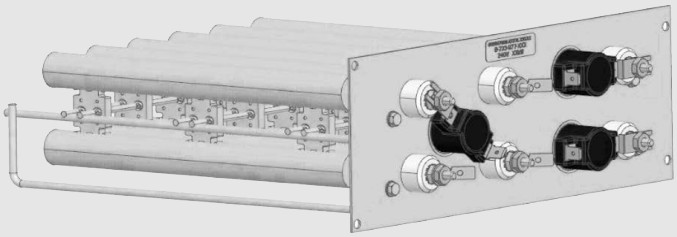
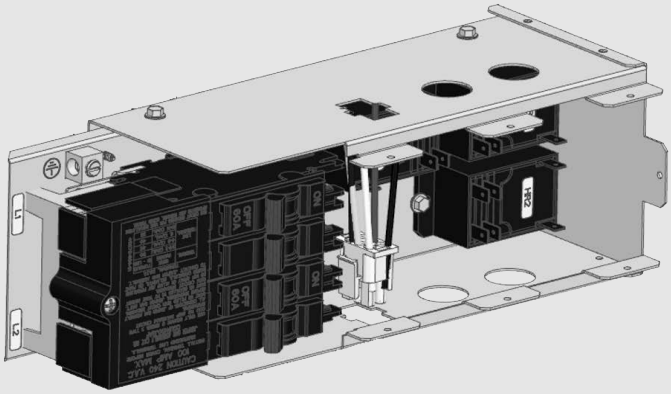
BOSCH

Installation, Operation, and Maintenance Manual

HK Series Electric Heat Kit

HK050 | HK100 | HK150 | HK200





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Intertek

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1 Document Conventions

1.1 Key to Symbols

1.1.1 Warnings

Warnings in this document are identified by a warning triangle followed by a signal word.

Signal word at the beginning of a warning indicate the type and seriousness of the ensuing risk if measures to prevent the risk are not taken.

The following signal words are defined and can be used in this document:

⚠ DANGER

DANGER indicates a situation that, if not avoided, will result in death or serious injury.

⚠ WARNING

WARNING indicates a situation that, if not avoided, could result in death or serious injury.

⚠ CAUTION

CAUTION indicates a situation that, if not avoided, could result in minor to moderate injury.

NOTICE

NOTICE is used to address practices not related to personal injury.

1.1.2 Important Information

i

This info icon indicates important information where there is no risk to property or people.

1.1.3 Additional Symbols

Symbol	Meaning
▶	A step in an action sequence.
→	A reference to a related part in the document.
•	A list entry.
–	A list entry (second level)

Table 1 Additional Symbols

1.2 General Safety Instructions

⚠ DANGER

Personal Injury Hazard or Property Damage!

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions that may cause death, serious personal injury and/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.

⚠ DANGER

Electric Shock!

Before performing service or maintenance operations on the system, turn OFF main power to the unit. Electrical shock will cause personal injury or death.

⚠ WARNING

Personal Injury Hazard!

Installation and servicing of this equipment can be hazardous due to system pressure and electrical components. Only trained and qualified personnel should install, repair, or service the equipment.

⚠ WARNING

Personal Injury Hazard!

When working on equipment, always observe precautions described in the literature, tags, and labels attached to the unit. Follow all safety codes. Wear safety glasses and work gloves. Use a quenching cloth for brazing, and place a fire extinguisher close to the work area.

⚠ WARNING

Fire Hazard!

Auxiliary devices that may be a POTENTIAL IGNITION SOURCE must NOT be installed in the duct work. Examples of such POTENTIAL IGNITION SOURCES are hot surfaces with a temperature exceeding 700 °C and electric switching devices such as circuit breakers, contactors, motor starters, disconnect switches, etc.

⚠ CAUTION

Personal Injury Hazard!

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing and gloves when handling parts.

NOTICE

Personal Injury Hazard!

This accessory is not intended for use by people (including children) with reduced physical, sensory, or mental capabilities, or with lack of experience and knowledge, unless they are supervised or have been given instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

HK Series Electric Heat Kit can only be installed on single-phase units.

2 General Description

Bosch HK Series Electric Heat Kit is a field Installable electric resistance heater kit designed for the CF, RF, CP, RP series heat pumps.

The HK Series Electric Heat Kit requires separate electrical service connection, independent from the heat pump's power supply. Hence, installation of this Heater Package will convert the Heat Pump into a two point power connection.

The HK Series Electric Heat Kit is available in several kW capacities. Applicable heater package capacities by heat pump model and capacity can be found in Table 2 below. The HK Series Electric Heat Kit can be installed on vertical (VT), horizontal [end blow only] (HZ) and counterflow (CF) units. The eighth and ninth characters of the unit model signify the configuration. Example: RF024-1VTC.

Unit Model	Heater Compatibility			
	HK050-1501 (5kW)	HK100-1501 (10kW)	HK150-1501 (15kW)	HK200-1501 (20kW)
RF/CF018	X			
RF/CF024	X	X		
RF/CF030	X	X		
RF/CF036	X	X	X	
RF/CF042	X	X	X	
RF/CF048	X	X	X	X
RF/CF060	X	X	X	X
RF/CF070	X	X	X	X
RP/CP024	X	X		
RP/CP036	X	X	X	
RP/CP048	X	X	X	X
RP/CP060	X	X	X	X
RP/CP070	X	X	X	X

Table 2 Unit/Heater Compatibility

The HK Series Electric Heat Kit can only be installed on single-phase units.

A heat pump thermostat with supplemental electric heat feature is required to operate the system when this kit is installed.

3 Unpacking and Inspection

1. Unpack the heater kit.
2. Ensure that the electric heat kit includes all of the items listed in the Component List on page 6.
3. If any part of the kit appears damaged (i.e., broken heater elements, damaged relays) or missing, do not attempt to install the kit. Note any visible damage or shortage on all the copies of the freight bill. Concealed damage not discovered until after removing the kits from packaging must be reported to Bosch by the original purchaser by filing a claim at: https://claims.bosch-homecomfort.us

4 Component List

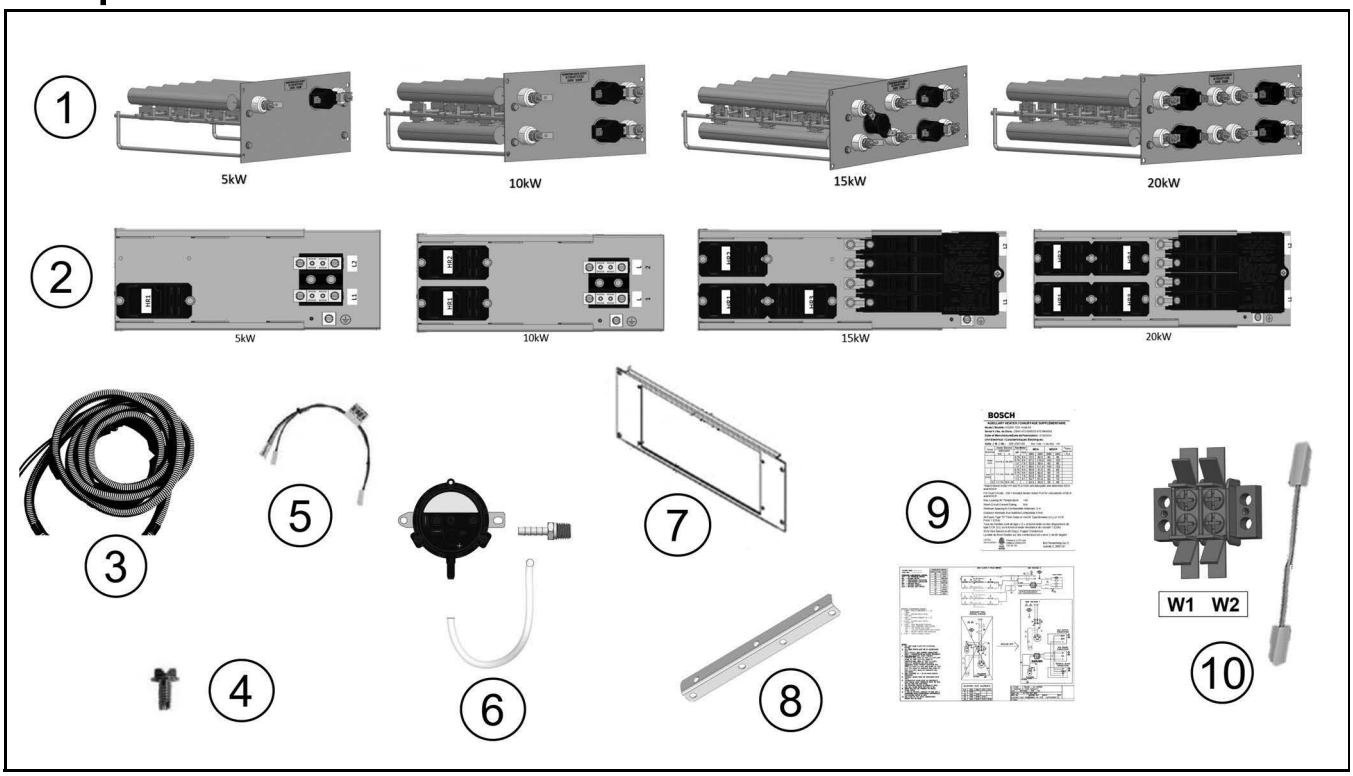


Fig. 1 Heater Kit Components

[1] Electric heat elements per kW capacity (qty - 1)

[2] Electric control box per kW capacity, pre-wired with three harnesses (HR1, HR2, APS harnesses) (qty - 1)

[3] Electric heat e. box and blower harness (qty - 1)

[4] Screw (qty -12)

[5] W1, W2, C (white-gray-blue) harness (qty - 1)

[6] APS (Air Pressure Switch) components: APS, brass fitting, tube

[7] Sheet metal Heater element adapter plate (qty - 1)

[8] Sheet metal blower support bracket for horizontal configuration units (qty - 1)

[9] EH wiring diagram (qty - 1) and EH nameplate (qty - 1)

[10] Components for constant torque motor units: Two-points terminal block, W1 W2 label, and a speed wire.

4.1 Heater Collar Accessory (CF and CP Series only)

CP and CF model require a heater collar accessory to allow installation of an electric heat kit. Refer to Table 3 on page #7 for the appropriate heater collar to order for the unit model.

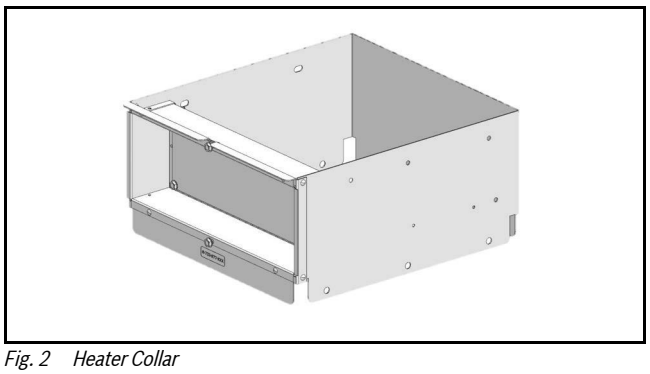


Fig. 2 Heater Collar

Any additional required components, such as the heater collar accessory, are sold separately.

Unit Model	Configuration	Heater Collar Accessory Number					
		8-733-979-994	8-733-979-998	8-733-851-040	8-733-979-997	8-733-979-996	8-733-979-995
CP024	VT/HZ		X				
CP036	VT/HZ				X		
CP048	VT					X	
	HZ				X		
CP060	VT						X
	HZ				X		
CP070	VT						X
	HZ				X		
CF018	VT/HZ	X					
CF024	VT/HZ/CF	X					
CF030	VT/HZ		X				
	CF			X			
CF036	VT/HZ/CF		X				
CF042	VT/HZ/CF		X				
CF048	VT/HZ/CF		X				
CF060	VT/HZ/CF				X		
CF070	VT/HZ/CF				X		

Table 3 Heater Collar Accessory Table

5 Electric Heat Control Box and Heating Element Locations

The electric heat field installed kit contains two main electrical components: electric heat element and electric heat control box.

The electric heat element and the electric heat control box are attached in the locations shown in figures #3 through 5, and the installation steps are provided in the following sections.

Labels for figures #3 through 5:

[1] Electric heat element

[2] Electric heat control box

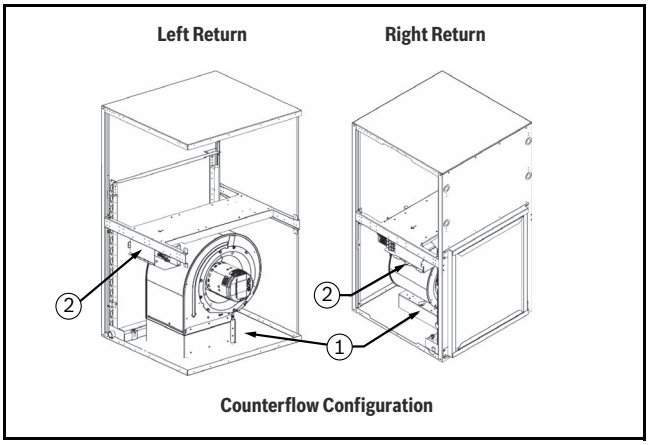


Fig. 4 Location of Heat Element and Control Box in Counterflow Units

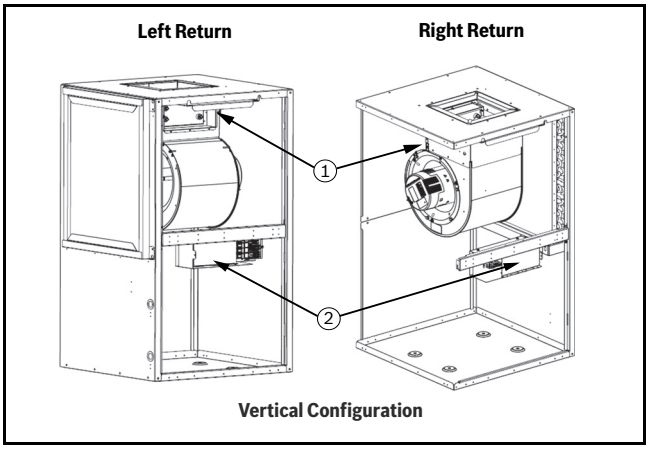


Fig. 3 Location of Heat Element and Control Box in Left-Return and Right-Return Vertical Units

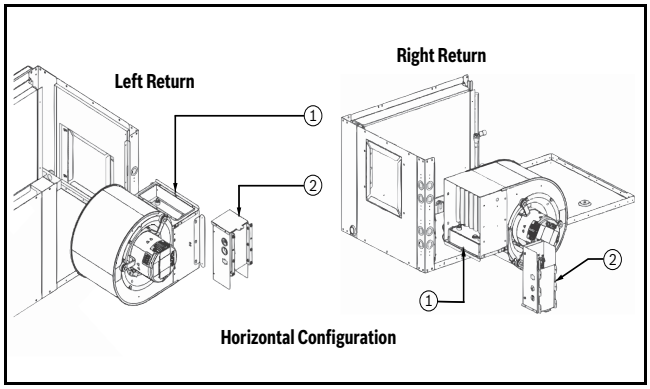


Fig. 5 Location of Heat Element and Control Box in Left-Return and Right-Return Horizontal Units-End Discharge

6 Electric Heat Kit Installation

This section contains information on the following:

⚠ WARNING

Personal Injury Hazard or Property Damage!

This product is to be installed, serviced, and uninstalled by professionals only.

⚠ WARNING

Personal Injury Hazard!

Avoid sharp edges when routing wiring as these edges can chafe the wiring insulation, exposing the conductor, which can result in equipment damage and personal injury.

6.1 Isolate the Power

1. Turn OFF the system at the thermostat.
2. Turn OFF the main power to the heat pump to at the unit's disconnect switch or breaker panel.

⚠ DANGER

Electric Shock!

Ensure you are following appropriate lockout/tagout procedures.

6.2 Instructions for Vertical (VT) Configured Units

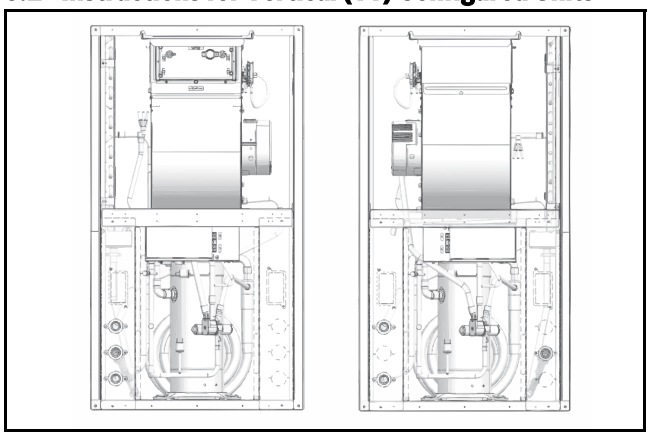


Fig. 6 Vertical Units EH Accessory Configurations per Left and Right Return Orientations

6.2.1 Removing the H-Brace

1. Remove the top front panel and unscrew bottom panel to swing open main unit's electrical box.
2. Remove the screws from the H-brace.
3. Pull the H-brace up and away from the slots. (➔Refer to Fig. 7.)

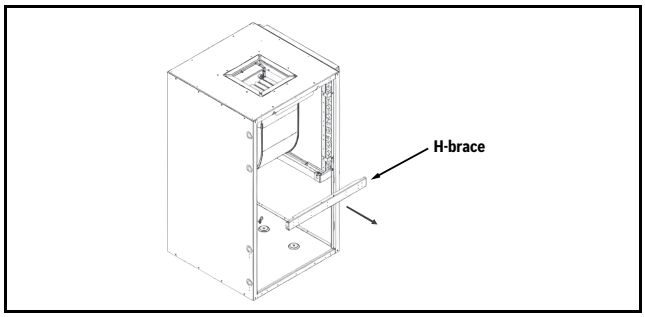


Fig. 7 H-Brace Removal

6.2.2 Removing the Blower/Motor Assembly

1. Disconnect the high- and low-voltage connectors from the blower motor.
2. Remove the two screws securing the blower to the top panel. (➔Refer to Fig. 8.)

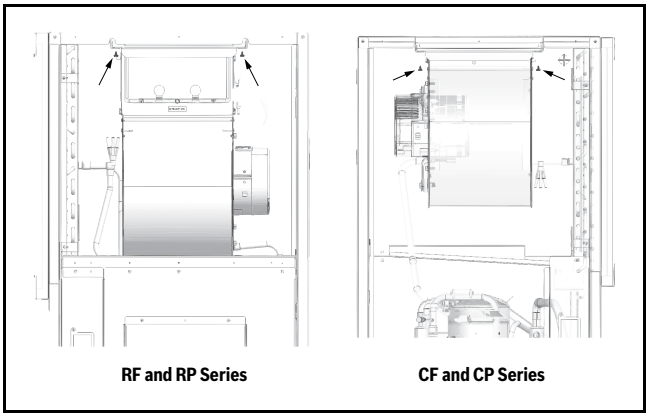


Fig. 8 Screws Securing the Blower to the Top Panel

3. Pull blower/motor and tray assembly out of unit.

6.2.3 Installing a Blower Collar Accessory (CF and CP Series Only)

1. Remove the three screws from the side holding the blower housing to tray. (➔Refer to Fig. 9.)

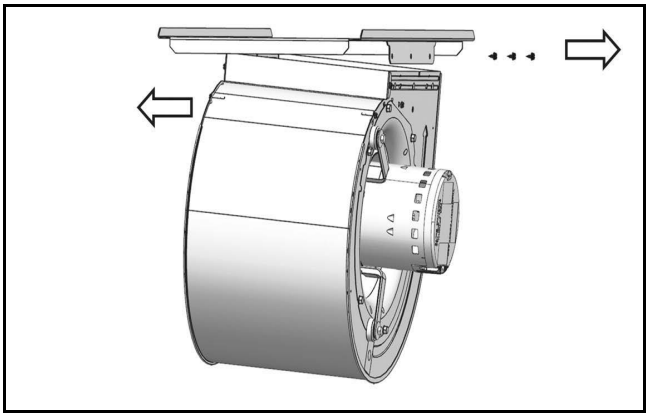


Fig. 9 Remove Screws and Pull the Blower Housing

2. Lift the blower housing then pull it to the side to remove the weld pins out of the other side. (➔Refer to Fig. 9.)
3. Orient and attach the collar to the blower housing opening. (➔Refer to Fig. 10.)

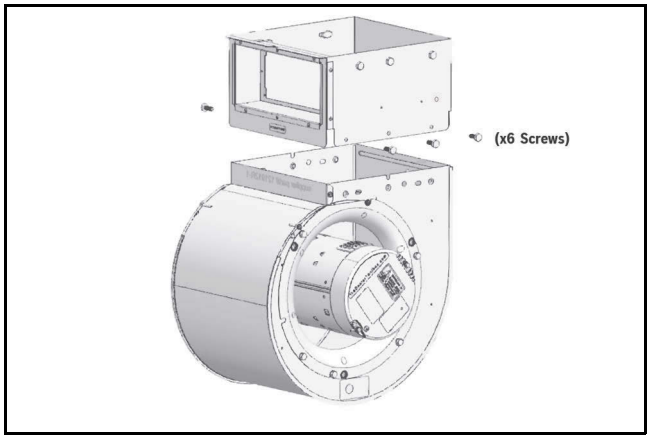


Fig. 10 Attach the Heater Collar

4. Install the three screws on each side of the collar. (➔Refer to Fig. 10.)
5. Reattach one side of collar/blower combo to blower tray aligning the two weld pins first.
6. Attach the collar/blower combo to the opposite side using three screws.

6.2.4 Removing the Heater Element Cover, Installing an Adapter Plate (As Needed), and Inserting the Heater Element

1. Remove the heater element cover and the adapter plate from the unit's heater collar. (➔Refer to Fig. 11.)

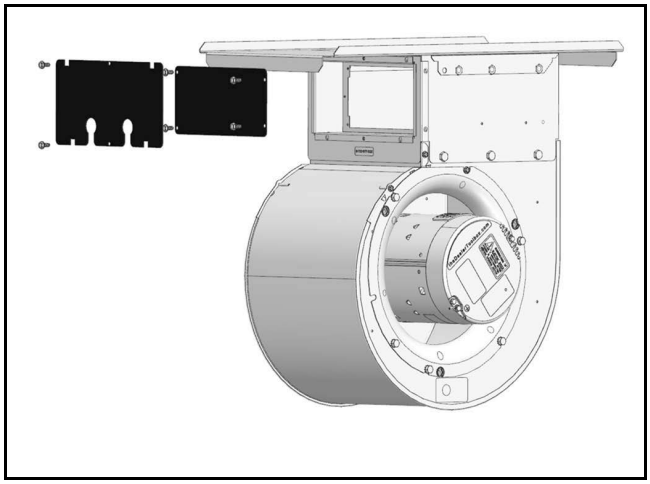


Fig. 11 Heater Collar Cover Plate and Blank Plate

2. Discard the blank plate.

An adapter plate is required for some models. Use Table 4 on page #10 to determine if the adapter plate is needed.

Model	Configuration	5kW Element	10kW Element	15kW Element	20kW Element
CF/RF018	All	Not Required			
CF/RF024	All	Not Required			
CF/RF030	Counterflow	Not Required			
CF/RF030	VT/HZ	Required		Not Required	
CF/RF036	All	Required		Not Required	
CF/RF042	All	Required		Not Required	
CF/RF048	All	Required		Not Required	
CF/RF060	All	Required		Not Required	
CF/RF070	All	Required		Not Required	
CP/RP024	All	Required		Not Required	
CP/RP030	All	Required		Not Required	
CP/RP036	All	Required		Not Required	
CP/RP042	All	Required		Not Required	
CP/RP048	All	Required		Not Required	
CP/RP060	All	Required		Not Required	
CP/RP070	All	Required		Not Required	

Table 4 Adapter Plate Requirement Table

3. Install the adapter plate, if required, to the heater collar using four screws. (➔Refer to Fig. 12.)

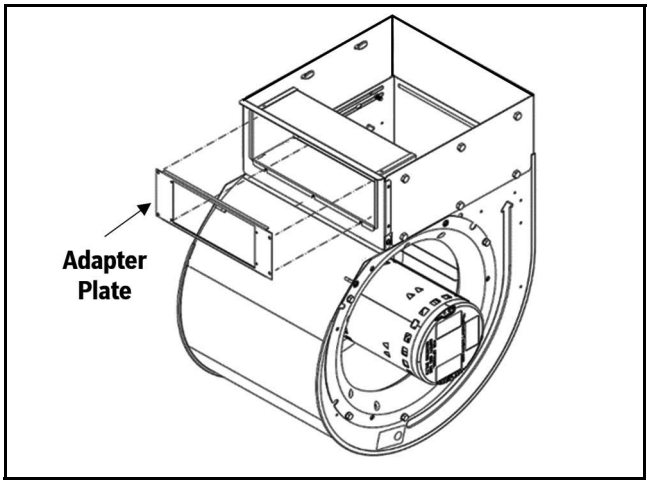


Fig. 12 Adapter Plate

4. Insert heater element into slot within the collar, ensuring holes of the heater element align with holes of the collar. (➔Refer to Fig. 13.)

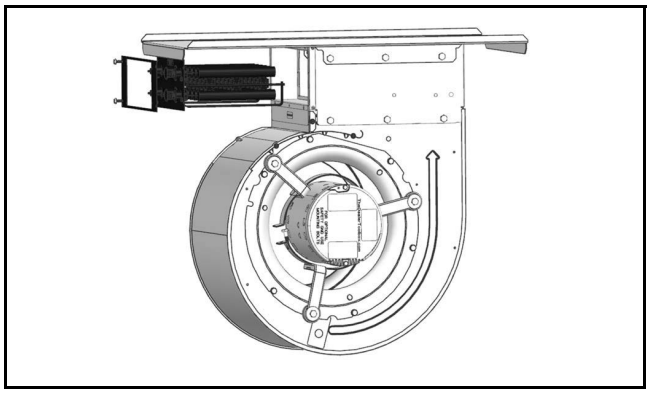


Fig. 13 Insert Heater Element

6.2.5 Installing the Air Proving Switch (APS) to the Blower Housing

The APS is wired in series with the Common side of the EH relay(s). When the blower turns on, air flow pressurizes the internal diaphragm through the brass fitting and air hose to close the switch. The back port on the APS must be left open to sense the pressure differential. With no air flow, the EH relay(s) cannot power the EH element(s).

1. Locate the three holes on the side of the mounting collar.

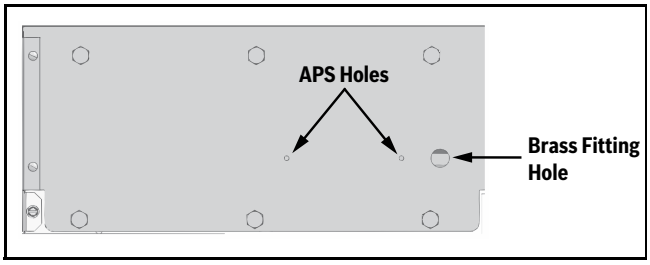


Fig. 14 Heating Elements

2. Insert the brass fitting into the specified hole if not installed from the factory. (➔Refer to Fig. 14.)
3. Mount the APS using two screws to the specified holes. (➔Refer to Fig. 14.)

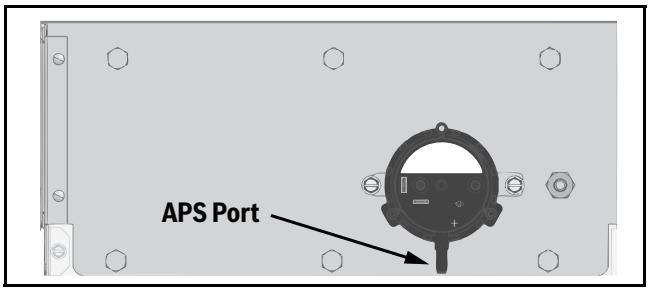


Fig. 15 APS Port Orientation

4. Connect one side of the tube to the APS front port. (➔Refer to Fig. 16.)

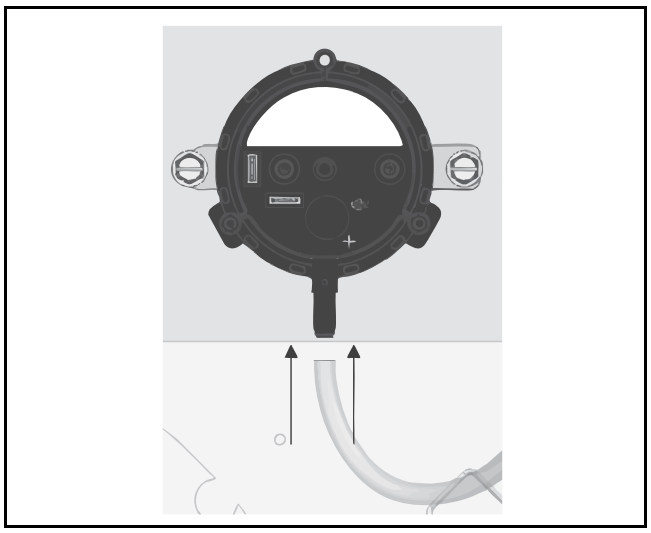


Fig. 16 Connect Tube to the APS Vacuum Port

5. Connect the other side of the tube to the brass fitting, ensuring the tube is fully pushed on all the way. (➔Refer to Fig. 17.)

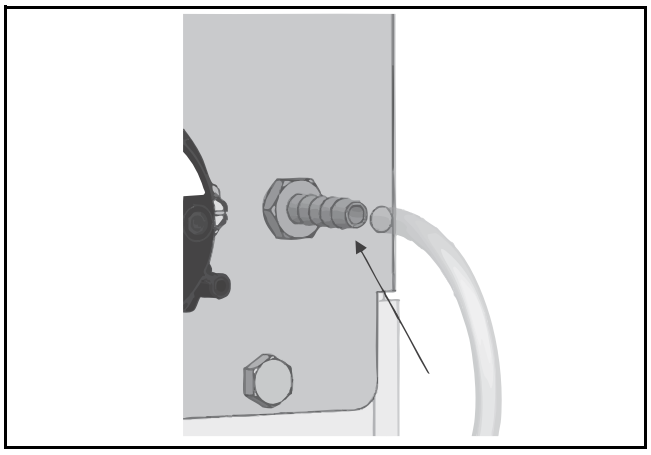


Fig. 17 Connect the Tube to the Brass Fitting

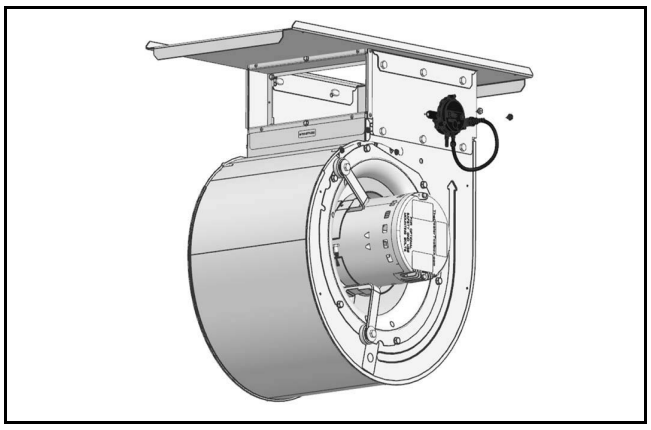


Fig. 18 Final APS Assembly with the Heater Collar

6.2.6 Installing the E-Heat Control Box

1. Orient e-heat control box in preparation to secure it to the H-brace:

▶ For right-return units, the field wires enter from the left-side upper knockouts. Orient the e-heat control box so that its terminal block/breaker is closest to the left side of the unit.

▶ For left-return units, the field wires enter from the right-side upper knockouts. Orient the e-heat control box so that its terminal block/breaker is closest to the right side of the unit.

2. Mount the e-heat control box by aligning the holes of the control box's flanges with holes in H-brace and fasten with two screws. (➔Refer to Fig. 19.)

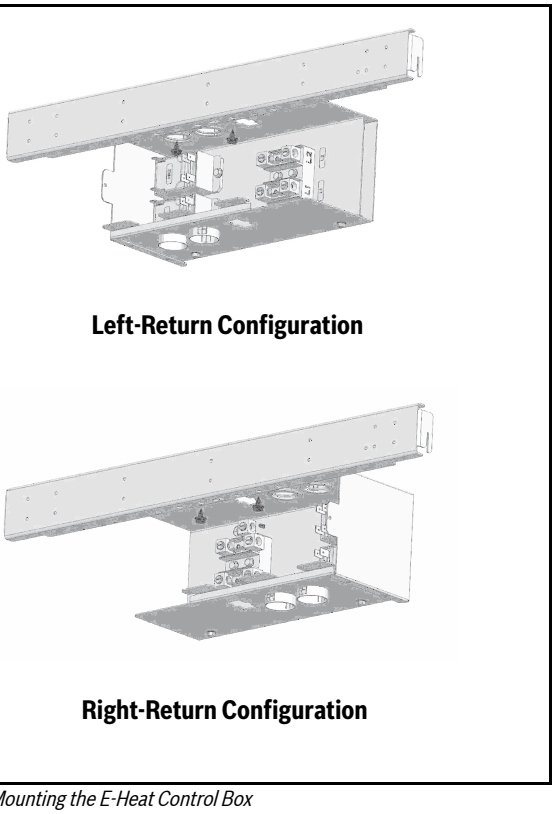


Fig. 19 Mounting the E-Heat Control Box

6.2.7 Routing and Connecting Wiring

1. Locate the e-heat's 6-pin connector and insert it into the corresponding-shaped top hole of the e-heat control box. (➔Refer to Fig. 20.)

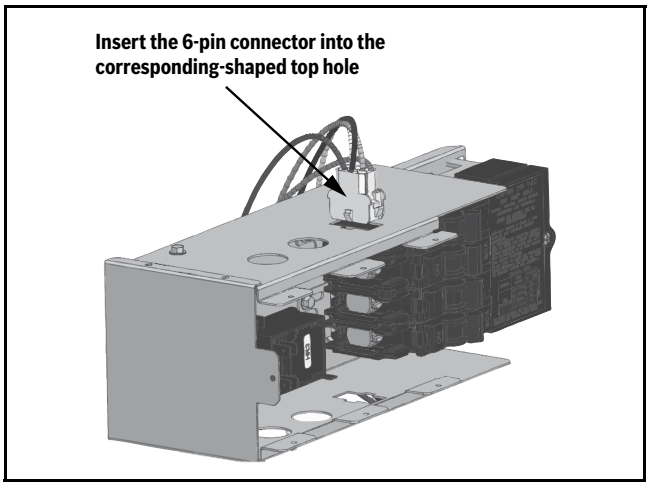


Fig. 20 Insert the Connector through the Top Hole of the E-Heat Control Box

Figure 20 is showing a left-return configuration (➔Refer to Fig. 19 for the right-return configuration).

2. Connect the matting plug to the connector that was inserted in the top hole of the e-heat control box. (➔Refer to Fig. 21.)

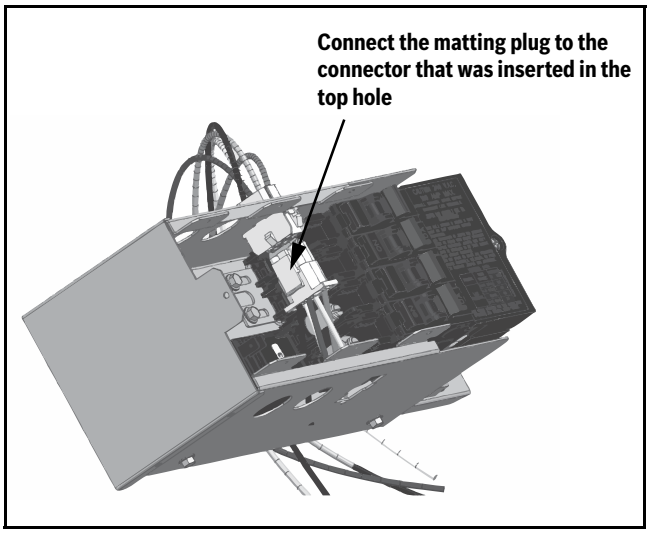


Fig. 21 Connect the Matting Connectors

3. Locate the red/black (conduit protected) elements wires (labeled HR1, HR2, HR3, and HR4. ➔Refer to Fig. 27.)and route the wires through the top of the e-heat control box. Be sure to make note of the different wire pairs—each relay has one black and one red wire. (➔Refer to Fig. 22.)

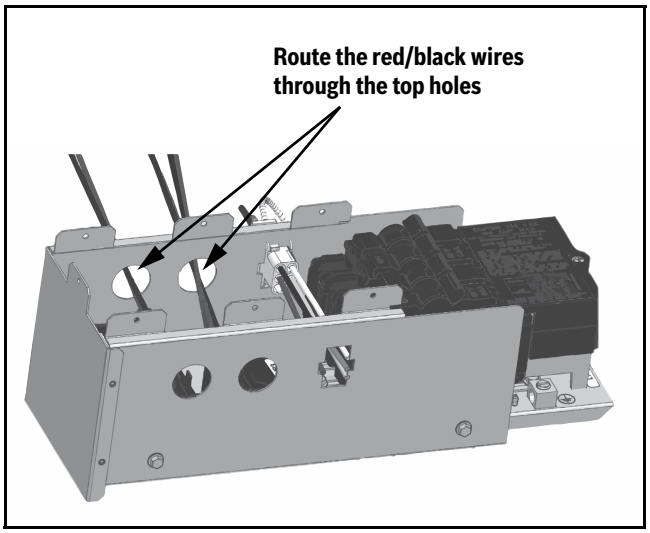


Fig. 22 Route the Red/Black Wire Pairs through the Top Holes

4. Locate the two blue wires (conduit protected) labeled APS on the e-heat control box and route the wires through one of the top e-heat control box holes. (➔Refer to Fig. 23.)

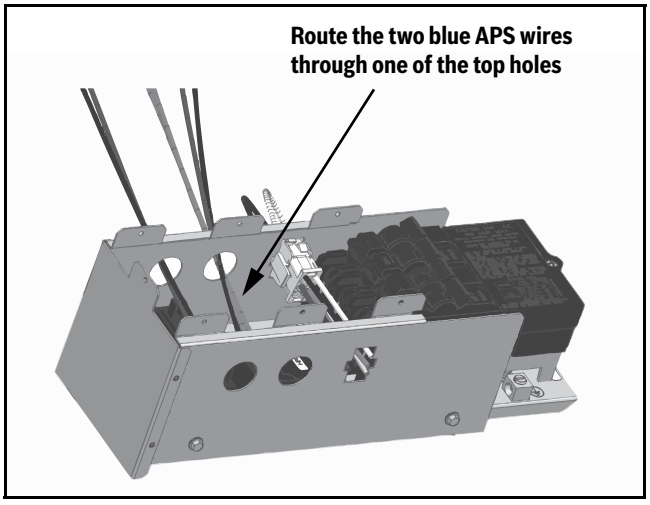


Fig. 23 Route the Two Blue APS Wires

5. Remove the “APS” jumper and discard it.

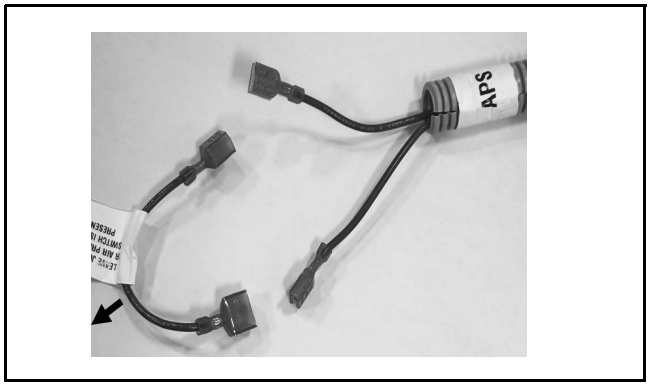


Fig. 24 Disconnect the Jumper and Discard

6. Connect the other two ends to the APS, installed on the heater collar earlier. (There are no polarity for the cable connections.)
7. Route the red/black (conduit protected) elements wires originating from the e-heat control box through the grommets in the electric heater element cover. (➔Refer to Fig. 25.)

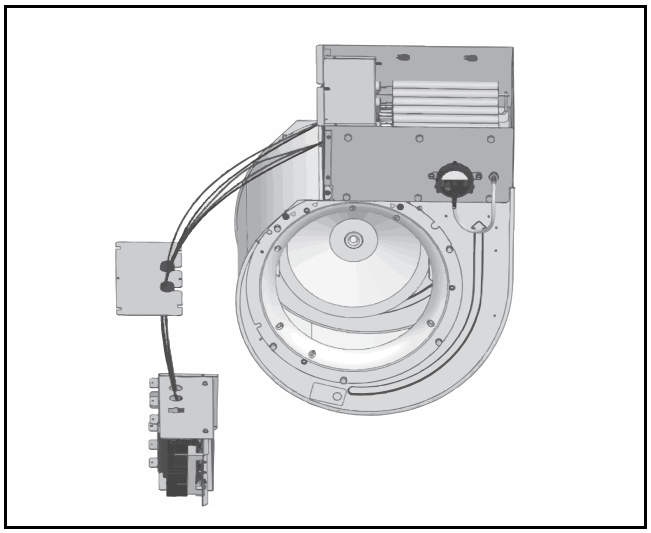


Fig. 25 Routing Red/Black Wires through the Heater Element Cover Grommets

⚠ WARNING

Personal Injury Hazard or Product Damage!

Make sure that the grommets are used to prevent wire damage from rubbing against the metal.

8. Connect the red/black (conduit protected) elements wires to heater element switch pins. Each element wire is labeled (HR1, HR2, HR3, or HR4) to facilitate wiring to heater elements switch pins. (There are no polarity for the cable connections.)(➔Refer to Fig. 26.)

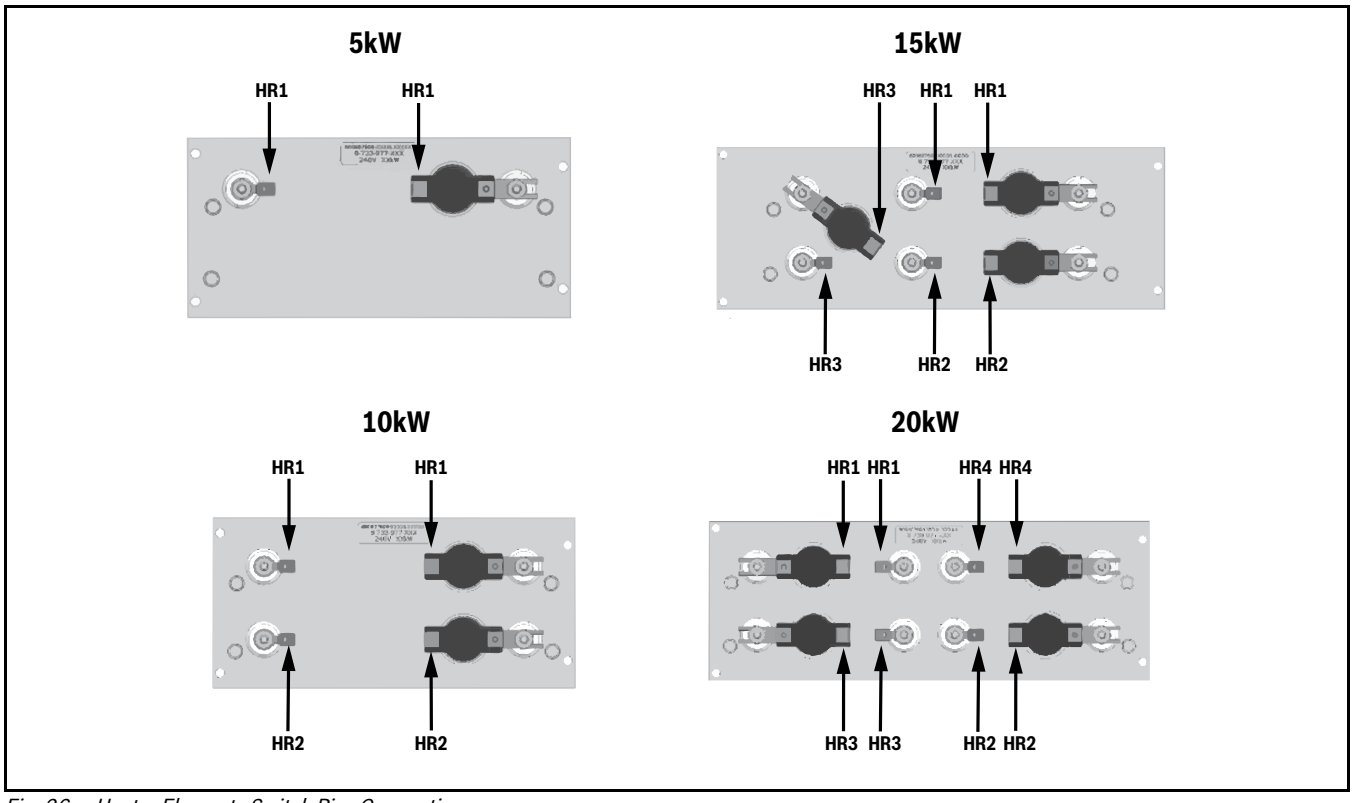


Fig. 26 Heater Elements Switch Pins Connections

9. Secure the element cover with two screws. (→Refer to Fig. 27.)

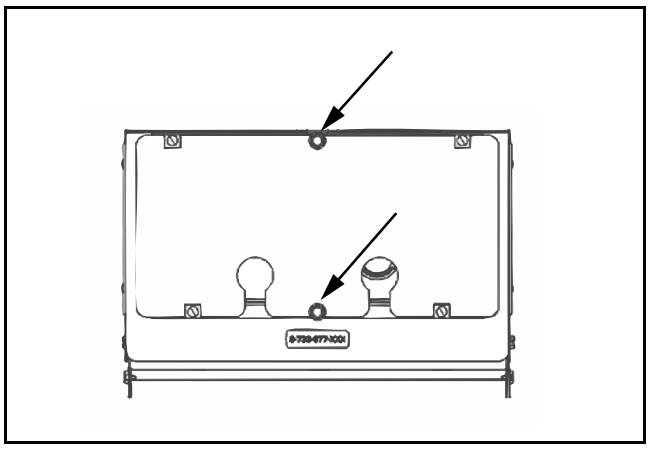


Fig. 27 Location of the Element Cover Screws

10. Reinstall the blower with tray in the same orientation that it was removed, and fasten the previously removed screws to secure the blower tray to the top panel.
11. Reconnect the high- and low-voltage connectors to the blower motor.
12. Install the H-brace e-heat control box assembly to the unit. (→Refer to Fig. 19.)

6.2.8 Completing the Installation

Follow the steps in sections:

- 6.5 Wiring the Main Control Box on page 20.
- 6.6 Wiring the Thermostat on page 21.
- 6.7 Wiring Line Voltage Connections on page 21.
- 6.8 Adding the Wiring Diagram and Adhering the Data Plate Label on page 23.

6.3 Instructions for Horizontal (HZ) Configured Units

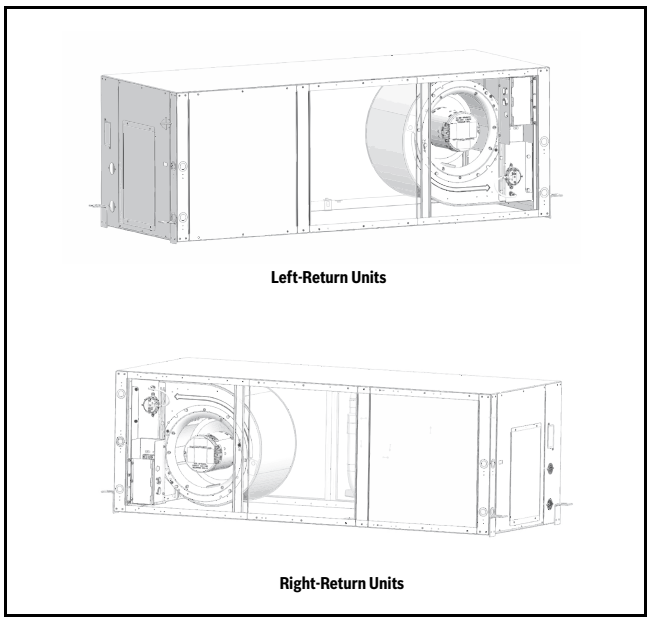


Fig. 28 Horizontal Configurations

6.3.1 Removing the Access Panel and Disconnecting Blower Wiring

1. Remove the blower/motor access panel of the unit that is opposite to evaporator. If required, remove additional panels on the same side for more working space.
2. Disconnect the high- and low-voltage connectors from the blower motor.

6.3.2 Disassembling the Blower Motor Assembly

1. Remove one screw from the blower support bracket, then move blower support bracket to the side. (➔Refer to Fig. 29.)

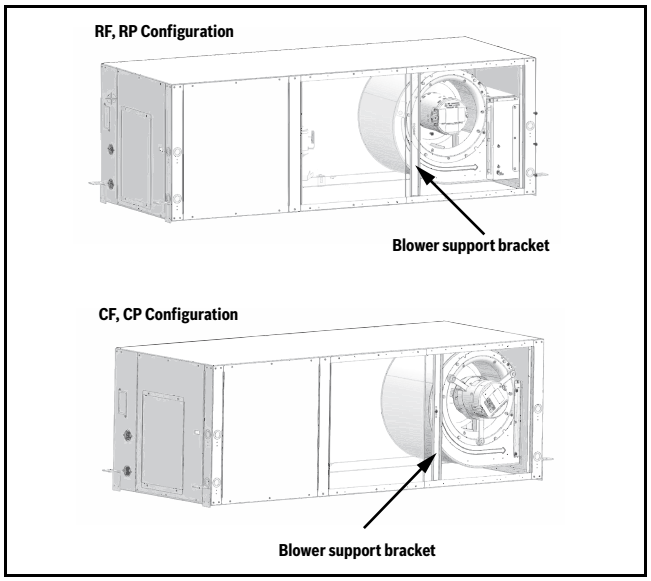


Fig. 29 Blower Support Bracket

2. Remove the three screws located on the motor side of the blower assembly. Then twist and pull the blower assembly away from the welded pins located on opposite side to the motor, near the evaporator. (➔Refer to Fig. 30.)

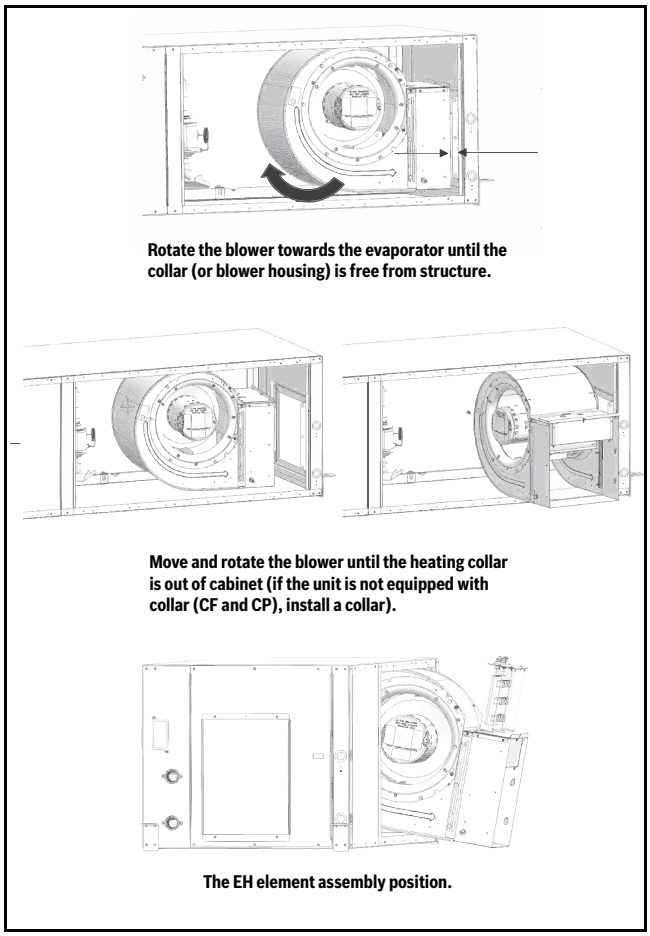


Fig. 30 Locations of the Blower Assembly Screws and Weld Pins

3. Rotating the blower assembly 90 degrees to allow the blower opening to be accessible from access panel.

6.3.3 Installing an Accessory Blower Collar (CF and CP Series Only)

1. Orient and attach the collar to the blower housing opening. (➔Refer to Fig. 10.)
2. Install the three screws on each side of the collar. (➔Refer to Fig. 10.)

6.3.4 Removing the Heater Element Cover, Installing an Adapter Plate (As Needed), and Inserting the Heater Element

Follow the steps in section 6.2.4 on page 9.

6.3.5 Installing the APS to the Blower Housing

Follow the steps in section 6.2.5 on page 10.

6.3.6 Routing and Connecting Wiring

1. Locate the e-heat's 6-pin connector and insert it into the corresponding hole of the e-heat control box. (➔Refer to Fig. 31.)

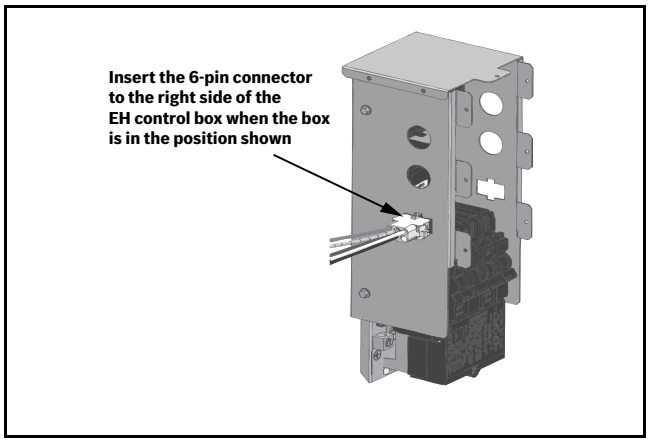


Fig. 31 Insert the 6-Pin Connector

2. Connect the matting plug to the connector that was inserted. (➔Refer to Fig. 32.)

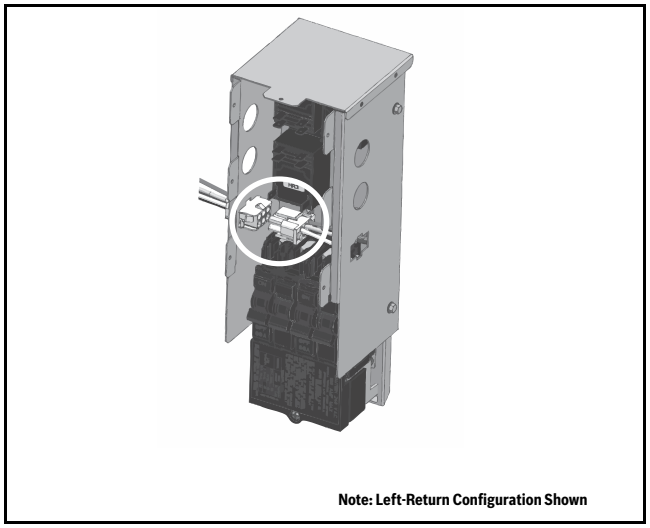


Fig. 32 Connect the Matting Connectors

3. Locate the red/black (conduit protected) elements wires and route the wires through the holes of the e-heat control box. Be sure to make note of the different wire pairs—each relay has one black and one red wire. (➔Refer to Fig. 33.)
   — Use the holes on the same side as shown in Fig. 31 on page #16.

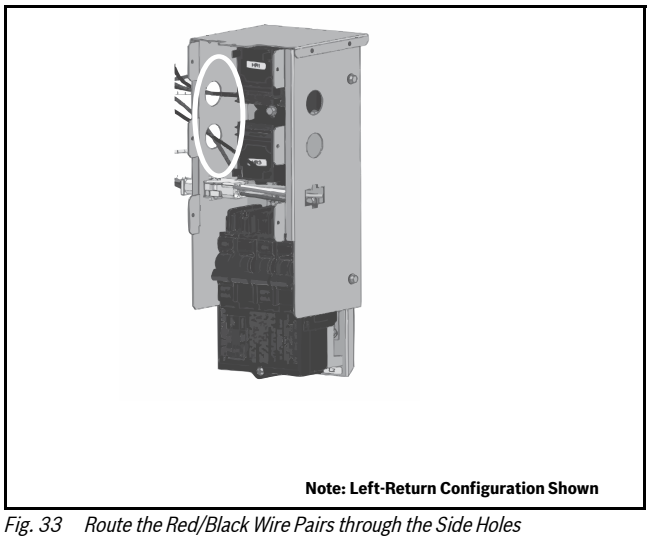


Fig. 33 Route the Red/Black Wire Pairs through the Side Holes

4. Locate the two blue wires (conduit protected) labeled APS on the e-heat control box and route the wires through one of the top e-heat control box holes. (➔Refer to Fig. 23.)
5. Remove the "APS" jumper and discard it.
6. Connect the other two ends to the APS, installed on the heater collar earlier.
7. Route the red/black (conduit protected) elements wires originating from the e-heat control box through the grommets in the electric heater element cover. (➔Refer to Fig. 25.)

⚠ WARNING

Personal Injury Hazard or Product Damage!

Make sure that the grommets are used to prevent wire damage from rubbing against the metal.

8. Connect the red/black (conduit protected) elements wires to heater element switch pins. Each element wire is labeled (HR1, HR2, HR3, or HR4) to facilitate wiring to heater elements switch pins. (➔Refer to Fig. 26.)
9. Secure the element cover with two screws. (➔Refer to Fig. 27.)

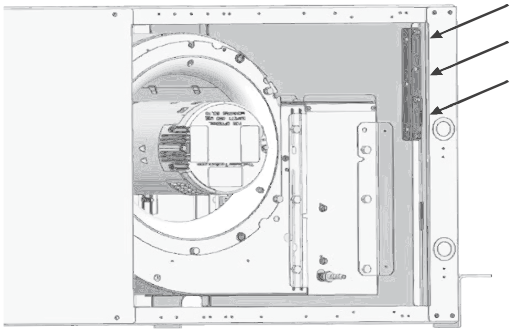
6.3.7 Reattaching the Blower/Heater Collar Combo to the Blower Bracket

1. Rotating the blower assembly 90 degrees to return it to its original position.
2. Attach the heater collar to the weld pins on the evaporator side.
3. Fasten three screws from the blower/heater collar combo to blower bracket on the access side.

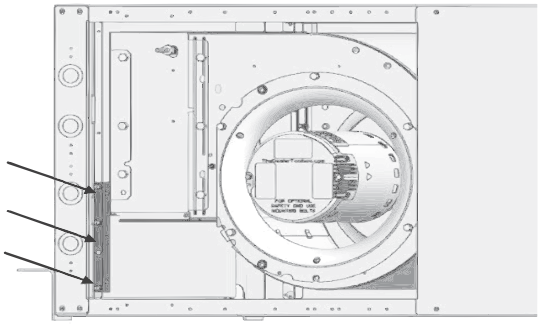
4. Reconnect the high- and low-voltage connectors from the blower motor.

6.3.8 Mounting the E-Heat Control Box

1. Locate the e-heat control box mounting bracket and install it to the blower electrical corner post by fastening with three screws. (→Refer to Fig. 34.)



Left-Return Orientation



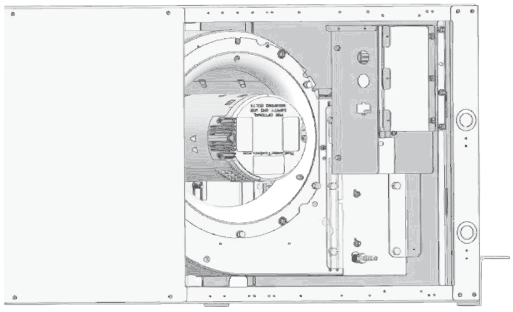
Right-Return Orientation

Fig. 34 HZ E-Heat Control Box Mounting Bracket Location

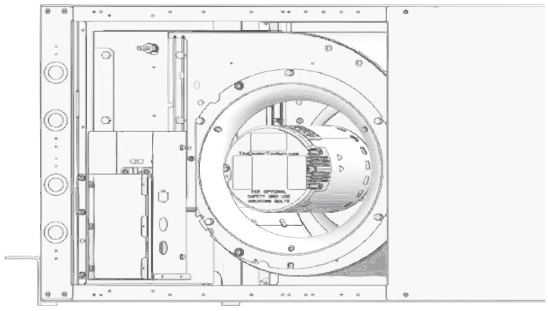
2. Orient e-heat control box in preparation to secure it to the Bracket:

- For Left-Return Units, orient the e-heat control box so that its terminal block/breaker is located at the bottom.
- For Right-Return Units, orient the e-heat control box so that its terminal block/breaker is located at the top.

3. Mount the e-heat control box by aligning the holes of the control box's flanges with holes in the previously mounted e-heat control box mounting bracket and fasten with three screws. (→Refer to Fig. 34.)



Left-Return Orientation



Right-Return Orientation

Fig. 35 HZ E-Heat Control Box Installation

6.3.9 Completing the Installation

Follow the steps in sections:

- 6.5 Wiring the Main Control Box on page 20.
- 6.6 Wiring the Thermostat on page 21.
- 6.7 Wiring Line Voltage Connections on page 21.
- 6.8 Adding the Wiring Diagram and Adhering the Data Plate Label on page 23.

6.4 Instructions for Counterflow (CF) Configured Units

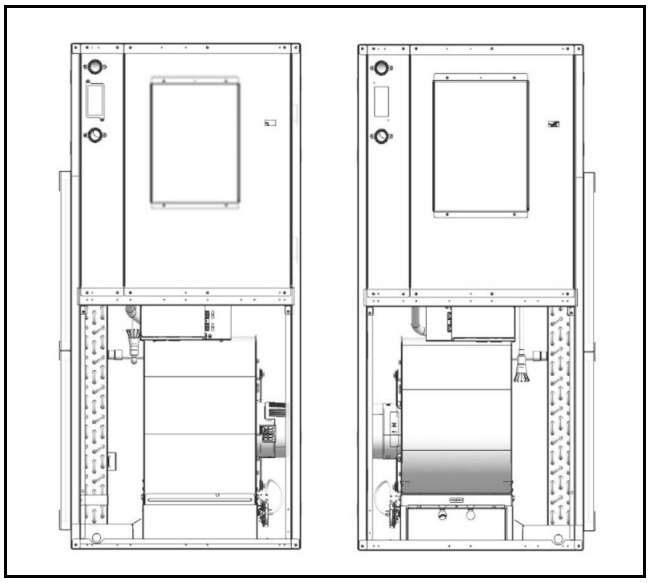


Fig. 36 Counterflow Units EH Accessory Configurations per Left and Right Return Orientations

6.4.1 Removing the Access Panel, Disconnecting Blower Wiring, and Removing Blower/Motor Assembly

1. Remove the bottom access panel.
2. Disconnect the high- and low-voltage connectors from the blower motor.
3. Remove the three screws securing blower to the base.
4. Lift then pull to the side to get weld pins out of the other side.

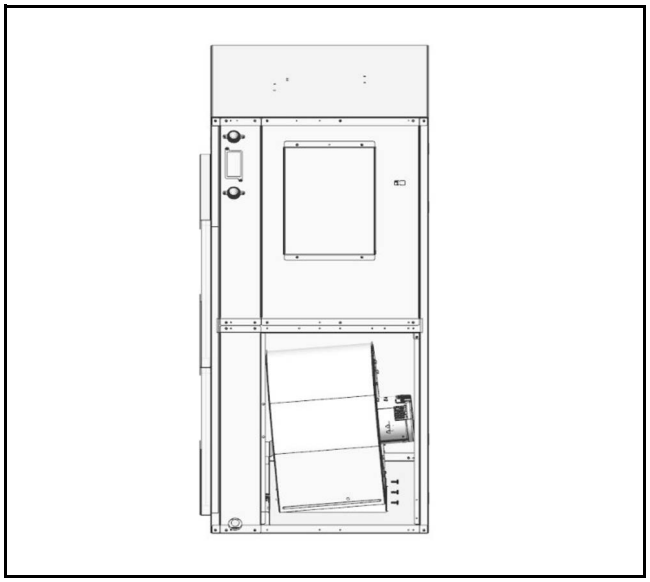


Fig. 37 Removing Blower Connections

6.4.2 Installing an Accessory Blower Collar (CF and CP Series Only)

1. Orient and attach the collar to the blower housing opening. (➔Refer to Fig. 10.)
2. Install the three screws on each side of the collar. (➔Refer to Fig. 10.)

6.4.3 Removing the Heater Element Cover, Installing an Adapter Plate (As Needed), and Inserting the Heater Element

Follow the steps in section 6.2.4 on page 9.

6.4.4 Installing the APS to the Blower Housing

Follow the steps in section 6.2.5 on page 10.

6.4.5 Routing and Connecting Wiring

1. Locate the e-heat's 6-pin connector and insert it into the corresponding-shaped hole of the e-heat control box. (➔Refer to Fig. 38.)

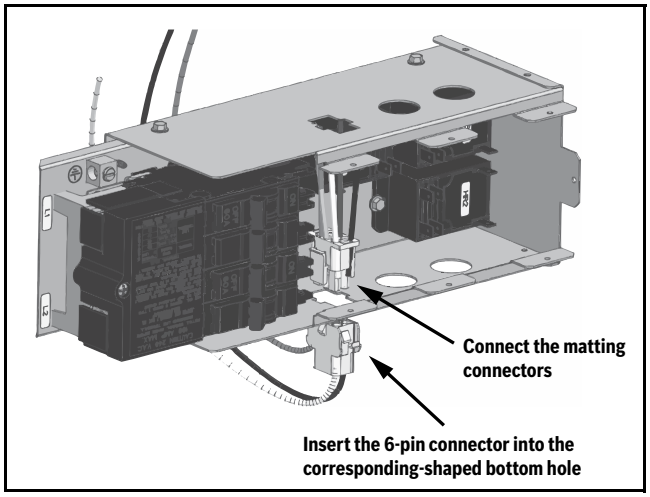


Fig. 38 Connect the Matting Connectors

2. Locate the red/black (conduit protected) elements wires and route the wires through the bottom holes of the e-heat control box. Be sure to make note of the different wire pairs—each relay has one black and one red wire. (➔Refer to Fig. 39.)

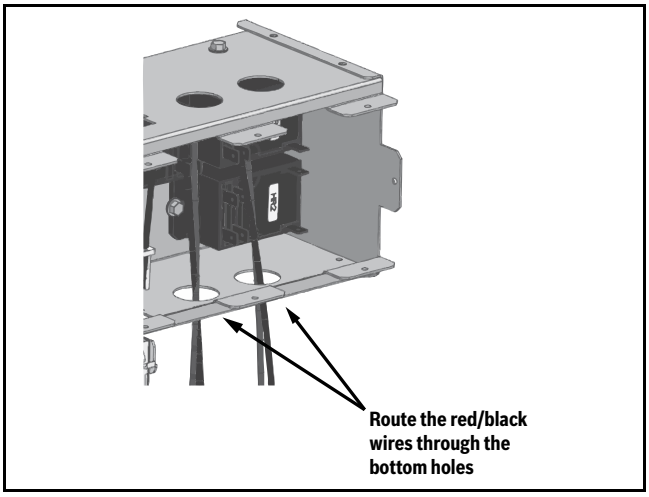


Fig. 39 Route the Red/Black Wires through the Bottom Holes

3. Locate the two blue wires (conduit protected) labeled APS on the e-heat control box and route the wires through one of the top e-heat control box holes. (➔Refer to Fig. 23.)
4. Remove the "APS" jumper and discard it.
5. Connect the other two ends to the APS, installed on the heater collar earlier.
6. Route the red/black (conduit protected) elements wires originating from the e-heat control box through the grommets in the electric heater element cover. (➔Refer to Fig. 25.)

⚠ WARNING

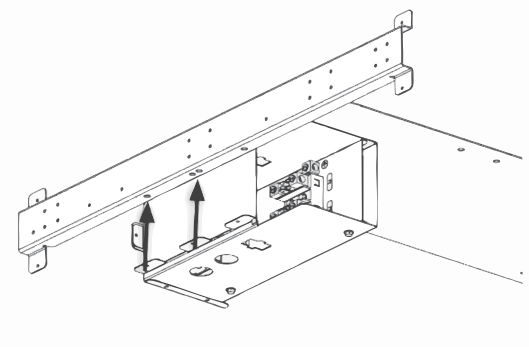
Personal Injury Hazard or Product Damage!

Make sure that the grommets are used to prevent wire damage from rubbing against the metal.

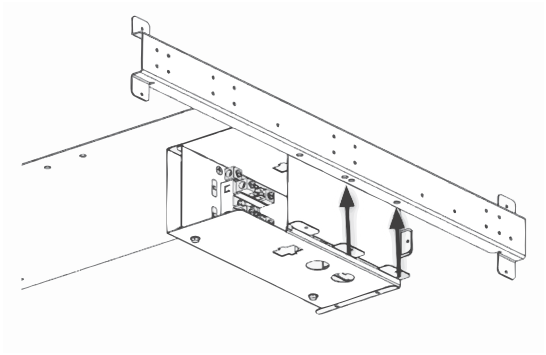
7. Connect the red/black (conduit protected) elements wires to heater element switch pins. Each element wire is labeled (HR1, HR2, HR3, or HR4) to facilitate wiring to heater elements switch pins. (➔Refer to Fig. 26.)
8. Secure the element cover with two standard 1/4"-drive screws. (➔Refer to Fig. 27.)
9. Reinstall blower in the same orientation that it was removed, and fasten previously removed screws to secure the blower to the unit base.
10. Reconnect the high- and low-voltage connectors from the blower motor.

6.4.6 Mounting the E-Heat Control Box

1. Orient e-heat control box in preparation to secure it to the divider:
   - For right-return Units, the field wires enter from the left side of the unit. Orient the e-heat control box so that its terminal block/breaker is closest to the left side of the unit.
   - For Left-Return Units, the field wires enter from the right side of the unit. Orient the e-heat control box so that its terminal block/breaker is closest to the right side of the unit.
2. Mount the e-heat control box by aligning the holes of the control box's flanges with the holes in the divider and fasten with two standard 5/16"–drive screws. (➔Refer to Fig. 40.)



Left-Return Orientation



Right-Return Orientation

Fig. 40 CF E-Heat Control Box Installation

6.4.7 Completing the Installation

Follow the steps in sections:

- 6.5 Wiring the Main Control Box on page 20.
- 6.6 Wiring the Thermostat on page 21.
- 6.7 Wiring Line Voltage Connections on page 21.
- 6.8 Adding the Wiring Diagram and Adhering the Data Plate Label on page 23.

6.5 Wiring the Main Control Box

1. Remove the unit's main electrical control box cover and high-voltage plate.
2. Disconnect the J19/P19 high-voltage wires that connect the blower motor to the line voltage. (➔Refer to Fig. 41.)

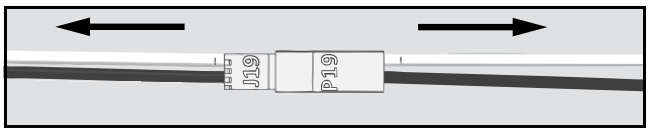


Fig. 41 Disconnect the J19/P19 High-Voltage Wires

3. Trace the J19 plug (red and black) from the e-heat 6-pin plug harness and connect it to the P-19 plug of the blower power harness. (➔Refer to Fig. 42.)

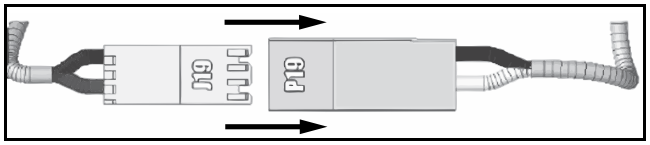


Fig. 42 Connect the E-Heat J19 Plug to the Blower P-19 Plug

When mating plugs, push both connectors together until they snap with a click.

4. In the main control box, there will be one harness (black and white wires) left connected to the compressor contactor. Remove and discard this loose harness from the contactor.
5. In the main control box, disconnect the red and black line voltage harness from the transformer's primary side and from the contactor line side, and discard this harness.
6. Locate the two-line voltage red and black wires that derived from the J-19 plug route them through the lower-rear grommet of the main control box, and connect T1 COM to the transformer COM and connect the T1 VLT to the transformer 240V or 208V per the desired primary voltage tap.
7. Locate the loose white-gray-blue adapter harness labeled W1, W2 and C that came with the e-heat kit.
8. Connect the white-gray-blue harness to the main 6-pin e-heat harness. (➔Refer to Fig. 43.)

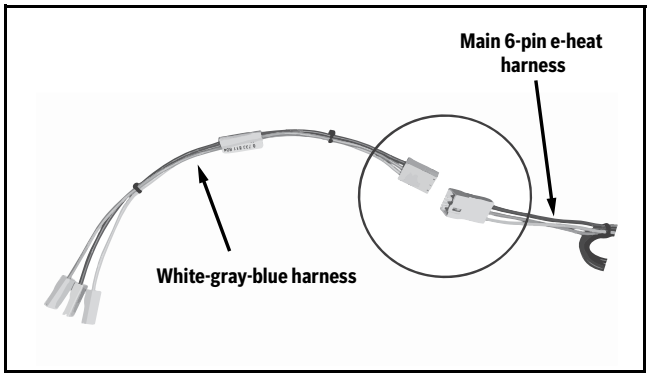


Fig. 43 Connect the White-Gray-Blue Harness to the Main 6-Pin E-Heat Harness

9. **For units with constant torque motor only:**
   - Install the two-points terminal block provided with the electric heat kit (➔Refer to Fig. 1.) using two screws to attach it to the main unit control box in the location shown in ➔Fig. 44.
   - Affix the W1, W2 label also provided with the kit. (➔Refer to Fig. 1.)

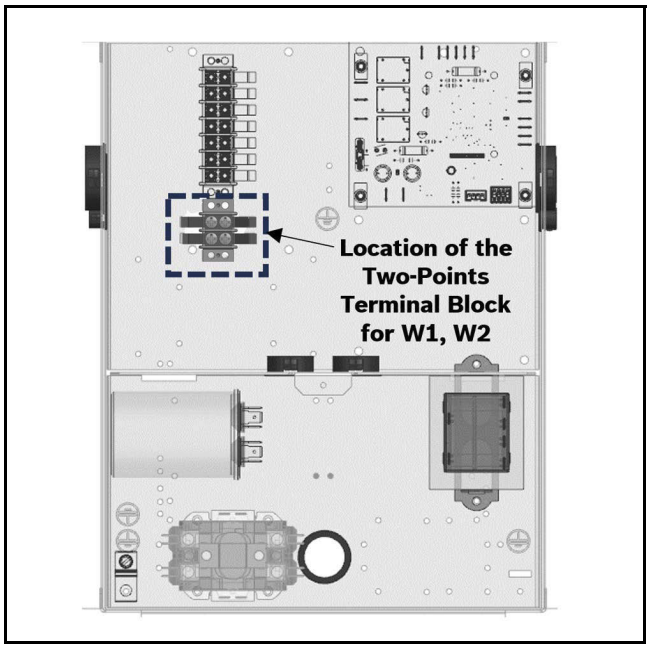


Fig. 44 Location of the Two-Point Terminal Block

10. Route the white-gray-blue wires through the main control box upper grommets on the hinged side, and connect W1, W2, and C from the 6-pin plug as follows based on unit motor option:

- Units with constant airflow motors: Connect to W1, W2/EM, and C in the ECM board.
- Units with constant torque motor: Connect to W1 and W2 in the two-points terminal block, and to C in the main unit terminal block.

11. **Units with constant torque motors only**:
    - Connect W1 from the main control box terminal block to speed tap 5 of the constant torque motor using the single loose wire (speed wire) provided with the kit. (➔Refer to Fig. 1.)
    - Refer to main unit's IOM Constant Torque Motor Performance Data table.
12. Reinstall the Unit's main electrical control box cover.
13. Reinstall main control box covers and unit panels.

6.6 Wiring the Thermostat

Route W1, W2 wires from the thermostat through main control box upper grommets on the hinged side and connect to W1, W2 in either the ECM board thermostat block or terminal block in the main control box.

For units with 5kW electric heat kit only: If the installation site thermostat has emergency heat on W2, then W1 and W2 of the installation site thermostat must both be connected to W1 of the ECM board thermostat block or terminal block in the main control box.

Refer to the thermostat user manual for low-voltage wiring.

6.7 Wiring Line Voltage Connections

WARNING

Personal Injury Hazard or Product Damage!

Properly-sized fusible safety switches or HACR circuit breakers must be installed for branch circuit protection. See the unit's nameplate for maximum fuse or breaker size.

Follow the steps below to make the line voltage connection from the circuit breaker panel of the installation site to the e-heat control box.

1. Select the appropriate wire size based upon the heater electrical load that the blower motor and electric heater element(s) require. Refer to the data tag label that is included in the heater kit or the electric heat electrical data tables of this manual. (➔Refer to Table 5 on page #22 and Table 6 on page #23.)

DANGER

Electric Shock!

Ensure that all national and local electrical codes are followed for installation, wire sizing, and breaker sizing.

2. Select the appropriate breaker size based upon the heater electrical load that the heat pump requires. Refer to the data tag label that is included in the heater kit or the electric heat electrical data tables of this manual. (➔Refer to Table 5 on page #22 and Table 6 on page #23.)
3. Route the new line voltage wiring and the ground wire from the circuit breaker panel to the heat pump.
4. Use one of the knockouts provided on the side opposite to the return, in the blower section, as the entry for the electrical service wiring. A plastic grommet must be used to protect the wire insulation from the metal edge of the knockout.
5. Connect line voltage to:

▶ Single Circuit (Standard): "L1" and "L2" terminal connection on the terminal block for 5kw and 10kw, or "L1" and "L2" terminal connection on the jumper bar for 15kw and 20kw electric heat.

▶ Dual Circuit (Optional field conversation for 15kw and 20kw):
    - Remove the black and red blower motor wire connected to the jumper bar.
    - Remove the jumper bar.
    - Rewire the black and red blower motor wires to CBR1 on the field-line side.
    - Connect the field "L1" and "L2" to CBR1, and "L1" and "L2" to CBR2.

For dual circuits, CBR1 includes the blower motor FLA for calculation of MCA and MOCP.

6. Use the ground lug provided in the e-heat control box to connect the field ground from the power supply.
7. Cover the e-heat control box by sliding the cover and fastening with one screw. (➔Refer to Fig. 45.)

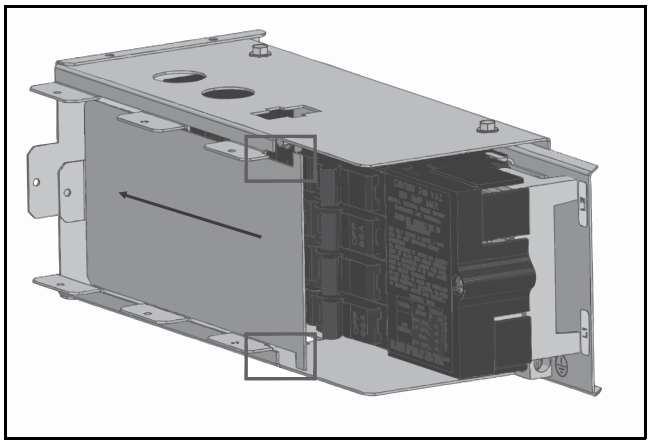


Fig. 45 E-Heat Control Box Cover

6.7.1 Electric Heat Electrical Data Tables

Match the blower motor HP and FLA from unit data plate and determine appropriate MCA and MOCP per the tables below.

Units with Constant Airflow Motors

Electric Heat Kit	Circuit Branches		Heater Element				Fan Motor		MCA		MOCP	
			kW		A							
			208V	240V	208V	240V	HP	FLA	208V	240V	208V	240V
HK050-1501	5kW Single Circuit		3.6	4.8	17.3	20	0.33	4.4	27.2	30.5	30	35
							0.5	5.0	27.9	31.3	30	35
							0.75	8.4	32.2	35.5	35	40
							1.0	9.1	33	36.4	35	40
HK100-1501	10kW Single Circuit		7.2	9.6	34.6	40	0.33	4.4	48.8	55.5	50	60
							0.5	5.0	49.6	56.3	50	60
							0.75	8.4	53.8	60.5	60	70
							1.0	9.1	54.7	61.4	60	70
HK150-1501	15kW Single Circuit		10.8	14.4	51.9	60	0.75	8.4	75.5	85.5	80	90
							1.0	9.1	76.4	86.4	80	90
	15kW Dual Circuit	Ckt 1*	7.2	9.6	34.6	40	0.75	8.4	53.8	60.5	60	70
							1.0	9.1	54.7	61.4	60	70
		Ckt 2	3.6	4.8	17.3	20	–	–	21.6	25	25	30
HK200-1501	20kW Single Circuit		14.4	19.2	69.2	80	0.75	8.4	97.2	110.5	100	125
							1.0	9.1	98	111.4	100	125
	20kW Dual Circuit	Ckt 1*	7.2	9.6	34.6	40	0.75	8.4	53.8	60.5	60	70
							1.0	9.1	54.7	61.4	60	70
		Ckt 2	7.2	9.6	34.6	40	–	–	43.3	50	50	60

* For dual circuits - Ckt 1 includes blower motor FLA for calculation of MCA and MOCP

Table 5 Electric Heat Electrical Data Table for Units with Constant Airflow Motors

Units with Constant Torque Motors

Electric Heat Kit	Circuit Branches		Heater Element				Fan Motor		MCA		MOCP	
			kW		A							
			208V	240V	208V	240V	HP	FLA	208V	240V	208V	240V
HK050-1501	5kW Single Circuit		3.6	4.8	17.3	20	0.33	2.8	25.2	28.5	30	30
							0.5	4.1	26.8	30.1	30	35
							0.75	6.0	29.2	32.5	30	35
							1.0	7.6	31.2	34.5	35	35
HK100-1501	10kW Single Circuit		7.2	9.6	34.6	40	0.33	2.8	46.8	53.5	50	60
							0.5	4.1	48.5	55.1	50	60
							0.75	6.0	50.8	57.5	60	60
							1.0	7.6	52.8	59.5	60	60
HK150-1501	15kW Single Circuit		10.8	14.4	51.9	60	0.75	6.0	72.5	82.5	80	90
							1.0	7.6	65.0	75.0	80	90
	15kW Dual Circuit	Ckt 1*	7.2	9.6	34.6	40	0.75	6.0	50.8	57.5	60	60
							1.0	7.6	52.8	59.5	60	60
		Ckt 2	3.6	4.8	17.3	20	–	–	21.6	25.0	25	30
HK200-1501	20kW Single Circuit		14.4	19.2	69.2	80	0.75	6.0	94.2	107.5	100	110
							1.0	7.6	96.2	109.5	100	110
	20kW Dual Circuit	Ckt 1*	7.2	9.6	34.6	40	0.75	6.0	50.8	57.5	60	60
							1.0	7.6	52.8	59.5	60	60
		Ckt 2	7.2	9.6	34.6	40	–	–	43.3	50.0	50	60

* For dual circuits - Ckt 1 includes blower motor FLA for calculation of MCA and MOCP

Table 6 Electric Heat Electrical Data Table for Units with Constant Torque Motors

6.8 Adding the Wiring Diagram and Adhering the Data Plate Label

1. Place the adhesive-backed additional wiring diagram included with the heater kit to the back of the blower access panel.
2. Place the adhesive-backed heater data-plate label (included with the heater kit) to the blower access panel next to the knockouts.

7 Start-up

Use the procedure below to initiate a proper start-up.

DANGER

Electrical Shock!

Disconnect switch is only to be closed when the electrical box cover is secured to electrical box and all exterior panels are secured on the unit.

1. Turn ON the disconnect switch or breaker switch in the installation site for the heat pump (compressor) and for the new separate circuit servicing the electric heat and motor.
2. Run the unit in heating mode with the heating elements engaged for at least 10 minutes to ensure the unit does not shut down due to any temperature-limiting devices.

8 Wiring Diagrams

8.1 Electric Heat Kit Auxiliary Diagram

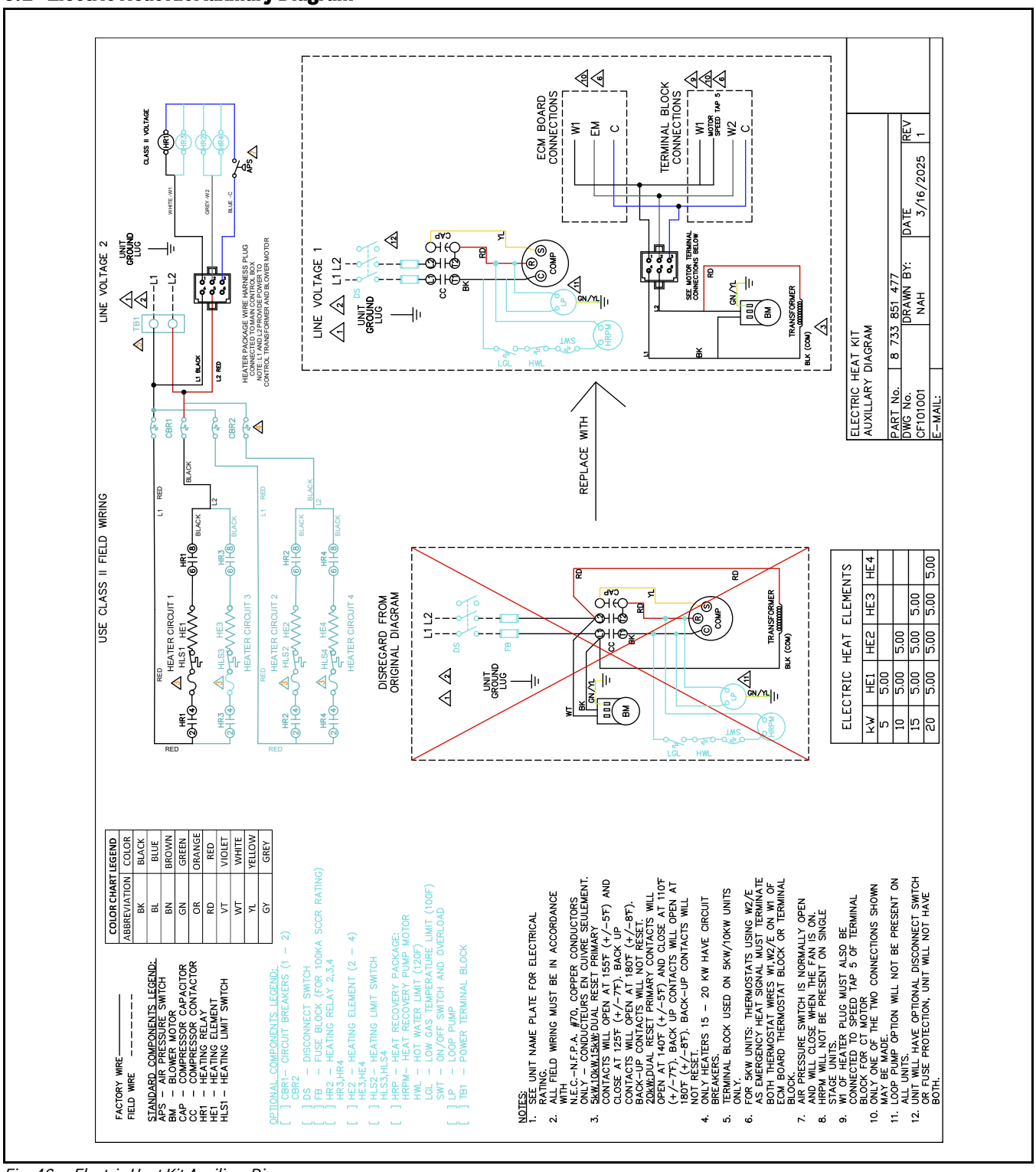


Fig. 46 Electric Heat Kit Auxiliary Diagram

FOR REFERENCE ONLY. Actual unit wiring may vary from this example. Always refer to the wiring diagram attached to the unit.

9 Notes

Notes

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Additional Product Information Page

To see additional product information and documentation, please visit the product page: www.bosch-homecomfort.com/us/ or scan the QR code below.