INSTALLATION INSTRUCTIONS

GHE Combustion Assembly Replacement Kit

Read these instructions thoroughly and understand all steps and procedures before proceeding with the installation.

INSPECT SHIPMENT:

Inspect contents for the following components. This kit includes:

1 - Combustion Assembly
4 - 5/16 Bolts
4 - Lock Washers
1 - O-ring
1 - Pressure Switch Assembly
1 - Pressure Switch Feedback Tubing
1 - Exhaust Elbow with Drain
1 - Condensate P-Trap
2 - LCD Display Retainers
1 - Control Board
1 - LCD Display
1 - Air Intake (if required)
1 – 4 oz. Jar Pipe Lubricant
6 - #8 Self Drilling Screws
2 - #6 Sheet metal Screws (LCD Retention)
1 – STD 3” PVC Coupling
1 – ½” PVC x 4” pipe

TOOLS REQUIRED:

1/2” Flexible Head Ratchet Wrench
5/16” Nut Driver
1/4” Nut Driver
Flat Head Screwdriver
Phillips Head Screwdriver
Pipe Wrench
Tape Measure
Hacksaw
PVC Primer
PVC Cement

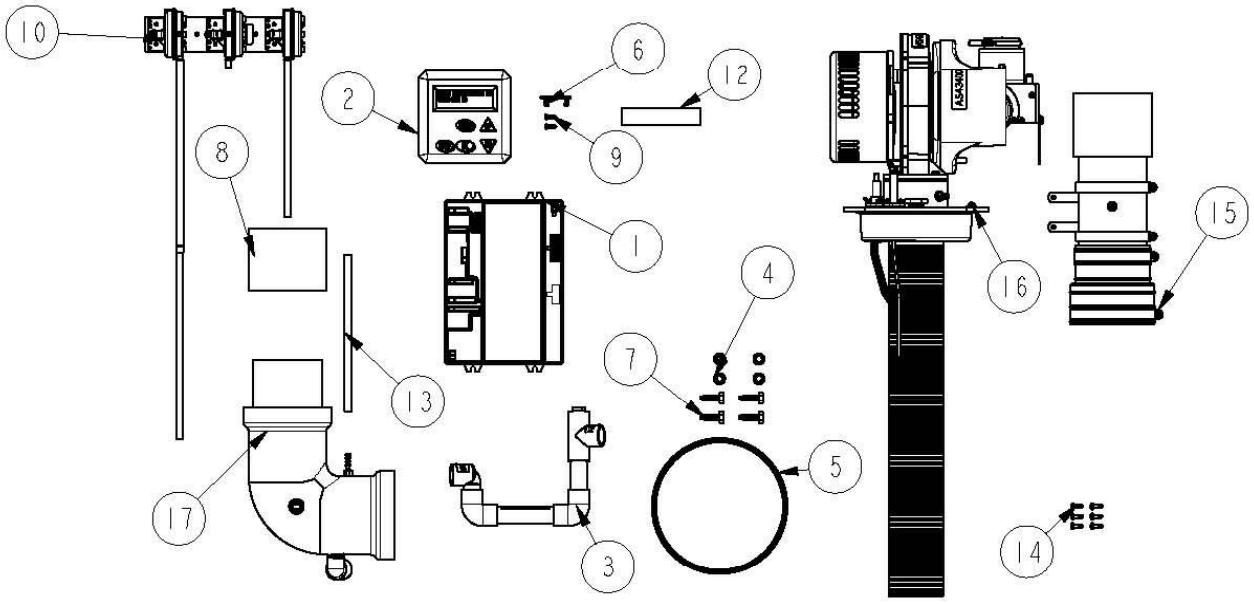
GHE EXHAUST AND COMBUSTION UPGRADE KIT

These kits are used only with the GHE 100 gallon chassis.

PART NO.
SP20330

SERVICE PART KIT	DESCRIPTION
SP20330A	GHE100-130/160 NAT
SP20330B	GHE100-130/160 LP
SP20330C	GHE100-200 NAT
SP20330D	GHE100-200 LP
SP20330E	GHE100-250 NAT
SP20330F	GHE100-250 LP
SP20330G	GHE100-300 NAT
SP20330H	GHE100-300 LP
SP20330J	GHE100-350 NAT
SP20330K	GHE100-350 LP

ITEM	QTY	UOM	DESCRIPTION
1	1	EA	ASSY - ARGUS CONTROL BOARD
2	1	EA	DISPLAY - LCD UNIT CONTROLS
3	1	EA	CONDENSATE TRAP
4	4	EA	WASHER - LOCK
5	1	EA	O-RING (BURNER PLATE)
6	2	EA	SNAP RETAINER
7	4	EA	5/16-18 UNC HEX CAP SCREW
8	1	EA	STD 3" SCH 40 PVC COUPLING
9	2	EA	SCREW - #6 SHEET METAL - .50
10	1	EA	ASSY - PRESSURE SWITCH
11	1	EA	GHE EXHAUST AND COMBUSTION UPGRADE INSTRUCTIONS
12	1	EA	PIPE - PVC 1/2 IN X 4 IN
13	1	EA	HOSE - SQUARE - FEEDBACK - 93.0 LONG
14	6	EA	SCREW - #8 SM SELF DRILLING - .50
15	1	EA	ASSY - AIR INTAKE
16	1	EA	ASSY - COMBUSTION - COMMERCIAL GHE
17	1	EA	GHE EXHAUST RETRO-FIT SERVICE PART
18	1	EA	WATER BASED LUBRICANT FOR RUBBER SEALS 4 OZ.



Installation Instructions

1. Turn off the gas supply, disconnect the power supply, and use a pipe wrench to remove the gas supply piping from the heater.

2. Remove the plastic cover dome from the unit using a Phillips head screwdriver. (Figure 1)

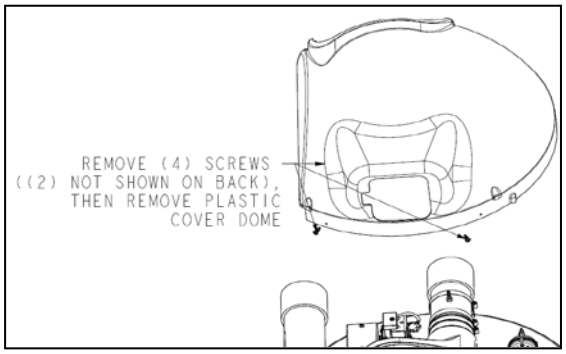


Figure 1

3. Remove Air Intake Assembly
    a. Use a flat head screwdriver or 5/16 nut driver to loosen the hose clamp around the rubber boot that connects the PVC Intake assembly to the burner assembly. Use a #2 Phillips head screwdriver to remove the mounting screws for the PVC Intake mounting bracket and remove the Intake and bracket from the heater. (Figure 2)
    b. If Intake Assembly is 3" PVC, a new intake assembly is included in the kit. Discard the old 3" PVC intake.
    c. If Intake Assembly is 2" PVC, reuse the existing Intake Assembly.

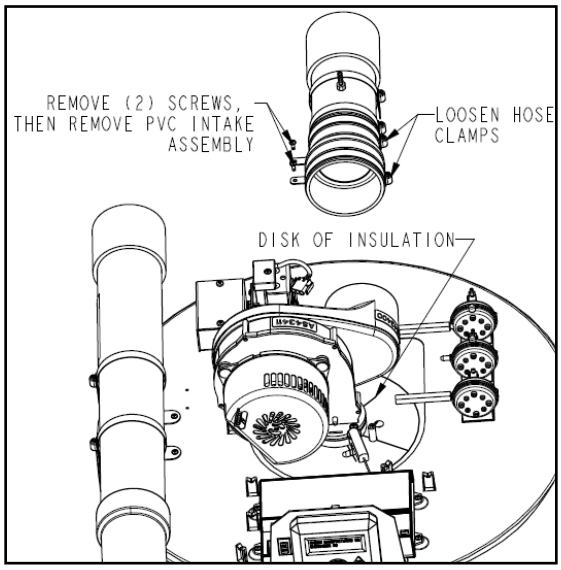


Figure2

4. Disconnect all wiring from the combustion assembly. See Figures 5 and 6.
    a. Blower ground wire (remove from blower housing)
    b. Igniter cable
    c. Igniter ground wire
    d. Flame sensor wire
    e. Blower power harness
    f. Gas valve power harness
    g. PWM cable from blower (Blower Control)

5. Remove tubing connections from the pressure switch assembly to the combustion assembly.

6. Removal of burner assembly.
    a. Remove the disk of white insulation that surrounds the combustion assembly base to gain access to the combustion assembly mounting bolts.
    b. Remove the two screws in the gas valve bracket. (Figure 3).
    c. Using the flexible head ratchet, remove the four bolts and lock washers that mount the combustion assembly to the heater chassis.
    d. Lift the combustion assembly out of the heater (Figure 3).

7. Replace the o-ring in the burner mounting flange with the one provided with the kit. Clean the o-ring groove of contaminants prior to o-ring installation.

8. Reinstall new combustion assembly in reverse order of step 6 above.

    a. Take care when handling the igniter and flame sensor during reinstallation.
    b. The ring terminal on the green 18 gauge ground wire installs under one of the burner mounting bolts.

9. Remove the pressure switch assembly, LCD display, and Control Board from the heater. (Figure 4)

    a. Remove (2) screws, wiring, and tubing from pressure switch assembly to remove assembly from heater.

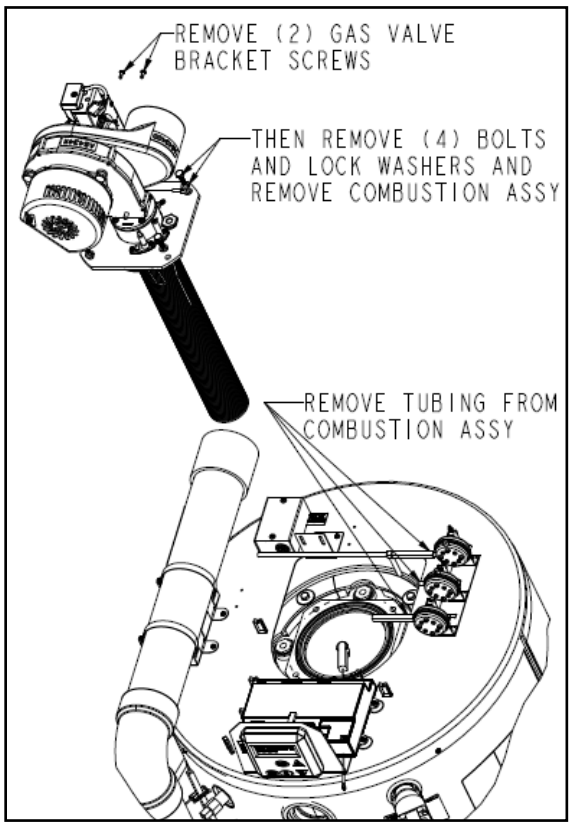


Figure 3

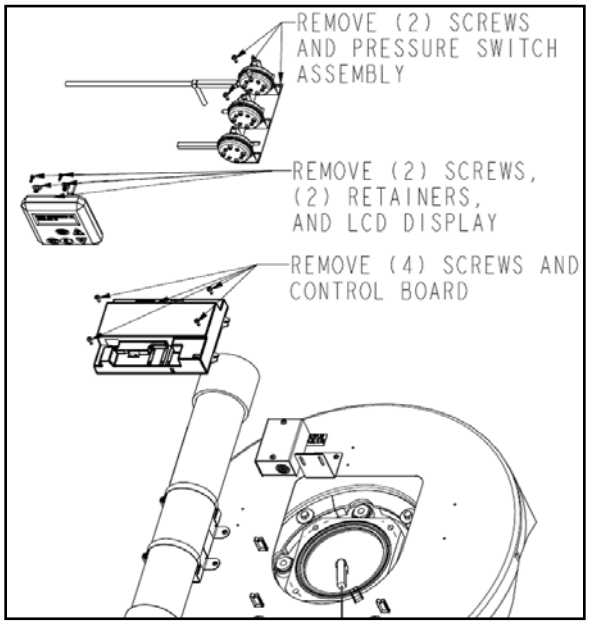


Figure 4

b. Install the new pressure switch assembly supplied with the kit
    i. If the pressure switch wires are not reconnected properly (shorter pink wires to the front most switch and one yellow wire each to the remaining switches), the unit will not operate properly.
c. Disconnect LCD wiring connection and remove the (2) screws in the back of the LCD bracket.
d. Install the new LCD provided with the kit.
    i. Replace the snap retainers and screws that mount the LCD to the bracket with those included in the kit.
e. Disconnect the wiring harnesses from the Control Board and the (4) screws mounting the controller to the heater.
f. Install the new Control Board included with the kit onto the heater and plug the wiring harnesses into the controller .

Refer to Figures 5 and 6 for wire connections

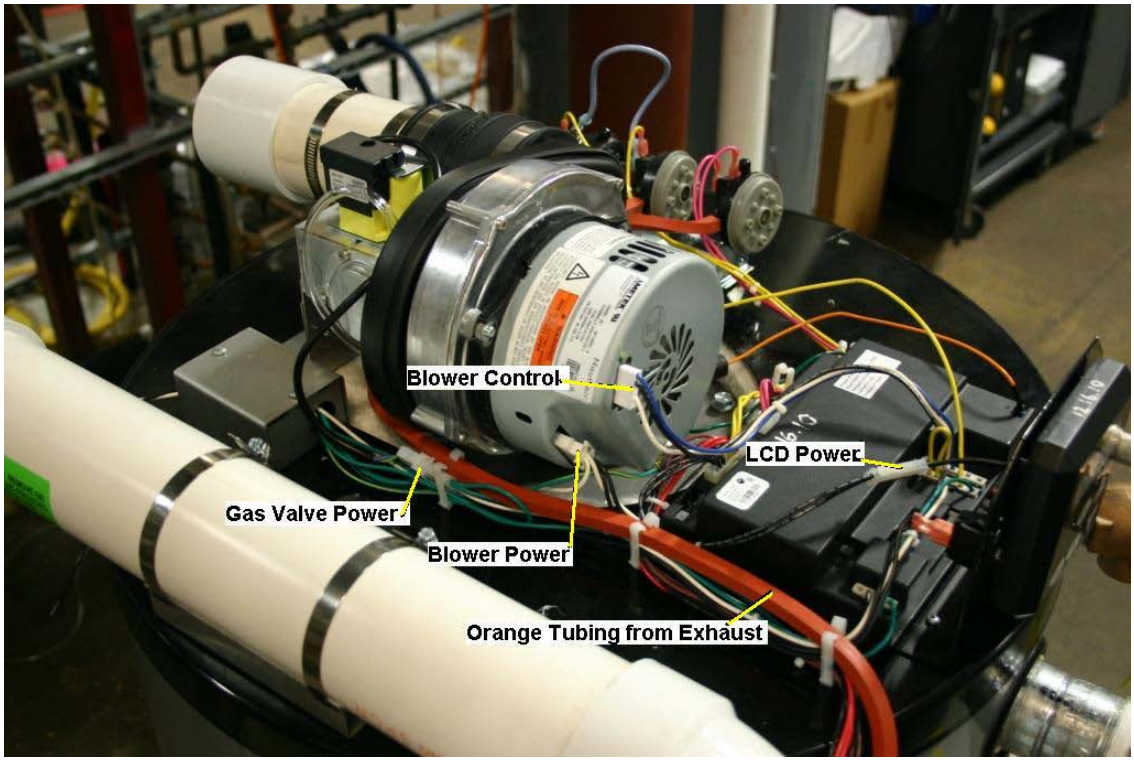


Figure 5

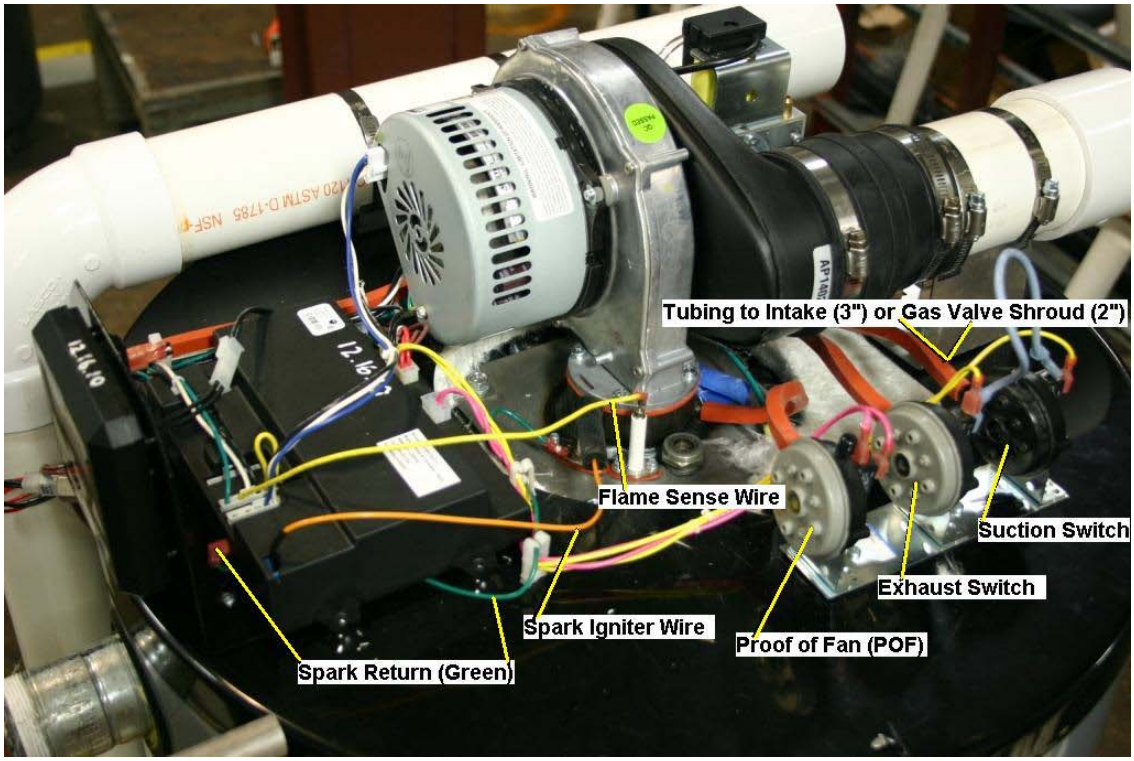


Figure 6

10. Reconnect the PWM harness to the blower (Blower Control), the blower power harness (Blower power), and the blower ground wire to the front of the blower housing. See Figure 5.

11. Reconnect the gas valve power harness (Gas Valve Power). See Figure 5.

12. Reconnect the flame sensor wire (yellow), igniter wire, and spark relay ground wire (green) harnesses. Ensure that the igniter cable does not contact any other harnesses or heater parts. See Figure 6.

13. Install new Air Intake Assembly, if required.

14. Reconnect the square orange silicone tubing on the front pressure switch (POF) to the metal air tap on the burner assembly, just below the blower mount.

15. Connect the silicone tubing supplied on the rear most pressure switch to the suction side of the blower.

    a. If the PVC Intake Assembly is 3” PVC, the short piece of round tubing at the Tee will connect to the nipple. If the intake on the unit does not have the nipple, replace the intake with the one supplied with the kit.
    b. If the PVC Intake Assembly is 2” PVC, the short piece of round tubing at the Tee will connect to the bottom of the black plastic shroud mounted to the blower.
    c. The longer piece of round tubing connects to the top of the gas valve for all models.

16. Next, check the exhaust elbow at the base of the unit for a plastic barbed nipple pointing up. **If the unit has a barbed nipple on the elbow, skip to Step 32.** See Figure 7 for example with barbed nipple.

17. Next, remove the exhaust gasketed elbow from the heater. Remove the (9) screws from the black plastic cover that runs the height of the heater and remove the plastic cover. Retain the screws for reinstallation.

18. Disconnect the condensate p-trap piping from the heater. A new p-trap is supplied with this kit.

19. Disconnect the two brown wires from the temperature sensor on the exhaust elbow.

20. Measure and mark a line around the vertical PVC pipe 2 ¾" from the top of the lower exhaust elbow fitting and cut the 3" PVC exhaust pipe upright. This will free the sealing elbow from the rest of the exhaust assembly.

21. Loosen the two hose clamps at the top portion of the exhaust piping (on top of the unit) and remove the (2) screws that mount the lower exhaust bracket to the heater jacket.

22. Remove the lower gasketed elbow and attached piping and discard.

23. Dry fit the new elbow assembly with coupling to the exhaust piping (use supplied lubricant at elbow seal). Line up the gasketed exhaust elbow with the condensate collector nipple and mark the 3" PVC coupling on the new exhaust elbow and the PVC pipe connected to the remaining portion of the exhaust system to provide an assembly aide.

24. Liberally apply the supplied water based lubricant around the rubber seal inside the supplied exhaust elbow at the EPDM gasket. The new exhaust elbow should easily slide into place on the condensate collector nipple once properly lubricated.

25. Transfer the lower retention bracket and hose clamps to the supplied exhaust elbow assembly.

26. Using the PVC Primer and Cement, bond the new 3" PVC elbow with coupling to the upper portion of the exhaust assembly and allow to dry.

27. Reinstall the bonded exhaust assembly to the heater by securing the lower bracket to the heater jacket and tighten the two hose clamps at the bracket on the top of the unit. The bracket will have to be moved vertically up the exhaust assembly ~4" from its current location to clear the new coupling.

28. Reconnect the two brown wires to the temperature sensor on the exhaust elbow. If these wires are not connected, the heater will not operate.

29. Remove the black rubber cap from the barbed nipple on the exhaust elbow. Discard the cap.

30. Connect one end of the 93” long piece of square orange silicone tubing to the barbed nipple on the new exhaust elbow.

31. Route the 93” piece of square orange silicone tubing up the height of the heater (parallel to the exhaust piping), and behind the combustion assembly on top of the unit. See Figure 7.

Figure 7

32. Connect the free end of the tubing to the middle pressure switch on the pressure switch assembly.

33. The heater should now be ready to return to service. Reconnect the gas supply and supply power to the unit per the Use and Care Manual.

34. Following lighting instructions and verify status of operation.

35. Check for condensate leaks around the area modified for the installation of the new exhaust elbow , if the elbow was replaced. If no leaks are present, reinstall the black plastic cover over the exhaust assembly and resume normal operation of the heater.