

# Installation Instructions


**NOTE:** Read the entire instruction manual before starting the installation.

## SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury, or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing, and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions include in literature and attached to the unit. Consult local building codes, the current editions of the National Fuel Gas Code (NFGC) NFPA 54/ANSI Z223.1 and the National Electrical Code (NEC) NFPA 70.

In Canada, refer to the current editions of the National Standards of Canada CAN/CSA-B149.1 and .2 Natural Gas and Propane Installation Codes, and Canadian Electrical Code CSA C22.1

Recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety-alert symbol. **DANGER** identifies the most serious hazards which **will** result in severe personal injury or death. **WARNING** signifies hazards which **could** result in personal injury or death. **CAUTION** is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

Follow all safety codes. Wear safety glasses and work gloves. Have a fire extinguisher available.

## WARNING

### **FIRE, EXPLOSION, ELECTRICAL SHOCK AND CARBON MONOXIDE POISONING HAZARD**

Failure to follow instructions could result in personal injury, death or property damage.

Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, or other conditions, which could result in personal injury or death. Consult your distributor or branch for information or assistance. The qualified installer or agency must use only factory-authorized kits or accessories when servicing this product.

## INTRODUCTION

This instruction covers the installation of a heat exchanger cell panel on non-condensing, 33.3" high, mid-efficiency hot surface igniter units. The heat exchanger cell panel should be replaced when corrosion has created visible surface damage to the cell panel or if functionality of the cell panel has been compromised. The correct cell panel must be used for the correct furnace model.

## DESCRIPTION AND USAGE

The heat exchanger cell panel replacement kit can be utilized to replace a defective heat exchanger cell panel. This kit contains the following items:

**Table 1 – Kit Contents**

Kit Contents	Qty.
Heat Exchanger Cell Panel	1
Cell Panel Support Gasket	2
Top Insulation Strip	1
Screws	9
Installation Instructions	1
Inducer Assembly Gasket	1

**NOTE:** In some situations, new heat exchanger cells may be required and must be ordered separately.

**Table 2 – Single and Two-Stage Furnace Models and Cell Panel Kits**

310AAV, 311AAV, 312AAV, 313ABV, 313JBV, 314AAV, PG8MAA, 310JAV, 311JAV, 312JAV, 313AAV, 313JAV, 314JAV, PG8JAA, PG8MEA, PG8JEA, PG8JEB, PG8JVB	58STA, 58DLA, 58CTA, 58CTW, 58CTY, 58PHA, 58PHB, 58PHY, 58PHX, 58STX, 58DLX, 58CTX	Kit Number
024045, 036045	045-08, 045-12	326704-751
024070, 036070	070-08, 070-12	326704-752
048070	070-16	326704-753
042090	090-14	326624-751
048090, 060090	090-16, 090-20	326624-752
036110	110-12	326624-753
048110, 060110	110-16, 110-20	326624-754
048135	135-16	326624-755
060135, 066135	135-20, 135-22	326624-756
060155	155-20	326624-757
066110	110-22	326624-758
066110 (314AAV/JAV and PG8JVB Only)	110-22 (58CTW/CTY Only)	326624-754
060110 (313AAV/JAV, 313ABV/JVB, PG8MEA/JEA/JEB Only)	110-20 (58PHA/PHB/PHX/PHY Only)	326624-758

**Table 3 – Variable-Speed Furnace Models and Cell Panel Kits**

315AAV, 315JAV, PG8MVA, PG8JVA	58CVA, 58CVX	Kit Number
036070	070-12	326704-752
048090	090-16	326624-751
066135	135-22	326624-756
066155	155-22	326624-757
066110	110-22	326624-758

**INSTALLATION**

**NOTE:** A releasing agent such as a vegetable oil cooking spray that does not contain corn oil, canola oil, halogenated hydrocarbons or aromatic content, which may prevent an inadequate seal from occurring, and RTV sealant such as G.E. RTV 162, G.E. RTV 6702, or Dow-Corning RTV 738 sealant are required. DO NOT substitute any other type of RTV sealant. G.E. 162 (P771-9003) is available through RCD in 3-oz tubes.

**Step 1 — Remove the Burner Assembly**

1. Turn off electric supplies to unit and set thermostat to lowest setting or “OFF”. More than 1 disconnect may be required to disconnect power to unit.

**⚠ WARNING**

**ELECTRICAL SHOCK HAZARD**

Failure to follow this warning could result in personal injury or death.

Before installing or servicing system, always turn off main power to system and tag disconnect switch with a suitable warning label. There may be more than one disconnect switch.

2. Remove outer door.
3. Turn off gas at external supply shut-off and turn electric switch on gas valve to “OFF”.
4. Disconnect wires from gas valve.
5. Disconnect main limit switch wires from main limit switch on cell panel.
6. Disconnect wires from roll-out switches located at the ends of the burner box.
7. Remove wiring harness stand-off from top edge of burner box.
8. Disconnect harness from hot surface igniter.

9. Disconnect flame sensor wire from flame sensor.
10. Disconnect gas line at external union or pipe connection.

**⚠ CAUTION**

**PERSONAL INJURY HAZARD**

Failure to follow this caution may result in improper furnace operation or failure of furnace.

Label all wires prior to disconnection when servicing controls. Wiring errors can cause improper and dangerous operation.

11. Remove the green/yellow ground wire attached to the manifold mounting tab, re-install screw.
12. Support the burner assembly while removing the 4 screws that attach the burner assembly to the cell panel.

**NOTE:** The hot surface igniter is **extremely** fragile. Failure to support the burner assembly could result in damage to the hot surface igniter.

13. Remove the burner assembly and set aside to prevent damage.

**Step 2 — Remove the Collector Box**

1. Disconnect and remove vent connector from vent elbow.

**⚠ CAUTION**

**PERSONAL INJURY HAZARD**

Failure to follow this caution may result in personal injury.

Vent connector may be hot to the touch or have sharp edges. Gloves should be worn when handling sheet metal parts.

**NOTE:** Support vent connector with temporary metal strap to prevent damage to vent connector or vent connector elbows.

2. Disconnect draft safeguard switch leads from draft safeguard switch on vent elbow.

3. Remove vent elbow from collector box/inducer housing.

**NOTE:** It may not be necessary to remove the vent elbow from the collector box in all applications.

4. Unplug wiring harness from inducer motor.

5. Disconnect pressure switch tube from collector box.

6. Remove pressure switch bracket from furnace casing. It is not necessary to disconnect pressure switch wires.

7. Remove screws from top corners of furnace casing (upflow furnaces only).

8. Remove 3 screws securing inducer motor assembly (motor, wheel, and mount) to inducer housing and remove inducer motor assembly. Note where inducer motor ground lead is connected.

## ⚠ CAUTION

### UNIT DAMAGE HAZARD

Failure to follow this caution may result in unit damage.

Failure to support the inducer motor assembly during removal may damage the inducer wheel.

9. Remove screws securing inducer housing/collector box to front of cell panel.

10. Use putty knife or automotive-type gasket scraper to carefully pry up on inducer housing/collector box assembly where it meets cell panel. Start at the bottom corner and work knife or scraper along inducer housing/collector box to break silicone seal. Continue to pry around until inducer housing/collector box can be removed.

11. Clean any remaining silicone residue from cell panel with a scraper, wire brush or fine steel wool.

### Step 3 — Removal of Heat Exchanger Assembly

1. Remove the screws that attach the blower access door and set door aside.

2. Remove screw from blower door switch and set switch aside.

3. Remove cover from J-box, set aside.

4. Disconnect line voltage wiring from J-box, including ground wire from green grounding screw.

**NOTE:** Grounding screw must be fully backed out to allow J-Box removal.

5. Remove the 2 screws from the J-box and set J-box aside.

6. Remove limit switch and any remaining wires or clamps on cell panel and set harness inside blower compartment.

7. Disconnect thermostat wires from furnace control board and pull wires through rubber grommet on cell panel.

8. Remove screws that secure the heat exchanger cell panel to the furnace casing.

**NOTE:** Heat exchanger cell panel also functions as the front part of the blower shelf. Be sure to remove the screws along the bottom fold of the cell panel, located just below the heat exchanger cell inlets and in the front corners of the heat exchanger cell panel located above the blower compartment.

## ⚠ CAUTION

### CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges. Use care and wear appropriate protective clothing and gloves when handling sheet metal parts. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts and servicing furnaces.

9. Grasp heat exchanger at the collector box and at the blower shelf and slide heat exchanger assembly forward. It may be necessary to raise the top of the furnace casing slightly to allow heat exchanger assembly to clear the furnace casing.

10. Set heat exchanger assembly aside.

### Step 4 — Removal of Heat Exchanger Cells

1. Remove the screws that secure the heat exchanger rear baffle to each heat exchanger cell and set baffle aside. Do not bend or damage fingers on baffles.

2. Remove NOx baffle, if installed. Remove screws of selected heat exchanger cell at cell panel inlet and outlet openings.

**NOTE:** Number each NOx baffle removed for reassembly in the correct heat exchanger cell.

3. Grasp heat exchanger to be removed at rear and lift cell up and away from heat exchanger cell panel.

4. Repeat for each heat exchanger cell.

5. Clean off any remaining insulation from heat exchanger cell panel inlets, outlets and from top panel on casing and casing cell panel supports on prior to reassembly.

### Step 5 — Installation of Heat Exchanger Cell Panel

**NOTE:** Rigid cell panel insulation is self-adhesive and factory-installed on cell panel. If insulation has slid out of position, re-position on cell panel and temporarily secure in place with small strips of foil tape. Remove tape after heat exchangers are re-installed.

1. Position heat exchanger under cell panel opening.

2. Align screw holes in cell panel with heat exchanger and start all 8 screws.

3. Check gasket position(s) and secure all 8 screws.

4. Repeat steps 1 through 3 for additional cells being replaced.

5. Inspect and re-install NOx baffles. Replace any severely deformed NOx baffles. Replacement baffles are not included and must be ordered separately.

6. After all heat exchanger cells are replaced, re-install heat exchanger rear baffle on heat exchanger assembly. Be sure baffle is installed right side up. (See Fig. 1)

7. Install gaskets on cell panel supports at casing and on top edge of cell panel.

### Step 6 — Installation of Heat Exchanger Assembly

1. Grasp heat exchanger assembly at top of cell panel and at the blower shelf and slide heat exchanger assembly into the furnace. It may be necessary to raise the top of the furnace casing slightly to allow heat exchanger assembly to clear the furnace casing.

2. With the cell panel flush against the cell panel supports, reinstall the screws that secure the heat exchanger cell panel to the furnace casing.

**NOTE:** Heat exchanger cell panel also functions as the front part of the blower shelf. Be sure to install the screws in the holes along

the bottom fold of the cell panel, located below the heat exchanger cell inlets and in the front corners of the heat exchanger cell panel located above the blower compartment.

3. Route wiring harness through opening in blower shelf.
4. Reinstall blower door switch.

**NOTE:** For deep door designed furnaces, hole must be drilled with 1/8-in. bit to reinstall screw securing blower door switch to cell panel. See Fig. 2 for proper hole location. Proper location is necessary to assure proper mounting and function of the blower door switch on deep door model furnaces.

5. Route line voltage wires through J-box bracket and secure J-box bracket to furnace casing.
6. Install limit switch in cell panel.
7. Connect line voltage bit wiring to J-box including ground wire at green grounding screw.

## **WARNING**

### **ELECTRICAL OPERATION HAZARD**

Failure to follow this warning could result in personal injury or death.

The furnace must be grounded to minimize personal injury if an electrical short should occur.

**NOTE:** Failure to properly ground burner assembly will result in loss of flame sensing signal.

8. Re-install J-box cover.
9. Install grommet from existing heat exchanger cell panel.
10. Route thermostat wires through grommet and attach to furnace control board.

### **Step 7 — Installation of Collector Box**

**NOTE:** A releasing agent such as a vegetable oil cooking spray that does not contain corn oil, canola oil, halogenated hydrocarbons or aromatic content, which may prevent an inadequate seal from occurring, and RTV sealant such as G.E. RTV 162, G.E. RTV 6702, or Dow-Corning RTV 738 sealant are required. DO NOT substitute any other type of RTV sealant. G.E. 162 (P771-9003) is available through RCD in 3-oz tubes.

1. Spray a cloth rag with releasing agent.
2. Wipe surface of heat exchanger cell panel with rag sprayed with releasing agent.
3. Apply 3/16-in. to 1/4-in. bead of high temperature silicone around the back outside edge of collector box.

**NOTE:** Do not allow RTV to flow into pressure switch port. Pressure switch will not operated with port obstructed.

4. Realign collector box assembly against cell panel and install all screws.
5. Verify old inducer motor gasket is removed from inducer assembly and collector box.
6. Place new inducer motor gasket provided in kit around flange on collector box.

**NOTE:** A new inducer assembly gasket is provided in the heat exchanger cell panel kit.

7. Align inducer motor assembly and attach to collector box. Verify inducer motor ground wire is reinstalled in original location.
8. Spin black plastic cooling fan on inducer motor to be certain there is no interference inside of inducer housing. If interference occurs, wheel must be readjusted.
9. Re-install screws in top corners of furnace casing.
10. Reinstall pressure switch bracket to furnace casing.

**NOTE:** Verify pressure switch port is not obstructed by inserting a small wire or drill bit into the port. If wire has RTV on it when it is removed, it may be necessary to remove collector box, clean pressure switch port area and re-attach collector box as explained above.

11. Connect pressure switch tubing to collector box fitting.
12. Re-install vent elbow to collector box (if removed).
13. Re-attach vent connector to vent elbow.
14. Re-connect inducer motor leads to inducer motor and draft safeguard leads to draft safeguard switch.

### **Step 8 — Installation of Burner Assembly**

**NOTE:** The hot surface igniter is **extremely** fragile. Failure to support the burner assembly could result in damage to the hot surface ignition.

1. Align burner box with mounting holes in cell panel and re-install the 4 mounting screws.
2. Remove the screw from the manifold mounting tab and re-attach the green/yellow ground wire attached to the manifold.

**NOTE:** Failure to properly ground burner assembly will result in loss of flame sensing signal.

3. Connect flame sensor wire to flame sensor.
4. Connect harness to HSI.
5. Connect leads to main limit on cell panel.
6. Connect leads to rollout switches on burner box.
7. Attach wiring harness standoff(s) to top edge of burner box.

## **WARNING**

### **ELECTRICAL OPERATION HAZARD**

Failure to follow this warning could result in unit damage, personal injury or death.

Failure to attach wiring harness standoff(s) may result in damage to the wiring.

8. Connect leads to gas valve. Refer to wiring diagram for correct orientation.
9. Connect gas supply to external union or pipe connection.
10. Turn on external gas supply and test for leaks.
11. Turn on gas at gas supply shut-off and gas control electric switch.
12. Purge gas lines—After all connections have been made, purge the lines and check for leaks.
13. Use a commercially available soap solution made specifically for the detection of leaks to check all connections.

## **WARNING**

### **ELECTRICAL OPERATION HAZARD**

Failure to follow this warning could result in personal injury, death, and/or property damage.

Never purge a gas line into a combustion chamber. Never test for gas leaks with an open flame. Use a commercially available soap solution made specifically for the detection of leaks to check all connections. A fire or explosion may result causing property damage, personal injury or loss of life.

14. Turn on line voltage electrical supply.

**NOTE:** Blower will run for 90 sec if thermostat is set to call for heat when 120-v power is restored. A status code 12 will flash

after 90 sec. To clear status code, turn off power, turn thermostat “OFF” or down below room setting. Turn power back on. Set thermostat to desired temperature.

### Step 9 — System Check-Out

1. Set thermostat to “OFF”.
2. Manually close blower door switch.
3. Initiate component test through circuit board by referring to “Component Test” on status code label on blower access door for complete test sequence information.
4. If any status codes are flashed, refer to status code label on unit blower door.
5. Turn thermostat fan switch to “ON”, “Continuous” or jumper R to G terminals at furnace control board.
6. Check for air leakage around cell panel. It may be necessary to remove heat exchanger assembly and top gasket between cell panel and furnace casing top plate. Re-install and re-check for blower air leaks.
7. Remove jumper(s) or set thermostat fan to “Auto” or “OFF”.
8. Release blower door switch.
9. Install blower access panel.
10. Set thermostat to call for heat.
11. Allow unit to initiate a complete call for heat cycle.
12. Check for air leakage around collector box. A whistling noise may indicate air leak in collector box -seal.

**NOTE:** If there is a severe air leak in the collector box seal, pressure switch may not close or will re-open, resulting in no ignition or erratic burner operation.

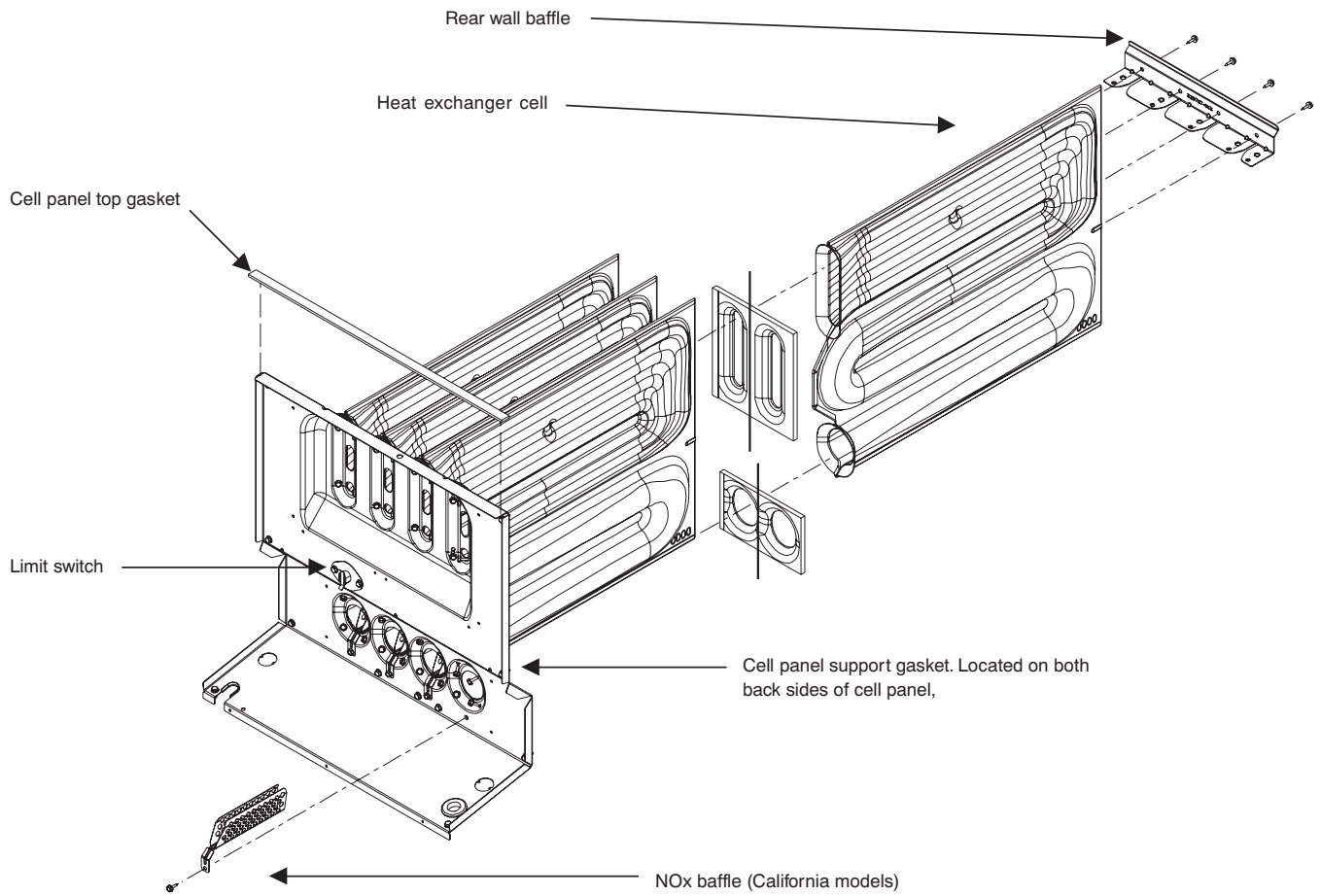
**NOTE:** Heat Exchanger failure may have been caused by one or more of the following conditions. As part of the system check-out,

verify that the following conditions are not affecting the operation of the furnace:

- **Short Cycling-Defective thermostat:** Incorrect thermostat anticipator setting, dirty filter or over-sized furnace.
- **Under firing/low BTU input:** Set manifold pressure and verify firing rate as shown on rating plate by clocking the gas meter.
- **Low temperature rise:** Set unit for correct temperature rise range as shown on unit rating plate.
- **Contaminated combustion air:** Remove contaminants or provide ample fresh air for combustion.
- **Excessive amounts of outside ventilation air:** Return air temperature cannot be below 60 degrees F for extended periods of time.
- **Incorrect venting:** Verify proper venting per local code. Type B vent connector is required for 2 stage units and may be required for other applications.

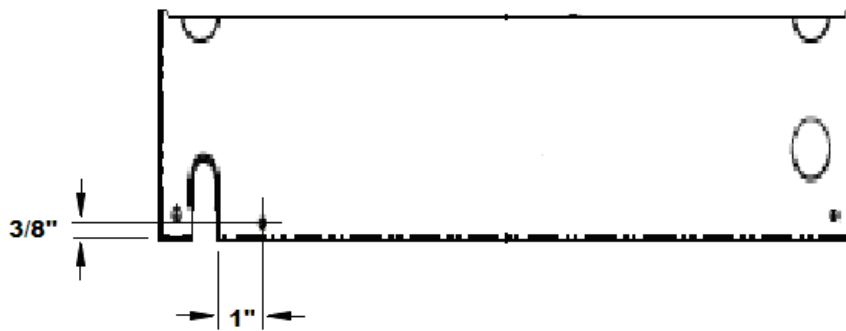
For additional information, and a complete sequence of furnace operation, refer to furnace Installation, Start-Up and Operating Instructions.

13. After System Check-out is complete, set thermostat below room temperature.
14. Verify that burner shuts down and blower completes selected off delay furnace time.
15. Verify furnace operates properly and set thermostat to desired room temperature.
16. Re-install outer door.



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**Fig. 1 - Heat Exchanger Cell Panel Installation**



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**Fig. 2 - Deep Door Furnace / Blower Door Switch Location**