not lean ladders or equipment against the heater at any time during the conversion.

**REPLACING THE ORIFICES (SEE FIGURE 5)**

1. Remove the screws holding the control compartment access panel and remove the panel.
2. Remove the four screws holding the manifold to the burner box and pull the manifold back slightly to disengage the orifices from the main burners.
3. Remove each burner by holding it against the tab on the burner bracket, then rotate the inlet end of the burner toward the fan side of the unit and slide the burner off the tabs.
4. Use the proper size wrench or socket to remove the burner orifices. Remove all the natural gas orifices and keep them separated from the L.P. orifices at all times.

5. Install L.P. gas orifices in manifold, ensuring that the number stamped on the orifice matches the size listed on page one for the appliance being converted. The orifices must be installed finger tight first to avoid cross threading and the possibility of leaking. Tighten securely with wrench or socket. Do not over tighten.
6. **DO NOT INSTALL** the burners at this time. Proceed to "Replacement of Pilot Orifice".

**REPLACEMENT OF PILOT ORIFICE (SEE FIGURE 6)**

1. Remove the pilot gas tubing from the pilot assembly.
2. Using a small screwdriver blade (<sup>5</sup>/<sub>32</sub>" ) or similar tool that will wedge into the orifice, insert the tool into the tubing fitting of the pilot assembly and remove the orifice.
3. Insert the L.P. gas orifice into the pilot assembly, making certain that it does not fall out before the pilot tubing is installed.
4. Install the pilot tubing finger tight first to avoid cross threading, then tighten with a wrench.
5. Install the main burners (see "INSTALLING THE BURNERS").

**INSTALLING THE BURNERS**

1. Fit first burner onto tabs on burner bracket.
2. Rotate burner to align it with heat exchanger tube.
3. Repeat with remaining burners.
4. Position manifold so that the orifices engage inlet end of each burner and fasten manifold in place.
5. Check the dimensional relationship between the pilot and the main burners (see Figure 7).

**▲ CAUTION** These dimensions must be maintained for safe operation of the appliance.

**CONVERSION OF THE GAS VALVE**

1. Follow all instructions provided with the valve conversion kit. Be sure valve conversion kit is for the valve on the appliance. If the instructions are lost or not in the kit **STOP**. Call the Customer Service Department and the instructions will be faxed to you.

## OPERATION

1. A water filled U-tube manometer must be used to measure gas pressures. The gauge type is not reliable and may give false readings.
2. Gas inlet pressure must be between 11.0 and 14.0 inches water column (2.7-3.5 kPa). Connect the manometer to the pressure tap on the inlet side of the gas valve, turn on the gas and observe the pressure with the heater not firing and then firing. If the pressure is not within the specified range under both conditions, contact the gas supplier.
3. The manifold pressure must be adjusted to 10.0 inches water column (2.5 kPa). This manifold pressure applied to #57 main burner orifices assures that the input rating is correct for altitudes up to 2,000 feet (610 m). For altitudes above 2,000 feet (610 m), see (4) below. This is very critical as overfiring or underfiring can cause problems. Move the manual control on the gas valve to the "Off" position, connect the manometer to the pressure tap on the outlet side of the gas valve, turn the control on, fire the unit and adjust the pressure if necessary. To adjust the pressure, remove the cap from the pressure regulator on the gas valve, turn the regulator screw clockwise to increase pressure or counter clockwise to decrease pressure, then replace the cap.
4. For altitudes above 2,000 feet (610 m), heater must be derated 4% for each 1,000 feet (305 m) above sea level. Adjust manifold pressure according to the L.P. Gas High Altitude Manifold Pressure Chart shown below.
5. After manometers have been removed and pressure tap plugs have been reinstalled, fire the heater and check all joints for leaks using a soap solution. **Never use an open flame to check for gas leaks.**
6. The pilot flame should be  $\frac{3}{4}$  to  $1\frac{1}{2}$  inch (19 to 38 mm) in length (see Figure 8). To adjust the pilot flame, remove the pilot adjustment cover screw adjacent to the pilot tubing nut on the gas valve. Turn the inner screw clockwise to decrease pilot flame or counterclockwise to increase pilot flame. Replace the cover screw.
7. Allow the heater to operate for at least five minutes, then observe main burner flames. A hard blue flame extending 12 to 16 inches (305 to 406 mm) into the tube is normal. Slight yellow tipping is acceptable (see Figure 9). There is no air adjustment on inshot burners.
8. After the heater is operating properly, cycle the system using the thermostat to check out the normal operating sequence of the ignition system. The normal sequence is as follows: Thermostat calls for heat, draft inducer fan starts. After a purge period, pilot section of gas valve opens and pilot glow bar is energized. Pilot flame ignites. Sensing circuit senses pilot flame, turns glow bar off, and allows main valve to open. Pilot ignites gas on nearest main burner. Flame travels along burner carryover slots to ignite remaining main burners. When thermostat is satisfied, both sections of the gas valve are de-energized, extinguishing all main burner and pilot flames.
9. Apply conversion plate and label to heater jacket panel. The conversion plate must be installed as closely as possible to the existing heater rating plate.

**▲ WARNING** Gas Tightness Of The Safety Shut-Off Valves Must Be Checked On At Least An Annual Basis!

To check gas tightness of the safety shut-off valves, turn off the manual valve upstream of the appliance combination control. Remove the 1/8 inch pipe plug on the inlet side of the combination control and connect a manometer to that tapping. Turn the manual valve on to apply pressure to the combination control. Note the pressure reading on the manometer, then turn the valve off. A loss of pressure indicates a leak. If a leak is detected, use a soap solution to check all threaded connections. If no leak is found, the combination control is faulty and must be replaced before putting appliance back in service.

**L.P. Gas High Altitude Manifold Pressure Chart**

Elevation (ft.)	0-1,999	2,000-2,999	3,000-3,999	4,000-4,999	5,000-5,999	6,000-6,999	7,000-7,999	8,000-8,999	9,000-9,999	10,000-10,999
Manifold (In. WC)	10.0	10.0	10.0	9.9	9.6	9.3	9.0	8.7	8.3	8.0
Pressure (kPa.)	2.49	2.49	2.49	2.46	2.39	2.32	2.24	2.17	2.07	1.99

(1 Foot = 0.305 m)

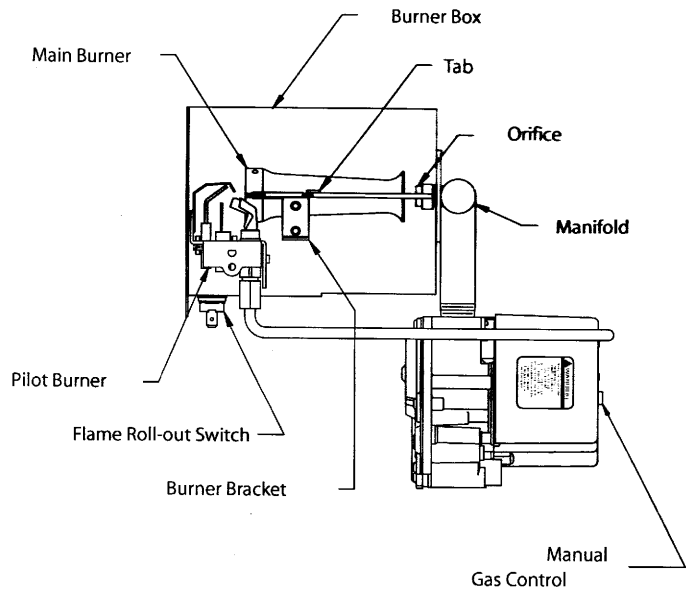
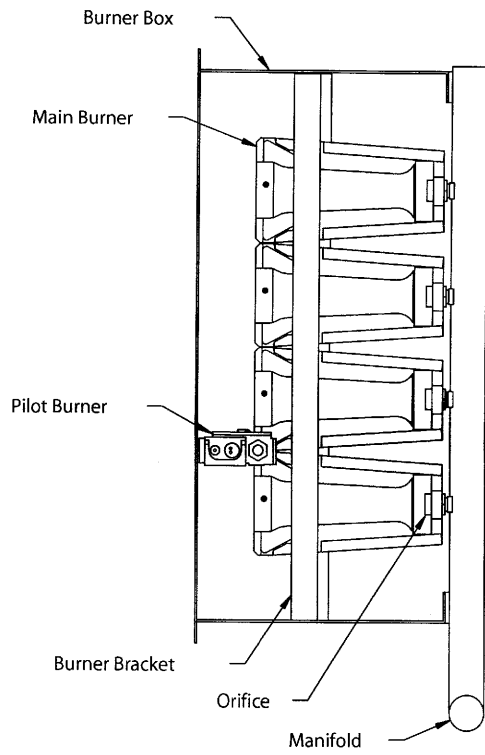


Figure 5

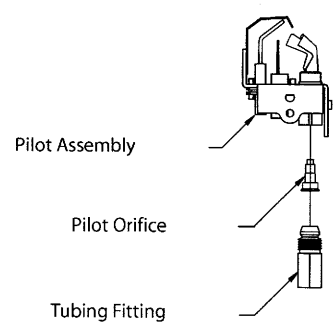


Figure 6

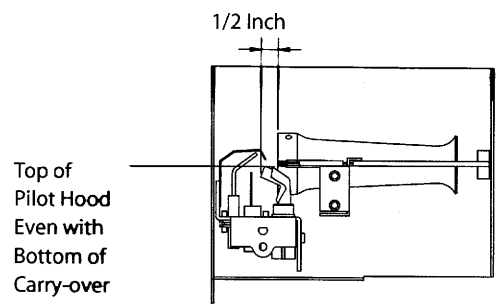


Figure 7

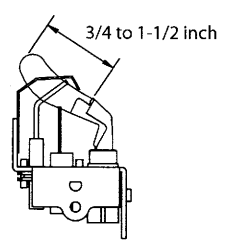


Figure 8

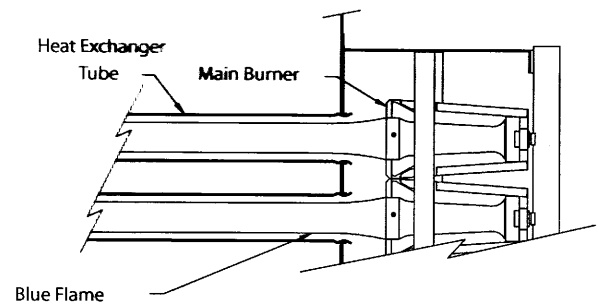


Figure 9