

# Installation Instructions

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

## SAFETY CONSIDERATIONS

Installing and servicing of heating and air conditioning equipment can be hazardous due to system pressures and electrical components. Only trained personnel should install or service heating and air conditioning equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils, or cleaning and replacing filters. All other operations should be performed by trained personnel. When working on heating and air conditioning equipment, observe precautions in literature, on tags, and on labels attached to the unit. Follow all safety codes. Wear safety glasses and work gloves. Have a fire extinguisher available.

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.

## WARNING

### ELECTRICAL SHOCK HAZARD

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

Before beginning any installation or modification, be sure the main electrical disconnect switch(es) is in the OFF position. There may be more than one power supply. Tag the disconnect switch(es) with a suitable warning label.

**Table 1 – Accessory Heater Usage**

| ELECTRIC HEATER PART NO.         | KW       | INTERNAL PROTECTION                         | MODEL FA, FB, FZ, PF SIZE | MODEL FC SIZE | MODEL FH SIZE | MODEL FX SIZE | MODEL FE, FK, FV, SIZE | FK, FV INTELLIGENT™ HEAT CAPABLE |
|----------------------------------|----------|---------------------------------------------|---------------------------|---------------|---------------|---------------|------------------------|----------------------------------|
| <b>1 Phase</b>                   |          |                                             |                           |               |               |               |                        |                                  |
| KFCEH0401N03B                    | 3        | Non- fused                                  | 018, 024                  | 018           | 001           | 018, 024      | —                      | NO                               |
| KFCEH0501N05B<br>KFCEH2401C05B   | 5        | Non- fused<br>Circuit Breaker               | 018- 071                  | 018- 070      | 001- 004      | 018- 060      | 001- 006               | NO<br>NO                         |
| KFCEH0801N08B<br>KFCEH2501C08B   | 8        | Non- fused<br>Circuit Breaker               | 018- 071                  | 018- 070      | 001- 004      | 018- 060      | 001- 006               | NO<br>NO                         |
| KFCEH2901N09B                    | 9*       | Non- fused                                  | 036- 071                  | 036- 070      | 002- 004      | 036- 060      | 003- 006               | YES†                             |
| KFCEH0901N10B<br>KFCEH2601C10B   | 10       | Non- fused<br>Circuit Breaker               | 018- 071                  | 018- 070      | 001- 004      | 018- 060      | 001- 006               | NO<br>NO                         |
| KFCEH3001F15B<br>KFCEH3101C15B   | 15       | Fused Circuit<br>Breaker Circuit<br>Breaker | 024- 071                  | 024- 070      | 001- 004      | 024- 060      | 001- 006               | YES†<br>YES†<br>YES†             |
| KFCEH3201F20B<br>KFCEH3301C20B   | 20       | Fused Circuit<br>Breaker Circuit<br>Breaker | 030- 071                  | 030- 070      | 002- 004      | 030- 060      | 001- 006               | YES†<br>YES†<br>YES†             |
| <b>3 Phase Only</b>              |          |                                             |                           |               |               |               |                        |                                  |
| KFCEH1601315B                    | 15       | Non- fused                                  | 036- 071                  | 036- 070      | 002- 004      | 036- 060      | 001- 006               | NO                               |
| KFCEH2001318B                    | 18       | Non- fused                                  | 042- 071                  | 042- 070      | 003, 004      | 042- 060      | 003- 006               | NO                               |
| <b>3 Phase, Factory Shipped‡</b> |          |                                             |                           |               |               |               |                        |                                  |
| KFCEH3401F24B<br>KFCEH3501F30B   | 24<br>30 | Fused Fused                                 | 048- 071                  | 048- 070      | 003, 004      | 048- 060      | 005, 006               | YES†<br>YES†                     |

\* Field convertible to 3 phase.

† These heaters are Intelligent Heat capable when used with the FK and FV fan coils and corporate 2- speed programmable Thermidistat™ control (Tx- xRH), capable zoning system, or an FE fan coil and Infinity™/Evolution™ Control.

‡ Field convertible to 1 phase, single or multiple supply circuit.

**Table 2 – Minimum CFM and Motor Speed Selection**

| FAN COIL FA, FB, FC,<br>FH, FX, FZ, PF SIZES | HEATER kW |      |      |      |      |      |      |       |      |      |
|----------------------------------------------|-----------|------|------|------|------|------|------|-------|------|------|
|                                              | 3         | 5    | 8    | 9    | 10   | 15   | 18   | 20    | 24   | 30   |
| 018                                          | 525       | 525  | 525  | —    | 600* | —    | —    | —     | —    | —    |
| 024                                          | 700       | 700  | 700  | 700  | 700  | 775* | —    | —     | —    | —    |
| 030, 033                                     | —         | 875  | 875  | 875  | 875  | 875  | —    | 1060* | —    | —    |
| 036, 038                                     | —         | 1050 | 970  | 970  | 970  | 920  | —    | 1040  | —    | —    |
| 042                                          | —         | 1225 | 1225 | 1225 | 1225 | 1225 | 1225 | 1225  | —    | —    |
| 048, 054                                     | —         | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400  | 1400 | 1400 |
| 060, 061, 070                                | —         | 1750 | 1750 | 1750 | 1750 | 1750 | 1750 | 1750  | 1750 | 1750 |

\* Indicates medium speed (blue). All other motor speeds at low tap.

This instruction describes the installation of Part No. KFCEH accessory heaters in FA, FB, FC, FE, FH, FK, FV, FX, FZ and PF fan coils.

**NOTE:** Electric heaters require a minimum airflow. Minimum airflow and motor speed selection are listed in Table 2. For 3-through 18-kW standard heaters, there are no clearance requirements for the first 36 in. (914 mm) of ductwork. For 20-through 30-kW heaters, a 1-in. (25 mm) clearance is required for the first 36 in. (914 mm) of ductwork.

## INSTALLATION

### Procedure 1 — Install Electric Heater Assembly

**NOTE:** Ensure heater coils are not deformed or damaged during heater installation.

1. Make sure power to unit is off.
2. Remove blower access panel of fan coil unit.

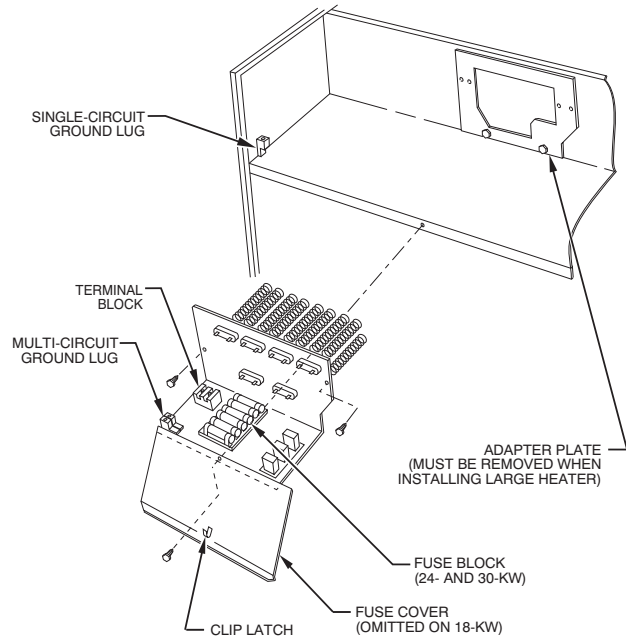
## ⚠ CAUTION

### ELECTRICAL OPERATION HAZARD

Failure to follow this caution may result in equipment damage or improper operation.

Before installation of heater, the black and yellow pigtail leads must be removed from the fan coil PCB or wire harness to prevent possible damage to the product. Electrical power will be provided to the board through the heater circuit plug.

3. Disconnect 2 power wires (black and yellow pigtail leads) from PCB or wire harness (if applicable) and discard. Wires may be part of a plug assembly or attached to terminals L1 and L2. Remove cooling control plate from fan coil (if equipped). For 18-, 24-, and 30-kW heaters, remove adapter plate. (See Fig. 1.)
4. Insert heater assembly into front of fan coil so that element rods engage holes in rear heat shield.
5. Attach heater control plate to fan coil using 2 screws provided. For 18-, 24-, and 30-kW heater models, attach front of heater to fan deck using third screw. (See Fig. 1.)



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**Fig. 1 - Installation of 18-, 24-, and 30-kW Model Heaters**

### Procedure 2 — Attach Fuse Box or Circuit Breaker Box

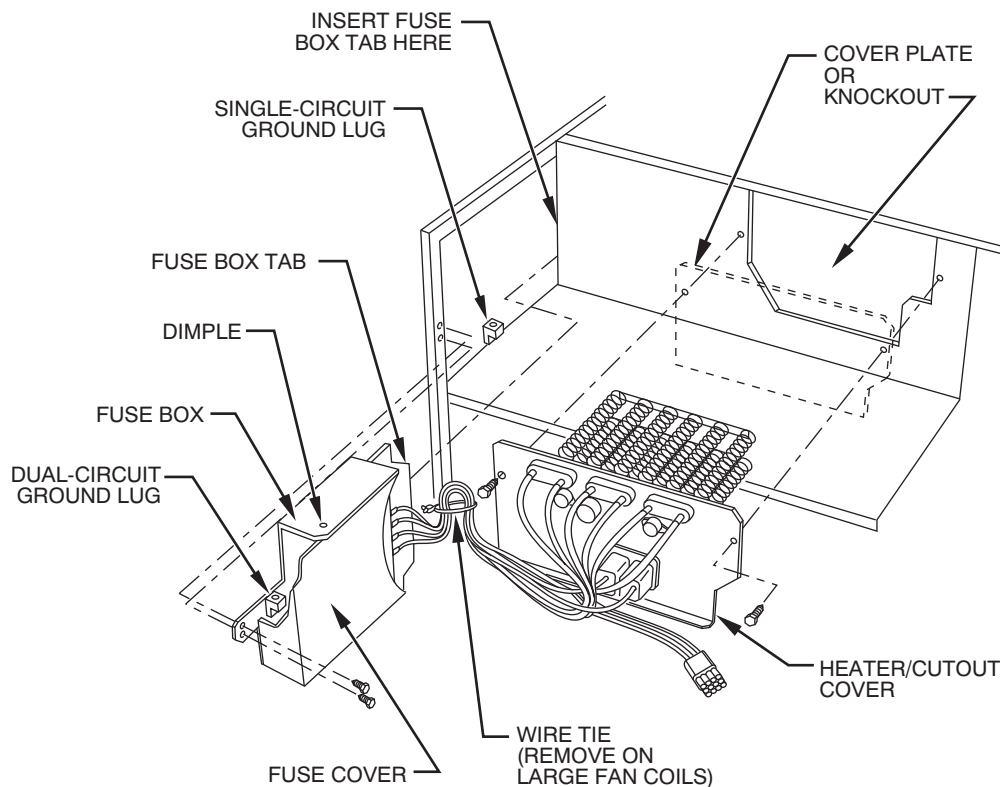
1. For 15- and 20-kW fused models:  
After installing heater assembly, attach fuse assembly to side of fan coil unit by inserting fuse box tab between insulation and to left side of unit and fan deck. Mount front of assembly to side flange with 2 screws provided. On fan coil units size 042 and larger, remove wire tie that shortens wire length between heater and fuses. Fuse cover is closed by engaging dimples in fuse box. (See Fig. 2.)
2. For 24- and 30-kW fused models:  
Fuse assembly is mounted on heater. Be sure fuse cover is closed by engaging clip latch on unit top panel. (See Fig. 1.)

## ⚠ WARNING

### ELECTRICAL SHOCK HAZARD

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

Ensure fuse box is closed before power is turned to ON position. There may be more than one power supply.



**Fig. 2 - Installation of Fused Model Heater**

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3. For 5- through 20-kW circuit breaker models:  
After installing heater assembly, attach circuit breaker assembly to unit with screws provided. (See Fig. 3.) On fan coil units size 042 and larger, remove wire tie that shortens wire length between heater and circuit breaker assembly to allow mounting of circuit breaker assembly. (See Fig. 3.)
4. Circuit breaker models require installing a window bezel in unit door to provide safe access to circuit breakers. The window bezel mounts on the outside of the blower door. (See Fig. 4.)
  - a. Cut insulation away from rectangular access hole in blower access panel.
  - b. Remove adhesive backing from window bezel and from the outside. Insert the window through the rectangular hole and seat firmly on the door surface. Press firmly in place to seat the adhesive. (See Fig. 4.)

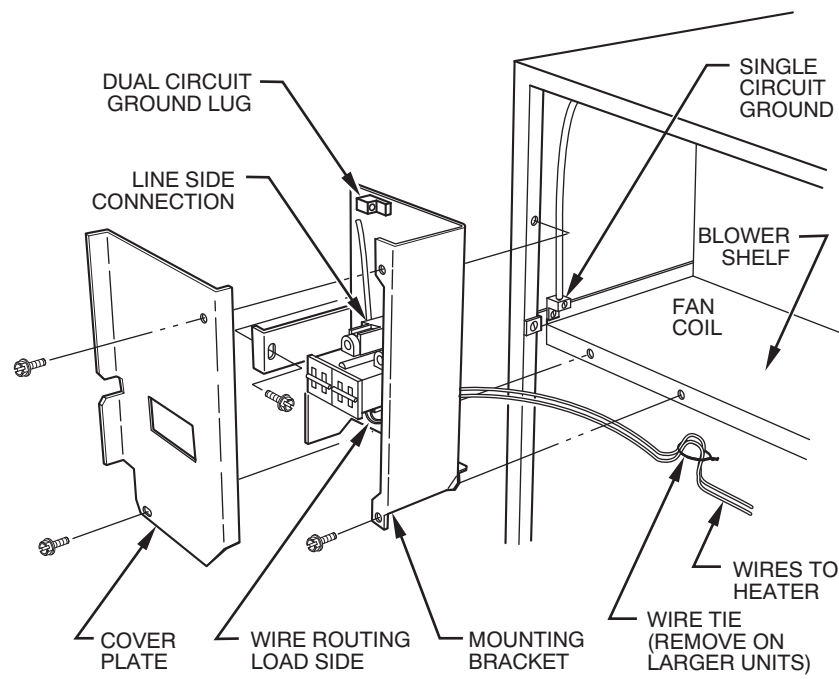
### Procedure 3 — Electrical Connections

Refer to unit instructions for recommended wiring procedures. Install wiring in accordance with all applicable local and national codes. (See Tables 3 and 4.) Connect heater wiring harness plug to receptacle on PCB or wire harness. A positive connection must be made between plug and receptacle. Plug will interlock with receptacle when properly seated. Harness contains both 24-v control and high-voltage wiring. Blower power is provided through heater harness.

**NOTE:** Units with or without electric heaters require a minimum CFM. Refer to unit wiring label to ensure the fan speed selected with electric heaters is equal to or greater than the minimum fan speed indicated. The minimum CFM for cooling is determined by the outdoor unit requirements. Use the higher of the 2 for year-round operation.

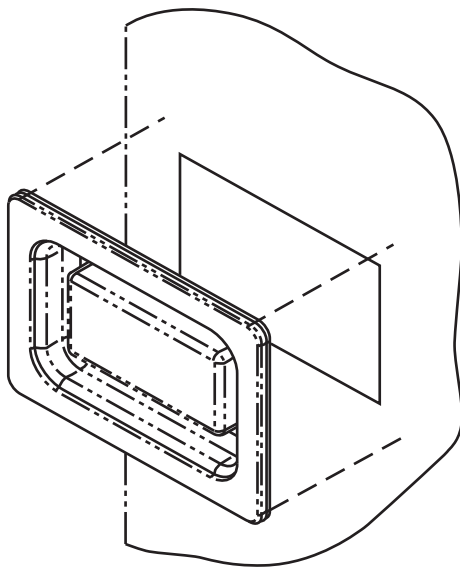
#### A. Wire 24- v Control Systems

1. Connections to unit  
Use No. 18 AWG color-coded, insulated (35°C minimum) wire to make low-voltage connections between thermostat, fan coil unit, and outdoor unit. If thermostat is located more than 100 ft (20 m) from unit (as measured along the low-voltage wire), use No. 16 AWG color-coded, insulated (35°C minimum) wire. All wiring must be separated from line voltage power leads. Refer to outdoor unit wiring instructions for additional wiring procedure recommendations.
2. Transformer  
Transformer is factory wired for 230-v operation. For 208-v applications, disconnect black wire on transformer 230-v terminal and reconnect it to 208-v terminal. (See Fig. 5.) The secondary circuit of transformer is protected by a 5-amp fuse mounted on PCB.



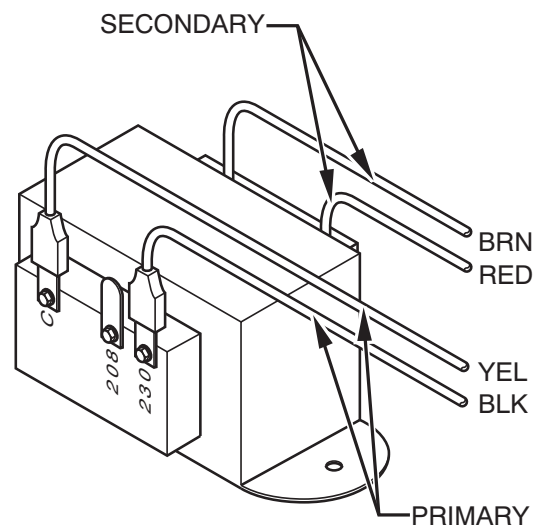
**Fig. 3 - Installation of Circuit Breaker Model Heater**

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**Fig. 4 - Installation of Window Bezel for Circuit Breaker Model Heater**

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**Fig. 5 - Connection of Transformer**

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Table 3 – Electric Heater Electrical Data

| HEATER<br>PART NO. | kW       |          | P<br>H<br>A<br>S<br>E | INTER-<br>NAL CIR-<br>CUIT<br>PROTEC-<br>TION | HEATER AMPS<br>208/230v |                   |              | MIN AMPACITY<br>208/230v* |                   |              | BRANCH CIRCUIT |                               |       |                                   |                   |                                   |         |                   |        |       |       |       |
|--------------------|----------|----------|-----------------------|-----------------------------------------------|-------------------------|-------------------|--------------|---------------------------|-------------------|--------------|----------------|-------------------------------|-------|-----------------------------------|-------------------|-----------------------------------|---------|-------------------|--------|-------|-------|-------|
|                    | 240<br>V | 208<br>V |                       |                                               | S<br>E                  | Single<br>Circuit | Dual Circuit |                           | Single<br>Circuit | Dual Circuit |                | Min Gnd Wire Size<br>208/230v |       | Max Fuse/Ckt Bkr<br>Amps 208/230v |                   | Max Wire Length<br>208/230v (Ft)† |         |                   |        |       |       |       |
|                    |          |          |                       |                                               |                         |                   | L1,L2        | L3,L4                     |                   | L1,L2        | L3,L4          | Single<br>Circuit             | L1,L2 | L3,L4                             | Single<br>Circuit | L1,L2                             | L3,L4   | Single<br>Circuit | L1,L2  | L3,L4 |       |       |
| KFCEH0401N03B      | 3        | 2.3      | 1                     | None                                          | 10.9/12.0               | —                 | —            | 15.9/17.3                 | —                 | —            | 12/12          | —                             | —     | 20/20                             | —                 | —                                 | 67/68   | —                 | —      |       |       |       |
| KFCEH0501N05B1     | 5        | 3.8      | 1                     | None                                          | 18.1/20.0               | —                 | —            | 26.0/28.4                 | —                 | —            | 10/10          | —                             | —     | 30/30                             | —                 | —                                 | 66/66   | —                 | —      |       |       |       |
| KFCEH0501N05B2     | 5        | 3.8      | 1                     | None                                          | 18.1/20.0               | —                 | —            | 31.2/33.5                 | —                 | —            | 8/8            | —                             | —     | 35/35                             | —                 | —                                 | 85/88   | —                 | —      |       |       |       |
| KFCEH2401C05B2     | 5        | 3.8      | 1                     | Ckt Bkr                                       | 18.1/20.0               | —                 | —            | 31.2/33.5                 | —                 | —            | 8/8            | —                             | —     | 35/35                             | —                 | —                                 | 85/88   | —                 | —      |       |       |       |
| KFCEH0801N08B      | 8        | 6.0      | 1                     | None                                          | 28.9/32.0               | —                 | —            | 44.7/48.5                 | —                 | —            | 8/8            | —                             | —     | 45/50                             | —                 | —                                 | 59/60   | —                 | —      |       |       |       |
| KFCEH2501C08B      | 8        | 6.0      | 1                     | Ckt Bkr                                       | 28.9/32.0               | —                 | —            | 44.7/48.5                 | —                 | —            | 8/8            | —                             | —     | 45/50                             | —                 | —                                 | 59/60   | —                 | —      |       |       |       |
| KFCEH2901N09B**    | 9        | 6.8      | 1                     | None                                          | 32.8/36.0               | —                 | —            | 49.5/53.5                 | —                 | —            | 8/6            | —                             | —     | 50/60                             | —                 | —                                 | 54/87   | —                 | —      |       |       |       |
| KFCEH2901N09B†     | 9        | 6.8      | 3                     | None                                          | 18.8/20.8               | —                 | —            | 32.0/34.5                 | —                 | —            | 8/8            | —                             | —     | 35/35                             | —                 | —                                 | 83/85   | —                 | —      |       |       |       |
| KFCEH0901N10B      | 10       | 7.5      | 1                     | None                                          | 36.2/40.0               | —                 | —            | 53.8/58.5                 | —                 | —            | 6/6            | —                             | —     | 60/60                             | —                 | —                                 | 78/80   | —                 | —      |       |       |       |
| KFCEH2601C10B      | 10       | 7.5      | 1                     | Ckt Bkr                                       | 36.2/40.0               | —                 | —            | 53.8/58.5                 | —                 | —            | 6/6            | —                             | —     | 60/60                             | —                 | —                                 | 78/80   | —                 | —      |       |       |       |
| KFCEH3001F15B**    | 15       | 11.3     | 1                     | Fuse                                          | 54.2/59.9               | 36.2/40.0         | 18.1/20.0    | 76.3/83.4                 | 53.8/58.5         | 22.7/25.0    | 4/4            | 6/6                           | 10/10 | 8/8                               | 10/10             | 80/90                             | 60/60   | 25/25             | 88/89  | 78/80 | 75/76 |       |
| KFCEH3101C15B**    | 15       | 11.3     | 1                     | Ckt Bkr                                       | —                       | 36.2/40.0         | 18.1/20.0    | —                         | 53.8/58.5         | 22.7/25.0    | —              | 6/6                           | 10/10 | —                                 | 10/10             | 10/10                             | —       | 60/60             | 25/25  | —     | 78/80 | 75/76 |
| KFCEH1601315B      | 15       | 11.3     | 3                     | None                                          | 31.3/34.6               | —                 | —            | 47.7/51.8                 | —                 | —            | 8/6            | —                             | —     | 50/60                             | —                 | —                                 | 56/90   | —                 | —      | —     | —     |       |
| KFCEH2001318B      | 18       | 13.5     | 3                     | None                                          | 37.6/41.5               | —                 | —            | 55.5/60.4                 | —                 | —            | 6/6            | —                             | —     | 60/70                             | —                 | —                                 | 76/77   | —                 | —      | —     | —     |       |
| KFCEH3201F20B**    | 20       | 15.0     | 1                     | Fuse                                          | 72.3/79.9               | 36.2/40.0         | 36.2/40.0    | 98.9/108.4                | 53.8/58.5         | 45.3/50.0    | 3/2            | 6/6                           | 8/8   | 8/6                               | 10/10             | 100/110                           | 60/60   | 50/50             | 85/109 | 78/80 | 59/59 |       |
| KFCEH3301C20B**    | 20       | 15.0     | 1                     | Ckt Bkr                                       | —                       | 36.2/40.0         | 36.2/40.0    | —                         | 53.8/58.5         | 45.3/50.0    | —              | 6/6                           | 8/8   | —                                 | 10/10             | 10/10                             | 60/60   | 50/50             | —      | 78/80 | 59/59 |       |
| KFCEH3401F24B†**   | 24       | 18.0     | 3                     | Fuse                                          | 50.1/55.4               | —                 | —            | 71.2/77.8                 | —                 | —            | 4/4            | —                             | —     | 80/80                             | —                 | —                                 | 94/95   | —                 | —      | —     | —     |       |
|                    | 24       | 18.0     | 1                     | Fuse                                          | 86.7/95.5               | —                 | —            | 116.9/127.9               | —                 | —            | 1/1            | —                             | —     | 125/150                           | —                 | —                                 | 115/116 | —                 | —      | —     | —     |       |
|                    | 30       | 22.5     | 3                     | Fuse                                          | 62.6/69.2               | —                 | —            | 86.8/95.0                 | —                 | —            | 3/3            | —                             | —     | 90/100                            | —                 | —                                 | 97/98   | —                 | —      | —     | —     |       |
| KFCEH3501F30B†**   | 30       | 22.5     | 1                     | Fuse                                          | 109.0/120.0             | —                 | —            | 144.8/158.5               | —                 | —            | 0/00           | —                             | —     | 150/175                           | —                 | —                                 | 117/150 | —                 | —      | —     | —     |       |

Table 4 – Field Multipoint Wiring or 24- and 30- kW Single Phase

| HEATER PART NO. |  |  | kW |      | P<br>H<br>A<br>S<br>E | HEATER AMPS 208/230v |           |           |           |           |           | MIN AMPACITY 208/230v* |           |           |       |       |       | MIN WIRE SIZE (AWG)<br>208/230v†† |       |       |       |       |       | MIN GND<br>WIRE SIZE<br>208/230v |       |       | MAX FUSE/CKT BKR AMPS<br>208/230v |       |       |       |       |       | MAX WIRE LENGTH 208/230v (FT)‡ |  |  |  |  |  |
|-----------------|--|--|----|------|-----------------------|----------------------|-----------|-----------|-----------|-----------|-----------|------------------------|-----------|-----------|-------|-------|-------|-----------------------------------|-------|-------|-------|-------|-------|----------------------------------|-------|-------|-----------------------------------|-------|-------|-------|-------|-------|--------------------------------|--|--|--|--|--|
|                 |  |  |    |      |                       | 240v                 |           | 208v      |           | L1,L2     | L3,L4     | L5,L6                  | L1,L2     | L3,L4     | L5,L6 | L1,L2 | L3,L4 | L5,L6                             | L1,L2 | L3,L4 | L5,L6 | L1,L2 | L3,L4 |                                  |       |       | L5,L6                             | L1,L2 | L3,L4 | L5,L6 | L1,L2 | L3,L4 | L5,L6                          |  |  |  |  |  |
|                 |  |  |    |      |                       |                      |           |           |           |           |           |                        |           |           |       |       |       |                                   |       |       |       |       |       |                                  |       |       |                                   |       |       |       |       |       |                                |  |  |  |  |  |
| KFCEH3401F24B†  |  |  | 24 | 18.0 | 1                     | 28.9/32.0            | 28.9/32.0 | 28.9/32.0 | 28.9/32.0 | 36.2/40.0 | 36.2/40.0 | 44.7/48.5              | 36.2/40.0 | 36.2/40.0 | 8/8   | 8/8   | 8/8   | 10/10                             | 45/50 | 40/40 | 40/40 | 59/60 | 73/73 | 73/73                            | L1,L2 | L3,L4 | L5,L6                             |       |       |       |       |       |                                |  |  |  |  |  |
| KFCEH3501F30B†  |  |  | 30 | 22.5 | 1                     | 36.2/40.0            | 36.2/40.0 | 36.2/40.0 | 36.2/40.0 | 53.8/58.5 | 45.3/50.0 | 45.3/50.0              | 45.3/50.0 | 6/6       | 8/8   | 8/8   | 10/10 | 60/60                             | 50/50 | 50/50 | 78/80 | 59/59 | 59/59 | L1,L2                            | L3,L4 | L5,L6 |                                   |       |       |       |       |       |                                |  |  |  |  |  |

\* Includes blower motor amps of largest fan coil used with heater.

† Field convertible to 1 phase, single or multiple supply circuit.

‡ Field convertible to 3 phase.

\*\* Heaters are Intelligent Heat™ capable when used with the FK and FV fan coils and corporate Thermidstat™ control (Tx-xRH), or FE fan coil and Infinity™/Evolution™ Control.

†† Copper wire must be used. If other than uncoated (non-plated), 75°C ambient, copper wire (solid wire for 10 AWG and smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the National Electric Code (ANSI/NFPA 70).

‡ Length shown is as measured 1 way along wire path between unit and service panel for a voltage drop not to exceed 2%.

NOTES:

1. For fan coil sizes 018-036.
2. For fan coil sizes 042-060 and all FE, FK, and FV sizes.
3. Single circuit application of F15 and F20 heaters requires single-point wiring kit accessory.

### 3. Heater staging

If electric heat staging is required, a multi-stage heating room thermostat is required. Consult your equipment supplier for a suitable thermostat.

- The 3-, 5-, 8-, and 10-kW heaters are single stage only.
- The 9- and 15-kW heaters are adaptable for 2-stage operation.
- The 18-, 20-, 24-, and 30-kW heaters are adaptable for 3-stage operation.

### 4. Intelligent Heat™ Staging

FK and FV Fan Coils are capable of Intelligent Heat™ staging when installed with capable electric heaters (see Table 1) and a corporate Thermidistat™ control (Tx-xRH), or Comfort Zone II™/Zone Perfect Plus™. An FE fan coil plus Infinity™/Evolution™ Control combination is also capable of Intelligent™ heat staging. Consult the fan coil Installation and Start-up Instructions for wiring details. Do not install with outdoor thermostats when installing for Intelligent Heat™ Staging.

### 5. Rectifier and Time Delay Boards

Each heater element is controlled by a relay mounted on the heater panel. The relay has a 24v DC coil. Each relay has a small rectifier board attached directly to relay coil terminals. The rectifier board converts incoming 24v AC control signal to DC. Some heaters may have up to three relays. The second and/or third relay rectifier board also has a time delay feature and a small jumper wire built into it. With the jumper uncut, the time delay allows the second stage heat to be energized approximately 5 sec after the first stage. On 18-, 24-, and 30-kW heaters, the third stage relay board jumper is cut at factory. This provides an 8 sec delay after first stage relay closes.

## B. Power Connections

**NOTE:** Heater supply circuit wire size and overcurrent protection must comply with National Electrical Code (NEC) and UL branch circuit requirements. (See Table 3 and 4.) Wires and overcurrent protection, integral to the heater, are not required to meet branch circuit requirements. **Internal circuit protection of 60 amps (maximum) is acceptable.**

#### 1. Unprotected heaters: (See Fig. 6, 10, and 11.)

- The 5- through 10-kW single-phase and 15- and 18-kW 3-phase heaters can be wired for single-supply circuit only. Supply circuit connects to heater pigtail leads (terminal block on 18-kW heaters).
- The 3- through 10-kW single-phase heaters can use a separate field-installed, factory-authorized disconnect kit which installs in fan coil.

**NOTE:** Refer to wiring label for component locations.

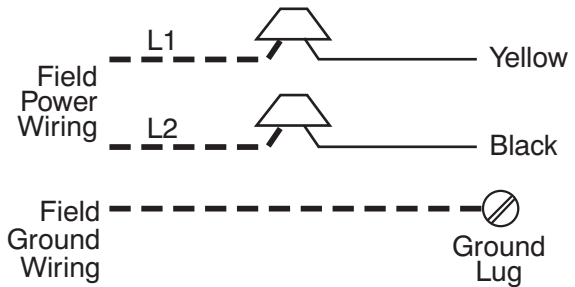
- The 9-kW heater is factory wired for single supply circuit, single phase. To convert heater to single supply circuit, 3 phase:
  - (1.) Disconnect blue wire from Relay 1 Terminal 6. Cut, strip, and connect to field wire L3.
  - (2.) Disconnect yellow wire from Relay 3 Terminal 6 and connect to Relay 1 Terminal 6.
  - (3.) Disconnect blue wire from Relay 3 Terminal 2 and connect to Relay 3 Terminal 6.

#### 2. Circuit breaker heaters: (See Fig. 7 and 9.)

- The 3- through 10-kW heaters can be wired for single-supply circuit only.
- The 15- and 20-kW heaters can be wired for dual-supply circuits only.

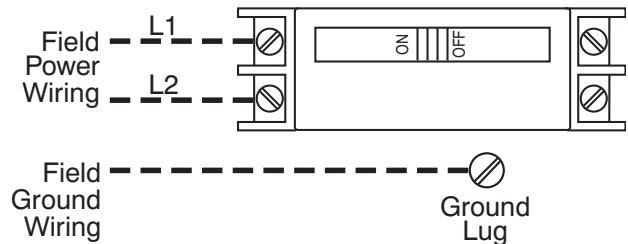
#### 3. Fused heaters: (See Fig. 8, 12, 13, and 14.)

- The 15- and 20-kW heaters can be wired for single- or dual-supply circuits. Single-supply circuit wiring requires a factory-authorized, single-point adapter kit.
- The 24- and 30-kW heaters can be wired for single- or multiple-supply circuits. Heaters are factory wired for single circuit 3 phase. To convert heaters to single circuit single phase, disconnect yellow lead from L3 and connect to L1. Disconnect black lead from L3 and connect to L2. To convert heaters to multiple-supply circuit single phase, remove and discard leads between single-circuit terminal block and fuse block. Remove and discard single-circuit terminal block. Attach L1 through L6 power leads as indicated on label next to fuse block.



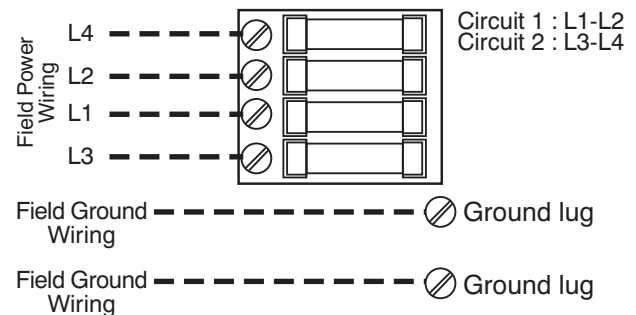
A00076

**Fig. 6 - 3, 5, 8, 9 10 kW Non-fused Heaters (9 kW is field convertible to 3-phase. See Procedure 3. B. 1. c.)**



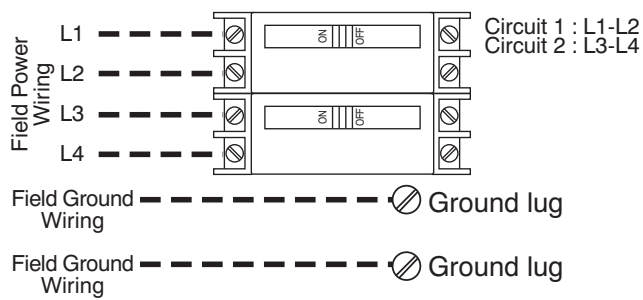
A00077

**Fig. 7 - 5, 8 10 kW Circuit Breaker and Disconnect Heaters**



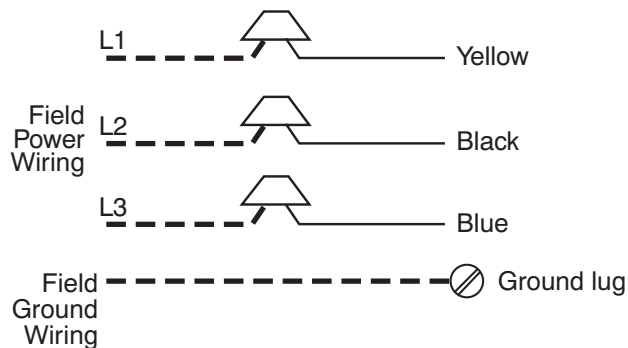
A00078

**Fig. 8 - 15 and 20 kW Fused Heaters (15 and 20 kW fused heaters are factory wired for dual supply circuits. Single supply circuit is possible with approved single point wiring kit.)**



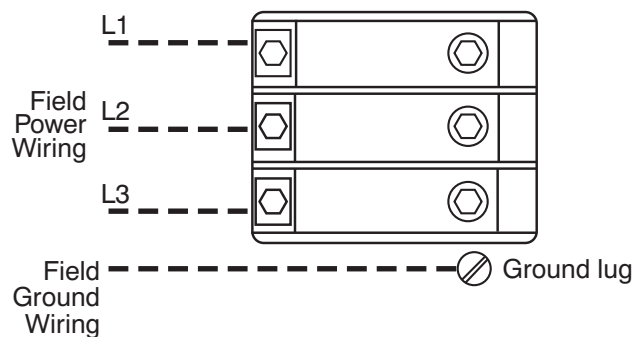
**Fig. 9 - 15 and 20 kW Circuit Breaker Heaters**

A00079



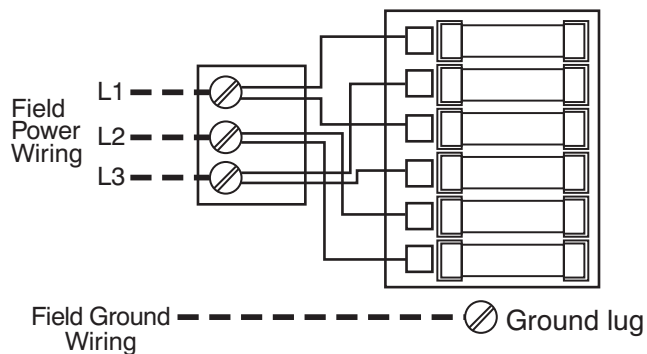
**Fig. 10 - 15 kW 3-Phase Heater**

A00080



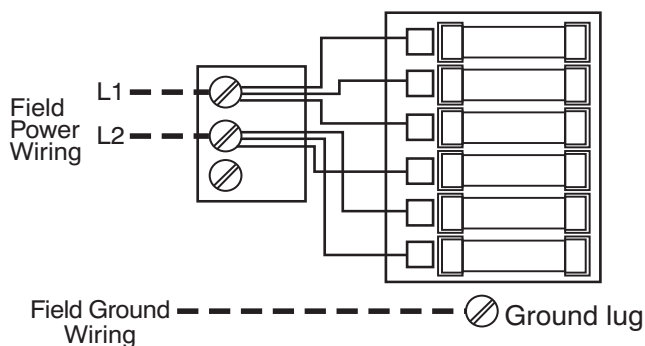
**Fig. 11 - 18 kW 3-Phase Heater**

A00081



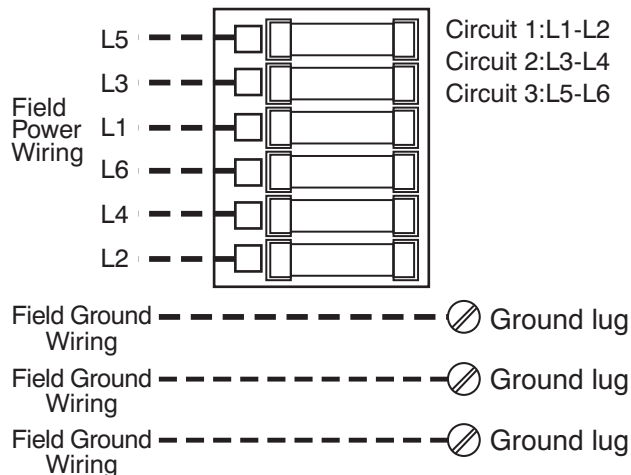
**Fig. 12 - 24 and 30 kW Heaters (3-Phase Wiring Factory Supplied)**

A00082



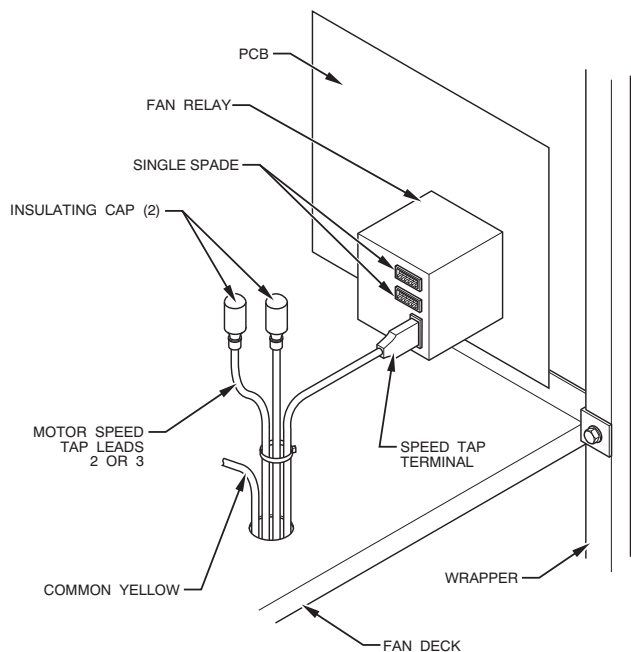
**Fig. 13 - 24 and 30 kW Heaters  
(Single Phase, Single Supply Circuit-Field Modified)**

A00083



**Fig. 14 - 24 and 30 kW Heaters  
(Single Phase, Multiple Supply Circuits-Field Modified)**

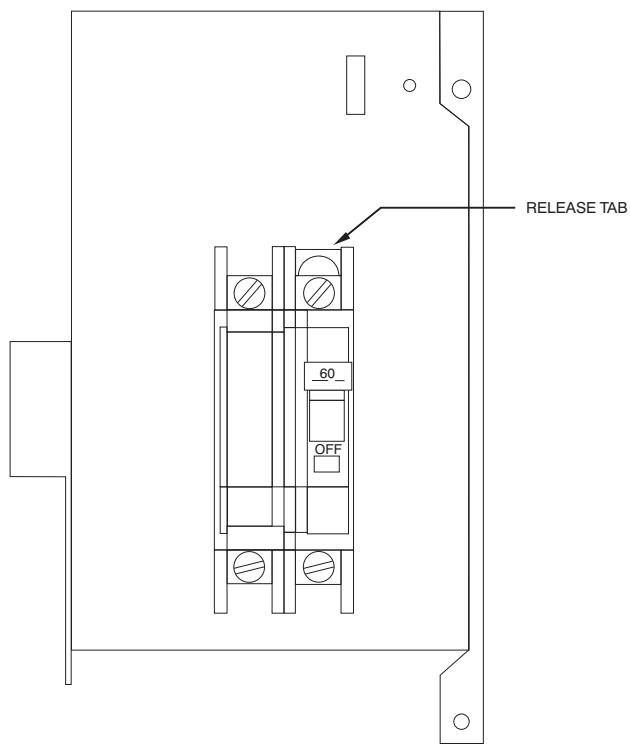
A00084



**Fig. 15 - PSC Motor Speed Tap and Fan Relay**

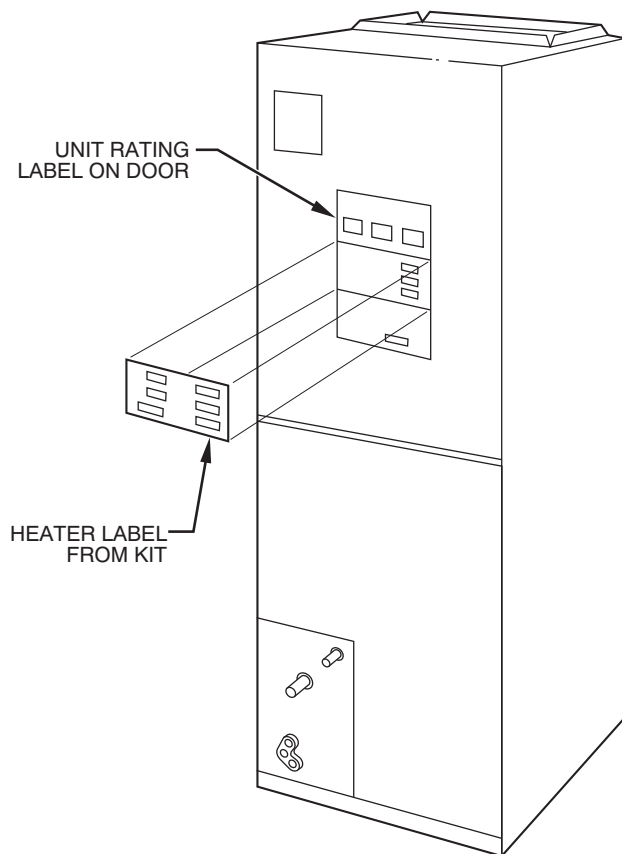
A94068





**Fig. 16 - Conversion of Circuit Breaker**

A99094



**Fig. 17 - Heater Rating Label Location**

A96251

## C. Ground Connections

### ⚠ WARNING

#### ELECTRICAL SHOCK HAZARD

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

According to NEC, ANSI/NFPA 70, and local codes, cabinet must have an uninterrupted or unbroken ground to minimize personal injury if an electrical fault should occur. The ground may consist of electrical wire or metal conduit when installed in accordance with existing electrical codes. (See Ground/Conduit Note below.)

**NOTE:** Use UL-listed conduit and conduit connector for connecting supply wire(s) to unit to obtain proper grounding. If conduit connection uses reducing washers, a separate ground wire must be used. Grounding may also be accomplished by using grounding lugs provided in control box.

1. For unprotected or single-circuit heaters, 1 equipment ground connection is provided on fan coil unit. (See Fig. 1 or 2.)
2. For 15- and 20-kW circuit breaker heaters, an additional ground lug is provided on circuit breaker mounting bracket for dual-circuit grounding. (See Fig. 3.)
3. For 15- and 20-kW fused heaters, an additional ground lug is provided on fuse mounting bracket for dual-circuit grounding. (See Fig. 2.)
4. For 24- and 30-kW fused heaters, 2 additional ground lugs are provided for single-phase, multi-circuit wiring. (See Fig. 1.)

#### D. Fan Speeds for FA(A,B,C) FB, FC4(B,C), FH, FX(A,B), FY, PF with PSC motors

1. Speed tap selection is done at fan relay. To change motor speeds, disconnect fan lead on relay and replace with motor speed tap desired. Save insulating cap and place on motor lead that was removed from relay. (See Fig. 15.) Refer to Table 5 for further clarification of speed tap selections.

**Table 5 – Color Code for Motor Lead Wires FA, FB, FC4(B,C), FH, FX4(A,B), FZ, PF with PSC motors**

| MOTOR SPEED TAP | WIRE COLOR                    |
|-----------------|-------------------------------|
| Common          | Yellow                        |
| High            | Black                         |
| Medium          | Blue (Factory selected)       |
| Low             | Red (Blue on 2- speed models) |

#### E. FK, FE, FV

1. Refer to Table 6 thru 8 for minimum CFM and airflow delivery.

#### F. FB4C, FC4D, FX4C, FZ4A and PF with Discrete Tap BLDC Motors

1. Speed tap selection is done at motor terminals. To change motor speed, disconnect motor lead from the factory terminal and move to desired speed tap based on published airflow tables and desired unit function.
2. Electric heat (white wire) should remain plugged into Tap 4.

### Procedure 4 — Conversion of Circuit Breaker for Downflow Applications

1. Tag and disconnect factory wiring from terminals on circuit breaker(s).



2. Pull white plastic release tab on the bottom of circuit breaker straight out to release circuit breaker from bracket. (See Fig. 16.)
3. Remove quick connect adapters from factory side of breaker(s). Reinstall adapters on other end of breakers(s). Be sure adapter is located between lug screw and plate. Torque lug screw to 30-in.-lb.
4. Rotate breaker 180° from its original position and reinstall in bracket. Slide breaker slot into sheet metal tab and snap breaker into place. Make sure both tabs engage breaker. Reconnect wiring on opposite end. Make sure wires are positioned as before.
5. Remount circuit breaker bracket into unit so that the switch will be in UP position when ON.

### Procedure 5 — Attach Wiring Diagram and Rating Label

Attach heater rating label included with kit over existing electrical information label located on front access panel of fan coil. (See

Fig. 17.) If kit contains multiple rating labels, ensure correct label is applied (check phase and supply circuits). Affix wiring diagram label 3, included with kit, on blower housing above fan coil wiring label. Do not cover up existing wiring label.

**NOTE:** The fact there is a label 3 does not imply there should be label 1 or 2. These kits have only one wiring label - label 3.

### Procedure 6 — Verify Installation

After completion of heater installation, check wiring to ensure tightness and that proper connections and routings have been made. Ensure all electrical covers are in place and proper labels have been applied. Reinstall blower access panel before turning unit power on.

**Table 6 – FK, FV, Airflow Delivery (CFM) - Electric Heating Modes**

| FAN<br>UNIT<br>SIZE | OUTDOOR<br>UNIT<br>CAPACITY<br>BTUH | ELECTRIC HEATER kW RANGE |      |      |      |      |      |      |      |      |      |      |      |
|---------------------|-------------------------------------|--------------------------|------|------|------|------|------|------|------|------|------|------|------|
|                     |                                     | 0—5                      |      |      | 0—10 |      |      | 0—15 |      |      | 0—20 |      |      |
|                     |                                     | LO                       | NOM  | HI   | LO   | NOM  | HI   | LO   | NOM  | HI   | LO   | NOM  | HI   |
| 001<br>002          | 18,000                              | 625                      | 625  | 625  | 675  | 675  | 675  | *    | *    | *    | *    | *    | *    |
|                     | 24,000                              | 650                      | 725  | 835  | *    | 725  | 835  | 875  | 875  | 875  | *    | *    | *    |
|                     | 30,000                              | 815                      | 905  | 1040 | *    | 905  | 1040 | 900  | 900  | 1040 | 1100 | 1100 | 1100 |
|                     | 36,000                              | 980                      | 1085 | 1250 | 980  | 1085 | 1250 | 980  | 1085 | 1250 | 1100 | 1100 | 1250 |
| 003                 | 24,000                              | 675                      | 725  | 835  | 875  | 875  | 875  | *    | *    | *    | *    | *    | *    |
|                     | 30,000                              | 815                      | 905  | 1040 | 875  | 905  | 1040 | 1100 | 1100 | 1100 | *    | *    | *    |
|                     | 36,000                              | 980                      | 1085 | 1250 | 980  | 1085 | 1250 | 1100 | 1100 | 1250 | 1225 | 1225 | 1250 |
|                     | 42,000                              | 1140                     | 1270 | 1460 | 1140 | 1270 | 1460 | 1140 | 1270 | 1460 | 1225 | 1270 | 1460 |
| FAN<br>UNIT<br>SIZE | OUTDOOR<br>UNIT<br>CAPACITY<br>BTUH | ELECTRIC HEATER kW RANGE |      |      |      |      |      |      |      |      |      |      |      |
|                     |                                     | 0—10                     |      |      | 0—15 |      |      | 0—20 |      |      | 0—30 |      |      |
|                     |                                     | LO                       | NOM  | HI   | LO   | NOM  | HI   | LO   | NOM  | HI   | LO   | NOM  | HI   |
| 005                 | 30,000                              | 975                      | 975  | 1040 | 1100 | 1100 | 1100 | *    | *    | *    | *    | *    | *    |
|                     | 36,000                              | 980                      | 1085 | 1250 | 1100 | 1100 | 1250 | 1250 | 1250 | 1250 | *    | *    | *    |
|                     | 42,000                              | 1140                     | 1270 | 1460 | 1140 | 1270 | 1460 | 1250 | 1270 | 1460 | 1500 | 1500 | 1500 |
|                     | 48,000                              | 1305                     | 1450 | 1665 | 1305 | 1450 | 1665 | 1305 | 1450 | 1665 | 1500 | 1500 | 1665 |
| 006                 | 36,000                              | 1100                     | 1100 | 1250 | 1350 | 1350 | 1350 | *    | *    | *    | *    | *    | *    |
|                     | 42,000                              | 1140                     | 1270 | 1460 | 1350 | 1350 | 1460 | 1525 | 1525 | 1525 | *    | *    | *    |
|                     | 48,000                              | 1305                     | 1450 | 1665 | 1350 | 1450 | 1665 | 1525 | 1525 | 1665 | 1750 | 1750 | 1750 |
|                     | 60,000                              | 1630                     | 1810 | 2085 | 1630 | 1810 | 2085 | 1630 | 1810 | 2085 | 1750 | 1810 | 2085 |

\*Airflow not recommended for heater/system size.

**NOTE:** LO, NOM, and HI refer to AC/HP CFM ADJUST selection.

Table 7 – FK, FV, Minimum CFM for Electric Heater Application (CFM) - Electric Heating Modes

| FAN COIL UNIT | HEAT PUMP UNIT SIZE | CFM            |          |      |        |        |
|---------------|---------------------|----------------|----------|------|--------|--------|
|               |                     | HEATER SIZE kW |          |      |        |        |
|               |                     | 5              | 8, 9, 10 | 15   | 18, 20 | 24, 30 |
| 001<br>002    | Heater Only         | 625            | 625      | 725  | 875    | —      |
|               | 018                 | 625            | 625      | —    | —      | —      |
|               | 024                 | 650            | 725      | 875  | —      | —      |
|               | 030                 | 800            | 875      | 875  | 1040   | —      |
|               | 036                 | 970            | 970      | 970  | 1040   | —      |
| 003           | Heater Only         | 675            | 700      | 850  | 1050   | —      |
|               | 024                 | 675            | 875      | 875  | —      | —      |
|               | 030                 | 800            | 875      | 1100 | 1150   | —      |
|               | 036                 | 975            | 975      | 1100 | 1225   | —      |
|               | 042                 | 1125           | 1125     | 1125 | 1225   | —      |
| 005           | Heater Only         | 675            | 700      | 850  | 1050   | 1400   |
|               | 030                 | 800            | 875      | 875  | 1150   | —      |
|               | 036                 | 975            | 975      | 1100 | 1225   | —      |
|               | 042                 | 1125           | 1125     | 1125 | 1225   | —      |
|               | 048                 | 1305           | 1305     | 1305 | 1305   | 1400   |
| 006           | Heater Only         | 1050           | 1050     | 1050 | 1050   | 1750   |
|               | 036                 | 1100           | 1100     | 1350 | 1350   | —      |
|               | 042                 | 1125           | 1125     | 1350 | 1350   | —      |
|               | 048                 | 1300           | 1300     | 1350 | 1465   | 1750   |
|               | 060                 | 1625           | 1625     | 1625 | 1750   | 1750   |

**NOTES:**

1. Heater Only—Air conditioner with electric heater application.
2. These airflows are minimum acceptable airflows as UL listed. Actual airflow delivered will be per airflow delivery chart for Electric Heating Modes.

Table 8 – FE4A/FE5A Fan Coil Airflow Delivery Chart (CFM) — Electric Heating Modes

| MODEL FE4A | OUTDOOR UNIT CAPACITY BTUH | ELECTRIC HEATER kW RANGE |      |      |      |      |      |      |
|------------|----------------------------|--------------------------|------|------|------|------|------|------|
|            |                            | 5                        | 9    | 10   | 15   | 20   | 24   | 30   |
| 002        | EMERGENCY                  | 625                      | 625  | 675  | 775  | 950  | —    | —    |
|            | 18,000                     | 625                      | 625  | 675  | —    | —    | —    | —    |
|            | 24,000                     | 650                      | 725  | 775  | 900  | —    | —    | —    |
|            | 30,000                     | 800                      | 875  | 875  | 925  | 1125 | —    | —    |
|            | 36,000                     | 975                      | 975  | 975  | 1025 | 1125 | —    | —    |
| 003        | EMERGENCY                  | 675                      | 700  | 775  | 850  | 1050 | —    | —    |
|            | 24,000                     | 675                      | 875  | 875  | 1100 | 1150 | —    | —    |
|            | 30,000                     | 800                      | 875  | 875  | 1100 | 1150 | —    | —    |
|            | 36,000                     | 975                      | 975  | 1025 | 1150 | 1250 | —    | —    |
|            | 42,000                     | 1125                     | 1125 | 1125 | 1150 | 1350 | —    | —    |
| 005        | EMERGENCY                  | 675                      | 700  | 775  | 850  | 1050 | 1400 | 1425 |
|            | 30,000                     | 800                      | 875  | 875  | 1100 | 1150 | —    | —    |
|            | 36,000                     | 975                      | 975  | 1025 | 1150 | 1250 | —    | —    |
|            | 42,000                     | 1125                     | 1125 | 1125 | 1150 | 1250 | —    | —    |
|            | 48,000                     | 1305                     | 1305 | 1305 | 1305 | 1350 | 1500 | 1600 |
| 006        | EMERGENCY                  | 1050                     | 1050 | 1050 | 1050 | 1125 | 1750 | 1750 |
|            | 36,000                     | 1050                     | 1050 | 1100 | 1350 | 1350 | —    | —    |
|            | 42,000                     | 1125                     | 1125 | 1150 | 1350 | 1350 | —    | —    |
|            | 48,000                     | 1300                     | 1300 | 1300 | 1350 | 1500 | 1750 | 1750 |
|            | 60,000                     | 1625                     | 1625 | 1625 | 1625 | 1750 | 1750 | 1750 |
| MODEL FE5A | OUTDOOR UNIT CAPACITY BTUH | ELECTRIC HEATER kW RANGE |      |      |      |      |      |      |
|            |                            | 5                        | 9    | 10   | 15   | 20   | 24   | 30   |
| 004        | EMERGENCY                  | 675                      | 775  | 775  | 900  | 1125 | —    | —    |
|            | 24,000                     | 975                      | 975  | 975  | —    | —    | —    | —    |
|            | 30,000                     | 1050                     | 1050 | 1100 | 1125 | —    | —    | —    |
|            | 36,000                     | 1050                     | 1050 | 1100 | 1350 | 1350 | —    | —    |
|            | 42,000                     | 1125                     | 1125 | 1150 | 1350 | 1350 | —    | —    |

**NOTES:**

1. Emergency - Air conditioner with electric heater application, or emergency heat.
2. These airflows are minimum airflows as UL listed.
3. Dashed entry indicates that the heater/fan coil/outdoor unit combination is not approved. Do not apply.