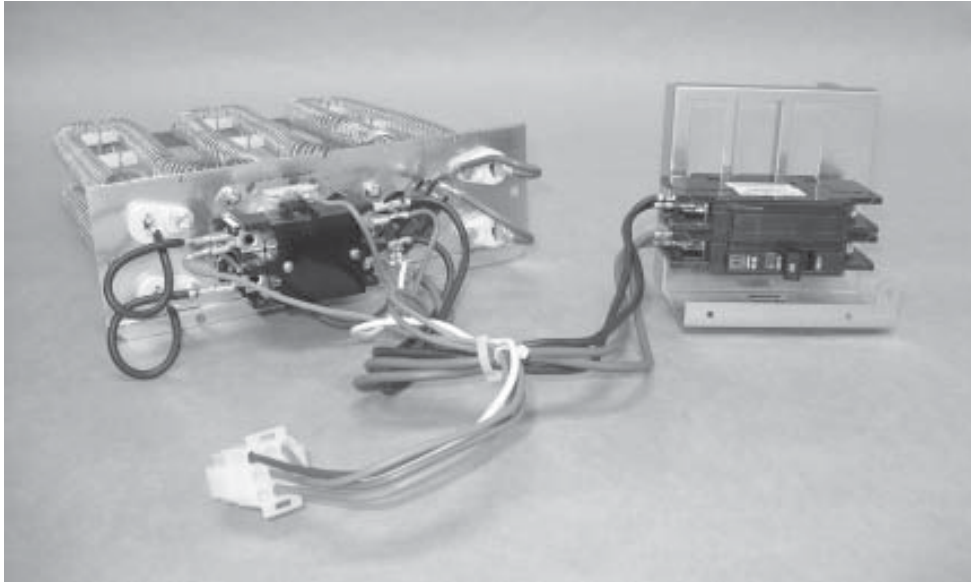


## H4HK B Series

# Installation Instructions

## Electric Heater Kits

### Installation in Standard and Variable Speed Indoor Air Handlers



## **IMPORTANT:**

**The instructions included with this heater kit are for installations in air handlers only.**

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These instructions are primarily intended to assist qualified individuals experienced in the proper installation of heating and/or air conditioning appliances. Some local codes require licensed installation/service personnel for this type of equipment. All installations must be in accordance with these instructions and with all applicable national and local codes and standards.

Before beginning the installation, read these instructions thoroughly and follow all warnings and cautions in the instructions and on the unit.

Improper installation, service, adjustment, or maintenance can cause explosion, fire, electrical shock, or other conditions which may result in personal injury or property damage. Unless otherwise noted in these instructions, only

factory authorized kits or accessories may be used when modifying this product.

## **INTRODUCTION**

The H4HK Series of electric heater kits are approved for field installation in air handlers and variable speed air handlers. All sizes are available with factory-provided circuit-breakers for short circuit protection and to provide a disconnecting means. Also available are 5, 8, and 10 kw electric heater kits without circuit-breakers. Refer to the National Electric Code (ANSI/NFPA 70) and applicable local codes for over-current protection and disconnect requirements.

**Note:** The 15 and 20 kw electric heater kits are **Not Approved** for installation in A-cabinet air handlers.

**Note:** These instructions are written assuming the air handler is in the upflow position (with the outlet facing up). For horizontal and downflow applications, it is recommended that the electric heater kit be installed prior to installation of the air handler.

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**! WARNING:**

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**To avoid the risk of electric shock, personal injury, or death, disconnect all electrical power to the unit before performing any maintenance or service. The unit may have more than one electrical power supply.**

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### **AIR HANDLER ELECTRICAL SUPPLY**

All wiring must be in compliance with the National Electric Code and applicable local codes.

If the air handler was previously installed without electric heat the existing supply wiring may not be sufficient to carry the increased load. See the ratings label or **Table 1** for minimum circuit ampacities and maximum over-current protection ratings.

All electric heater kits of 10 kw or less are supplied from the factory configured for use with a single supply circuit. Electric heater kits greater than 10 kw are supplied from the factory configured for use with two supply circuits. See the ratings label or **Table 1** for individual circuit ampacities and over-current protection ratings. If a single supply is desired, accessory kit #913874 is required to convert to single circuit connection.

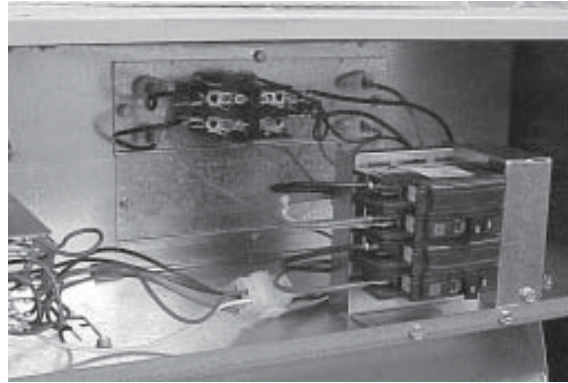
### **INSTALLATION**

Remove the upper access door from the air handler. Remove the circuit breaker bracket and cover package from the heater kit. Remove the top-most (A-cabinet air handlers have only one) element close-off plate from the back of the air handler control box. For two-tiered electric heater kits remove both close-off plates.

#### **Installation into Air Handler, All Heater Kits**

Insert the element assembly into the opening in the air handler control box being careful not to damage the element wire or the ceramic element supports. Heating element alignment rod(s) will slide into alignment holes in the back of the air handler element box. Secure the element assembly to the back of the air handler control

box with the screws removed when removing the element close-off plate(s). Install the circuit-breaker bracket. (See **Figure 1**)



**Figure 1. Sample Installation.  
Shown without access door.**

**Note:** on some B & C cabinet units a shipping bracket must be removed before installing the circuit breaker bracket.

Install the nine-pin plug from the element assembly into the receptacle located in the left-hand side of the air handler control box.

A wiring diagram and a ratings label are supplied with the electric heater kit. Attach the wiring diagram to the Blower Housing.

When installing the electric heater kit into a standard air handler, attach the rating label (included with the electric heater kit) on the air handler unit data label (located on the lower access door) over the electrical data section.

When installing the electric heater kit into a variable speed air handler the rating label supplied with the kit will not be used. Check the appropriate block on the air handler ratings label located on the lower access door just below the unit data label.

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**! WARNING:**

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**To avoid risk of electric shock, personal injury, or death, disconnect electrical power to the unit before performing any maintenance or service. The unit may have more than one electric power supply.**

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Model Number H4HK			Standard Air Handler			Variable Speed Air Handler								
			Min. Circuit Ampacity			Max. Over-Current Protection			Min. Circuit Ampacity			Max. Over-Current Protection		
			Circuit A	Circuit B	Single Circuit	Circuit A	Circuit B	Single Circuit	Circuit A	Circuit B	Single Circuit	Circuit A	Circuit B	Single Circuit
005H-	240	4.8	-	-	30.0	-	-	30	-	-	34.8	-	-	40
008H-	240	7.6	-	-	44.1	-	-	50	-	-	47.8	-	-	50
010H-	240	9.6	-	-	55.0	-	-	60	-	-	58.8	-	-	60
015H-	240	14.4	55.0	25.0	80.0	60	30	90	59.3	25.0	83.8	60	30	90
020H-	240	19.2	55.0	50.0	105.0	60	50	125	59.3	50.0	108.8	60	50	125
005H-	208	3.6	-	-	26.6	-	-	30	-	-	30.9	-	-	40
008H-	208	5.7	-	-	38.8	-	-	40	-	-	43.1	-	-	50
010H-	208	7.2	-	-	48.3	-	-	50	-	-	52.5	-	-	60
015H-	208	10.8	48.3	21.6	69.7	50	30	70	52.5	21.6	74.2	60	30	80
020H-	208	14.4	48.3	43.3	91.5	50	50	100	52.5	43.3	95.8	60	50	100
<b>Three Phase</b>														
009Q-	240	9.0	-	-	32.4	-	-	35	-	-	35.8	-	-	40
015Q-	240	14.4	-	-	48.7	-	-	50	-	-	52.1	-	-	60
009Q-	208	6.8	-	-	28.8	-	-	30	-	-	32.2	-	-	35
015Q-	208	10.8	-	-	42.9	-	-	45	-	-	46.3	-	-	50

Table 1. Electrical Ratings

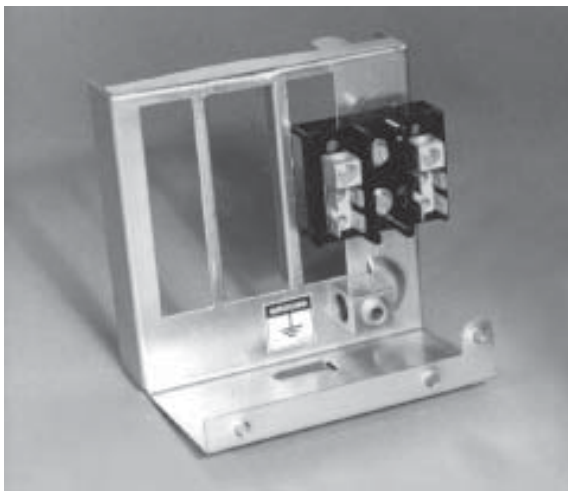


Figure 2. Circuit Breaker Brackets. Shown with Line Cover Removed and Terminal Block Installed.



Figure 3. Installation of Circuit Breakers

**Electric Heater Kits without Circuit Breakers —**

Attach the supplied power terminal block to the circuit-breaker bracket with the supplied screws as shown in **Figure 2**.

Using the 1/4" terminals, connect the red supply wire(s) from the element assembly to one pole of the terminal block and connect the black wires to the other pole.

**Electric Heater Kits with Circuit Breakers —**

**NOTE : Circuit breakers supplied with the H4HK electric heater kits are for short-circuit protection of the internal wiring and to serve as a unit disconnect.** Circuit breakers supplied with the H4HK electric heater kits do not provide over-current protection of the supply wiring. Over-current protection of the supply wiring must be provided at the distribution panel and sized as shown in **Table 1** or on the unit data label and per the NEC and applicable local codes. In some cases the over-current protection specified in **Table 1** or on the unit data label is less than the 60 amp rating of the circuit breakers used in the H4HK electric heater kits. This is because the function of the over-current protection required at the distribution panel (field supplied) and the function of the circuit breakers in the H4HK electric heater kit is different.

**5, 8, and 10 kw electric heater kits supplied with a circuit breaker —** Remove the lower

circuit breaker knockout from the air handler upper access door.

Snap the circuit breaker on to the circuit breaker bracket as shown in **Figure 3**. The orientation of the circuit breaker must be as shown in **Figure 1**. (Side with 1/4" terminals to the left).

Using the 1/4" terminals, connect the heavy red supply lead(s) from the element assembly to one pole of the circuit breaker. Connect the heavy black supply lead(s) from the element assembly to the other pole of the circuit breaker.

**15 and 20 kw electric heater kits supplied with circuit breakers** — Remove all circuit breaker knockouts in the air handler upper access door.

Snap the circuit breakers on to the circuit breaker bracket as shown in **Figure 3**. The orientation of the circuit breakers must be as shown in **Figure 1**. (Side with 1/4" terminals to the left).

The heavy red and black supply leads are bundled by circuit with wire ties at the factory. The bundle coming from the top element tier is circuit "A" (**note:** the element assembly is right-side-up when the limits are on the right side). The bundle coming from the bottom element tier is circuit "B".

Using the 1/4" terminals, connect the heavy red supply leads from circuit "A" to one pole of the top circuit breaker. Connect the heavy black supply leads from circuit "A" to the other pole of the top circuit breaker.

Using the 1/4" terminals, connect the heavy red supply lead(s) from circuit "B" to one pole of the bottom circuit breaker. Connect the heavy black supply lead(s) from circuit "B" to the other pole of the bottom circuit breaker.

**3-Phase 9 and 15 kw electric heater kits supplied with a circuit breaker** — Remove all circuit breaker knockouts in the air handler upper access door.

Snap the 3-pole circuit breaker on to the circuit breaker bracket as shown in **Figure 3**. The orientation of the circuit breaker must be as shown in **Figure 1**. (Side with 1/4" terminals to the left).

Using the 1/4" terminals, connect the heavy red supply leads from element assembly to

one pole of the circuit breaker. Connect the heavy yellow supply leads from element to the middle pole of the circuit breaker and connect the heavy black supply leads from the element to the third pole of the circuit breaker.

## POWER WIRING

All wiring must comply with the current revision of the National Electric Code and must be sized for the minimum ampacities as listed on the unit data label or in **Table 1**.

If a single circuit adaptor kit is used it may need to be re-configured for some applications. Remove the single circuit adaptor kit cover and verify that the lugs are configured correctly for the application. If the lugs are not configured for the application, reference the instructions included with the kit and modify the configuration. Install the single circuit adaptor kit (if used) in the line side ("on" end) of the circuit breakers. Tighten the lugs securely (45 in-lbs recommended).

Connect the supply wiring to the circuit breaker(s), single circuit adaptor kit, or terminal block. Tighten the lugs securely.

When using dual supply circuits verify that the supply sized for circuit "A" is connected to the circuit breaker that is connected to the top element assembly.

Install metal circuit breaker line cover on the right side of the circuit breaker (**see Figure 3**).

**Note;** on 3-phase heater kit installations after the air handler door has been attached to the unit, install the circuit breaker close-off to the opening in the door just above the circuit breaker.

## STAGING

The 15 kw and 20 kw heater kits have the option of being staged if you have a two-stage thermostat. The brown wire (pin 1) must be the first stage of heat and orange wire (pin 2) is the second stage of heat. If you do not want staged heat with the 15 kw and 20 kw heater kits just wire nut the brown and orange wires together before attaching them to the thermostat.

## MOTOR SPEED SELECTION

**Standard Air Handlers** — The blower speed is preset at the factory for operation at the same

speed for heating and cooling. For optimum system performance and comfort, it may be necessary to change the factory set speed. To change the blower speed, disconnect all electrical power to the unit and remove the upper door. Remove black and red wires from the blower motor jumpering terminal. Discard the blower motor jumpering terminal. Connect the heating speed wire (red) and the cooling speed wire (black) to the desired blower speed marked on the terminal block of the blower motor. Terminal 4 = High Speed, Terminal 5 = Medium Speed and Terminal 6 = Low Speed. See Table 2 for minimum required blower heating speed.

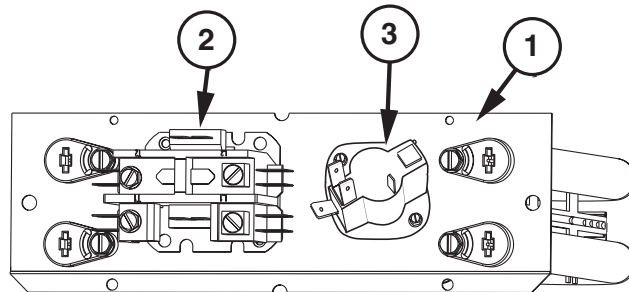
**IMPORTANT:** After making any changes to the blower speed setting be sure to bundle and insulate any unused blower motor leads so that they will not come in contact with the air handler cabinet or non-insulated live parts.

High speed operation may be required when using a 20 kw electric heater kit in a downflow application. (See Clearance section.)

Replace the upper door and secure it to the unit. Restore power to the unit.

MODEL	APPLICABLE CABINET SIZE			MINIMUM REQUIRED BLOWER HEATING SPEED		
	A	B	C	UP-FLOW	HORIZ.	DN-FLOW
H4HK003H	X	X	X	LOW	LOW	LOW
H4HK005H	X	X	X	LOW	LOW	LOW
H4HK008H	X	X	X	LOW	LOW	LOW
H4HK010H	X	X	X	LOW	LOW	LOW
H4HK015H		X	X	LOW	LOW	MED
H4HK020H		X	X	LOW	LOW	HIGH
H4HK009Q		X	X	LOW	LOW	LOW
H4HK015Q		X	X	LOW	LOW	MED

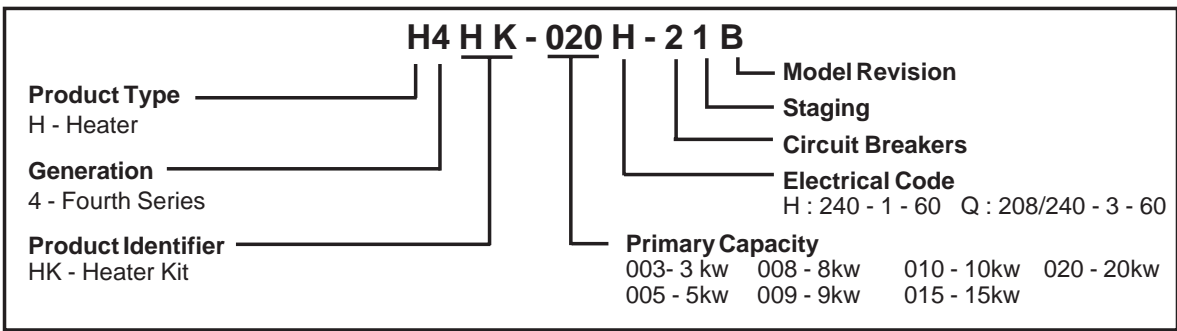
Table 2. Blower Heating Speed



## Replacement Parts List

ITEM NO.	PART NO.	DESCRIPTION	H4HKxxxx-x1B									
			005H-01B	005H-11B	008H-01B	008H-11B	010H-01B	010H-11B	015H-21B	020H-21B	009Q-11B	015Q-11B
1	491216	Element Ass'y - 3.0 kw									1	
	491214	Element Ass'y - 4.8 kw	1	1					1			1
	491227	Element Ass'y - 6.0 kw									1	
	491226	Element Ass'y - 7.6 kw			1	1						
	491225	Element Ass'y - 9.6 kw					1	1	1	2		1
2	621957	Contact, 1-pole	1	1					1		1	1
	621958	Contact, 2-pole			1	1	1	1	1	2	1	1
3	626458	Limit, 2-pole, 190°F			1	1	1	1	1	2		
	626487	Limit, 1-pole, 190°F	1	1					1		2	2
4	632249	Circuit Breaker, 2-pole, 60 amp (not shown)		1		1		1	2	2		
	632225	Circuit Breaker, 3-pole, 60 amp (not shown)									1	1
5	371982	Circuit Breaker Bracket (not shown)	1	1	1	1	1	1	1	1	1	1
6	257442	Circuit Breaker Bracket Cover (not shown)	1	1	1	1	1	1	1	1	1	1
7	632229	Circuit Breaker Close Off (not shown)									1	1
8	631762	Terminal Block, (not shown)	1		1		1					

# MODEL IDENTIFICATION



**Variable Speed Air Handlers** — The minimum electric heat airflow is selected by setting switches on the air handler circuit board. Selecting the minimum electric heat airflow sets the minimum air flow that will be produced whenever electric heater kits are energized. When the electric heater kits are energized along with a heat pump the airflow may be higher depending on the basic cooling/heat-pump airflow setting. Reference the variable speed air handler installation instructions for further details.

handler installations with zero-clearance to combustibles at any blower speed. For horizontal and upflow configuration, air handlers equipped with 20 kw electric heater kits are approved for installation with zero clearance to combustibles at any blower speed. When using a 20 kw electric heat kit in a downflow installation, the blower must be set for high speed for both heating and cooling.

## CLEARANCE

**Standard Air Handlers** — All electric heater kits less than 20 kw are approved for use in air

**Variable Speed Air Handlers** — All installations of H4HK electric heater kits in variable speed air handlers are approved for zero-clearance to combustibles when the minimum electric heat airflow is set as directed in these instructions.

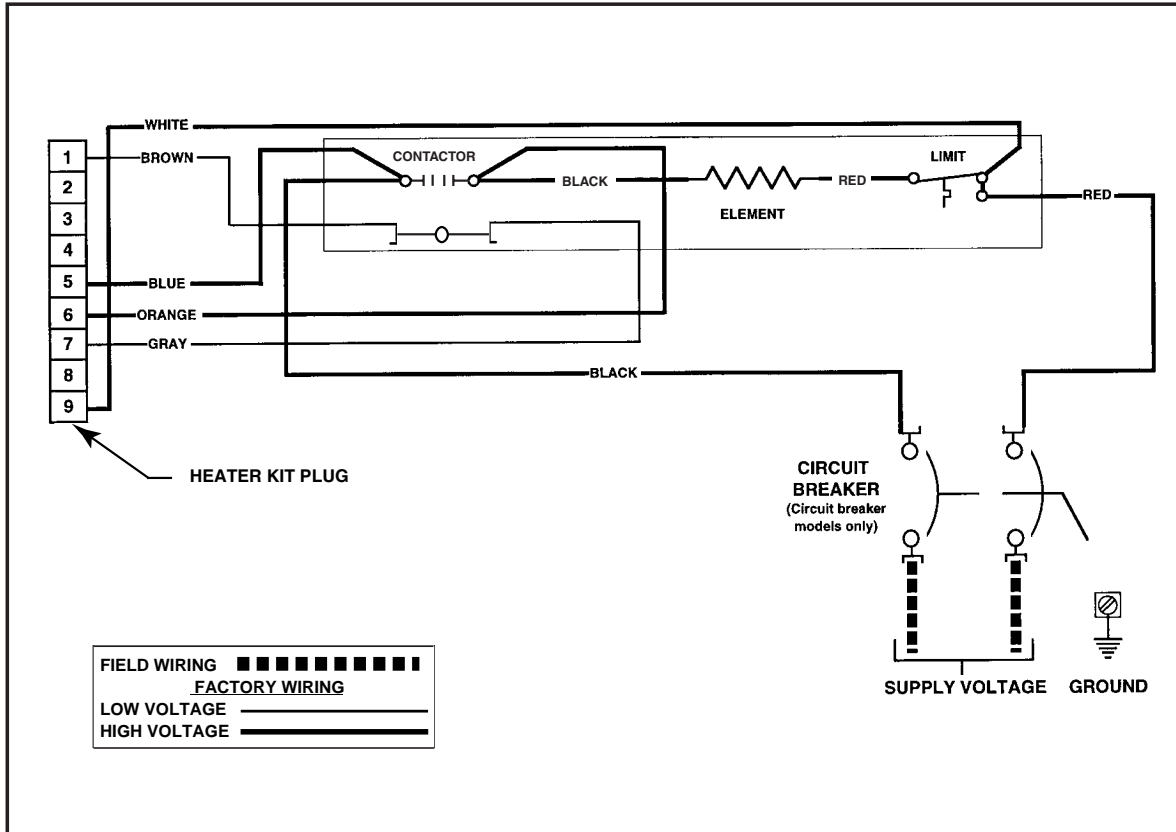


Figure 4. Typical System Wiring Diagram  
5 kw 1-stage with circuit breaker

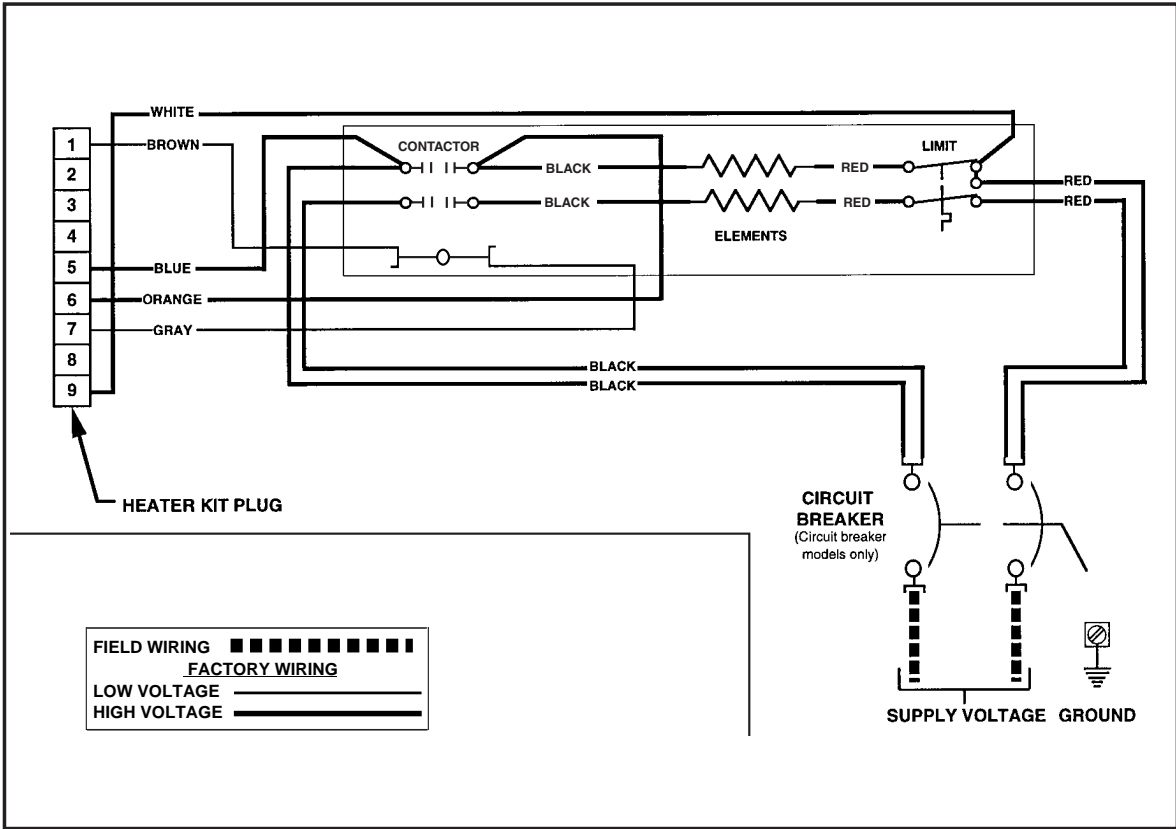


Figure 5. Typical System Wiring Diagram  
8/10 kw 1-stage with circuit breaker

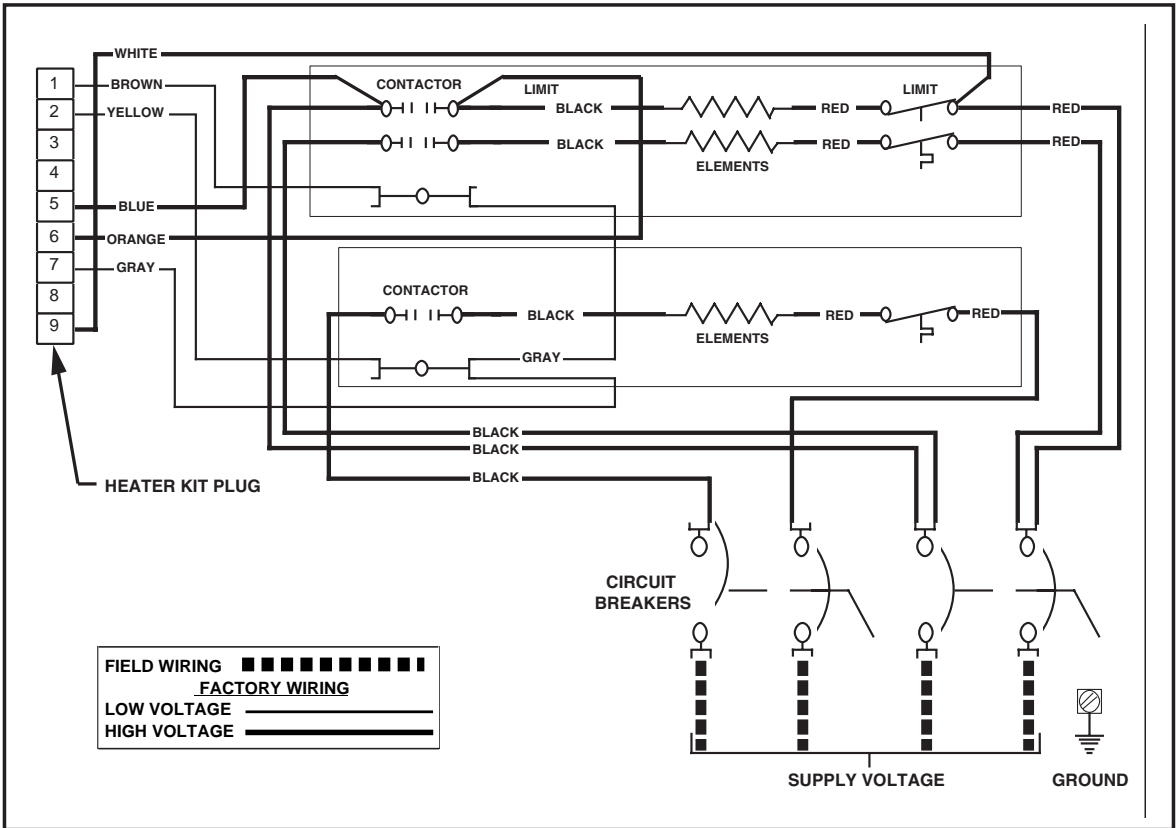


Figure 6. Typical System Wiring Diagram  
15/20 kw 1-stage (20 kw shown) has two 2-pole contactors  
15 kw has one 2-pole and one 1-pole contactor

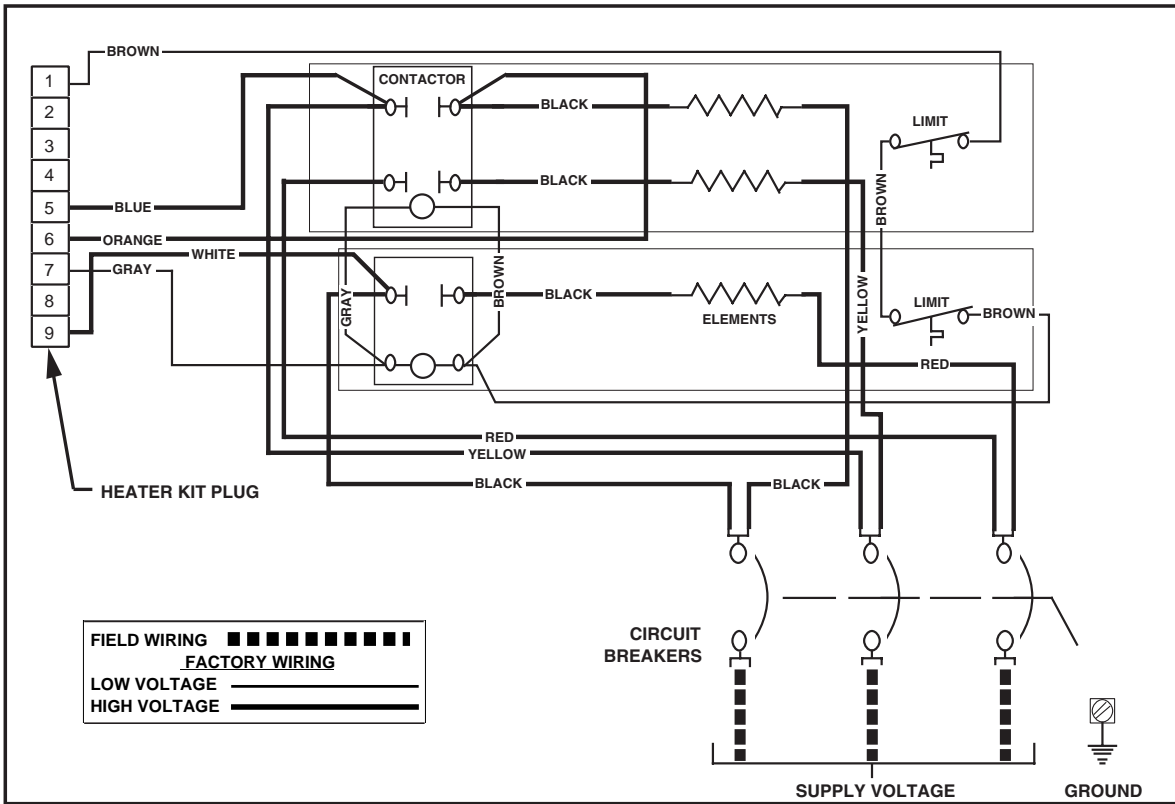


Figure 7. Typical 3-Phase System Wiring Diagram

**INSTALLER:  
PLEASE LEAVE THESE  
INSTALLATION  
INSTRUCTIONS WITH  
THE HOMEOWNER**



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