

# Installation Instructions for the Hi-E2 Combustion Chamber Replacement Kit

**FOR YOUR SAFETY:** This product must be installed and serviced by a professional service technician, qualified in pool/spa heater installation and maintenance. Improper installation and/or operation could create carbon monoxide gas in flue gases which could cause serious injury, property damage, or death. Improper installation and/or operation will void the warranty.

These instructions are to be used with the following Replacement Kits:

**R0305103-- Hi-E2 Combustion Chamber Replacement Kit, Model EHE 220**

**R0305105-- Hi-E2 Combustion Chamber Replacement Kit, Model EHE 350**

## ⚠ WARNING

If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

This document gives instructions for replacing the combustion chamber in all Hi-E2 Model EHE pool/spa heaters. Important information on replacing the gaskets is included in this set of instructions. The instructions must be followed exactly. Read through the instructions completely before starting the procedure.

### A. Remove The Combustion Chamber From The Heater

1. Remove the front panel of the heater (see Fig. 1).

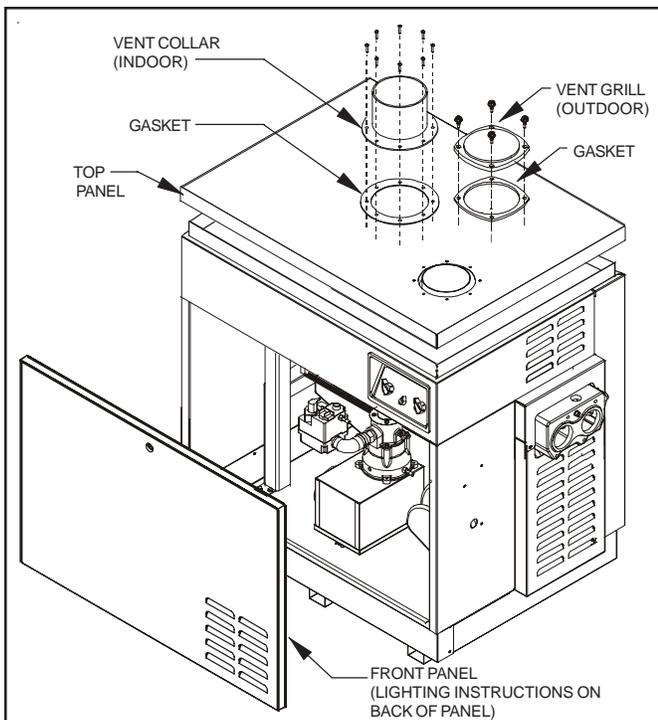


Figure 1- Remove Jacket Panels

2. Shut the heater down by following the instructions under the heading of "To Turn Off Gas To Appliance" on the label on the inside of the front panel.
3. Remove the exhaust grill and gasket (if outdoor installation) or the vent pipe, vent collar and gasket (if indoor installation), from the top of the heater (see Fig. 1).
4. Remove the top from the heater (see Fig. 1).
5. Remove the two screws holding the venturi pressure switch bracket to the heater frame (see Fig. 2).
6. Remove the hot surface igniter from the combustion chamber (see Fig. 3).

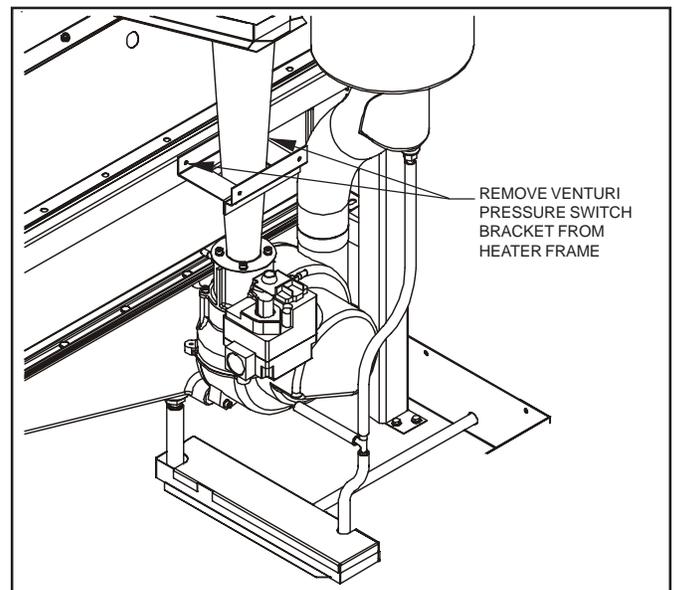
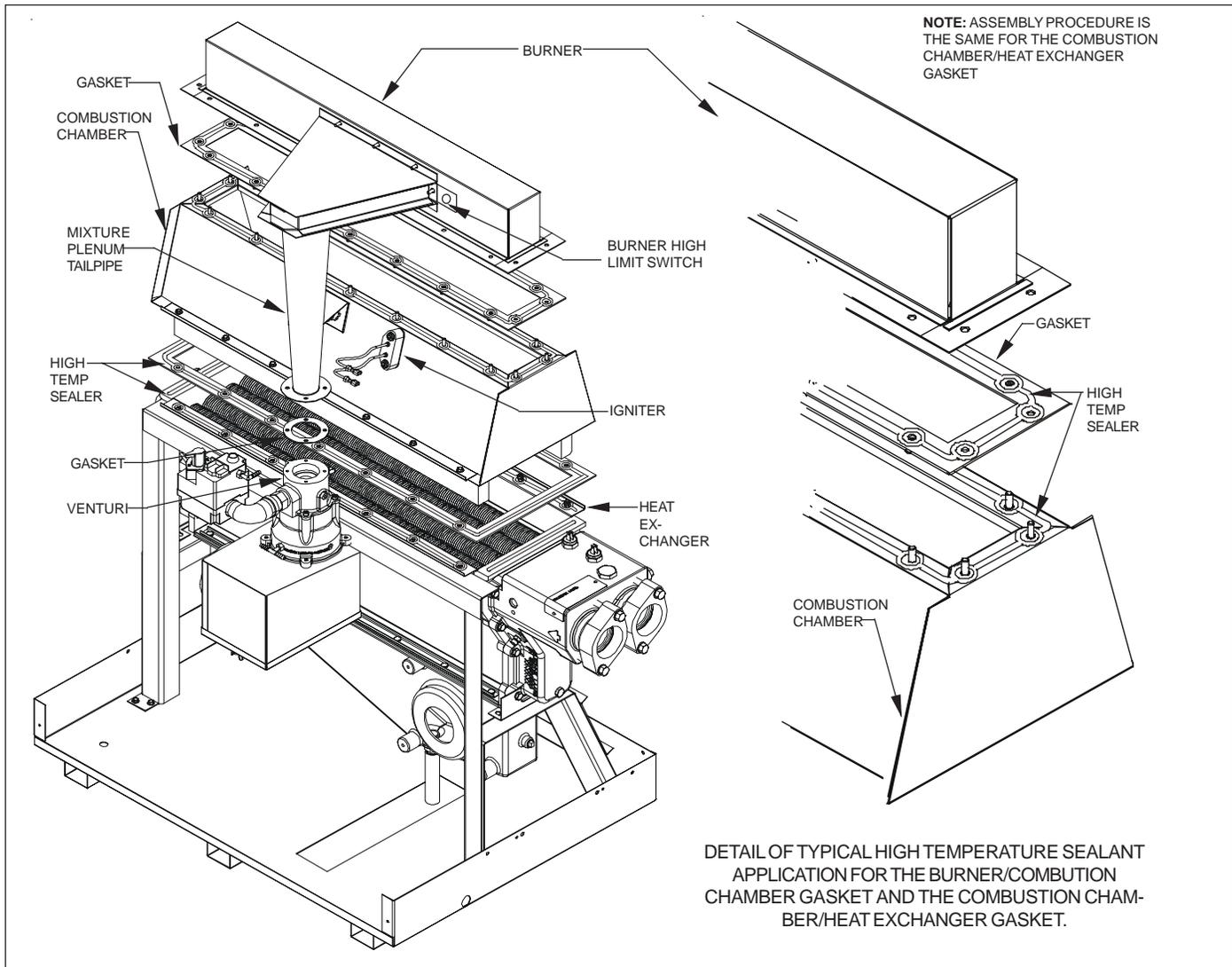


Figure 2- Remove Venturi Pressure Switch Bracket



**Figure 3- Component Assembly Detail**

7. Disconnect the wires from the burner high limit switch.
8. Remove the four screws holding the mixture plenum tailpipe to the top of the venturi (see Fig. 3).
9. Remove all the nuts that hold the burner to the combustion chamber (18 for an EHE 350, 14 for an EHE 220) (see Fig. 3).
10. Pull the burner straight up off of the combustion chamber. The burner was installed using a high temperature sealer at the combustion chamber. You may need to use a screwdriver to pry the burner from the combustion chamber. If this is necessary, use the screwdriver as close to the studs as possible and be careful not to bend the burner flanges (see Fig. 3).
11. Remove the nuts that hold the back of the combustion chamber to the heat exchanger (7 for an EHE 350, 5 for an EHE 220) (see Fig. 3).
12. Remove the screws that hold the front of the combustion chamber to the heat exchanger (7 for an EHE 350, 5 for an EHE 220) (see Fig. 3).
13. Pull the combustion chamber straight up off of the heat exchanger. The combustion chamber was installed using a high temperature sealer at the heat exchanger. You may need to use a screwdriver to pry the combustion chamber from the heat exchanger. If this is necessary, use the screwdriver as close to the studs as possible and be careful not to bend the heat exchanger edges (see Fig. 3).

## B. Clean The Parts To Be Reused

1. Clean **all** the remains of the original gasket and silicon sealer from the flanges of the burner. Use a putty knife if necessary. Be careful not to leave deep scratches on the flanges. It is important to have a clean, flat, unscratched surface to provide a good seal when the parts are reassembled.

2. Use the same procedures and precautions to clean the top of the heat exchanger. To clean the heat exchanger properly you may need to remove the studded strip from the underside. Do not allow debris to drop onto the tubes of the heat exchanger. Remove any debris from the top of the heat exchanger. A vacuum cleaner is recommended.

## C. Important Information On Gaskets

### General Information

The Hi-E2 pool heater has a fan-assisted combustion system. A specially-designed combustion blower pulls flow through the system, most of which operates at negative pressure (below room pressure). For proper operation of the heater, all gaskets and sealers must be in place and properly installed. Leakage of air into the system can cause operational problems or reduced efficiency.

The exhaust system of the Hi-E2 heater operates at slightly positive pressure due to the resistance of the grill or the vent piping. Sealing of this part of the system is especially important to prevent combustion products and moisture from escaping from the heater or venting.

Gaskets and sealers used for the hot surface joints of the burner and combustion chamber are selected and installed to handle the special requirements at those locations.

*To assure proper operation and efficiency, be sure to use only the materials specified in these instructions and installed in accordance with them.*

### 1. The Combustion Chamber/Heat Exchanger Gasket

The interface of the heat exchanger and combustion chamber gets very hot during operation, especially at the edge facing the combustion process. A pliable ceramic fiber gasket and high temperature silicone sealer are used to seal this interface. The rear flange joint is held together by nuts and lockwashers on studs. The front flange joint is held together and mounted to the frame with lockwashers and screws. The gasket part number is S0088801 for model EHE 220 and S0088803 for model EHE 350. The sealer part number is X0020700. Note that this sealer is red in color and is rated for high temperature.

Before assembling the parts, be sure to scrape old material or contamination off of the mating surfaces. If there are any gaps at the sheet metal joints (especially at the corners), fill these with a moderate amount of silicone sealer.

*Note: Excessive use of silicone sealer can lead to nuisance problems with the ignition system. Stop sealer deposits short of the inside edge of the gasket and parts.*

### 2. The Combustion Chamber/Burner Gasket

The interface between the combustion chamber and the burner also gets very hot. Except for the dimensions, installing the gasket for this interface is same as that for the heat exchanger/combustion chamber interface. The gasket part numbers are S0090701 for model EHE 220 and S0090703 for model EHE 350. The sealer is the same as that for the heat exchanger/combustion chamber interface, part number X0020700.

Surface preparation, gasket and sealer installation and assembly are the same as for the heat exchanger/combustion chamber. Follow the instructions in the previous section.

### 3. Venturi/Mixture Plenum Tailpipe

The mixture plenum tailpipe is held to the venturi casting assembly by four machine screws. A flat elastomer gasket, part number S0098100, is used between these two parts. Sealer is not required. Be sure that the parts are properly aligned and tighten the screws uniformly. Do not tighten so much that the gasket material bulges out of the joint. Be sure to replace the star lockwashers under the screw heads.

### 4. Vent Duct / Top Cover / Exhaust Terminal

The vent duct and exhaust terminal sandwich the top cover between them, with gaskets between parts. This joint is very important, both to assure that exhaust products are not mis-directed and to assure satisfactory heater operation.

The exhaust terminal is either a grill for outdoor installation (shipped in place) or a vent collar for connection to plastic vent piping. Vent piping and all vent connections are very important because their failure can result in release of exhaust products within a building. A leak under the top cover can result in recirculation of exhaust products through the heater and condensation of combustion product water inside the heater. The latter can result in operating problems with controls.

## D. Install The New Combustion Chamber

### 1. Install The New Heat Exchanger/Combustion Chamber Gasket

- a. Apply a 1/4" bead of sealer along the centerline of the heat exchanger flanges on all sides of the heat exchanger. Form the bead in a small circle around each hole (see Fig. 3).
- b. Place the gasket onto the flanges, align the holes, and push it into the sealer.
- c. Place a second 1/4" bead of silicone sealer along the centerline of the gasket surface and in small circles around the holes (see Fig. 3).

## 2. Install The Combustion Chamber

- a. Place the combustion chamber over the flanges and position as necessary by hand (see Fig 3).
- b. Replace the studded strip by inserting the studs through the holes from the underside of the heat exchanger rear flange. Place a lockwasher and nut on each of the studs, but do not fully tighten.
- c. Align the holes in the front flange with the holes in the support frame and insert a screw with a lockwasher in each of the holes.
- d. Uniformly tighten the nuts and screws. Start with the middle nut on the rear flange then tighten the middle screw on the front flange. Then alternate the sequence from rear to front and from left to right so that the fasteners are tightened from the middle toward the outside.

## 3. Install The Combustion Chamber/Burner Gasket

- a. Apply a 1/4" bead of sealer along the centerline of the combustion chamber top flange. Form the bead in a small circle around each stud (see Fig. 3).
- b. Place the gasket over the studs and push it into the sealer.
- c. Place a second 1/4" bead of silicone sealer along the centerline of the gasket surface and in small circles around the studs (see Fig. 3).

## 4. Reinstall The Burner

- a. Place the burner over the studs on the top of the combustion chamber, position as necessary by hand (see Fig. 3).
- b. Place a lockwasher and nut on each of the studs.
- c. Uniformly tighten the nuts on the studs. Use the same sequence as described in section D2d.
- d. Align the holes on the flange of the mixture plenum tailpipe to the holes on the top of the venturi. Be sure that the rubber gasket has remained in place between the two parts. Reinstall the four screws and lockwashers that fasten the parts together (see Fig. 3).
- e. Install the new hot surface igniter in the combustion chamber. Be careful when handling the igniter. The element is very fragile and will break if hit or dropped.
- f. Reconnect the wires to the burner high limit switch.

- g. Reinstall the two screws that mount the venturi pressure switch bracket to the heat exchanger (see Fig. 2).

## 5. Restart The Heater

- a. Replace the top of the heater. Be sure that the gasket on the top of the vent duct is still in place and in good condition (see Fig. 1).
- b. Replace the exhaust grill and gasket (if outdoor installation) or the vent pipe, vent collar and gasket (if indoor installation). Inspect the gaskets to be sure they are not cracked or torn. Be sure that the screws engage the brass inserts in the vent duct under the top (see Fig. 1).
- c. Restore the electrical power and the gas supply to the heater.
- d. Read the warnings under the heading of "For Your Safety Read Before Operating" on the label on the inside of the front panel.
- e. Ignite the heater by following the instructions under the heading of "Operating Instructions" on the label on the inside of the front panel.
- f. Replace the front panel. The front panel must be in place for the heater to be operate properly and safely.

## Parts List

Description	Quantity
Combustion Chamber Assembly	1
Includes	
Hot Surface Igniter	1
Studded Metal Strip	1
Self Drilling Screws	7
Tube High Temperature Silicone Sealer	2
Lockwashers	32
Hex Nuts	25
Burner/Combustion Chamber Gasket	1
Combustion Chamber/Heat Exchanger Gasket	1
Instructions	1

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