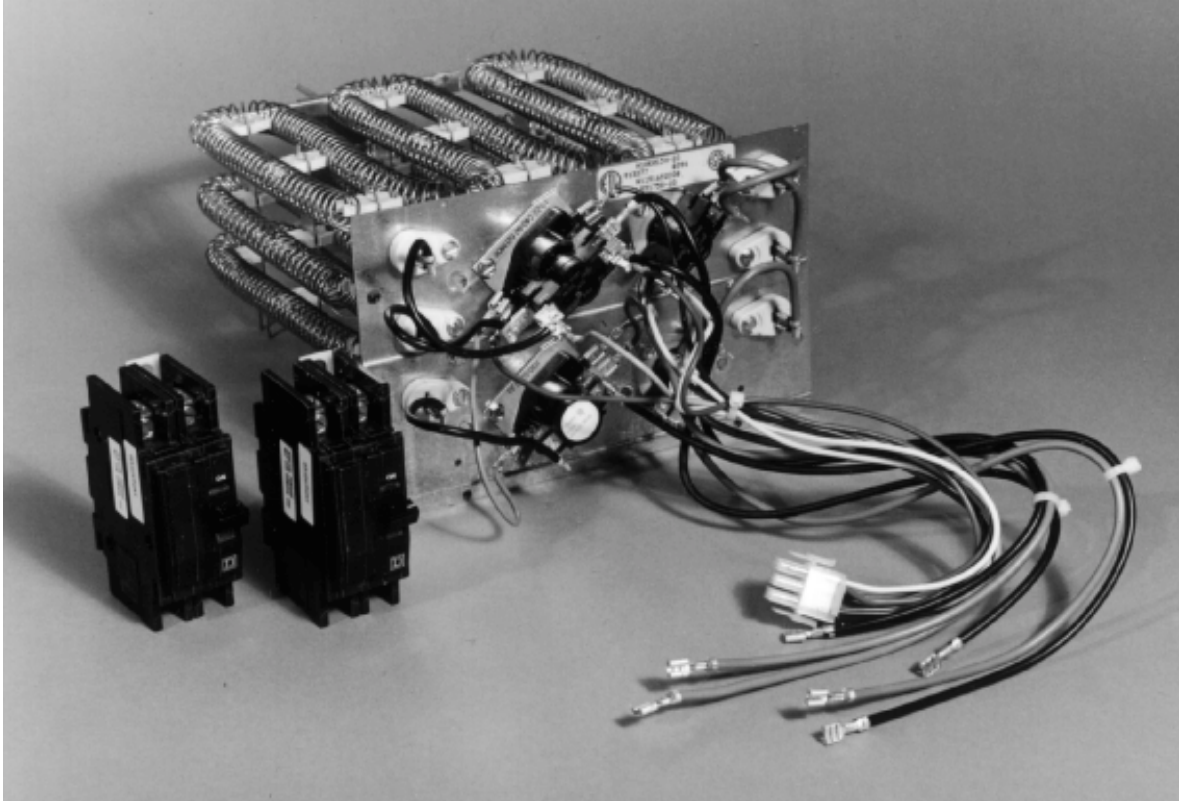


H4HK Series

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. Instructions for installation of this heater kit in other equipment is included with that equipment.

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 indoor 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.

**WARNING:**

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.

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 electric heater kits greater than 10 kw (two-tiered kits) remove both close-off plates.

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 1**.

After inserting the heating element assembly (see below) 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 2**. The orientation of the circuit breaker must be as shown in **Figure 2**. (Side with 1/4" terminals to the left).

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.

14, 15 and 20 kw electric heater kits supplied with circuit breakers — Remove all circuit

Model Number H4HK			Voltage			KW			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	7.5	-	-	44.1	-	-	50	-	-	47.8	-	-	50						
010H-	240	9.6	-	-	55.0	-	-	60	-	-	58.8	-	-	60						
014H-	240	13.4	39.9	34.9	74.8	40	35	80	43.4	34.9	78.3	45	35	80						
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	5.6	-	-	38.8	-	-	40	-	-	43.1	-	-	50						
010H-	208	7.2	-	-	48.3	-	-	50	-	-	52.5	-	-	60						
014H-	208	10.0	35.0	30.0	65.5	35	30	70	39.2	26.0	69.2	40	30	70						
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						
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

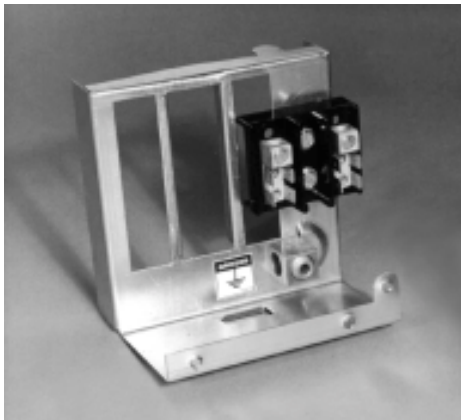


Figure 1. Circuit Breaker Brackets. Shown with Line Cover Removed and Terminal Block Installed.



Figure 2. Installation of Circuit Breakers

breaker knockouts in the air handler upper access door.

Snap the circuit breakers on to the circuit breaker bracket as shown in **Figure 2**. The orientation of

the circuit breakers must be as shown in **Figure 2**. (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".

After inserting the heating element assembly (see below) 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. (**note:** on H4HK-014H, also connect white wire from plug assembly to red side of circuit "A" of the top breaker. See **Figure 5**.)

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 2**. The orientation of the circuit breaker must be as shown in **Figure 2**. (Side with 1/4" terminals to the left).

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.

Final Installation, 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 (now with wired circuit-breaker or terminal block installed). **(See Figure 3)**

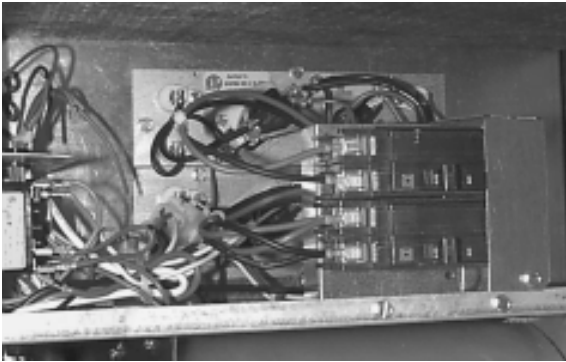


Figure 3. Sample Installation.
Shown without access door.

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

additional ratings label located on the lower access door just below the unit data label.

! WARNING:

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.

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.

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 the red jumper wire from the blower relay (terminals 4 and 6). Connect the black wire from the motor to terminal 4 of the blower relay. 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.

You may have the same speed for heating and cooling by jumpering terminals four and six on the blower relay and removing the heating speed wire connected to the blower.

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.

Replacement Parts List

ITEM NO.	PART NO.	DESCRIPTION	H4HKxxxx-xx										
			005H-01	005H-11	008H-01	008H-11	010H-01	010H-11	014H-21	015H-22	020H-22	015Q-11	009Q-11
1	491216	Element Ass'y - 3.0 kw											1
	491214	Element Ass'y - 4.8 kw	1	1						1		1	1
	491227	Element Ass'y - 6.0 kw											1
	491226	Element Ass'y - 7.5 kw			1	1							
	491225	Element Ass'y - 9.6 kw					1	1		1	2	1	
	D12707	Element Ass'y - 13.4 kw								1			
2	621380	Sequencer, 2-pole, Blower Timing			1	1	1	1		1	1		
	621381	Sequencer, 2-pole, Aux. Timing										1	
	621382	Sequencer, 1-pole, Blower Timing	1	1									
	621383	Sequencer, 1-pole, Aux. Timing									1		
2*	621908	Contact, 1-pole										1	1
	621909	Contact, 2-pole							1			1	1
	621910	Contact, 3-pole											
3	626458	Limit, 2-pole, 190°F			1	1	1	1		1	2		
	626487	Limit, 1-pole, 190°F	1	1						1		2	2
	626501	Limit, 1-pole, 160°F								1			
4	632249	Circuit Breaker, 2-pole, 60 amp (not shown)		1		1		1	2	2	2		
5	632225	Circuit Breaker, 2-pole, 60 amp (not shown)										1	1
6	371982	Circuit Breaker Bracket (not shown)	1	1	1	1	1	1	1	1	1	1	1
7	257442	Circuit Breaker Bracket Cover (not shown)	1	1	1	1	1	1	1	1	1	1	1
8	632229	Circuit Breaker Close Off (not shown)										1	1
9	631762	Terminal Block, (not shown)	1		1		1						

2*: effective 10/01/00

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

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.

CLEARANCE

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

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.

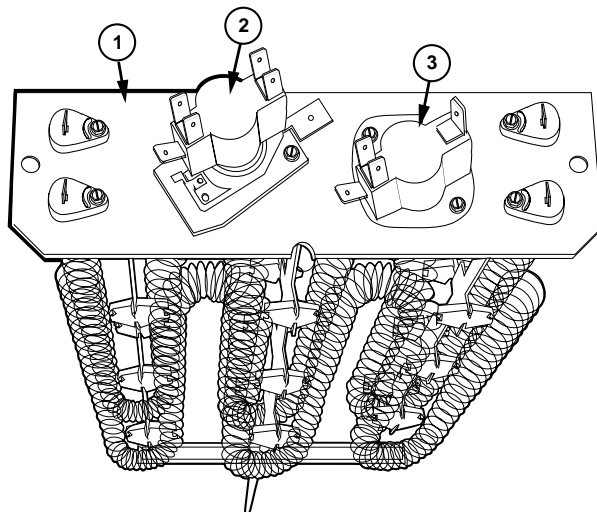


Figure 4. Typical System Wiring Diagram (20 kw, 2-Stage Shown)

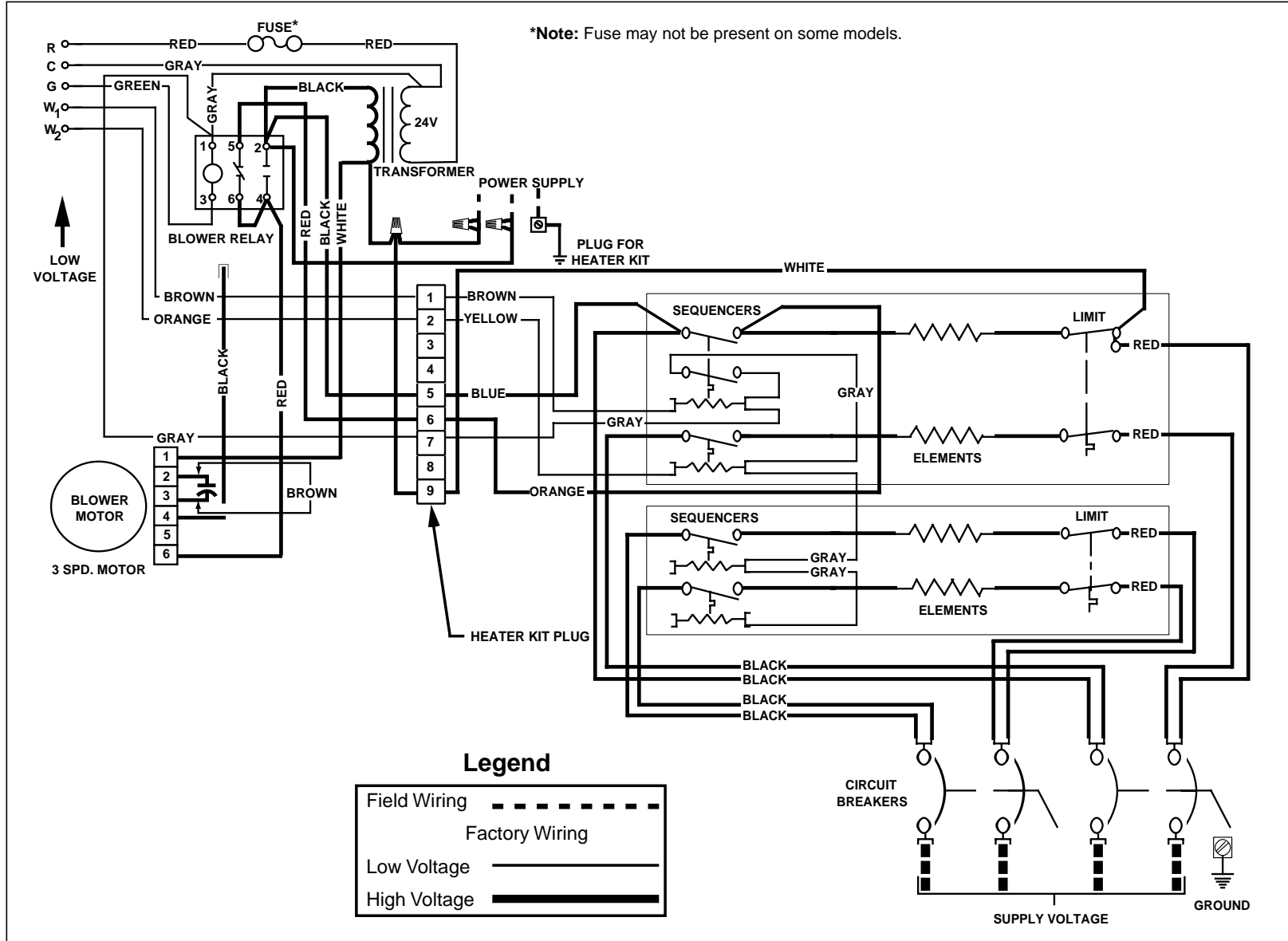
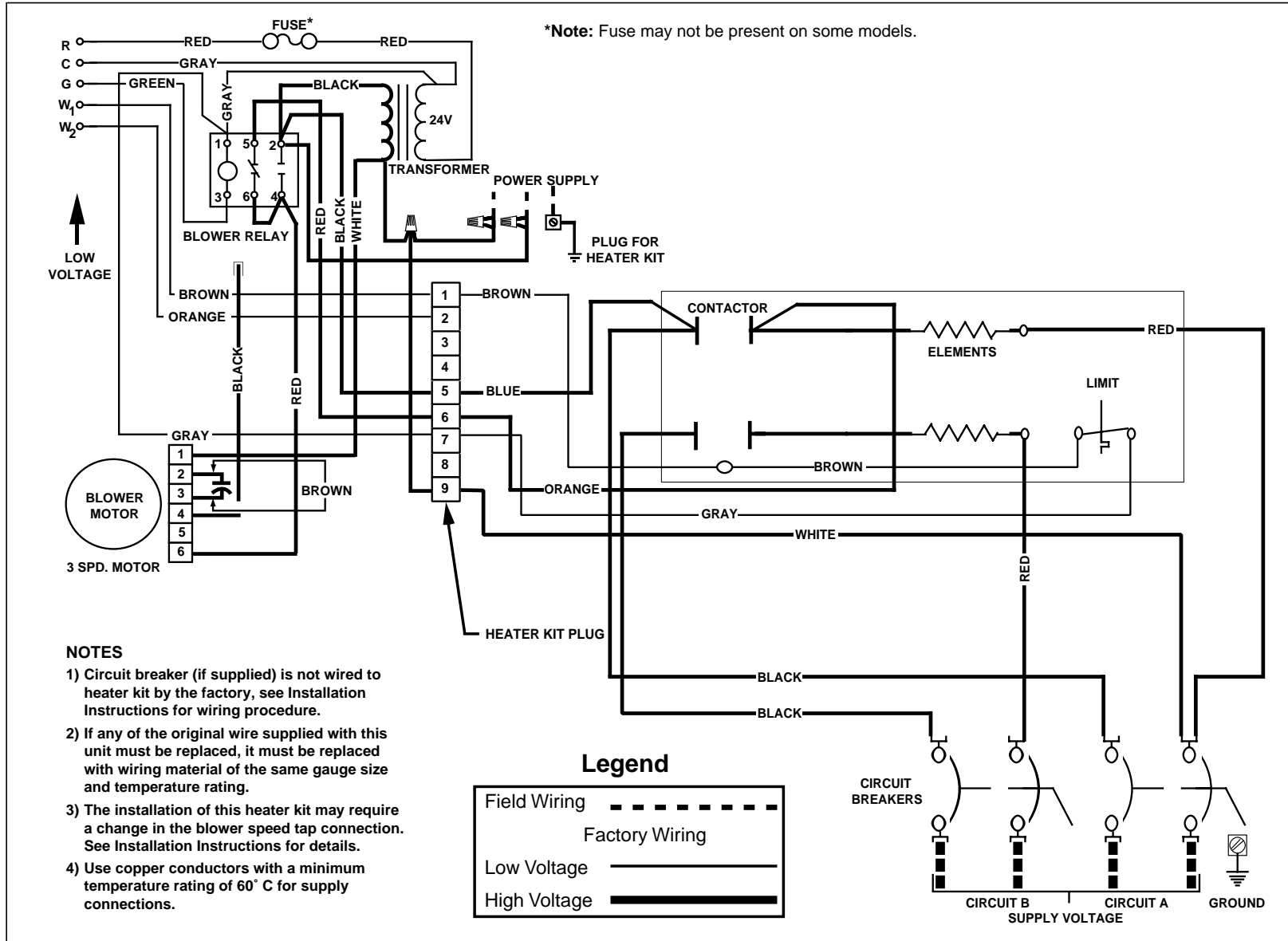
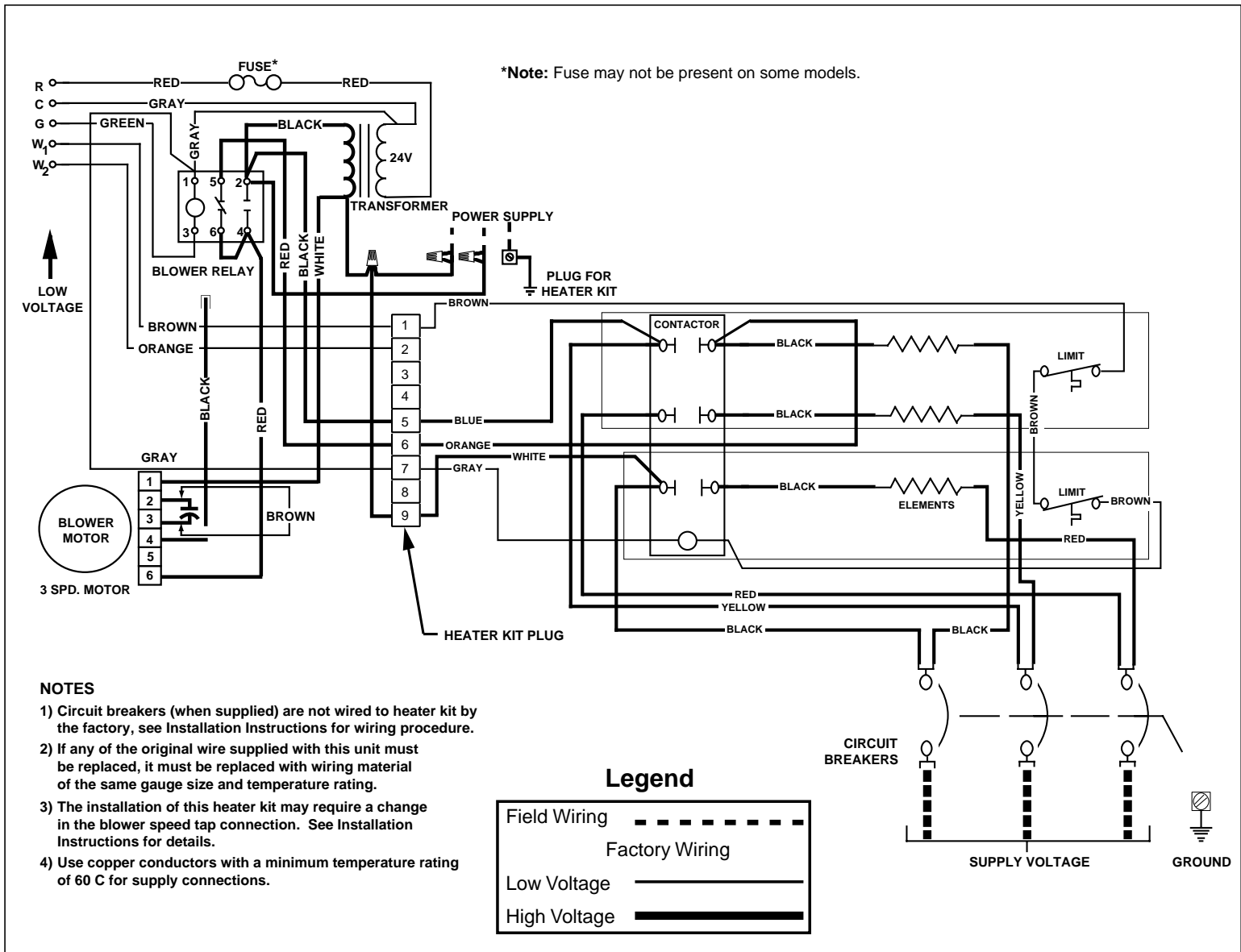


Figure 5. Typical System Wiring Diagram (14 kw, 1-Stage Shown)

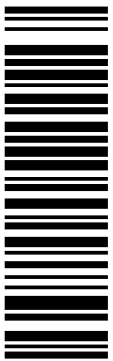


INSTALLER: PLEASE LEAVE THESE INSTALLATION INSTRUCTIONS WITH THE HOMEOWNER

Figure 6. Typical 3-Phase System Wiring Diagram (15 kw, Shown)



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