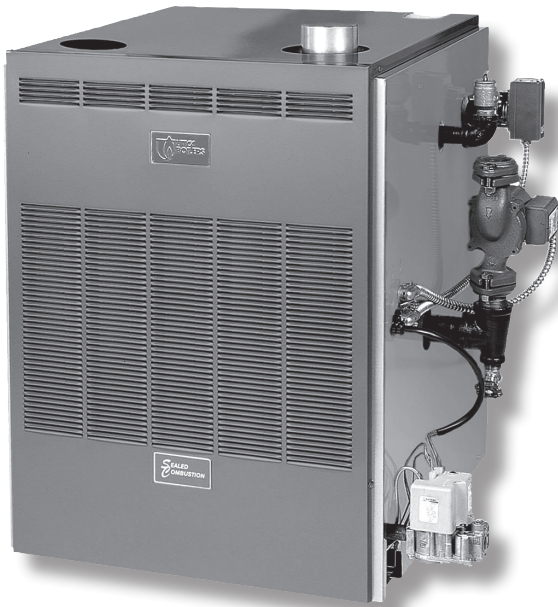


# SEALED COMBUSTION, CAST IRON, GAS FIRED, HOT WATER BOILERS *(Before 8/06)*

**MODEL NUMBERS:**  
USC3, USC4 & USC5



**! 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, an explosion, or production of carbon monoxide may result, causing property damage, personal injury, or loss of life.

The qualified service agency is responsible for the proper installation of this kit.

The installation is not proper and complete until the operation of the converted appliance is checked as specified in the manufacturer's instructions supplied with this kit.



C.S.A. Certified  
For Natural Gas Or Propane



Tested For 100 LBS.  
ASME  
Working Pressure

**DO NOT DESTROY THESE INSTRUCTIONS!!**  
Please read carefully and keep in a safe place for future reference.





# SEALED COMBUSTION LP TO NATURAL GAS CONVERSION INSTRUCTIONS

## ⚠ CAUTION ⚠

The gas supply shall be shut off prior to disconnecting the electrical power, before proceeding with the conversion.

## TOOLS REQUIRED

- Flat Head Screwdriver
- 7/16" Open Ended Wrench
- 1/4" Nut Driver
- 3/16" Allen Wrench
- 5/16" Nut Driver
- 18" Manometer (or dial manometer)
- 1/2" Open Ended Wrench

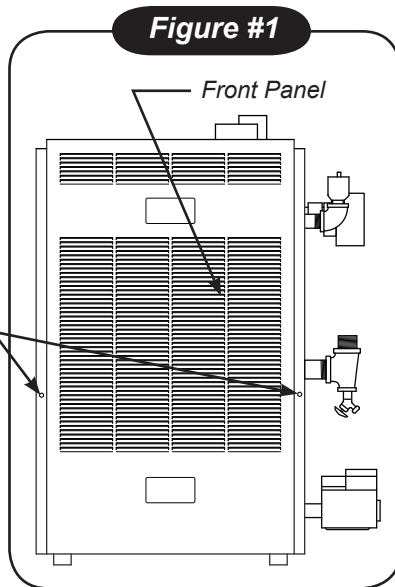
## KIT CONTENTS

Model	USC3	USC4	USC5
Input (BTUH)	50,000	100,000	140,000
Installation Instructions	1	1	1
ConversionPlate/Label	1	1	1
Pilot Orifice	1	1	1
Liquid Sealing Compound	1	1	1
Spring Kit	1	1	1
Main Burner Orifice #43	2	-	-
Main Burner Orifice #37	-	3	-
Main Burner Orifice #36	-	-	4
Burner Tubes	2	3	4
Base Baffle	-	-	1
Self Tapping Screws	-	-	2

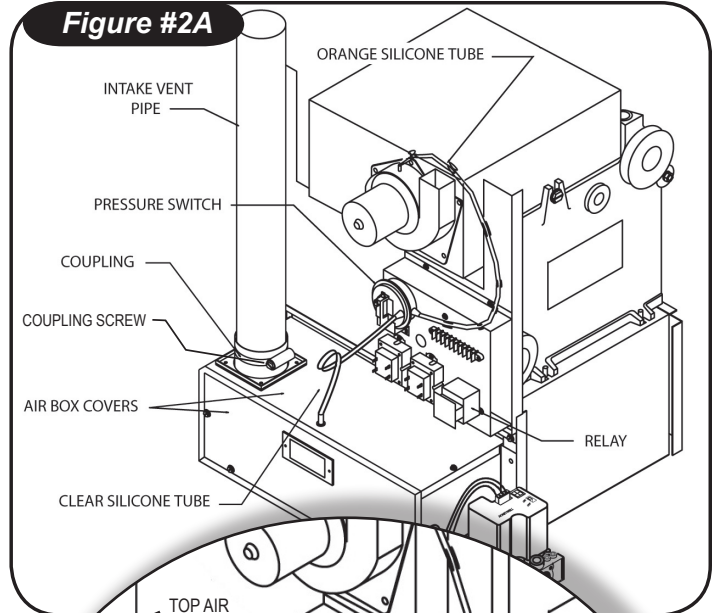
## INSTALLATION

### 1. Remove front panel. (Figure 1)

- a) Remove the two screws on each side of the front panel.
- b) Lift front panel off the unit.



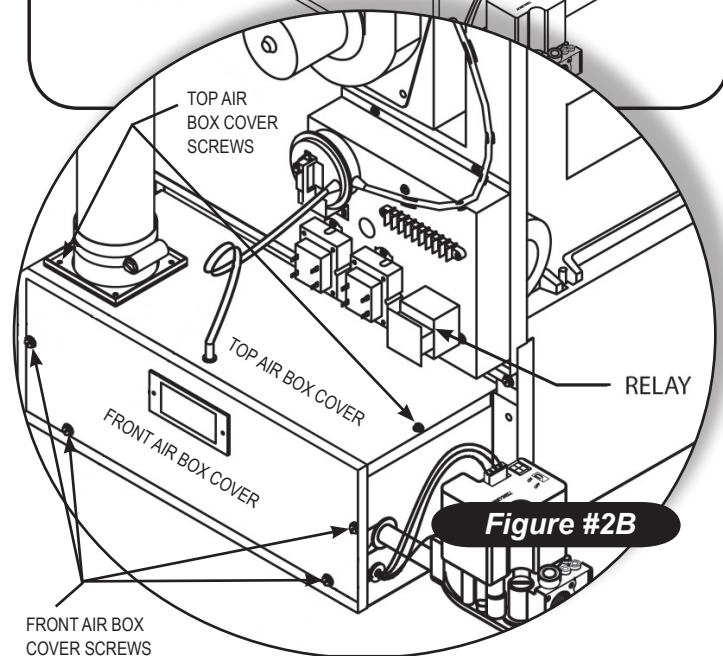
### 2. Disconnect the intake vent pipe by loosening the coupling screw. (Figure #2A)



### 3. Disconnect clear silicone tubing from pressure switch. (Figure #2A)

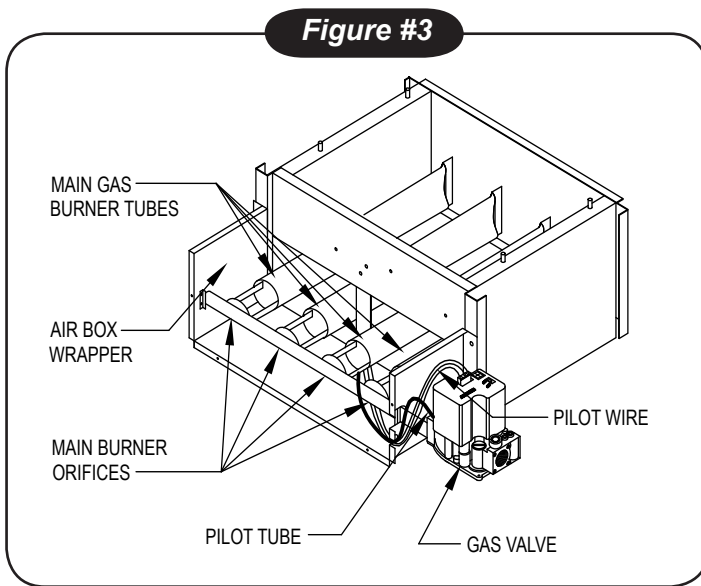
### 4. To remove air box covers:

- a) Unplug the relay to access top right air box cover screw.
- b) Remove the top air box cover, by removing the screws at the left and right edges of the top cover. (Figure #2B)
- c) Remove the front cover of the air box by removing the screws around the edge. (Figure #2B)



## SEALED COMBUSTION LP TO NATURAL GAS CONVERSION INSTRUCTIONS

5. Remove main gas burner tubes. **(Figure #3)**



6. Remove main burner orifices. **(Figure #3)**

7. Install Natural gas main burner orifices found in kit. Use orifice #43 for 3 section, orifice #37 for 4 section and orifice #36 for 5 section boilers.

8. Unplug pilot wire from gas valve. **(Figure #3)**

9. Disconnect pilot tube from gas valve. **(Figure #3)**

10. Slide grommets with wires out of slot in air box wrapper before manipulating wires. **(Figure #3)**

11. Disconnect the pilot assembly from the pilot bracket.

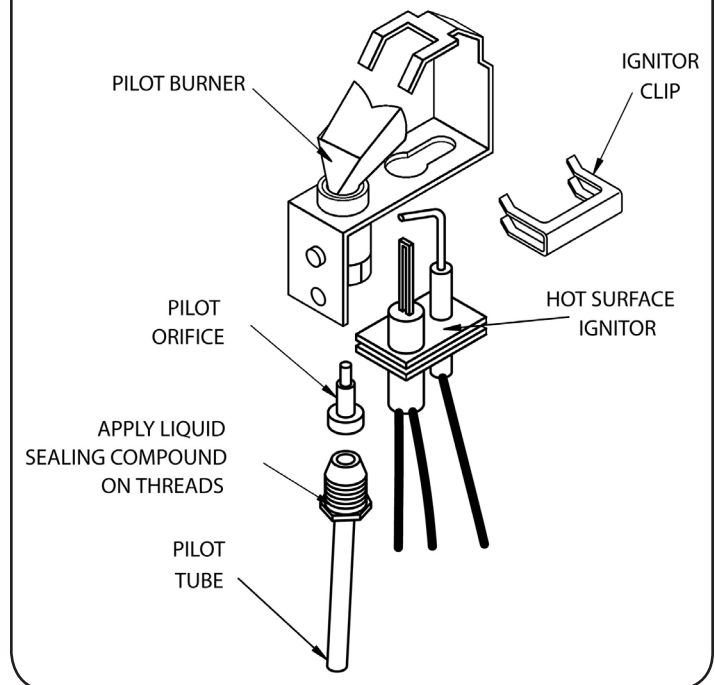
12. Remove the pilot assembly from the unit.

13. Remove the igniter clip. **(Figure #4)**



Care should be taken not to damage the hot surface igniter.

**Figure #4**



14. Remove the igniter unit from the pilot assembly. **(Figure #4)**

15. Using two wrenches disconnect the pilot tube from the pilot. **(Figure #4)**

16. Remove the pilot orifice. **(Figure #4)**

17. Install the LP gas pilot orifice. **(Figure #4)** Honeywell Part No. 390686-4.

18. Apply liquid sealing compound (provided) to threads of the pilot assembly fitting.

19. Reattach the pilot tube to the pilot and securely tighten using two wrenches. **(Figure #4)**

20. Carefully reattach igniter unit to pilot assembly with the igniter clip. **(Figure #4)**

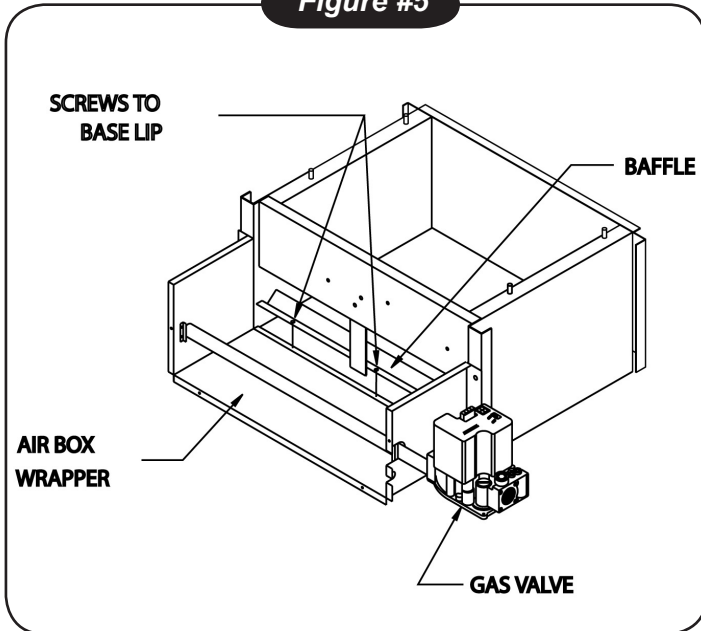
## SEALED COMBUSTION LP TO NATURAL GAS CONVERSION INSTRUCTIONS

21. a) Reattach pilot assembly to pilot bracket.
- b) Install base baffle using the 2 <sup>5</sup>/<sub>16</sub>" self tapping screws (**Figure #5**) to the front lip of the base.



Base baffle must be installed on 5 section boilers.

**Figure #5**



22. Replace grommets with wires attached back into slots in air box wrapper and reattach to gas valve. (**Figure #2**)

23. Install main gas burner tubes found in kit. (**Figure #3**)

24. Reattach air box covers.

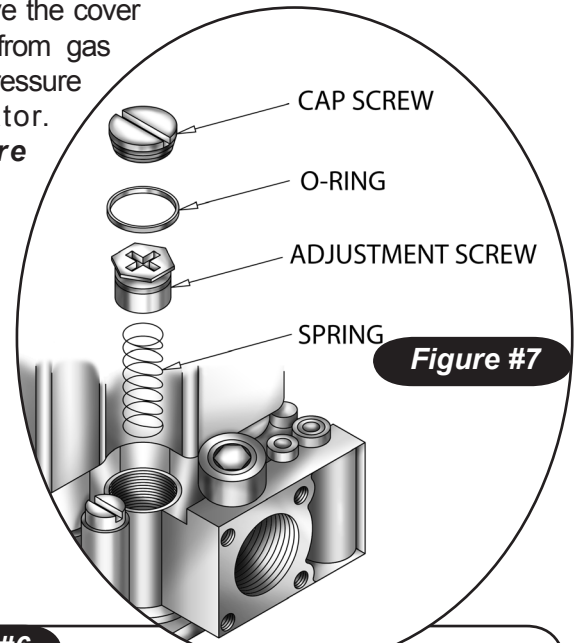


Gaskets must be in place when installing covers, replace if damaged.

25. Replace relay.

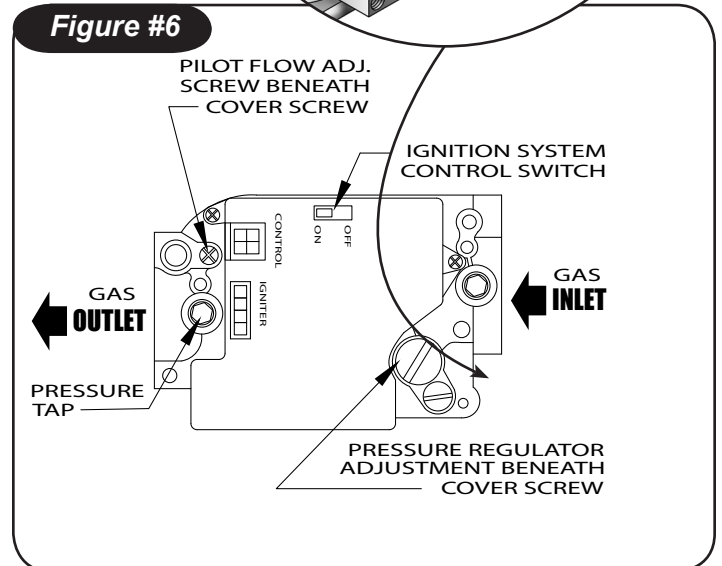
26. Reattach intake vent pipe and clear silicone tubing. (**Figure #2**)

27. Remove the cover screw from gas valve pressure regulator. (**Figure #6**)



**Figure #7**

**Figure #6**




28. Remove adjustment screw by turning counterclockwise. (**Figure #7**)

29. Remove stainless steel Natural gas spring. (**Figure #7**)

**PARTS FOR STEPS 30, 31, 39, AND 40 ARE LOCATED IN THE HONEYWELL LP GAS CONVERSION KIT #394588.**

30. Insert **Stainless Steel** natural gas spring. (**Figure #7**)

## SEALED COMBUSTION LP TO NATURAL GAS CONVERSION INSTRUCTIONS

31. Install new adjustment screw. Assure the screw top is flush with the regulator top. **(Figure #7)**
32. Turn the pressure regulator adjustment screw clockwise  eleven (11) complete turns. *(This is a starting point for the manifold pressure)*
33. Install a manometer to the pressure tap on the outlet side of the gas valve. **(Figure #6)**
34. Turn on electric and gas supply.
35. Check for gas leaks around all gas connections using soap bubbles.
36. While boiler is running adjust manifold pressure to 3½" water column by turning pressure regulator adjustment screw.
37. Turn off electric and gas supply.
38. Remove the manometer and replace pressure tap cover screw securely.
39. Install **Silver** natural gas regulator adjustment covers crew with O-ring. **(Figure #7)**
40. Mount conversion label on gas valve.
41. Turn on electric and gas supply.
42. Cycle boiler to insure proper operation and lighting.
43. Replace front panel.
44. Fill out and affix conversion plate adjacent to rating plate.



### WARNING

Do not use an open flame.

**NOTE:** It is **very** important that step 44 (*below*) be completed in order to provide proper identification for customer service or technical support issues.

## SEQUENCE OF OPERATION

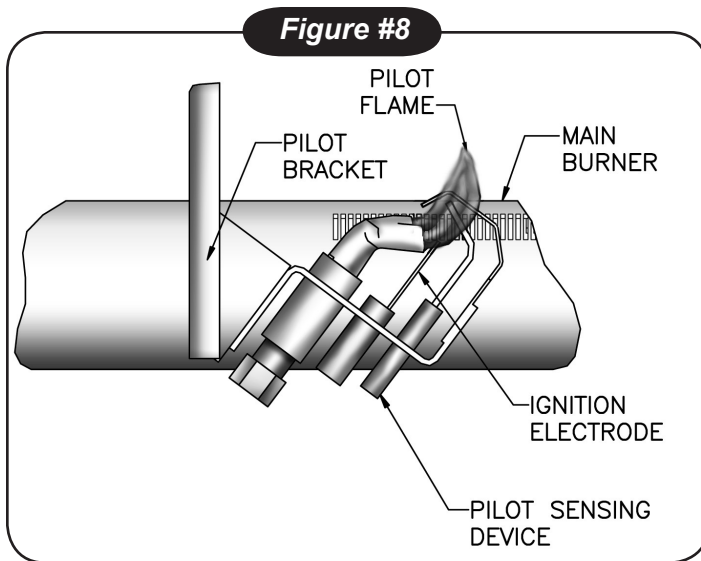
On a call for heat:

1. The thermostat will actuate, completing the circuit between terminals T and T.
2. The R8222C relay coil will energize thus pulling in the relay contacts.
3. The circulator starts and power is switched to the limit. If limit circuit is closed the venter motor and TR-2 transformer are energized.
4. The venter motor starts and develops static pressure.
5. When the static pressure is reached the pressure switch pulls in completing the circuit between TR-2 and the SV9501H gas valve system.
6. The SV9501H opens the pilot valve and ignites pilot. After pilot is proven the main burner will ignite.
7. In the event the boiler water temperature exceeds the high limit setting the power will be interrupted to the venter motor, and TR-2, thus interrupting power to the ignition system. Power will remain off until the water temperature drops below the high limit setting. The circulator will continue to operate under this condition until the thermostat is satisfied.
8. Should the air flow (static pressure) be interrupted (ie. blocked flue), the pressure switch will sense a drop in pressure, opening the circuit between the ignition system and TR-2. The venter motor will continue to operate until static pressure is reached or thermostat is satisfied.
9. In the event the flow of combustion products through the boiler flueways becomes reduced or blocked, the Q34505 pilot will lose flame rectification and shut off the main burners. The boiler will try for ignition but will not light. **If this condition occurs, turn off the main power and do not put the unit into operation.**
10. When the thermostat is satisfied power is interrupted to the relay coil and the relay drops out cutting power to the circulator, venter motor, and TR-2.

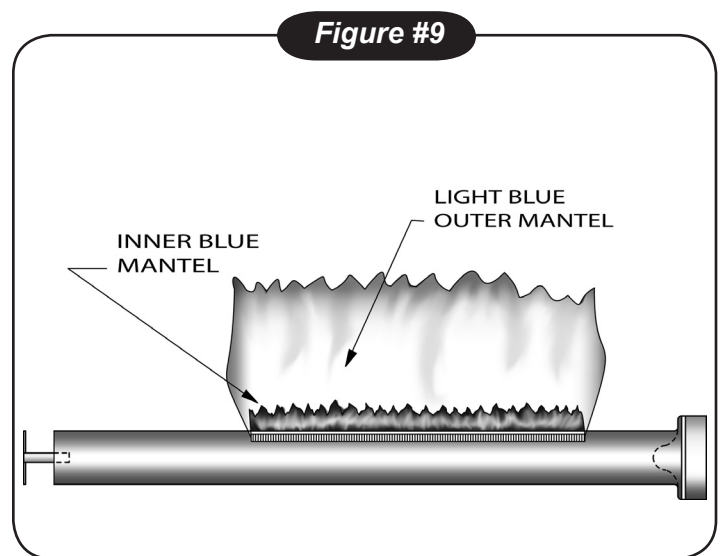


## SEALED COMBUSTION LP TO NATURAL GAS CONVERSION INSTRUCTIONS

VISUALLY CHECK THE MAIN BURNERS AND PILOT FLAME AT THE START OF EACH HEATING SEASON AND AGAIN MIDWAY THROUGH THE SEASON.



The pilot flame should envelop  $3/8$ " (.95 cm) to  $1/2$ " (1.27 cm) of the tip of the pilot sensing device. (See **Figure #8** above.)



The main burner flame should have a well defined inner blue mantel with a lighter blue outer mantel. (See **Figure #9** above.)

## CHECK GAS INPUT RATE TO BOILER

1. Maximum permissible gas supply pressure must not be higher and minimum supply pressure must not be lower than what is specified on the rating plate.
2. To check for proper flow of natural gas to boiler using the gas meter, proceed as follows:
  - A. Turn off the gas supply to all other appliances, except the boiler.
  - B. With the boiler operating, determine the flow of gas through the meter for two minutes and multiply by 30 to get the hourly rate.
  - C. Divide the input rate shown on the rating plate by the heating value of the gas as obtained from the local gas company. This will determine the number of cubic feet of gas required per hour.
  - D. If minor adjustment is necessary, install a manometer on the outlet side of the gas valve. Adjust the pressure regulator on the combination gas control. Increase or decrease manifold pressure to obtain gas input required as described on the rating plate. To increase, turn the regulator adjusting screw clockwise ↻ or counterclockwise ↻ to decrease pressure.  
  
After adjustment has been completed, turn the boiler off and remove the manometer and the shut-off cock.
  - E. Relight all the other appliances turned off in step A above. Be sure all pilot burners are operating.

