

THIS MANUAL MUST BE LEFT WITH THE HOMEOWNER FOR FUTURE REFERENCE

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

Shipping and Packing List

Package 1 of 1 contains:

- 1 – Assembled electric heat section
- 1 – Bag assembly containing the following:
 - 6 – Screws
 - 1 – Wiring diagram
 - Circuit breaker cover - 1 each
- 1 – Transformer (575V, 3-phase, 60Hz only)
- 1 – Fuse block extension plate (460V, 3-phase, 60Hz and 575V, 3-phase, 60Hz only)
- 2 – Adhesive-backed foam seals
- 1 – Circuit breaker cover

Check equipment for shipping damage; if found, immediately contact the last carrier.

INSTALLATION INSTRUCTIONS

ECB27 Series Units

ELECTRIC HEAT SECTIONS

507855-01

7/2019

⚠ WARNING



Electric shock hazard! - Disconnect all power supplies before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

Electric Heat Section

The ECB27 series electric heat section provides field-installed electric heat for various air handler units. These electric heat sections are available in either single- or three-phase. Single-phase heat sections are equipped with either terminal blocks or circuit breakers.

Refer to the model-specific air handler product specification bulletin for heat section applications.

General Information

These instructions are a general guide and do not supersede local codes. Local authorities having jurisdiction should be consulted before installation. Read these instructions thoroughly before starting installation.

Be sure to disconnect all power to the unit before you install and service this equipment. Use proper tools and protective equipment during installation and service.

Installation of air handler with or without optional electric heat must conform with standards in the National Fire Protection Association (NFPA) Standard for Installation of Air Conditioning and Ventilation Systems NFPA No. 90A, and Standard for Installation of Resident Type Warm Air Heating and Air Conditioning System, No. 90B, the manufacturer's installation instructions, and local municipal building codes.

Heat Section Installation

Before installing the electric heat section, check the unit rating plate to ensure that the unit meets the job requirements, that proper electrical power is available, and that proper duct clearances are maintained.

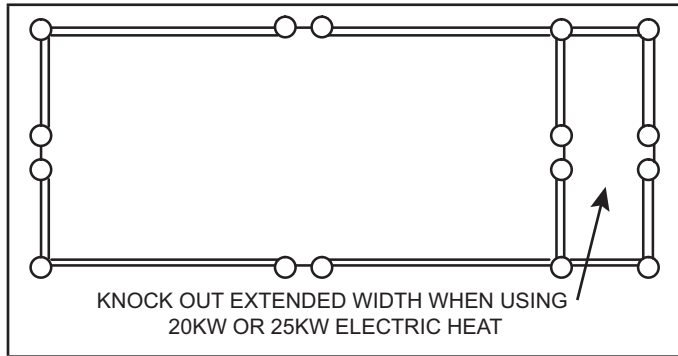


FIGURE 1. Air Handler Electric Heat Knockouts

NOTE – It is easier to install the electric heat section inside the air handler unit before the unit is set and the plenum is attached.

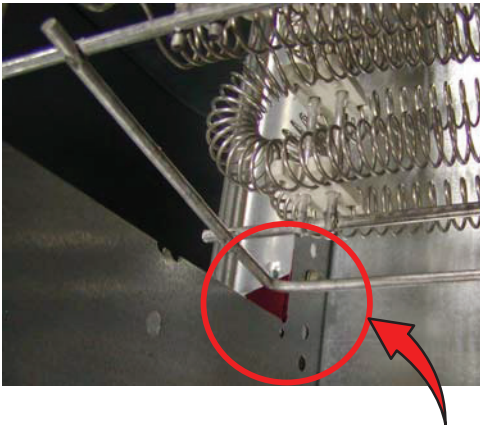
- 1 - Shut off all power to the air handler. More than one disconnect may be required.
- 2 - Remove air handler access panel.
- 3 - Remove the electric heat knockout from the air handler vestibule panel to accommodate the heater being used. Remove the extended width knockout to allow for installation of 20kW or 25kW heater (see figure 1).
- 4 - Slide the electric heat section into the air handler. Be careful that the heating elements do not rub against the sheet metal opening when they slide into the air handler. The hole(s) on each side of the heater line up with holes in the air handler control box. Secure the electric heater into place with the screws that are provided in the bag assembly.

Cabinet Modifications for 460 Volt, 3 Ton Models

Modifications are necessary when an ECB27-10F-G / 15F-G voltage (460 volt) electric heat section is installed in a 460 volt, 3 ton air handler (see figure 2).

ISSUE:

Tabs on a 460 volt, 3 ton air handler prevent proper installation of the ECB27-10F-G / 15F-G voltage (460 volt) electric heat section.



Tabs restricting electric heat section installation.

SOLUTION:

Remove the tabs identified below.

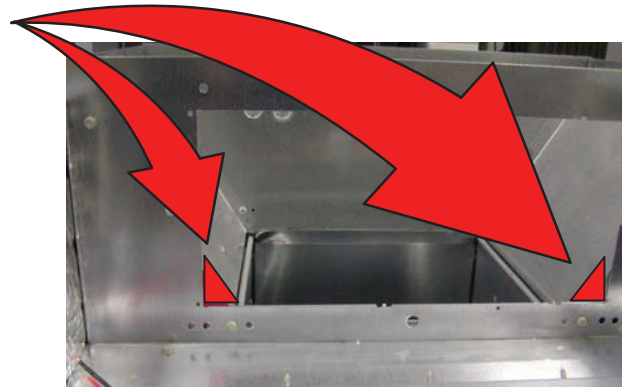


FIGURE 2. Cabinet Modifications

⚠ WARNING

Electric Shock Hazard. Can cause injury or death. Unit must be properly grounded in accordance with national and local codes.

Line voltage is present at all components when unit is not in operation on units with single-pole contactors. Disconnect all remote electric power supplies before opening access panel. Unit may have multiple power supplies.



Circuit Breaker Installation

- 1 - Install the circuit breaker on the air handler deck flange. Use the provided six screws to secure the circuit breaker (see figure 3).

NOTE – When applied in the downflow position, **the circuit breakers must be rotated to the UP position.** See figure 3 and follow the procedure below:

- A - Disconnect power to the unit if present.
- B - Remove the screw and slide the breakers off the mounting rail.

NOTE – You may need to remove the wire tie closest to the circuit breaker to allow rotation.

- C - Rotate the circuit breaker 180 degrees.
 - D - Slide the circuit breaker back on the rail and secure in place with previously removed screw.
- 2 - The air handler access panels are factory supplied. There is a patch plate over the circuit breaker opening. Remove the circuit breaker patch plate from the air handler access panel. See figure 4.
 - 3 - Replace the air handler access door.
 - 4 - Choose the appropriately sized adhesive-backed circuit breaker seal and remove any perforated sections (if needed). Apply the seal to the outside of the air handler access panel so that the seal is snug around the circuit breakers.
 - 5 - Break the patch plate for the specific size of electric heat section that you are installing. Discard the unused piece of patch plate (see figures 5 and 6).
 - 6 - Secure the patch plate on the air handler access door.

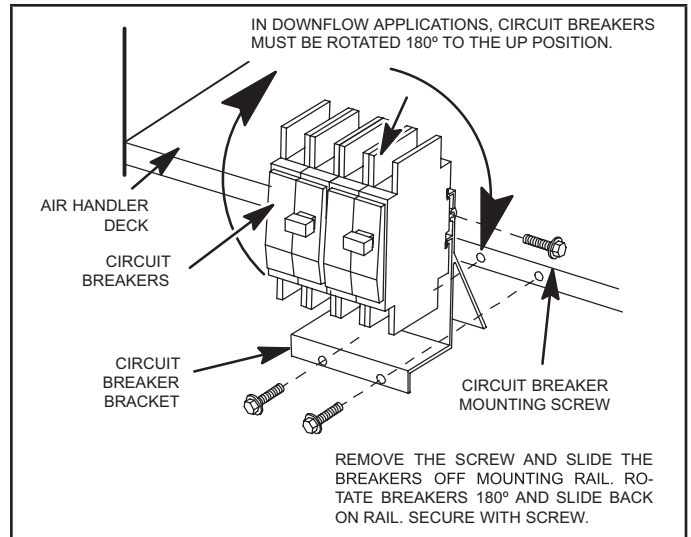


FIGURE 3. Electric Heat Section with Circuit Breakers

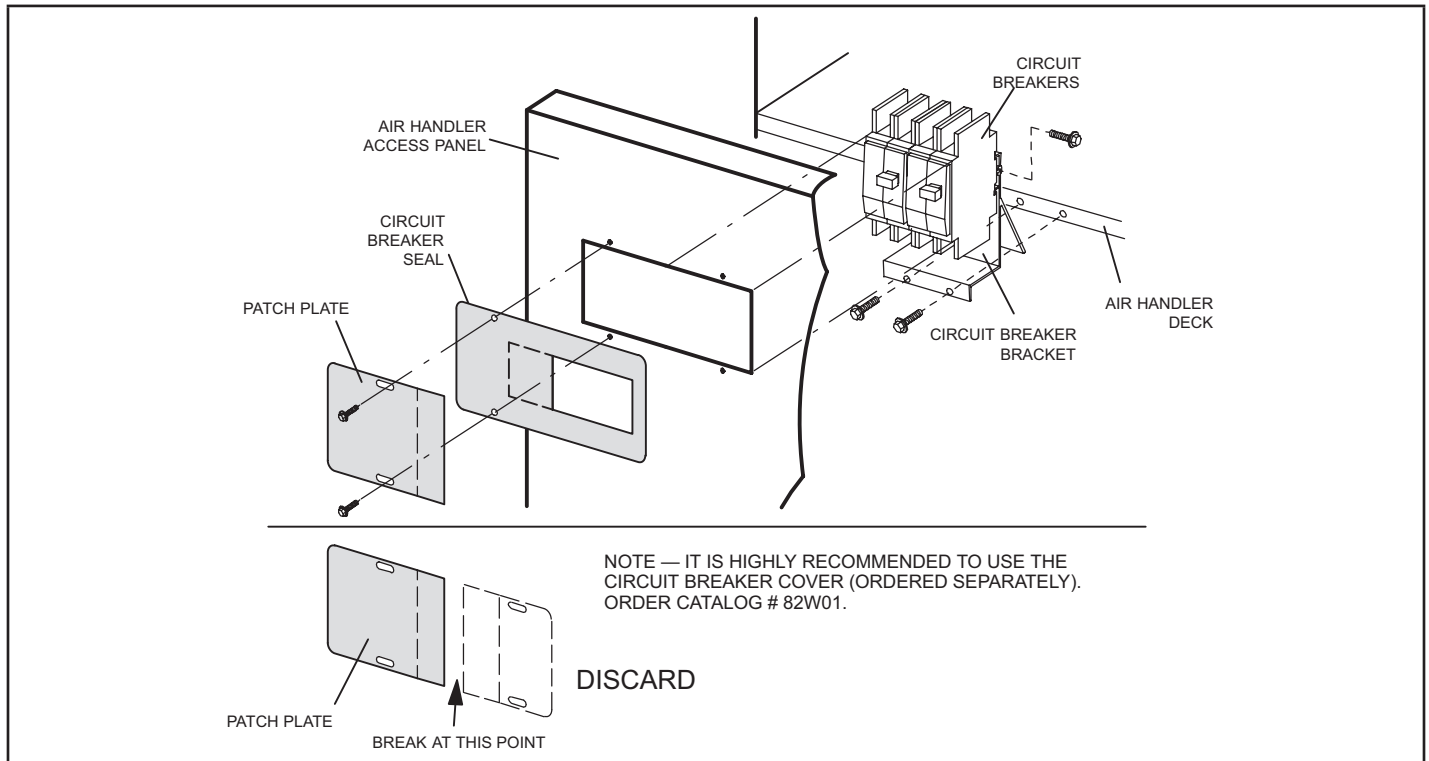


FIGURE 4. Circuit Breaker Seal and Patch Plate Installation

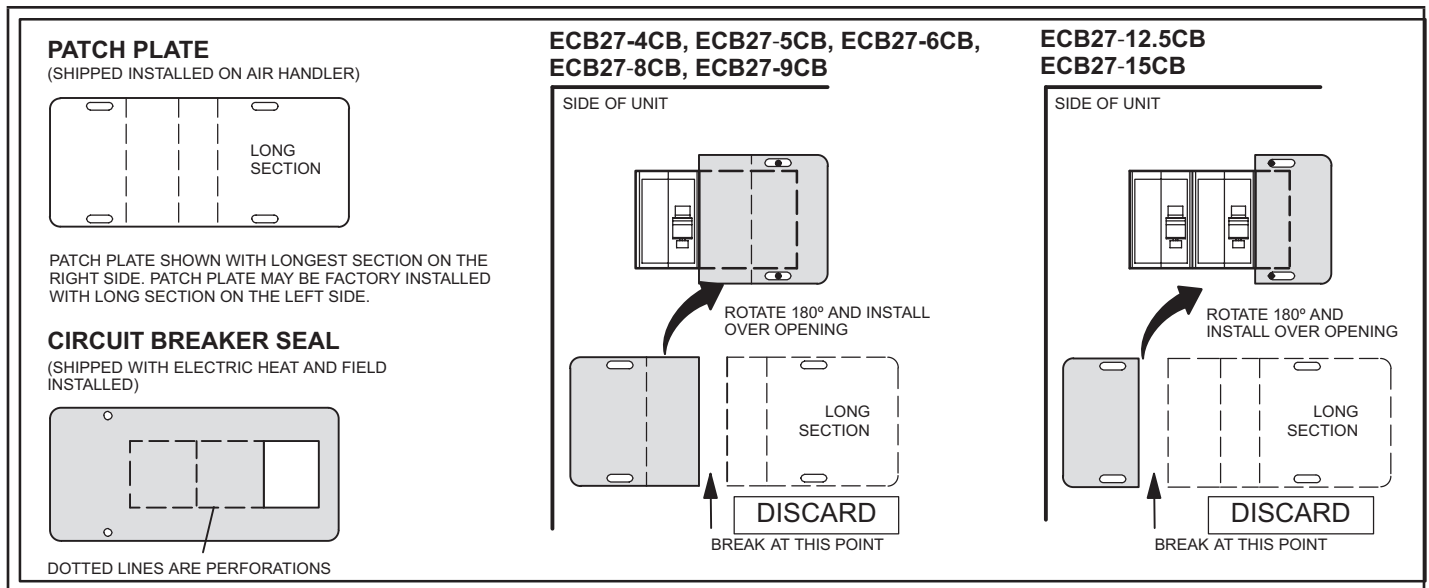


FIGURE 5. Circuit Breaker and Patch Plate Configuration (Select Cases in Air Handlers with Small Cabinets)

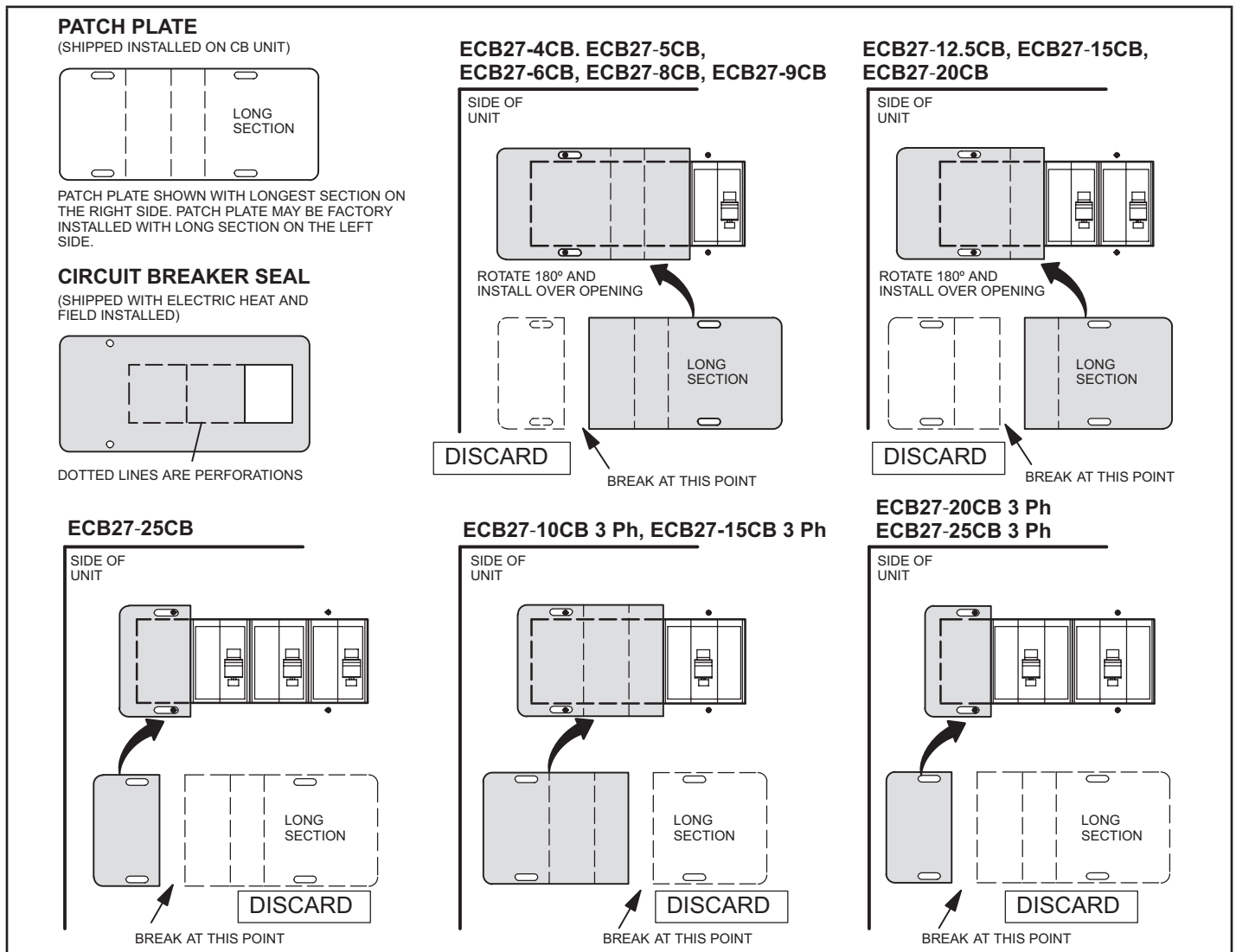


FIGURE 6. Circuit Breaker Heater and Patch Plate Configuration (Common Configurations)

Circuit Breaker Cover Installation

If the air handler is installed in an unconditioned space the provided circuit breaker cover must be installed.

- 1 - Use isopropyl alcohol to clean the surface that the circuit breaker cover will be attached to.

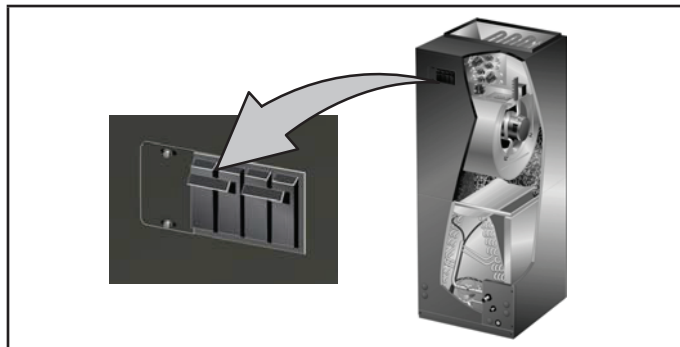


FIGURE 7. Circuit Breaker Location

- 2 - Remove paper backing from foam seal around perimeter of circuit breaker cover (figure 8).

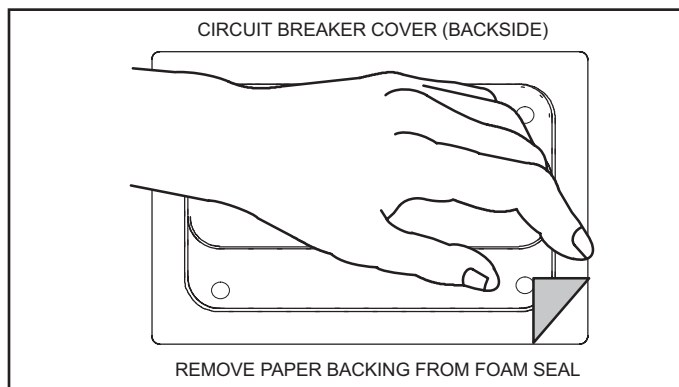


FIGURE 8. Remove Paper Backing

- 3 - Run a bead of clear silicone around the perimeter of the circuit breaker cover to seal any gaps between the cabinet access door and the circuit breaker cover.
- 4 - Position the breaker cover over the air handler circuit breaker opening (figure 9).

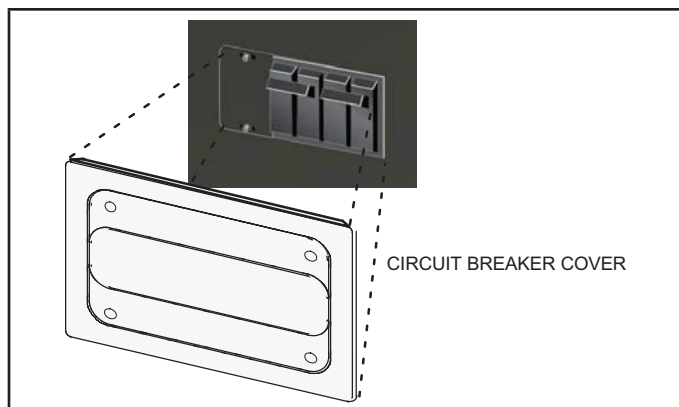


FIGURE 9. Circuit Breaker Cover Installation

⚠ IMPORTANT

Confirm airtight seal between breaker cover and air handler access panel. Apply a thin silicone bead to the adhesive back seat to ensure airtight seal.

Failure to seal circuit breaker cover will allow warm moist air to be pulled into control panel which can create condensation to form on the circuit breaker and other electrical components within the control panel.

Electrical Connections

⚠ IMPORTANT

USE COPPER CONDUCTORS ONLY

NOTE – Refer to the nameplate on the air handler unit for minimum circuit ampacity and maximum over-current protection size.

The air handler units are provided with openings to be used with 1-1/2 inch trade size (1-31/32 inch diameter) conduit. A conduit reducer washer has been provided if you are installing a smaller sized conduit.

For single-point power supply, refer to the nameplate on the single-point power supply accessory for minimum circuit ampacity and maximum over-current protection size. Select the proper supply circuit conductors in accordance with tables 310-16 and 310-17 in the National Electric Code, ANSI/NFPA No. 70 or tables 1 through 4 in the Canadian Electric Code, Part I, CSA Standard C22.1. Refer to figure 11 for typical air conditioner applications and figure 12 for typical heat pump applications with an air handler unit and electric heat section.

Refer to figure 13 for typical system diagram for air handlers with electric heat sections.

Make wiring connections

- 1 - Disconnect the interface harness from the air handler unit. Connect the plug from the heater to the matching plug inside the air handler.

NOTE – 575V, 3-Phase, 60Hz heaters are shipped with a line-voltage-to-460V transformer. This transformer provides 460V power to the air handler motor and transformer only. Disconnect the 2-wire connector from the air handler interface harness and the air handler transformer. Connect the 575V to 460V transformer between these connections. See figure 10 for installation location.

- 2 - **If using a two-stage thermostat**—Remove the jumper between terminals **W2** and **R** of **TB1** terminal block and connect the second-stage heat bulb lead to **W2**.
- 3 - **If using an outdoor thermostat** — Remove the jumper between terminals **W2** and **R** of **TB1** terminal block and connect leads to **W2** and **R**.

4 - Make wiring connections as follows:

- **Heaters equipped with circuit breakers** – Connect field power supply wiring to circuit breaker(s).
- **Heaters equipped with terminal blocks** – Connect field power supply wiring to terminal block(s).

- **Heaters equipped with fuses (460V, 3-Phase, 60Hz and 575V, 3-Phase, 60Hz)** – Connect field power supply wiring to fuse block. (An extension plate is provided for J-voltage units.)

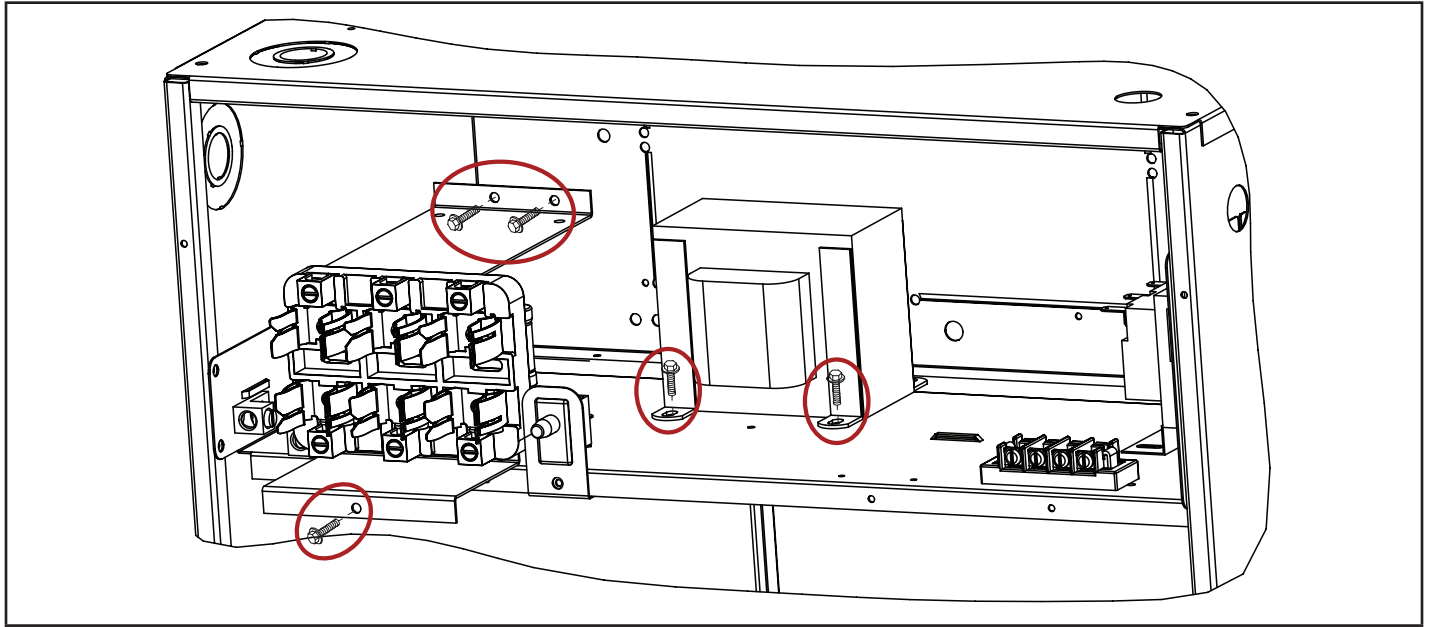


FIGURE 10. Installing Fuse Block and Transformer (575V only)

Unit Start-Up

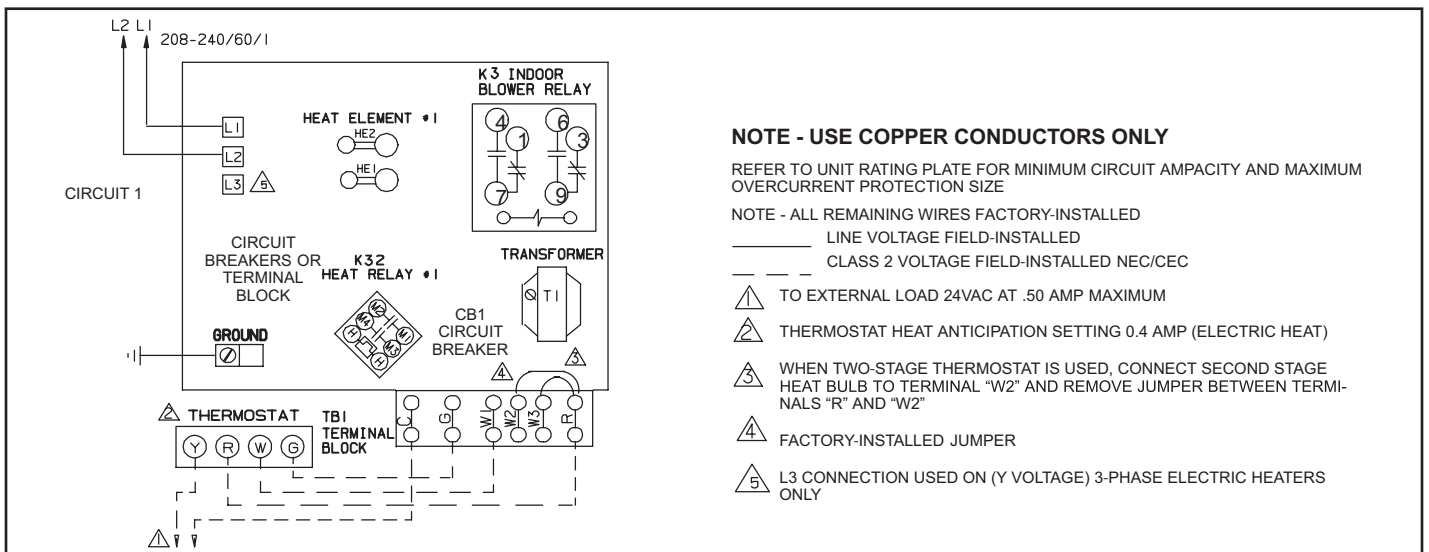
- 1 - Replace the air handler access cover.
- 2 - Restore power to the unit.
- 3 - Set the thermostat heat anticipator to 0.4 amps.
- 4 - Align the provided wiring diagram sticker with the air handler diagram on the blower housing. Remove the backing and affix the sticker to the housing.
- 5 - Set the thermostat above room temperature.
- 6 - Check the system for normal operation.
- 7 - Set the thermostat to desired setting.

Air Handler Blower Speed Connections

When using ECB27 heat section, adjust the blower speed according to the size of electric heat and air handler unit. The **minimum blower setting** for each air handler size with any heat sections in any application is **HIGH**. See specific air handler installation instructions for blower speed adjustment procedure.

Typical Unit Applications

Refer to figures 11 and 12 for typical field wiring for cooling and heat pump applications including an air handler with electric heat.



NOTE - USE COPPER CONDUCTORS ONLY

REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION SIZE

NOTE - ALL REMAINING WIRES FACTORY-INSTALLED

— LINE VOLTAGE FIELD-INSTALLED

- - - CLASS 2 VOLTAGE FIELD-INSTALLED NEC/CEC

⚠ TO EXTERNAL LOAD 24VAC AT .50 AMP MAXIMUM

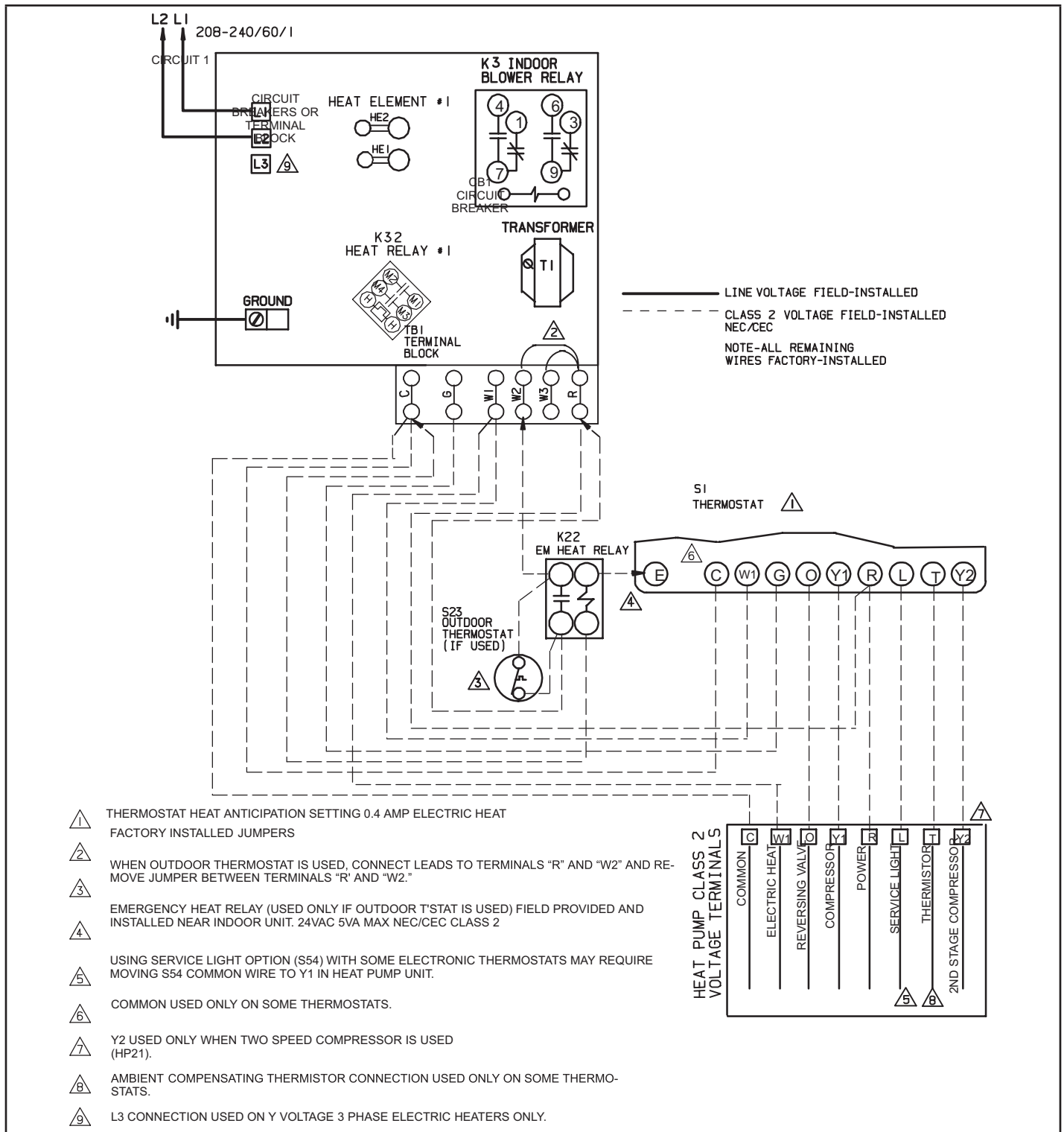
⚠ THERMOSTAT HEAT ANTICIPATION SETTING 0.4 AMP (ELECTRIC HEAT)

⚠ WHEN TWO-STAGE THERMOSTAT IS USED, CONNECT SECOND STAGE HEAT BULB TO TERMINAL "W2" AND REMOVE JUMPER BETWEEN TERMINALS "R" AND "W2"

⚠ FACTORY-INSTALLED JUMPER

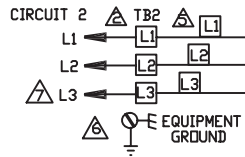
⚠ L3 CONNECTION USED ON (Y VOLTAGE) 3-PHASE ELECTRIC HEATERS ONLY

FIGURE 11. Typical Field Wiring – Cooling Application with Electric Heat



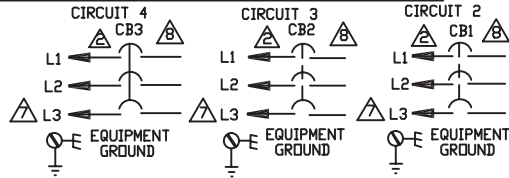
Unit Field Wiring Diagrams

FIELD WIRING FOR UNITS WITHOUT CIRCUIT BREAKERS



- ⚠ CONNECT POWER WIRES FROM HEATER LABELED L1,L2 ON 'P' VOLTAGE UNITS AND L1,L2,L3 ON 'Y' VOLTAGE UNITS TO TB2 TERMINAL STRIP IN INDOOR UNIT
- ⚠ EQUIPMENT GROUND LOCATED IN INDOOR UNIT

FIELD WIRING FOR UNITS WITH CIRCUIT BREAKERS



- ⚠ L3 IS NOT PRESENT ON (P) ELECTRIC HEATERS
- ⚠ THE NUMBER OF CIRCUITS VARY ACCORDING TO HEATER MODEL. REFER TO FAN COIL NAMEPLATE FOR ACTUAL NUMBER EMPLOYED

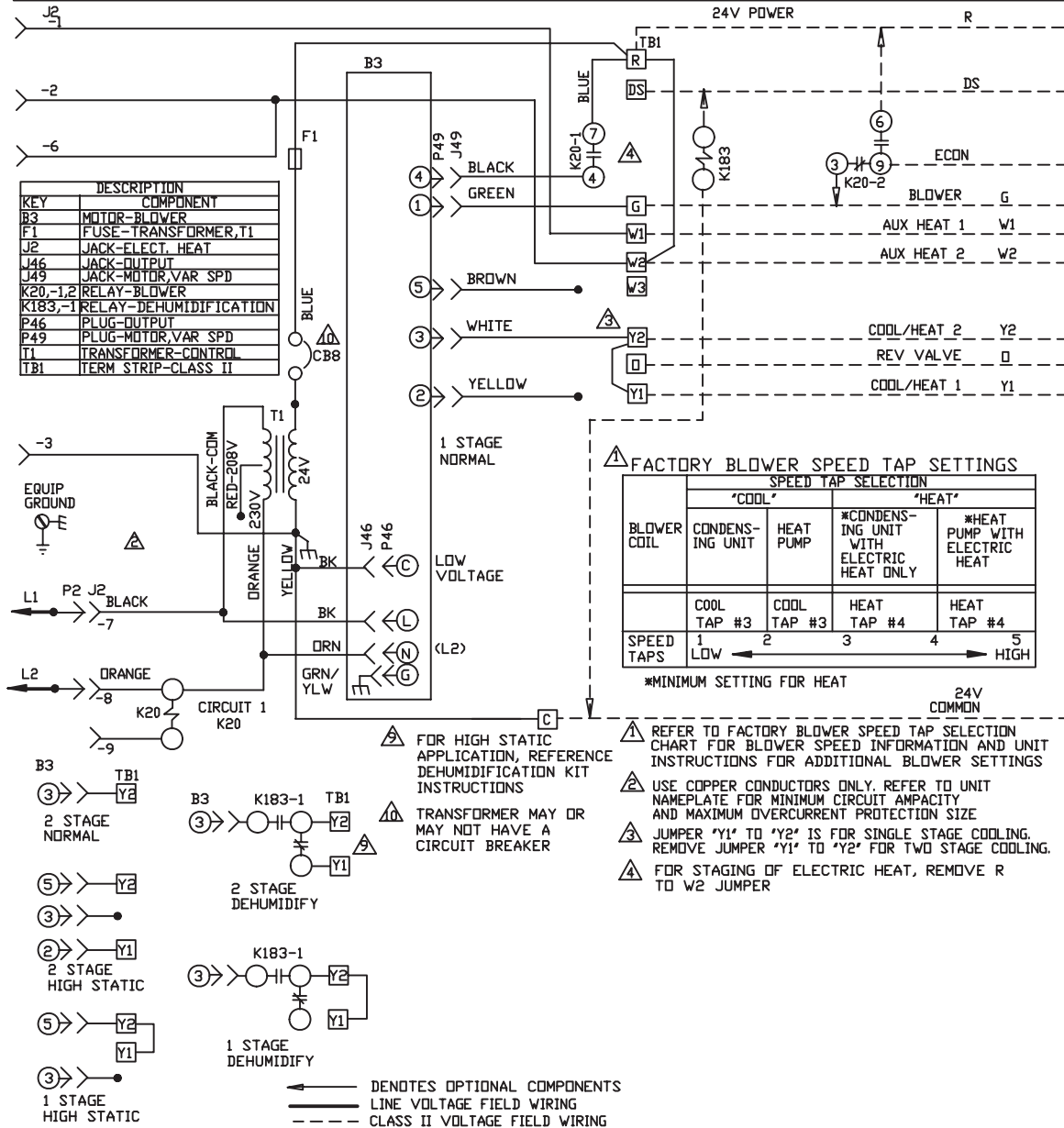


FIGURE 13. Typical Unit Diagram – Air Handlers with Constant Torque Motors (P Voltage – 208-230V, 1-Phase, 60Hz)

**FIELD WIRING FOR ECB SERIES
UNITS WITHOUT CIRCUIT BREAKERS**

**FIELD WIRING FOR ECB SERIES
UNITS WITH CIRCUIT BREAKERS**

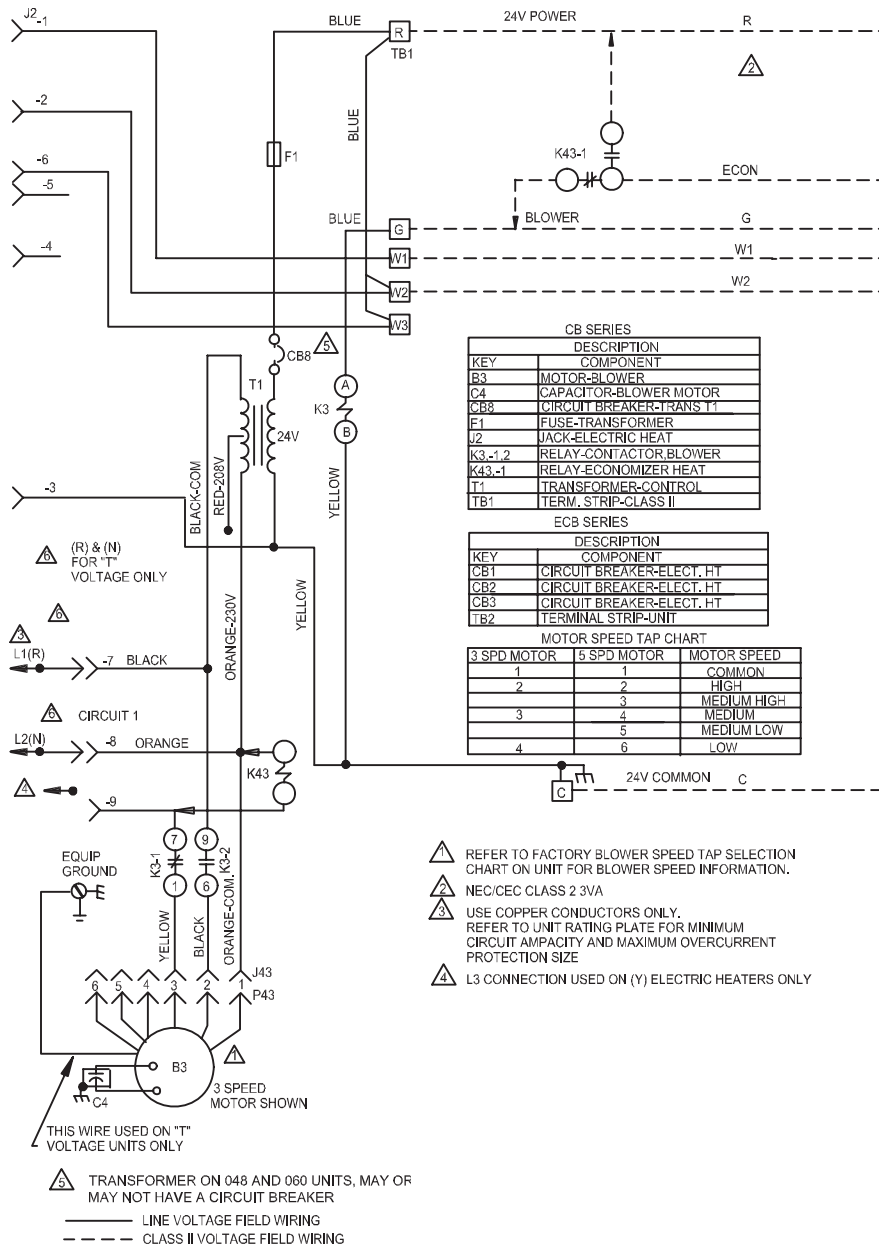
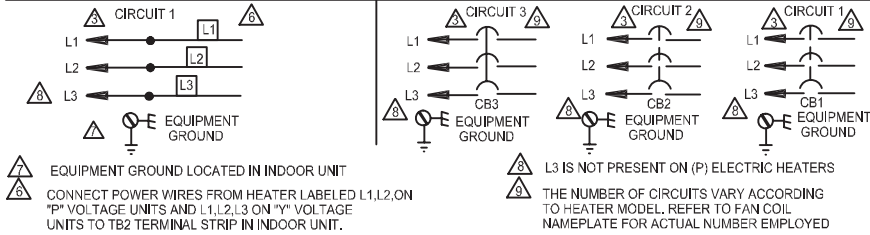


FIGURE 14. Typical Unit Diagram – Air Handlers with PSC, Non-Communicating Motors (P Voltage – 208-230V, 1-Phase, 60Hz)

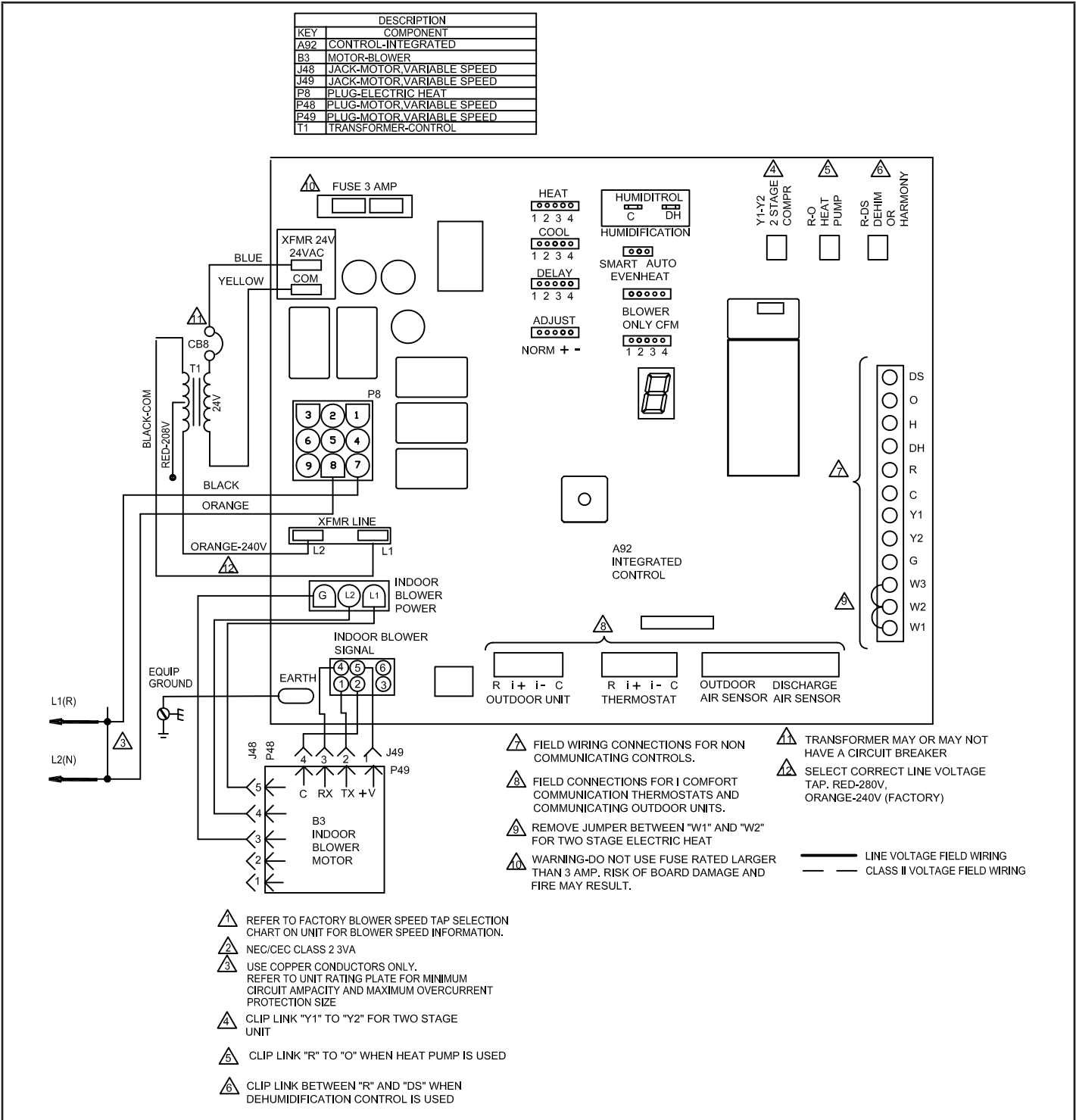
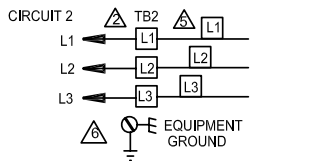


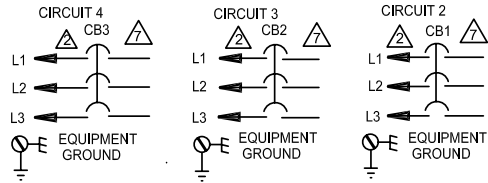
FIGURE 15. Typical Unit Diagram – Air Handlers with Variable Speed, Communicating Motors (P Voltage – 208-230V, 1-Phase, 60Hz)

FIELD WIRING FOR UNITS WITHOUT CIRCUIT BREAKERS



- ⚠ CONNECT POWER WIRES FROM HEATER LABELED L1, L2, L3 ON G VOLTAGE UNITS TO TB2 TERMINAL STRIP IN INDOOR UNIT
- ⚠ EQUIPMENT GROUND LOCATED IN INDOOR UNIT

FIELD WIRING FOR UNITS WITH CIRCUIT BREAKERS



- ⚠ THE NUMBER OF CIRCUITS VARY ACCORDING TO HEATER MODEL. REFER TO FAN COIL NAMEPLATE FOR ACTUAL NUMBER EMPLOYED

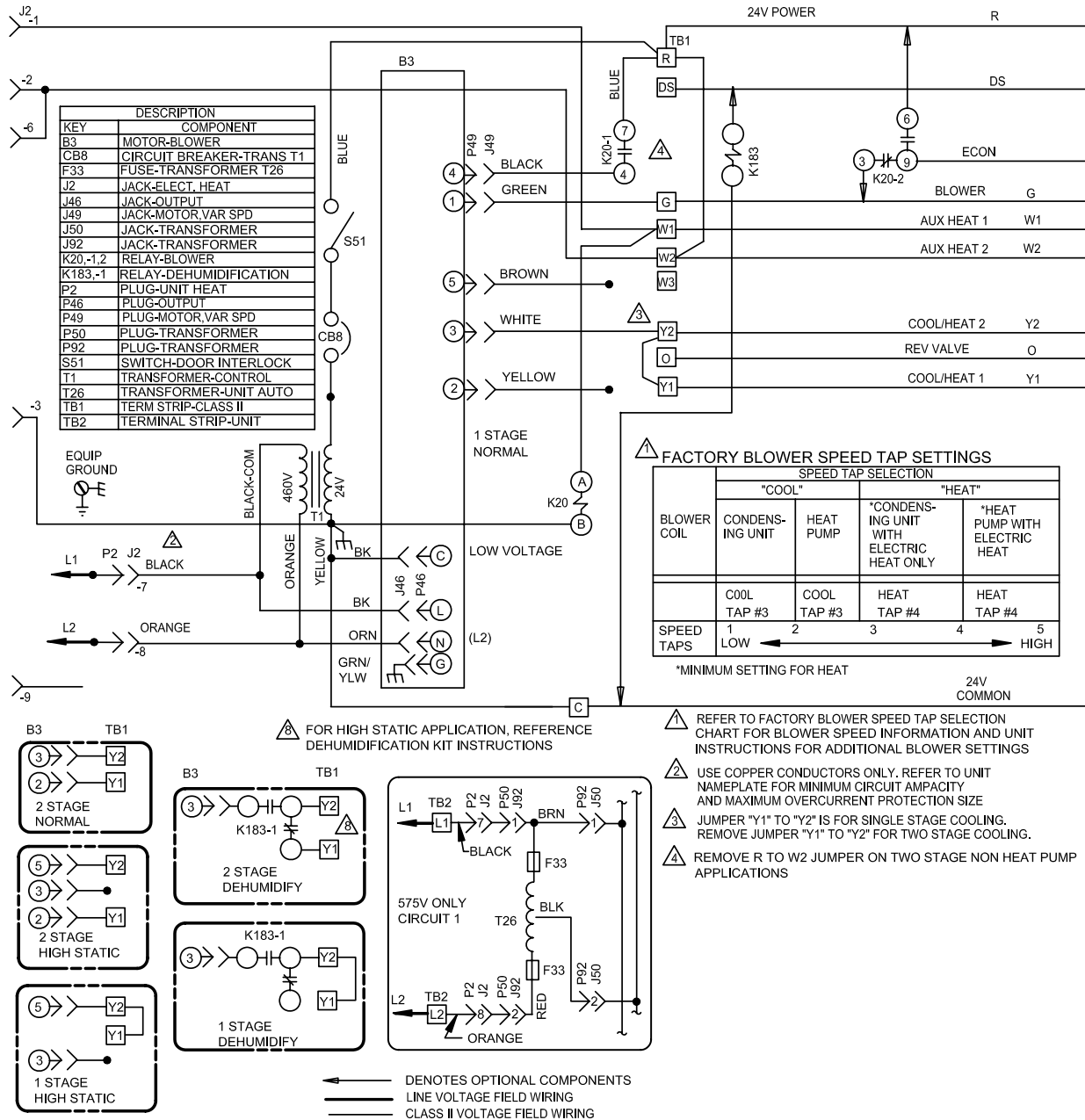


FIGURE 16. Typical Unit Diagram – Air Handlers with Constant Torque Motors (G Voltage — 460V, 3-phase, 60Hz)

Electric Heat Wiring Diagram Cross Reference

The following table provides a cross-reference for diagrams for specific electric heat models.

TABLE 1

Electric Heat Section Model	Wiring Diagram #
ECB27-4(CB)-P	538002-01
ECB27-5(CB)-P	538002-01
ECB27-6(CB)-P	538002-01
ECB27-8(CB)-P	538003-01
ECB27-9CB-P	538004-01
ECB27-12.5CB-P	538005-01
ECB27-15CB-P	538005-01
ECB27-20CB-P	538006-01
ECB27-25CB-P	538010-01
ECB27-8-Y	538007-01
ECB27-10-Y	538007-01
ECB27-15CB-Y	538007-01
ECB27-20CB-Y	538008-01
ECB27-25CB-Y	538008-01
ECB27-10-G	538009-01
ECB27-15-G	538009-01
ECB27-20-G	538009-01
ECB27-25-G	538009-01
ECB27-20-J	538009-01
ECB27-25-J	538009-01