

# INSTALLATION MANUAL

## Standard ECM Single Piece Multi-position Air Handlers

Models: RFC Series  
- 208/230 V - Single and Three-Phase



Assembled at a facility with  
an ISO 9001:2015-certified  
Quality Management  
System

### List of sections

General	1	Low voltage control connections	11
Safety	1	Blower speed connections	11
Unit installation	4	Unit data	12
Ductwork and connections	6	Maintenance	19
Coil metering devices	7	Air system adjustment	19
Refrigerant line connection	9	Installation verification	19
Condensate drain connections	10	Control wiring	21
Electric heater installation	10	Wiring diagram	23
Line power connections	10	Start-up sheet	25

### List of figures

Return air duct attachment and component location	2	TXV bulb and equalizer line installations	8
Pressure check	3	Correct bulb location	9
Dimensions and duct connection dimensions	3	Grommets	10
Typical installation	5	Line power connections	11
Horizontal baffle plate installation	5	Blower speed connections	11
Suspension support locations for horizontal applications	6	Duct static measurements	19
Duct attachment	6	Drain traps	19
Ductwork transition	7	Location of coil trapped and plugged drain connections	20
Recommended distributor adjustment	7	Standard ECM AH conventional wiring diagram	21
Piston installation	8	Wiring diagram - standard ECM - single phase heat kits	23
TXV installation	8	Wiring diagram - 208/230V three phase heat kits	24

### List of tables

Dimensions	4	Electric heat performance data: 208/230-1-60 and 208/230-3-60	13
Horizontal suspension dimensions	6	Electrical data for single source power supply: 208/230-1-60	13
Physical and electrical data - cooling only	12	Electrical data for multi-source power supply: 208/230-1-60	15
Electrical data - cooling only	12	Electrical data for single source power supply: 208/230-3-60	15
Electrical heat: minimum fan speed	12	Electrical data for multi-source power supply: 208/230-3-60	16
Application factors - rated CFM versus actual CFM	12	Airflow data (CFM per Watts)	16
kW and MBH conversions - for total power input requirement	13		

## Section I: General

The single piece air handler series provides the flexibility for installation in any position. This unit may be used for upflow, downflow, horizontal right, or horizontal left applications.

These units may be located in a closet, utility room, attic, crawl space, or basement. These versatile models may be used for cooling or heat pump operation with or without electric heat.

Top or side power and control wiring, color coded leads for control wiring, and electric heaters all combine to make the installation easy and minimize installation cost.

Electric heat kits are available as field installed accessories. Single phase kits are available from 2.5 kW to 25 kW and 208/230 V three phase kits are available from 10 kW to 25 kW.

## Section II: Safety



This is a safety alert symbol. When you see this symbol on labels or in manuals, be alert to the potential for personal injury.

Understand and pay particular attention to the signal words **DANGER**, **WARNING**, or **CAUTION**.

**DANGER** indicates an **imminently** hazardous situation, which, if not avoided, **will result in death or serious injury**.

**WARNING** indicates a **potentially** hazardous situation, which, if not avoided, **could result in death or serious injury**.

**CAUTION** indicates a **potentially** hazardous situation, which, if not avoided **may result in minor or moderate injury**. It is also used to alert against unsafe practices and hazards involving only property damage.

## ▲ WARNING

### FIRE OR ELECTRICAL HAZARD

Failure to follow the safety warnings exactly could result in serious injury, death or property damage. A fire or electrical hazard may result causing property damage, personal injury or loss of life.

**⚠ WARNING**

The air handler area must not be used as a broom closet or for any other storage purposes, as a fire hazard may be created. Never store items such as the following on, near or in contact with the furnace.

1. Spray or aerosol cans, rags, brooms, dust mops, vacuum cleaners or other cleaning tools.
2. Soap powders, bleaches, waxes or other Cleaning compounds; plastic items or containers; gasoline, kerosene, cigarette lighter fluid, dry cleaning fluids or other volatile fluid.
3. Paint thinners and other painting compounds.
4. Paper bags, boxes or other paper products.

Never operate the air handler with the blower door removed. To do so could result in serious personal injury and/or equipment damage.

**⚠ WARNING**

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

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

**⚠ WARNING**

Improper installation, adjustment, alteration, or maintenance may create a condition where the operation of the product could cause personal injury or property damage. Refer to this manual for assistance, or for additional information, consult a qualified contractor, installer, or service agency.

**⚠ CAUTION**

This product must be installed in strict compliance with the installation instructions and any applicable local, state, and national codes including, but not limited to building, electrical, and mechanical codes.

**NOTICE**

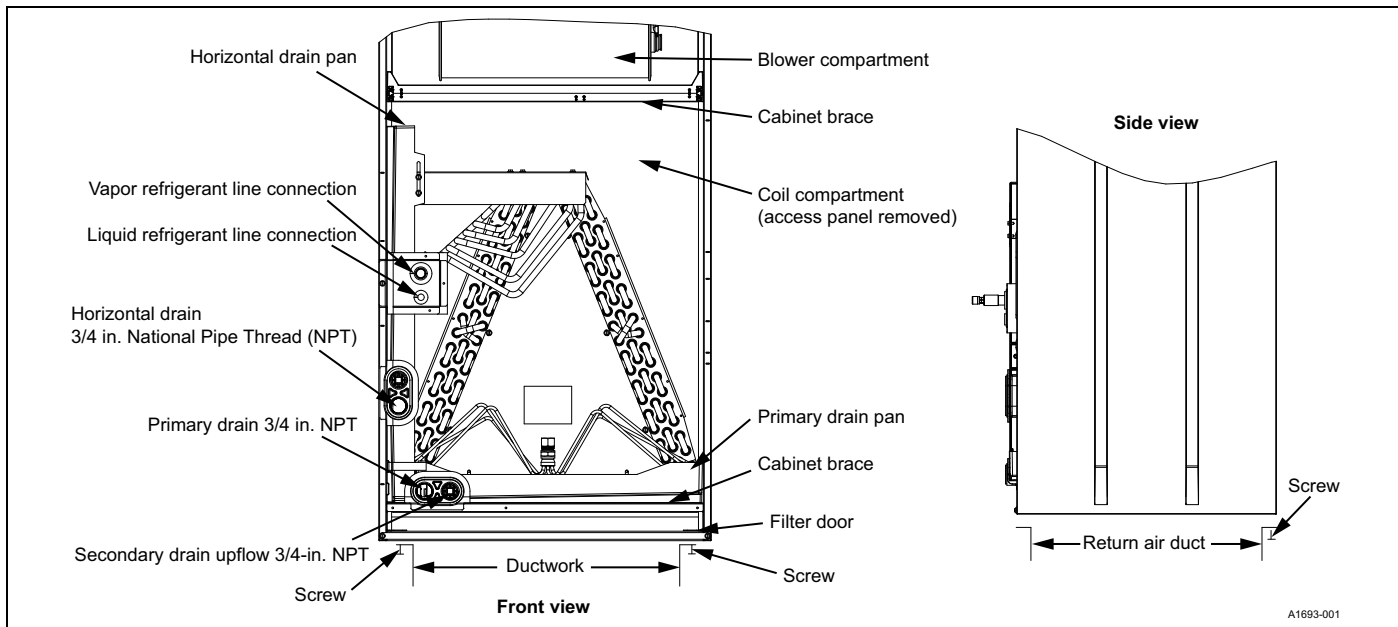
To ensure a correct match for this indoor product, refer to the current *Tabular Data Sheet* for the outdoor equipment selected for the system application. If the indoor product model is not listed in the *Tabular Data Sheet* included with the outdoor unit, to access the current version of the *Tabular Data Sheet*, go to the *Residential Equipment & Supplies* section of the Offering Catalog at [www.simplygettingthejobdone.com](http://www.simplygettingthejobdone.com) or scan the QR code provided on the outdoor unit rating plate.

**Safety requirements**

1. Failure to carefully read and follow all instructions in this manual can result in air handler malfunction, death, personal injury, or property damage.
2. Always install this air handler in accordance with all national and local building and safety codes and requirements, local plumbing or wastewater codes, and other applicable codes.
3. Only install this air handler in a location and position specified in the *Unit installation*.
4. Do not use the air handler for temporary heating of buildings or structures under construction.
5. Always install the air handler to operate within the air handler's intended maximum outlet air temperature.
6. Clearance from combustible material is provided under *Clearances in Unit installation*.
7. The unit rating plate displays the air handler model number. The unit dimensions for the supply air plenum are provided in **Figure 3** and **Table 1**. Always install the plenum according to the instructions.

**⚠ CAUTION**

Do not lift the air handler by the cabinet braces. The cabinet braces could become disengaged from the cabinet causing the air handler to fall, potentially causing injury or damaging property. See **Figure 1** for the location of the cabinet braces. Lift the air handler by tightly gripping the casing.



**Figure 1:** Return air duct attachment and component location

8. It is necessary to maintain clearances for servicing and allow access to the electric heaters and blower.
9. It is necessary to verify the unit rating plate and power supply to ensure that the electrical characteristics match.
10. When attaching ductwork with screws, carefully fasten the screws and keep them within 5/8 in. of the sides and back of the air handler.
11. Install the air handler so the electrical components are protected from water.
12. Installing and servicing heating and cooling equipment can be hazardous due to the electrical components. Only trained and licensed personnel must install, repair, or service heating and cooling equipment. Unlicensed service personnel can perform basic maintenance functions such as cleaning and replacing the air filters. When working on heating and cooling equipment, the precautions in the manuals and on the labels attached to the unit and other safety precautions must be observed as applicable.

## ⚠ CAUTION

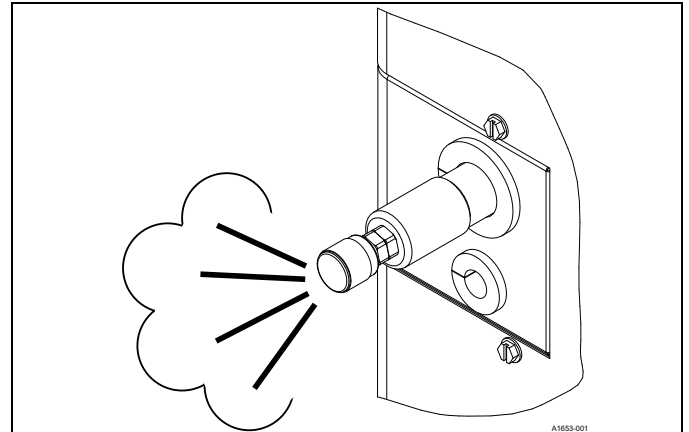
These air handlers must be transported and handled in an upright, upflow position. Failure to do so may result in unit damage and personal injury. Configuration conversions must be done at the site of installation.

13. These instructions cover minimum requirements and conform to existing national standards and safety codes. In some instances, these instructions exceed certain local codes and ordinances, especially those who have not kept up with changing residential and non-HUD modular home construction practices. These instructions are required as a minimum for a safe installation.
14. These models are not CSA listed or approved for installation into a HUD-approved modular home or a manufactured (mobile) home.

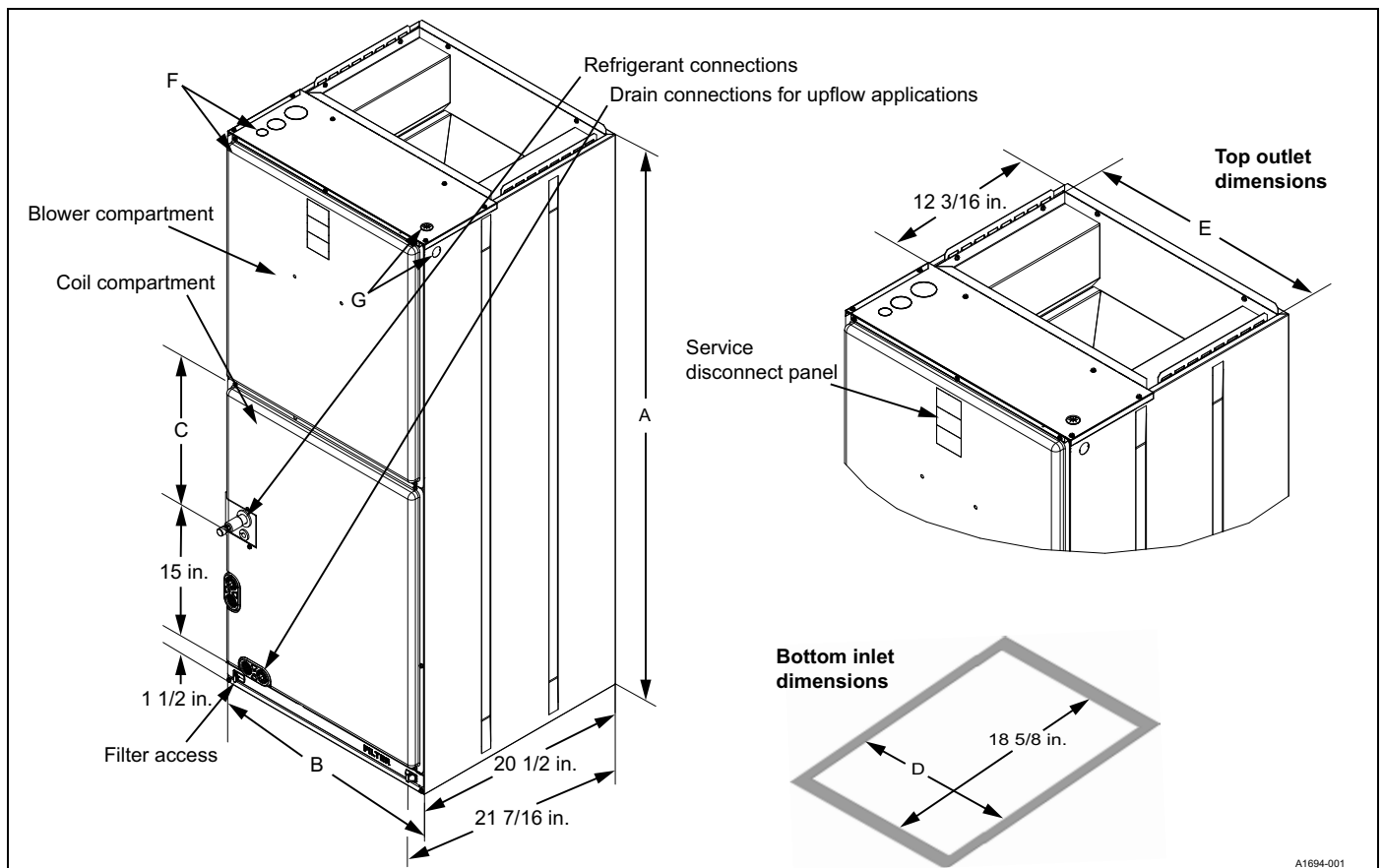
## Inspection

Upon receiving the air handler, check to ensure it is still under pressure. See **Figure 2**. Inspect the air handler, including the coil, for possible damage during transit. If damage is evident, note the extent of the damage on the carrier's freight bill. A separate request for inspection by the carrier's agent must be made in writing. Consult the local distributor for more information. Check the drain pan for cracks or breakage. Before installation, check the unit for screws or bolts loosened in transit. There are no internal shipping or spacer brackets that need removing.

You must verify that all accessories, such as heater kits and coils, are available. Complete installation of these accessories or field conversion of the unit before setting the unit in place or connecting any wiring, ductwork, or piping. C48G and C60H models are shipped with a horizontal baffle plate. Remove and retain this plate for horizontal right application. Discard for all other applications.



**Figure 2:** Pressure check



**Figure 3:** Dimensions and duct connection dimensions

**Table 1: Dimensions<sup>1</sup>**

Models	Dimensions					Wiring knockouts <sup>2</sup>		Refrigerant connections line size	
	A	B	C	D	E	F	G	Liquid (in.)	Vapor (in.)
	Height (in.)	Width (in.)	Opening widths (in.)			Power (in.)	Control (in.)		
RFCB18B	47	17 1/2	7 1/2	16 1/2	16 1/2	7/8 (1/2) 1 3/8 (1) 1 23/32 (1 1/4)	7/8 (1/2)	3/8	3/4
RFCB24C	49 5/8	17 1/2	10	16 1/2	16 1/2				
RFCB30D	49 5/8	17 1/2	10	16 1/2	16 1/2				
RFCB36D	49 5/8	17 1/2	10	16 1/2	16 1/2				
RFCC36D	51	21	11 1/2	20	20				
RFCC42F	57	21	17 1/2	20	20				
RFCC48G	61 1/4	21	21 3/4	20	20			7/8	7/8
RFC48G	61 1/4	24 1/2	21 3/4	23 1/2	23 1/2				
RFCC60H	63	21	23 1/2	20	20				
RFCD60H	63	24 1/2	23 1/2	23 1/2	23 1/2				
RFCD60J	61 1/4	24 1/2	21 3/4	23 1/2	23 1/2				

1. All dimensions are in inches.

2. Actual size (conduit size).

## Section III: Unit installation

### NOTICE

Avoid handling aluminum coil components after handling the copper refrigeration piping or other tubing without first cleaning hands.

#### Unit sizing

- The size of the unit must be based on an acceptable heat loss or gain calculation for the structure. Use Air Conditioning Contractors of America (ACCA) Manual J or another approved method.
- Only connect the air handler to a duct system that has an external static pressure within the allowable range.
- Airflow must be within the minimum and maximum limits approved for electric heat, indoor coils, and outdoor units.

Entering air temperature limits			
Wet bulb temperature (°F)		Dry bulb temperature (°F)	
Minimum	Maximum	Minimum	Maximum
57	72	65	95

- When an air handler is installed so that supply ducts carry air circulated by the air handler to areas outside the space containing the air handler, the return air is also handled by one or more ducts sealed to the air handler casing and terminating in the space to be cooled or heated.
- Refer to the unit rating plate for the air handler model number and then see the dimensions page of this manual for supply air plenum dimensions. The plenum must be installed according to the instructions.
- The installer must check available supply power and verify that it is within the normal operating voltage range for the unit. The acceptable voltage range for these units is as follows:

Air handler voltage	Normal operating <sup>1</sup> voltage range
208/230-1-60	187 V to 253 V

1. Rated in accordance with ARI Standard 110, utilization range A.

#### Clearances

It is essential to provide the following clearances:

- Refrigerant piping and connections - minimum 12 in.
- Maintenance and servicing access - minimum 36 in. from the front of the unit for blower motor or coil replacement
- Condensate drain lines routed to clear filter and panel access
- Filter removal - minimum 36 in.

- The supply air ductwork connected to this unit is designed for 1 in. clearance for the first 18 in. of combustible materials if an electric heat kit accessory is installed.
- A combustible floor base accessory is available for downflow applications of this unit, if required by local code.

#### Location

Location is usually predetermined. Check with the owner's or dealer's installation plans. If location has not been decided, consider the following in choosing a suitable location:

- Select a location with adequate structural support, space for service access, and clearance for air return and supply duct connections.
- Do not use hanging brackets to wall mount this single piece air handler unit.
- Normal operating sound levels may be objectionable if the air handler is placed directly over some rooms such as bedrooms or a study.
- Select a location that permits installation of the condensate line to an open drain or outdoors, allowing condensate to drain away from the structure.

### NOTICE

The primary and secondary drain line must be trapped to allow proper drainage of condensate water. The secondary drain line must be piped to a location that gives the occupant a visual warning that the primary drain is clogged. If the secondary drain line is not used, it must be capped.

- When installing an indoor coil in an attic or above a finished ceiling, an auxiliary drain pan must be provided under the air handler as is specified by most local building codes.
- A sufficient electrical supply must be available.
- If locating the unit in an area of high humidity, such as an unconditioned garage or attic, nuisance sweating of the casing may occur. On these installations, completely seal the unit duct connections and other openings, and use a wrap of 2 in. fiberglass insulation with vinyl vapor barrier.

#### Air handler configuration

These air handler units are supplied ready to install in an upflow or horizontal left position. See **Figure 4**. If the unit requires either downflow or horizontal right airflow configurations, the unit must have the coil assembly repositioned. See *Downflow or horizontal right conversion*.

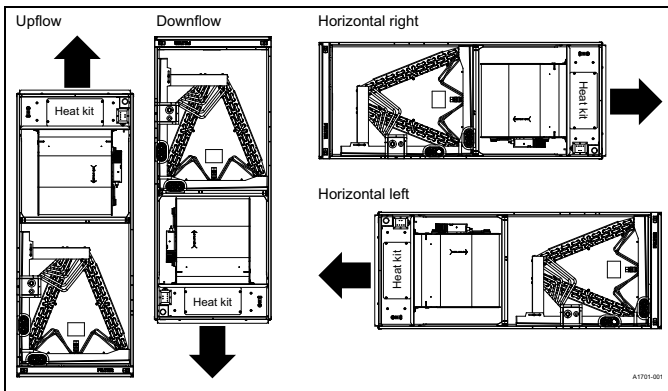


Figure 4: Typical installation

### Downflow or horizontal right conversion

## NOTICE

Convert the air handler to the desired orientation prior to installation. Conversion must be made before brazing the refrigerant connections to the coil.

1. Remove the coil access panel.
2. Slide the coil and drain pan assembly out of the air handler.
3. Turn the air handler cabinet upside down (downflow position).

4. If installing the unit in a horizontal right position, the following models require installation of a horizontal baffle plate shipped with the unit: C48G and C60H. The horizontal baffle plate must be secured to the coil delta plates. See **Installing a horizontal baffle plate**.
5. Slide the coil back into the cabinet.
6. Install the coil access panel. Conversion is now complete.

### Installing a horizontal baffle plate

1. With the coil removed from the air handling unit and laying on its horizontal drain pan, locate the pre-drilled holes in the front and rear coil delta plates.
2. Insert the horizontal baffle plate into the end of the coil. Insert one end of the horizontal baffle plate into the top side of the primary drain pan as shown in **Figure 5**.
3. Secure the horizontal baffle plate in place with two screws, one in the front delta plate and one in the rear delta plate. See **Figure 5**.

### Horizontal left applications (all models)

Air handling units are supplied ready to install in a horizontal left position. A horizontal drain pan is factory installed. If you require horizontal right application, see *Downflow or horizontal right conversion* before proceeding.

See *Refrigerant line connection* and *Condensate drain connections* for further installation instructions.

### Positioning the unit in horizontal applications

Set the unit so that it is sloped 1/4 in. towards the drain line connection.

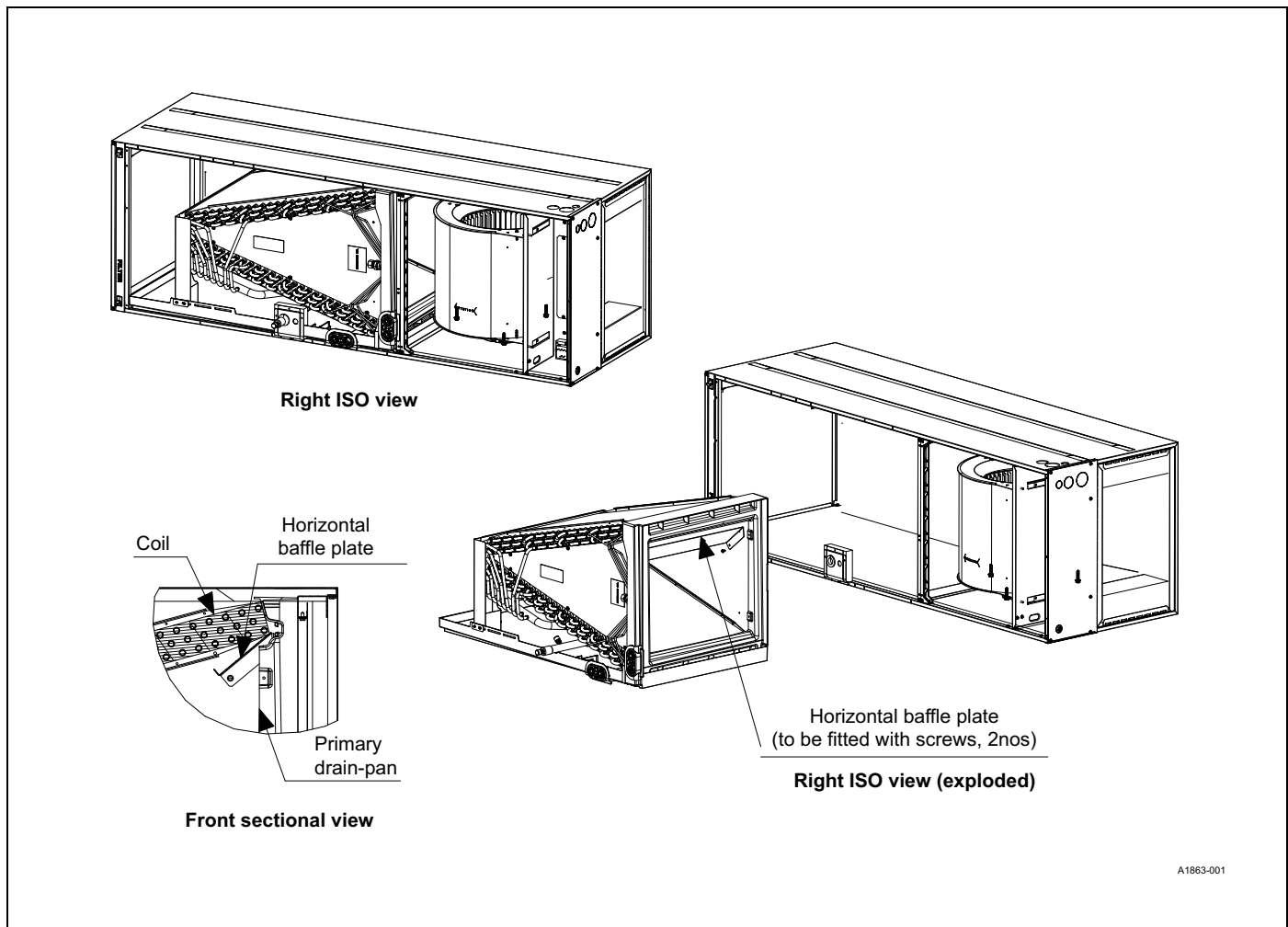


Figure 5: Horizontal baffle plate installation

### Section IV: Ductwork and connections

Air supply and return may be handled in one of several ways best suited to the installation. Upflow, horizontal or downflow applications may be used.

The vast majority of problems encountered with heating and cooling systems can be linked to incorrectly designed or installed duct systems. It is therefore highly important to the success of an installation that the duct system be correctly designed and installed.

When installing a central air return grille in or near the living space, design the ductwork so that the grille is not in direct line with the opening in the unit. One or two elbows and acoustical duct liner assure a quieter system. For operation where the return air duct is short or where sound may be a problem, use acoustical duct liner inside the duct. Use flexible duct connectors to minimize the transmission of vibration and noise into the conditioned space.

**⚠ WARNING**

Do not bring in return air from a location which could introduce hazardous substances into the airflow.

Use 1/2 in. screws to connect ductwork to the cabinet. If pilot holes are drilled, drill only through the field duct and the unit flange.

Insulation of ductwork is a must where it runs through an unheated space during the heating season or through an uncooled space during the cooling season. Use a vapor barrier to prevent absorption of moisture from the surrounding air into the insulation.

Use a transition to match unit opening to correctly size the supply air duct. Suspend all ducts using flexible hangers and never fasten directly to the structure.

**⚠ CAUTION**

This unit is not designed for non-ducted (freeblow) applications. Do not operate without ductwork attached to the unit.

Never operate the equipment without filters.

Ductwork must be fabricated and installed in accordance with local and/or national codes. This includes the standards of the National Fire Protection Association for Installation of Air-Conditioning and Ventilating Systems, NFPA No. 90B. If using electric heat, non-flammable material must be used. Duct systems must be designed in accordance with ACCA Manual D.

#### Horizontal suspension

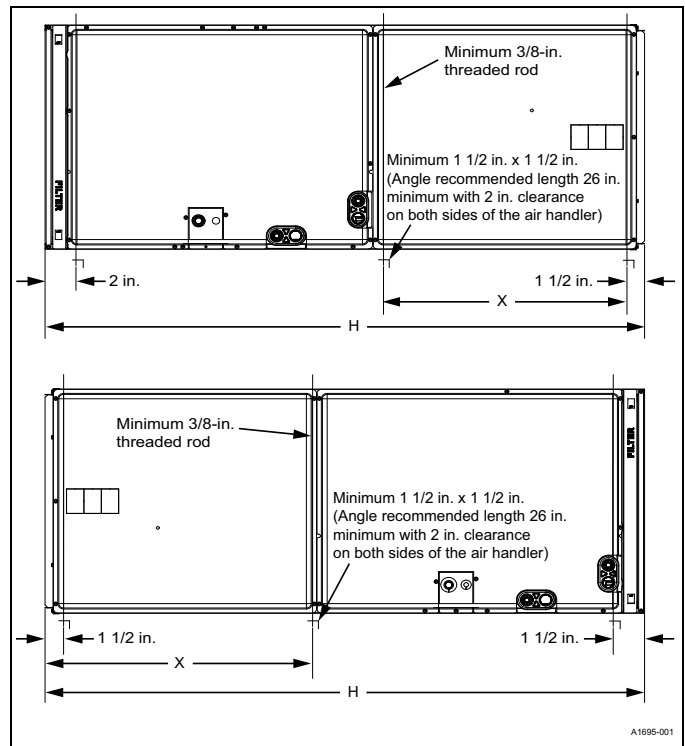
These air handlers may be suspended in horizontal applications. Use angle steel support brackets with minimum 3/8 in. threaded rods, supporting the unit from the bottom. Attach the threaded rods at the locations shown in **Figure 6**, leaving enough clearance between the door and the rod so that doors can be easily removed for service.

**⚠ CAUTION**

Do not lift the air handler by the cabinet brace. The cabinet brace is held in place by the coil channel. The cabinet brace could become disengaged from the cabinet causing the air handler to fall, potentially causing injury or damaging property. See **Figure 1** for the location of the cabinet braces.

**NOTICE**

When assembling the support structure, size to provide clearance for access door removal.



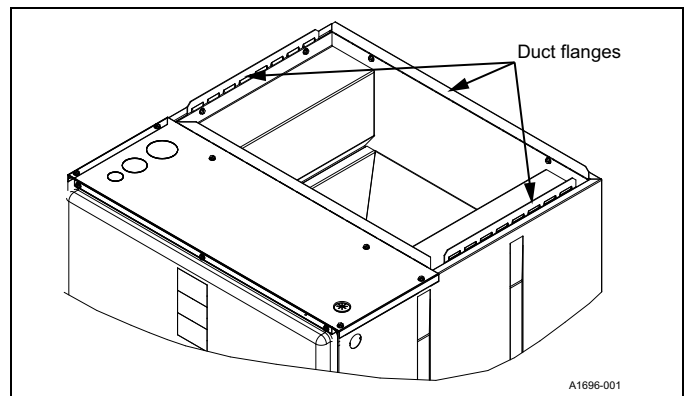
**Figure 6:** Suspension support locations for horizontal applications

**Table 2:** Horizontal suspension dimensions

Air handler cabinet size	X (in.)	H (in.)
B18B	21 3/4	47
B24C/B30D/B36D	21 3/4	49 5/8
C36D	21 3/4	51
C42F	21 3/4	57
C48G/D48G/D60J	21 3/4	61 1/4
C60H/D60H	21 3/4	63

#### Duct flanges

Duct flanges are integrated into the casing. Fold the flanges into position and use screws to anchor the flanges.



**Figure 7:** Duct attachment

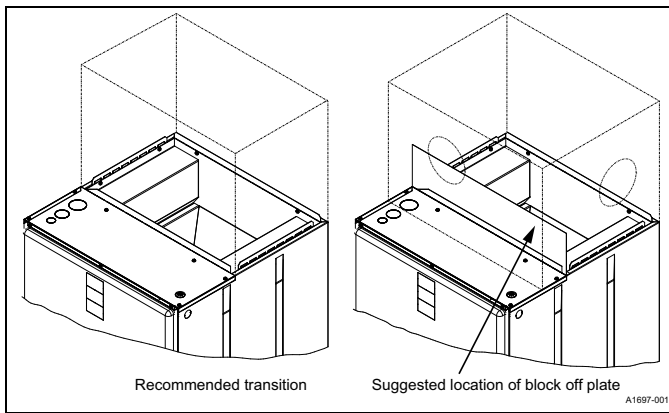


Figure 8: Ductwork transition

### Unit connections

There are several ways to handle the supply and return air duct connections. The location and sizing of the connections depends on the situation and the method best suited to the installation. Upflow, horizontal or downflow applications may be used.

Use a transition to match unit opening to correctly size the supply air duct. See **Table 1** for air handler unit inlet and outlet dimensions.

## ⚠ CAUTION

Use 1/2 in. screws to connect ductwork to the unit. Longer screws may pierce the drain pan and cause leakage. If drilling pilot holes, drill only through the field duct and the unit bottom duct flange.

Ductwork that is not designed to match the supply air opening can cause turbulence inside the plenum. This turbulence can change the airflow patterns across the electric heater limit switch/switches. If the factory suggested transition cannot be fabricated, attach a block off plate (approximately 8 in. high and running the full width of the plenum) to the supply opening. See **Figure 8**. The use of this block off plate enables better air circulation across the limit switches.

### Air filters

## ⚠ CAUTION

Never operate the equipment without filters.

Return air filters are required and must be field supplied. Filtration can be accomplished external to the unit or the integral filter rack may be used. A 1 in. filter access rack is built into the unit. Remove the filter access cover and install the correct size filter. Use a standard 1 in. permanent or throw away filter. See **Table 3** for filter sizes.

## Section V: Coil metering devices

Install a piston or a TXV in the field. There is an installation manual that comes with the TXV kit. Install the piston or TXV kit prior to brazing of the refrigeration piping. Until brazing is completed and cooled, do not install the TXV sensing bulb.

Consult the outdoor unit *Technical Guide* for the required piston or TXV on the indoor coil. A piston and Schrader valve core are supplied with the outdoor unit if applicable. When using a piston instead of a TXV, install the Schrader valve core in the suction line equalizer connection port and cap it with the supplied plastic cap. Do not install the Schrader valve core if installing the TXV, because the TXV equalizer line attaches to the equalizer connection port.

## ⚠ CAUTION

### COIL UNDER PRESSURE.

Verify that pressure has been released by depressing the Schrader valve core shown in **Figure 2**.

The coil requires a metering device to be added. Refer to outdoor unit documentation for the correct TXV or piston to use.

## NOTICE

To prevent moisture and contaminants from entering the system, the coil must not be open to atmosphere for extended periods of time. If the coil cannot be brazed into the refrigeration system during a routine installation period, the ends must be temporarily closed or plugged. For a short term delay, use masking tape over the ends of the copper tubing to close the tube from the air. For a longer term delay, use plugs or caps. There is no need to purge the coil if this procedure is followed.

### Piston Installation

## ⚠ WARNING

Failure to install a Schrader valve core in the vapor line equalizer connection port for piston applications could result in total refrigerant loss of the system.

### Install the Schrader valve core and piston as follows:

1. After discharging the holding charge completely, remove the black plastic cap from the equalizer connection port on the vertical part of the vapor line.
2. Adjust the distributor position to allow the preformed liquid line assembly to properly line up with the hole in the tubing access panel. Raise the distributor body approximately 2 in. toward the top of the coil or what would be the top of the coil if the coil was in the upflow position. See **Figure 9** and adjust as necessary.
3. Install the Schrader valve core supplied with the outdoor unit into the equalizer fitting connection port using a valve core tool.
4. Loosen and remove the liquid line connection nut and the sealing disc from the distributor assembly. Note that the fitting has right hand threads.
5. Slide the nut over the liquid line and discard the seal disc.
6. Install the required size piston into the distributor. Refer to the *Tabular Data Sheet* for the specific piston size and indoor coil match up. See **Figure 10**.
7. Verify that the PTFE washer is still in place in the distributor opening. See **Figure 10**.

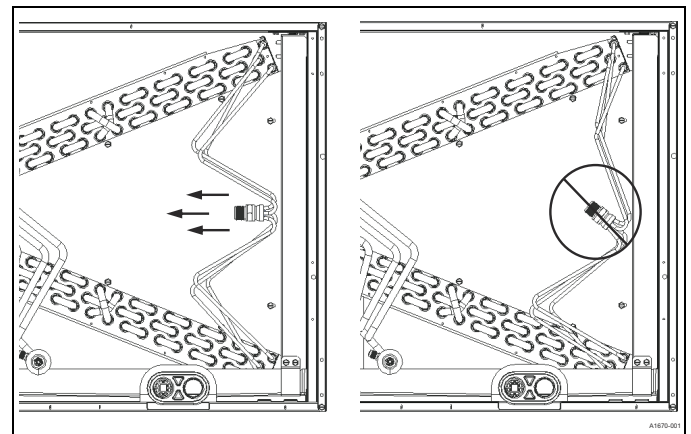


Figure 9: Recommended distributor adjustment

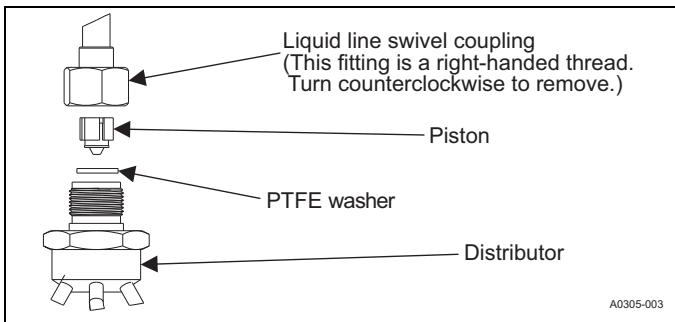


Figure 10: Piston installation

## ⚠ CAUTION

Do not overtorque. Do not use slip joint pliers. This will distort the aluminum distributor and the brass fitting (potentially causing leaks).

- After the piston is installed, install the liquid line to the top of the piston/distributor assembly. Hand tighten and turn an additional 1/4 turn to seal. Do not over tighten fittings.
- Replace the black plastic cap on the unused equalizer fitting connection port.
- After installing the refrigeration piping, leak test the system.

### Thermal expansion valve (TXV) installation

## ⚠ CAUTION

Outdoor unit model numbers ending with an H have a factory installed hard start kit which is required when a TXV is installed. Outdoor unit model numbers with no H ending do not require a hard start kit unless the outdoor unit *Data Sheet* indicates it.

The following are basic steps for installation. For detailed instructions, refer to the *Installation Manual* accompanying the TXV kit. Complete the following steps to install the TXV kit:

**Important:** Refer to the *Technical Guide* or *Data Sheet* for the unit to determine the correct TXV kit to use on this product.

- Relieve the holding charge by depressing the Schrader valve core on the suction manifold stub out.
- After discharging the holding charge completely, loosen and remove the Schrader valve core.
- Place a backup wrench on the distributor, then loosen and remove the brass distributor nut. Retain the brass nut for use on the liquid line. Keep the PTFE washer in place and discard the seal disk.
- Install the thermal expansion valve into the distributor assembly with the supplied fittings. Ensure the PTFE washer is seated in the distributor. Hand tighten and turn an additional 1/4 turn to seal. Do not over-tighten fittings. See **Figure 11**.

## ⚠ CAUTION

Do not overtorque. Do not use slip joint pliers. This will distort the aluminum distributor and the brass fitting (potentially causing leaks).

- Slide the nut removed in Step 3 over the supplied liquid line. Place the supplied PTFE washer from the TXV kit in place on the TXV and install the liquid line into the top of the thermal expansion valve. Adjust the assembly so the liquid line aligns with the hole in the access panel. See **Figure 12**. Hand tighten the liquid line and apply an additional 1/4 turn to seal.

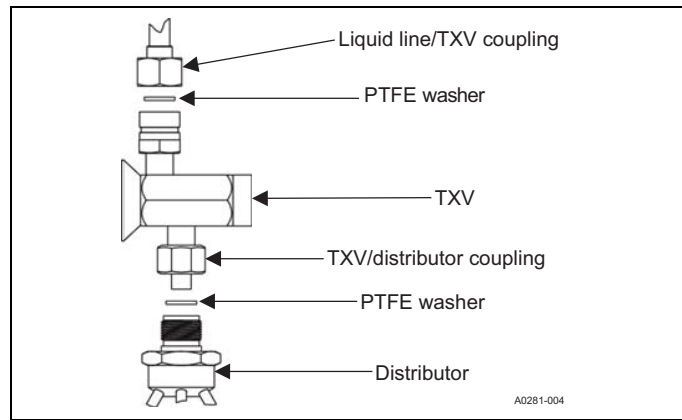


Figure 11: TXV installation

## ⚠ WARNING

The Schrader valve core **must not** be installed with TXV installation. Poor system performance or system failure could result.

- Install the TXV equalizer line onto the vapor line by hand tightening the 1/4 in. SAE coupling nut to the equalizer fitting and apply an additional 1/3 turn to seal. See **Figure 12**.

## ⚠ CAUTION

In all cases, mount the TXV temperature sensing bulb after the vapor line is brazed and sufficiently cooled.

Failure to use a suction line split grommet may result in TXV failure.

- Route the temperature sensing bulb tube for the TXV toward the vapor line header and the TXV equalizer tube connection port on the vapor line header.

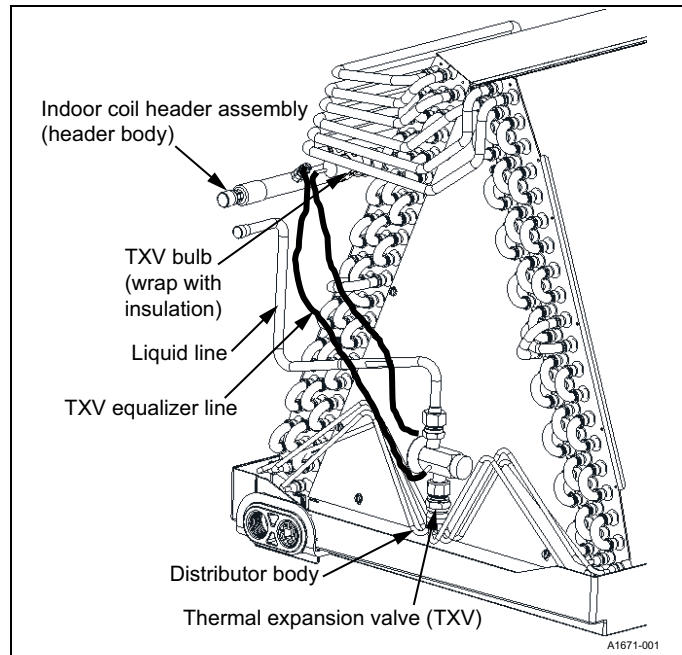


Figure 12: TXV bulb and equalizer line installations

- Install the TXV bulb to the vapor line near the TXV equalizer tube connection port, using the bulb clamps supplied with the TXV assembly. Ensure the bulb makes maximum contact. See **Figure 12** and **Figure 13**, and complete the following steps:



- a. Install the TXV bulb on the vapor line suction header near the TXV equalizer tube connection port. Ensure to install the bulb at a 10 o'clock or 2 o'clock position.
  - b. Insulate the TXV bulb using the thermal insulation provided to protect it from the effect of the surrounding ambient temperature. Cover the bulb completely to insulate.
9. After installing the refrigeration piping, leak test the system.

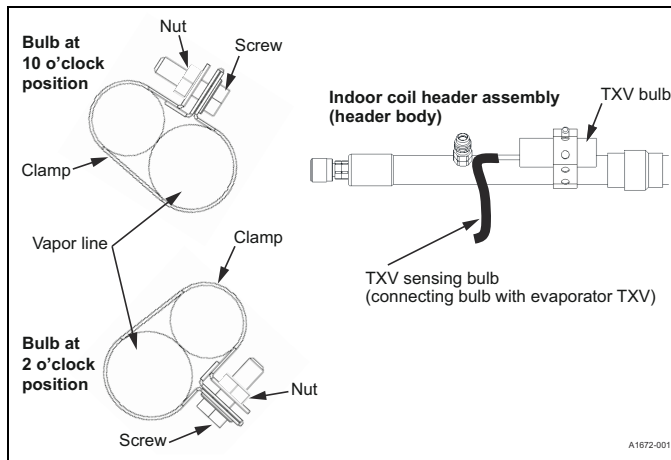


Figure 13: Correct bulb location

## Section VI: Refrigerant line connection

### CAUTION

The coil is under inert gas pressure. Relieve pressure from the coil by depressing the Schrader valve core at the end of the suction manifold stub out.

### CAUTION

Dry nitrogen must always be supplied through the tubing while it is being brazed, because the temperature required is high enough to cause oxidation of the copper unless an inert atmosphere is provided. The flow of dry nitrogen must continue until the joint has cooled. Always use a pressure regulator and safety valve to insure that only low pressure dry nitrogen is introduced into the tubing. Only a small flow is necessary to displace air and prevent oxidation.

### NOTICE

Avoid handling aluminum coil components after handling the copper refrigeration piping or other tubing without first cleaning hands.

Connect lines as follows:

### NOTICE

Route the refrigerant lines to the coil in a manner that will not obstruct service access to the coil, air handling system, furnace flue, or filter.

1. Make suction and liquid line connections outside of the cabinet. Leave the tubing connection panel attached to the cabinet. Remove the coil access panel for brazing. The lines are expanded to receive the field refrigeration piping tubes for most outdoor unit matches.
2. Remove the grommets where the tubes exit the cabinet to prevent burning them during brazing. In some units, the grommets may be shipped as loose parts with the unit. See **Figure 14**.

3. Cut the end of the suction tube using a tube cutter. Place the tube cutter as close as possible to the end of the tube to allow as much depth as possible for the connection and brazing of the suction line. To ensure the suction line fits into the connection, deburr the stub out (including inner pressure protrusion from cutting).
4. If the coil does not have a factory installed TXV or EEV, install the required size piston or TXV kit. See *Coil metering devices* and *Piston installation* or *Thermal expansion valve (TXV) installation* for detailed instructions.
5. If the coil does have a factory installed TXV or EEV, remove the liquid line copper cap that is soft soldered onto the outside of the 3/8 in. stub protruding from the front of the coil cabinet tubing panel:
  - a. Screw a sheet metal screw into the center of the cap.
  - b. Apply a small amount of heat to the cap while pulling on the screw using slip joint pliers.

#### Important: For EEV-equipped coils only

The EEV in this unit is shipped in the closed position to protect the valve during transportation.

Before brazing, connect and apply line power to the field wiring terminals of the air handling unit and ensure the board is powered for 60 s. This ensures the EEV control board cycles the valve to an open position. This allows nitrogen to flow through the system during brazing.

### NOTICE

If power cannot be applied to the EEV control board prior to brazing refrigeration piping, a tool is available to manually operate the EEV. An EEV manual operating tool can be purchased from Source 1 as part number S1-02649686000. Six revolutions of the tool opens the valve fully.

6. Insert the liquid and suction lines into the coil connections at the coil cabinet tubing panel.
7. Wrap a water-soaked rag around the coil connection tubes inside the cabinet to avoid transferring excess heat to the coil, TXV, EEV, and temperature sensor if the coil is equipped with an EEV.
8. Purge the refrigerant lines with dry nitrogen during brazing.

### NOTICE

All indoor coil connections are copper-to-copper and must be brazed with a phosphorous-copper alloy material such as Silfos-5 or equivalent. Do not use soft solder.

9. Braze the suction and liquid lines, and allow the joints to cool.
10. Secure the sensing bulb and equalizer line capillary tubes with nylon cable ties to prevent leaks from tubes rubbing.
11. If using a piston, install a Schrader valve core into the suction header and reinstall the cap.
12. Re-attach the grommets to the lines carefully to prevent air leakage. In some units, the grommets may be shipped as loose parts with the unit. See **Figure 14**.
13. Refer to the outdoor unit *Installation Manual* and complete evacuation, a leak check, and charging instructions. Check all field brazed joints and metering device connections.
14. Attach the coil access panel to the cabinet.
15. Ensure the lines are sound isolated by using appropriate hangers or strapping.

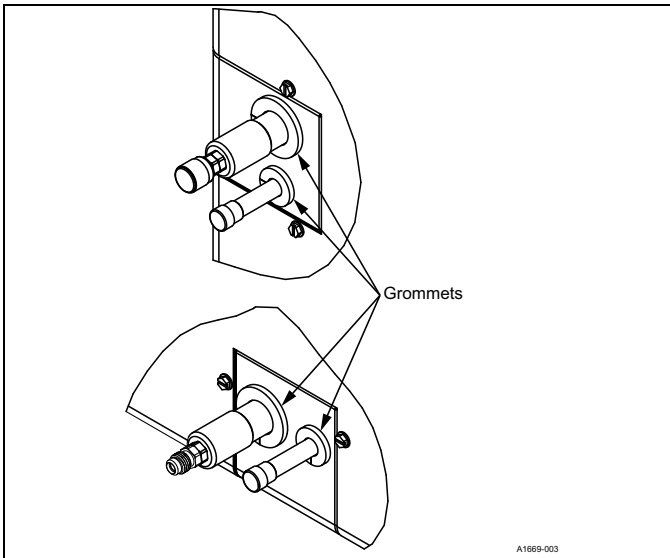


Figure 14: Grommets

## Section VII: Condensate drain connections

Adhere to the following:

- Pitch all drain lines 1/4 in./ft away from the unit drain pan and make sure that the drain lines are no smaller than the coil drain connection.
- Route the drain line so that it does not impede access to the coil, air handling system, or filter and is not exposed to freezing temperatures.
- Instruct the homeowner that the indoor coil drain pan must be inspected and cleaned regularly to prevent odors and ensure proper drainage.
- Install the air handling unit pitched slightly toward the drain end.
- Note that you can remove drain plugs using a standard 3/8 in. drive socket ratchet.
- If the coil has a secondary drain, pipe it to a location that gives the occupant a visual warning that the primary drain is clogged. If a secondary drain is not used, you must plug the secondary drain.

### ⚠ CAUTION

Avoid double trapping.

### ⚠ CAUTION

Threaded drain connections must be hand tightened, plus no more than one turn.

### ⚠ CAUTION

Do not use PTFE tape, pipe thread compound, or other sealants. Use of a sealant can cause damage and premature failure of the drain pan.

## Section VIII: Electric heater installation

If the air handler requires electric heat, install the electric heat kit according to the installation instructions included with the kit. After installing the kit, mark the air handler nameplate to designate the heater kit that was installed. If no heater is installed, mark the name plate appropriately to indicate that no heat kit is installed.

Use only 8HK heater kits, as listed on the air handler name plate and in these instructions. Use data from **Table 5** to **Table 12** for information on the required minimum motor speed tap to use for heating operation and the maximum over-current protection device required as listed for combination of air handler and heater kit.

### NOTICE

In some horizontal applications, the service disconnects on the electric heat kits must be rotated 180° so the up position of the disconnect is the ON position. This service disconnect orientation change is required by UL 60335-2-40 (in reference to all circuit breakers).

## Section IX: Line power connections

### ⚠ WARNING

Before obtaining access to terminals, all supply circuits must be disconnected.

### ⚠ WARNING

A fused disconnect switch must be field provided for the unit to be in compliance with UL 60335-2-40 Clause 7.12.2.

Power can be brought into the unit through the supply air end of the unit (top left when unit is vertical) or the left side panel. Use the hole appropriate to the unit's orientation in each installation to bring the conduit from the disconnect. The power lead conduit must be terminated at the electrical control box. See **Table 8** to **Table 12** and the latest edition of the National Electric Code, or in Canada the Canadian electrical Code, and local codes to determine correct wire sizing. To minimize air leakage, seal the wiring entry point on the outside of the unit.

All electrical connections to air handlers must be made with copper conductors. **Direct connection of aluminum wiring to air handlers is not approved.**

If aluminum conductors are present, all applicable local and national codes must be followed when converting from aluminum to copper conductors prior to connection to the air handler.

The chosen conductor and connections must all meet or exceed the amperage rating of the overcurrent protector (service disconnect or fuse) in the circuit.

Existing aluminum wire within the structure must be sized correctly for the application according to the National Electric Code and local codes. Use caution when sizing aluminum rather than copper conductors, as aluminum conductors are rated for less current than copper conductors of the same size.

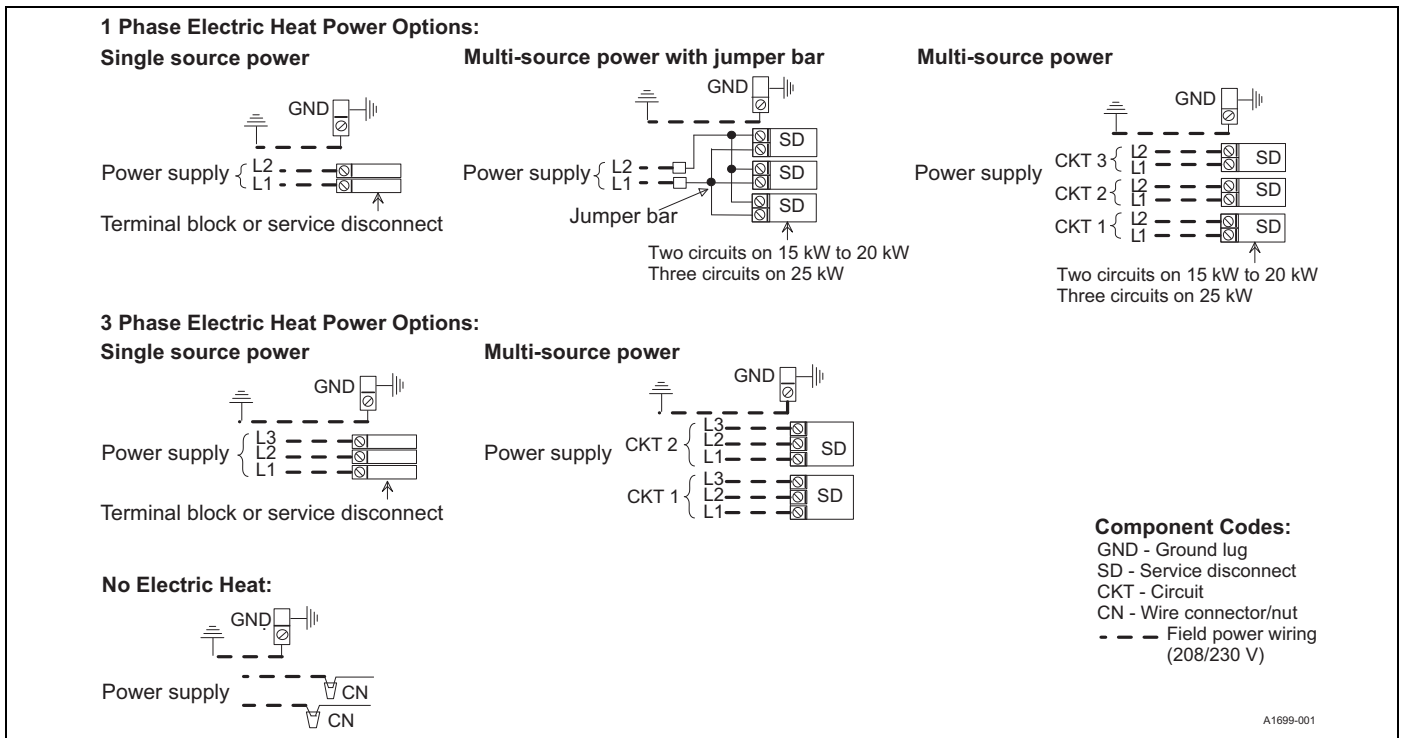


Figure 15: Line power connections

### Section X: Low voltage control connections

The 24 V power supply is provided by an internally wired low voltage transformer that is standard on all models. If connecting the unit to a 208 V power supply, the low voltage transformer must be rewired to the 208 V tap. See the *Control wiring*.

Field supplied low voltage wiring can exit the unit through the top right (when unit is vertical upflow) or the right side panel. See **Figure 3**.

Remove the knockout and pierce the foil faced insulation to allow wiring to pass through. Use as small of a hole as possible to minimize air leakage. Install a 7/8 in. plastic bushing in the selected hole and keep low voltage wiring as short as possible inside the control box.

To further minimize air leakage, seal the wiring entry point at the outside of the unit. Connect the field wiring at the pigtails supplied with the air handler. See **Figure 26** to **Figure 28** for system wiring.

NOTICE

All wiring must comply with local and national electrical code requirements. Read and heed all unit caution labels.

### Section XI: Blower speed connections

Adjust the blower motor speed to provide airflow within the minimum and maximum limits approved for indoor coils, electric heat, and outdoor units. Make speed tap adjustments at the motor terminal block.

See **Table 13** for airflow data. Connect the motor wires to the motor speed tap receptacle for the speed required.

The standard ECM motor operates when a 24 VAC signal is sent to any of its five speed taps. If simultaneous 24 VAC inputs are present, the motor operates at the highest speed tap that is energized. The lowest speed is one and the highest speed is five.

The air handler comes factory-wired with the electric heat kit connected to tap five for the heating speed. There are two speed tap wires for cooling or heat pump blower speeds. The YEL/BLK wire is for first stage compressor speed and the YEL wire is for full compressor speed. The RED continuous fan speed wire is connected to speed tap one. If the lowest speed tap (tap one) is needed for first stage compressor speed, leave the continuous fan speed wire connected to speed tap one and let the room thermostat provide the signal (through its G output) for first stage com-

pressor, as the room thermostat provides a fan output during a heat pump heating or cooling call. In this particular application, cap off the YEL/BLK wire and do not use it.

Move the electric heat kit wire for the heating speed from tap five to the appropriate speed tap according to **Table 5**. If electric heat requires speed tap five, the highest speed tap available for cooling or heat pump heating is tap four. Do not splice or combine multiple signals to a single blower motor tap. Each of the standard ECM blower motor speed taps have a built-in 60 s off delay.

The circulating blower (green) thermostat input is factory connected to speed tap one, which is the lowest speed. The circulating blower (yellow) thermostat input is used for the second-stage or full blower speed. See **Figure 26** to **Figure 28** for wiring details.

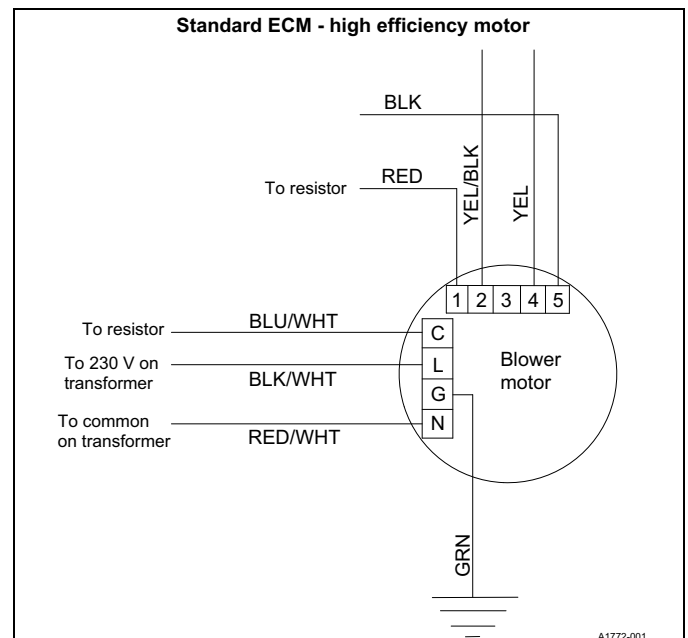


Figure 16: Blower speed connections

## Section XII: Unit data

**Table 3:** Physical and electrical data - cooling only

Models		B18B	B24C	B30D	B36D	C36D	C42F
Blower - diameter x width (in.)		11 x 8	11 x 8	11 x 8	11 x 8	11 x 10	11 x 10
Motor	HP	1/3 HP	1/3 HP	1/2 HP	1/2 HP	1/2 HP	1/2 HP
	Nominal RPM	1050	1050	1050	1050	1050	1050
Voltage (V)		208/230	208/230	208/230	208/230	208/230	208/230
Full load amps at 230 V (A)		2.6	2.6	3.8	3.8	3.8	3.8
Filter <sup>1</sup>	Type	Disposable or cleanable					
	Size (in.)	16 x 20 x 1	16 x 20 x 1	16 x 20 x 1	16 x 20 x 1	20 x 20 x 1	20 x 20 x 1
Shipping / operating weight (lb)		101/93	107 / 99	108 / 100	108 / 100	124 / 114	135 / 125
Models		C48G	D48G	C60H	D60H	D60J	
Blower - diameter x width (in.)		11 x 10	11 x 11	11 x 10	11 x 11	11 x 11	
Motor	HP	3/4 HP	3/4 HP	3/4 HP	3/4 HP	3/4 HP	
	Nominal RPM	1050	1050	1050	1050	1050	
Voltage (V)		208/230	208/230	208/230	208/230	208/230	
Full load amps at 230 V (A)		5.4	5.4	5.4	5.4	5.4	
Filter <sup>1</sup>	Type	Disposable or cleanable					
	Size (in.)	20 x 20 x 1	23 x 20 x 1	20 x 20 x 1	23 x 20 x 1	23 x 20 x 1	
Shipping / operating weight (lb)		140 / 129	152 / 140	153 / 141	158 / 146	162 / 150	

1. Field supplied.

**Table 4:** Electrical data - cooling only

Models	Motor FLA <sup>1</sup>	Minimum circuit ampacity (A)	MOP <sup>2</sup>
B18B/B24C	2.6	3.3	15
B30D/B36D/C36D/C42F	3.8	4.8	15
C48G/D48G/C60H/D60H/D60J	5.4	6.8	15

1. FLA = Full Load Amps

2. MOP = Maximum Overcurrent Protection device; must be HACR type circuit breaker or time delay fuse. Refer to the latest edition of the National Electric Code or in Canada the Canadian electrical Code and local codes to determine correct wire sizing.

**Table 5:** Electrical heat: minimum fan speed

Heater kit models <sup>1,2</sup>	Nominal kW at 240 V	Air handler models										
		B18B	B24C	B30D	B36D	C36D	C42F	C48G	D48G	C60H	D60H	D60J
8HK(0,1)6500206	2.4	Medium Low (2)	Medium (3)	Medium High (4)	Medium (3)	Medium (3)	Medium (3)	Medium Low (2)	Medium Low (2)	Medium Low (2)	Medium Low (2)	Medium Low (2)
8HK(0,1)6500506	4.8	Medium (3)	Medium (3)	Medium High (4)	Medium (3)	Medium (3)	Medium (3)	Medium Low (2)	Medium Low (2)	Medium Low (2)	Medium Low (2)	Medium Low (2)
8HK(0,1)6500806	7.7	Medium High (4)	Medium High (4)	Medium High (4)	Medium High (4)	Medium High (4)	Medium High (4)	Medium (3)	Medium (3)	Medium (3)	Medium (3)	Medium Low (2)
8HK(0,1)6501006 8HK06501025	9.6	Medium High (4)	Medium High (4)	Medium High (4)	Medium High (4)	Medium High (4)	Medium High (4)	Medium (3)	Medium (3)	Medium High (4)	Medium (3)	Medium Low (2)
8HK(1,2)6501506 8HK06501525	14.4	—	Medium High (4)	High (5)	Medium High (4)	Medium High (4)	Medium High (4)	Medium (3)	Medium (3)	Medium High (4)	Medium High (4)	Medium (3)
8HK(1,2)6502006 8HK16502025	19.2	—	—	High (5)	Medium High (4)	High (5)	High (5)	Medium High (4)	Medium (3)	Medium High (4)	Medium High (4)	Medium (3)
8HK(1,2)6502506 8HK16502525	24	—	—	—	—	—	—	—	—	—	Medium High (4)	Medium (3)

1. (0,1) - 0 = no service disconnect or 1 = with service disconnect.

2. (1,2) - 1 = with service disconnect, no breaker jumper bar or 2 = with service disconnect and breaker jumper bar.

**Table 6:** Application factors - rated CFM versus actual CFM

% of rated airflow (CFM)	80	90	100	110	120
Capacity factor	0.96	0.98	1	1.02	1.03

**Table 7:** kW and MBH conversions - for total power input requirement

For a power distribution voltage that is different from the provided nominal voltage, multiply the kW and MBH data from **Table 8** by the conversion factor in the following table.

Distribution power (V)	Nominal voltage (V)	Conversion factor
208	240	0.75
220	240	0.84
230	240	0.92

**Table 8:** Electric heat performance data: 208/230-1-60 and 208/230-3-60

	Heater models <sup>1,2</sup>	Nominal kW at 240 V	Total heat <sup>3</sup>				kW staging			
			kW		MBH		W1 only		W1 and W2	
			208 V	230 V	208 V	230 V	208 V	230 V	208 V	230 V
Single phase	8HK(0,1)6500206	2.4	1.8	2.2	6.2	7.5	1.8	2.2	1.8	2.2
	8HK(0,1)6500506	4.8	3.6	4.4	12.3	15	3.6	4.4	3.6	4.4
	8HK(0,1)6500806	7.7	5.8	7.1	19.7	24.1	5.8	7.1	5.8	7.1
	8HK(0,1)6501006	9.6	7.2	8.8	24.6	30.1	7.2	8.8	7.2	8.8
	8HK(1,2)6501506	14.4	10.8	13.2	36.9	45.1	3.6	4.4	10.8	13.2
	8HK(1,2)6502006	19.2	14.4	17.6	49.2	60.2	7.2	8.8	14.4	17.6
	8HK(1,2)6502506	24	18	22	61.5	75.2	7.2	8.8	18	22
Three phase	8HK06501025	9.6	7.2	8.8	24.6	30.1	7.2	8.8	7.2	8.8
	8HK06501525	14.4	10.8	13.2	36.9	45.1	10.8	13.2	10.8	13.2
	8HK16502025	19.2	14.4	17.6	49.2	60.2	7.2	8.8	14.4	17.6
	8HK16502525	24	18	22	61.5	75.2	9	11	18	22

1. (0,1) - 0 = no service disconnect or 1 = with service disconnect.

2. (1,2) - 1 = with service disconnect, no breaker jumper bar or 2 = with service disconnect and breaker jumper bar.

3. For different power distributions, see **Table 7**.

**Table 9:** Electrical data for single source power supply: 208/230-1-60

Air handler models	Heater models <sup>1,2</sup>	Heater amps (A) at 240 V	Field wiring			
			Minimum circuit ampacity (A)		MOP <sup>3</sup> (A)	
			208 V	230 V	208 V	230 V
B18B	8HK(0,1)6500206	10	14.1	15.2	15	20
	8HK(0,1)6500506	20	24.9	27.2	25	30
	8HK(0,1)6500806	32	38.1	41.8	40	45
	8HK(0,1)6501006	40	46.5	51.1	50	60
B24C	8HK(0,1)6500206	10	14.1	15.2	15	20
	8HK(0,1)6500506	20	24.9	27.2	25	30
	8HK(0,1)6500806	32	38.1	41.8	40	45
	8HK(0,1)6501006	40	46.5	51.1	50	60
	8HK(1,2)6501506	60	68.2	75.0	70	80
B30D	8HK(0,1)6500206	10	15.6	16.7	20	20
	8HK(0,1)6500506	20	26.4	28.7	30	30
	8HK(0,1)6500806	32	39.6	43.3	40	45
	8HK(0,1)6501006	40	48.0	52.6	50	60
	8HK(1,2)6501506	60	69.7	76.5	70	80
	8HK(1,2)6502006	80	91.3	100.4	100	110
B36D	8HK(0,1)6500206	10	15.6	16.7	20	20
	8HK(0,1)6500506	20	26.4	28.7	30	30
	8HK(0,1)6500806	32	39.6	43.3	40	45
	8HK(0,1)6501006	40	48.0	52.6	50	60
	8HK(1,2)6501506	60	69.7	76.5	70	80
	8HK(1,2)6502006	80	91.3	100.4	100	110

Continued on next page

**Table 9:** Electrical data for single source power supply: 208/230-1-60 (continued)

Air handler models	Heater models <sup>1,2</sup>	Heater amps (A) at 240 V	Field wiring			
			Minimum circuit ampacity (A)		MOP <sup>3</sup> (A)	
			208 V	230 V	208 V	230 V
C36D	8HK(0,1)6500206	10	15.6	16.7	20	20
	8HK(0,1)6500506	20	26.4	28.7	30	30
	8HK(0,1)6500806	32	39.6	43.3	40	45
	8HK(0,1)6501006	40	48.0	52.6	50	60
	8HK(1,2)6501506	60	69.7	76.5	70	80
	8HK(1,2)6502006	80	91.3	100.4	100	110
C42F	8HK(0,1)6500206	10	15.6	16.7	20	20
	8HK(0,1)6500506	20	26.4	28.7	30	30
	8HK(0,1)6500806	32	39.6	43.3	40	45
	8HK(0,1)6501006	40	48.0	52.6	50	60
	8HK(1,2)6501506	60	69.7	76.5	70	80
	8HK(1,2)6502006	80	91.3	100.4	100	110
C48G	8HK(0,1)6500206	10	17.6	18.7	20	20
	8HK(0,1)6500506	20	28.4	30.7	30	35
	8HK(0,1)6500806	32	41.6	45.3	45	50
	8HK(0,1)6501006	40	50.0	54.6	60	60
	8HK(1,2)6501506	60	71.7	78.5	80	80
	8HK(1,2)6502006	80	93.3	102.4	100	110
D48G	8HK(0,1)6500206	10	17.6	18.7	20	20
	8HK(0,1)6500506	20	28.4	30.7	30	35
	8HK(0,1)6500806	32	41.6	45.3	45	50
	8HK(0,1)6501006	40	50.0	54.6	60	60
	8HK(1,2)6501506	60	71.7	78.5	80	80
	8HK(1,2)6502006	80	93.3	102.4	100	110
C60H	8HK(0,1)6500206	10	17.6	18.7	20	20
	8HK(0,1)6500506	20	28.4	30.7	30	35
	8HK(0,1)6500806	32	41.6	45.3	45	50
	8HK(0,1)6501006	40	50.0	54.6	60	60
	8HK(1,2)6501506	60	71.7	78.5	80	80
	8HK(1,2)6502006	80	93.3	102.4	100	110
D60H	8HK(0,1)6500206	10	17.6	18.7	20	20
	8HK(0,1)6500506	20	28.4	30.7	30	35
	8HK(0,1)6500806	32	41.6	45.3	45	50
	8HK(0,1)6501006	40	50.0	54.6	60	60
	8HK(1,2)6501506	60	71.7	78.5	80	80
	8HK(1,2)6502006	80	93.3	102.4	100	110
D60J	8HK(1,2)6502506	100	114.9	126.3	125	150
	8HK(0,1)6500206	10	17.6	18.7	20	20
	8HK(0,1)6500506	20	28.4	30.7	30	35
	8HK(0,1)6500806	32	41.6	45.3	45	50
	8HK(0,1)6501006	40	50.0	54.6	60	60
	8HK(1,2)6501506	60	71.7	78.5	80	80
D60J	8HK(1,2)6502006	80	93.3	102.4	100	110
	8HK(1,2)6502506	100	114.9	126.3	125	150

1. (0,1) - 0 = no service disconnect or 1 = with service disconnect.

2. (1,2) - 1 = with service disconnect, no breaker jumper bar or 2 = with service disconnect and breaker jumper bar.

3. MOP = Maximum Overcurrent Protection device; must be HACR type circuit breaker or time delay fuse. Refer to the latest edition of the National Electric Code or in Canada the Canadian electrical Code and local codes to determine correct wire sizing.

**Table 10:** Electrical data for multi-source power supply: 208/230-1-60

Air handlers models	Heater models <sup>1</sup>	Heater amps (A) at 240 V	Minimum circuit ampacity (A)						MOP <sup>2</sup> (A)					
			208 V			230 V			208 V			230 V		
			Circuit						Circuit					
			First <sup>3</sup>	Second	Third	First <sup>3</sup>	Second	Third	First <sup>3</sup>	Second	Third	First <sup>3</sup>	Second	Third
B24C	8HK16501506	60	24.7	43.5	—	26.9	48.1	—	25	45	—	30	50	—
B30D	8HK16501506	60	26.2	43.5	—	28.4	48.1	—	30	45	—	30	50	—
	8HK16502006	80	48.0	43.3	—	52.6	47.8	—	50	45	—	60	50	—
B36D	8HK16501506	60	26.2	43.5	—	28.4	48.1	—	30	45	—	30	50	—
	8HK16502006	80	48.0	43.3	—	52.6	47.8	—	50	45	—	60	50	—
C36D	8HK16501506	60	26.2	43.5	—	28.4	48.1	—	30	45	—	30	50	—
	8HK16502006	80	48.0	43.3	—	52.6	47.8	—	50	45	—	60	50	—
C42F	8HK16501506	60	26.2	43.5	—	28.4	48.1	—	30	45	—	30	50	—
	8HK16502006	80	48.0	43.3	—	52.6	47.8	—	50	45	—	60	50	—
C48G	8HK16501506	60	28.2	43.5	—	30.4	48.1	—	30	45	—	35	50	—
	8HK16502006	80	50.0	43.3	—	54.6	47.8	—	50	45	—	60	50	—
D48G	8HK16501506	60	28.2	43.5	—	30.4	48.1	—	30	45	—	35	50	—
	8HK16502006	80	50.0	43.3	—	54.6	47.8	—	50	45	—	60	50	—
C60H	8HK16501506	60	28.2	43.5	—	30.4	48.1	—	30	45	—	35	50	—
	8HK16502006	80	50.0	43.3	—	54.6	47.8	—	50	45	—	60	50	—
D60H	8HK16501506	60	28.2	43.5	—	30.4	48.1	—	30	45	—	35	50	—
	8HK16502006	80	50.0	43.3	—	54.6	47.8	—	50	45	—	60	50	—
D60J	8HK16502506	100	50.0	43.3	21.6	54.6	47.8	23.9	50	45	25	60	50	25
	8HK16501506	60	28.2	43.5	—	30.4	48.1	—	30	45	—	35	50	—
D60J	8HK16502006	80	50.0	43.3	—	54.6	47.8	—	50	45	—	60	50	—
	8HK16502506	100	50.0	43.3	21.6	54.6	47.8	23.9	50	45	25	60	50	25

1. 8HK1 = with service disconnect, no breaker jumper bar

2. MOP = Maximum Overcurrent Protection device; must be HACR type circuit breaker or time delay fuse. The first circuit includes blower motor amps. Refer to the latest edition of the National Electric Code or in Canada the Canadian electrical Code and local codes to determine correct wire sizing.

**Table 11:** Electrical data for single source power supply: 208/230-3-60

Air handler models	Heater models <sup>1</sup>	Heater amps (A) at 240 V	Field wiring			
			Minimum circuit ampacity (A)		MOP <sup>2</sup> (A)	
			208 V	230 V	208 V	230 V
B18B	8HK06501025	23.1	28.2	30.9	30	35
B24C	8HK06501025	23.1	28.2	30.9	30	35
	8HK06501525	34.6	40.7	44.7	45	45
B30D	8HK06501025	23.1	29.7	32.4	30	35
	8HK06501525	34.6	42.2	46.2	45	50
	8HK16502025 <sup>1</sup>	46.2	54.7	60.0	60	60
B36D	8HK06501025	23.1	29.7	32.4	30	35
	8HK06501525	34.6	42.2	46.2	45	50
	8HK16502025 <sup>1</sup>	46.2	54.7	60.0	60	60
C36D	8HK06501025	23.1	29.7	32.4	30	35
	8HK06501525	34.6	42.2	46.2	45	50
	8HK16502025 <sup>1</sup>	46.2	54.7	60.0	60	60
C42F	8HK06501025	23.1	29.7	32.4	30	35
	8HK06501525	34.6	42.2	46.2	45	50
	8HK16502025 <sup>1</sup>	46.2	54.7	60.0	60	60
C48G	8HK06501025	23.1	31.7	34.4	35	35
	8HK06501525	34.6	44.2	48.2	45	50
	8HK16502025 <sup>1</sup>	46.2	56.7	62.0	60	70
D48G	8HK06501025	23.1	31.7	34.4	35	35
	8HK06501525	34.6	44.2	48.2	45	50
	8HK16502025 <sup>1</sup>	46.2	56.7	62.0	60	70

Continued on next page

**Table 11:** Electrical data for single source power supply: 208/230-3-60 (continued)

Air handler models	Heater models <sup>1</sup>	Heater amps (A) at 240 V	Field wiring			
			Minimum circuit ampacity (A)		MOP <sup>2</sup> (A)	
			208 V	230 V	208 V	230 V
C60H	8HK06501025	23.1	31.7	34.4	35	35
	8HK06501525	34.6	44.2	48.2	45	50
	8HK16502025 <sup>1</sup>	46.2	56.7	62.0	60	70
D60H	8HK06501025	23.1	31.7	34.4	35	35
	8HK06501525	34.6	44.2	48.2	45	50
	8HK16502025 <sup>1</sup>	46.2	56.7	62.0	60	70
	8HK16502525 <sup>1</sup>	57.7	69.2	75.8	70	80
D60J	8HK06501025	23.1	31.7	34.4	35	35
	8HK06501525	34.6	44.2	48.2	45	50
	8HK16502025 <sup>1</sup>	46.2	56.7	62.0	60	70
	8HK16502525 <sup>1</sup>	57.7	69.2	75.8	70	80

1. 0 = no service disconnect OR 1 = with service disconnect. The 20 kW and 25 kW heater models (8HK16502025 and 8HK16502525) come with service disconnects standard. Single source power MCA and MOP requirements are given here only for reference if used with field installed single point power modification.

2. MOP = Maximum overcurrent protection device; must be HACR type circuit breaker or time delay fuse. The first circuit includes blower motor amps. Refer to the latest edition of the National Electric Code or in Canada the Canadian electrical Code and local codes to determine correct wire sizing.

**Table 12:** Electrical data for multi-source power supply: 208/230-3-60

Air handlers models	Heater models <sup>1</sup>	Heater amps (A) at 240V	Minimum circuit ampacity (A)				MOP <sup>2</sup> (A)			
			208V		230V		208V		230V	
			Circuit				Circuit			
			First <sup>2</sup>	Second	First <sup>2</sup>	Second	First <sup>2</sup>	Second	First <sup>2</sup>	Second
B30D	8HK16502025	46.2	29.7	25.0	32.4	27.6	30	25	35	30
B36D	8HK16502025	46.2	29.7	25.0	32.4	27.6	30	25	35	30
C36D	8HK16502025	46.2	29.7	25.0	32.4	27.6	30	25	35	30
C42F	8HK16502025	46.2	29.7	25.0	32.4	27.6	30	25	35	30
C48G	8HK16502025	46.2	31.7	25.0	34.4	27.6	35	25	35	30
D48G	8HK16502025	46.2	31.7	25.0	34.4	27.6	35	25	35	30
C60H	8HK16502025	46.2	31.7	25.0	34.4	27.6	35	25	35	30
D60H	8HK16502025	46.2	31.7	25.0	34.4	27.6	35	25	35	30
	8HK16502525	57.7	38.0	31.2	41.3	34.5	40	35	45	35
D60J	8HK16502025	46.2	31.7	25.0	34.4	27.6	35	25	35	30
	8HK16502525	57.7	38.0	31.2	41.3	34.5	40	35	45	35

1. The 20kW and 25kW heater models (8HK06502025 and 8HK06502525) come with service disconnects standard.

2. MOP = Maximum overcurrent protection device; must be HACR type circuit breaker or time delay fuse. The first circuit includes blower motor amps. Refer to the latest edition of the National Electric Code or in Canada the Canadian electrical Code and local codes to determine correct wire sizing.

**Table 13:** Airflow data (CFM per Watts)

Models	Blower motor speed	Unit	External static pressure (in. W.C.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
B18B	High (5)	CFM	975	925	875	825	800	750	700	650	600	550
		W	129	137	145	153	161	169	177	186	194	202
	Medium high (4)	CFM	900	850	800	775	725	675	625	575	525	500
		W	110	117	124	132	139	146	153	160	167	175
	Medium (3)	CFM	825	775	725	700	650	600	550	500	450	400
		W	94	101	107	114	120	127	134	140	147	154
	Medium low (2)	CFM	650	600	550	500	425	—	—	—	—	—
		W	58	63	68	73	78	—	—	—	—	—
	Low (1)	CFM	450	—	—	—	—	—	—	—	—	—
		W	31	—	—	—	—	—	—	—	—	—

Continued on next page



Table 13: Airflow data (CFM per Watts) (continued)

Models	Blower motor speed	External static pressure (in. W.C.)										
		Unit	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
B24C	High (5)	CFM	1150	1125	1100	1050	1025	975	950	900	875	850
		W	190	199	209	219	229	238	248	258	267	277
	Medium high (4)	CFM	1000	950	925	875	825	775	750	700	650	600
		W	130	138	147	155	163	171	180	188	196	204
	Medium (3)	CFM	775	725	675	625	575	525	450	400	—	—
		W	75	81	88	95	101	108	114	121	—	—
	Medium low (2)	CFM	675	600	550	500	425	—	—	—	—	—
		W	55	61	67	73	79	—	—	—	—	—
	Low (1)	CFM	525	450	—	—	—	—	—	—	—	—
		W	34	40	—	—	—	—	—	—	—	—
B30D	High (5)	CFM	1150	1125	1075	1050	1025	975	950	925	875	850
		W	221	228	235	243	252	262	273	285	297	311
	Medium high (4)	CFM	1000	950	900	875	825	800	750	700	675	625
		W	147	156	164	172	181	189	198	206	214	223
	Medium (3)	CFM	775	725	700	650	600	550	500	450	400	—
		W	87	93	100	106	113	120	126	133	139	—
	Medium low (2)	CFM	650	600	550	500	450	400	—	—	—	—
		W	62	67	72	78	83	89	—	—	—	—
	Low (1)	CFM	575	525	475	400	—	—	—	—	—	—
		W	49	54	59	65	—	—	—	—	—	—
B36D	High (5)	CFM	1500	1475	1450	1425	1425	1400	1375	1350	1325	—
		W	482	493	504	516	527	539	550	562	573	—
	Medium high (4)	CFM	1325	1300	1275	1250	1225	1200	1175	1150	1125	1100
		W	332	339	347	357	367	379	391	405	420	435
	Medium (3)	CFM	975	950	900	875	825	800	750	700	675	625
		W	145	154	162	170	178	186	194	202	210	219
	Medium low (2)	CFM	925	875	825	800	750	700	675	625	575	550
		W	121	128	136	143	151	158	166	173	180	188
	Low (1)	CFM	650	600	550	500	450	400	—	—	—	—
		W	60	65	71	76	81	87	—	—	—	—
C36D	High (5)	CFM	1600	1575	1525	1500	1450	1425	1400	1350	1325	1275
		W	377	391	405	419	434	448	462	476	490	504
	Medium high (4)	CFM	1400	1375	1325	1275	1225	1200	1150	1100	1075	1025
		W	260	272	283	294	305	316	328	339	350	361
	Medium (3)	CFM	1100	1050	1000	950	900	850	800	725	675	625
		W	143	152	161	169	178	187	195	204	212	221
	Medium low (2)	CFM	950	900	825	775	725	650	600	550	475	425
		W	103	110	117	124	131	138	146	153	160	167
	Low (1)	CFM	725	650	575	525	450	375	—	—	—	—
		W	60	66	72	77	83	89	—	—	—	—
C42F	High (5)	CFM	1525	1500	1450	1425	1375	1350	1300	1275	1225	1200
		W	334	348	363	377	391	405	419	433	448	462
	Medium high (4)	CFM	1375	1325	1300	1250	1200	1150	1125	1075	1025	975
		W	247	259	270	282	293	305	317	328	340	352
	Medium (3)	CFM	1050	1000	950	900	850	775	725	675	625	575
		W	130	138	146	155	163	171	180	188	197	205
	Medium low (2)	CFM	925	875	800	750	700	625	575	525	450	400
		W	97	104	112	119	126	133	141	148	155	162
	Low (1)	CFM	700	625	575	500	425	—	—	—	—	—
		W	56	61	67	73	78	—	—	—	—	—

Continued on next page

**Table 13:** Airflow data (CFM per Watts) (continued)

Models	Blower motor speed	External static pressure (in. W.C.)										
		Unit	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
C48G	High (5)	CFM	1925	1900	1875	1850	1800	1775	1750	1725	1700	1675
		W	588	604	619	635	650	666	681	697	712	728
	Medium high (4)	CFM	1750	1700	1675	1650	1600	1575	1550	1500	1475	1450
		W	435	449	463	476	490	504	517	531	545	558
	Medium (3)	CFM	1400	1350	1300	1275	1225	1175	1125	1075	1050	1000
		W	235	245	256	266	277	287	298	308	319	329
	Medium low (2) (2)	CFM	1200	1150	1100	1050	1000	925	875	825	775	725
		W	157	166	176	185	194	203	212	221	230	239
	Low (1)	CFM	925	875	800	750	700	625	575	500	450	375
		W	93	100	107	114	121	128	135	142	149	156
D48G	High (5)	CFM	2050	2000	1975	1950	1900	1875	1850	1800	1775	1750
		W	579	597	615	632	650	668	686	704	722	739
	Medium high (4)	CFM	1850	1800	1775	1725	1700	1650	1625	1575	1550	1500
		W	431	446	461	476	492	507	522	537	552	568
	Medium (3)	CFM	1625	1600	1550	1500	1450	1425	1375	1325	1275	1250
		W	305	318	332	345	358	371	384	397	410	423
	Medium low (2)	CFM	1275	1200	1150	1100	1050	975	925	875	825	750
		W	159	169	179	189	199	208	218	228	238	248
	Low (1)	CFM	1000	925	875	800	750	675	600	550	475	400
		W	96	103	111	118	126	133	141	148	156	163
C60H	High (5)	CFM	1925	1900	1875	1850	1825	1775	1750	1725	1700	1675
		W	564	578	593	608	623	638	653	668	683	698
	Medium high (4)	CFM	1750	1725	1675	1650	1625	1575	1550	1525	1475	1450
		W	420	433	447	461	474	488	502	515	529	543
	Medium (3)	CFM	1375	1350	1300	1250	1225	1175	1125	1100	1050	1000
		W	222	233	244	255	266	277	288	299	310	321
	Medium low (2)	CFM	1200	1150	1100	1050	1000	950	900	850	800	750
		W	154	163	173	182	192	201	211	220	229	239
	Low (1)	CFM	950	900	825	775	725	650	600	550	475	425
		W	91	98	105	113	120	127	134	142	149	156
D60H	High (5)	CFM	1925	1900	1875	1825	1800	1775	1750	1700	1675	1650
		W	500	515	530	545	560	575	590	605	620	635
	Medium high (4)	CFM	1775	1750	1725	1675	1650	1600	1575	1525	1500	1450
		W	393	407	421	435	449	463	477	491	504	518
	Medium (3)	CFM	1450	1400	1325	1275	1225	1175	1125	1075	1025	975
		W	212	223	235	246	258	269	281	292	304	315
	Medium low (2)	CFM	1225	1175	1125	1050	1000	950	875	825	775	700
		W	146	156	166	176	185	195	205	215	225	235
	Low (1)	CFM	975	900	850	775	700	625	550	475	425	—
		W	87	95	102	110	118	125	133	141	148	—
D60J	High (5)	CFM	2100	2075	2050	2025	2000	1975	1925	1900	1875	1850
		W	691	707	724	740	757	773	790	806	823	839
	Medium high (4)	CFM	1925	1900	1875	1825	1800	1775	1725	1700	1675	1650
		W	516	533	550	566	583	600	617	633	650	667
	Medium (3)	CFM	1750	1725	1675	1650	1600	1575	1525	1500	1450	1425
		W	394	409	423	437	452	466	480	495	509	524
	Medium low (2)	CFM	1350	1275	1225	1175	1125	1075	1025	975	925	875
		W	188	199	210	221	232	242	253	264	275	286
	Low (1)	CFM	1200	1150	1100	1025	975	925	850	800	750	675
		W	145	155	165	174	184	193	203	212	222	232

**Notes:**

1. No electric heat installed
2. Air handler units are tested to UL60335-2-40 standards up to 0.6 in. W.C. external static pressure.
3. Dry coil conditions only; tested without filters
4. For optimal performance, external static pressures of 0.2 in. W.C. to 0.5 in. W.C. are recommended. Heating applications are tested at 0.5 in. W.C. external static pressure.
5. Airflow data shown is from testing performed at 230 V. These units use a standard ECM constant torque motor and there is minimal variation of airflow at other distribution voltage values. The above data can be used for airflow at other distribution voltages.

## Section XIII: Maintenance

Inspect filters at least once per month, and clean or replace them when they become dirty. The frequency of cleaning depends upon the hours of operation and the local atmospheric conditions. Clean filters keep unit efficiency high.

### Coil cleaning

#### ⚠ CAUTION

Ensure adequate precautions are taken to protect electrical components from liquid.

If cleaning the coil is necessary, clean with water only.

As an alternative to water, Evap-Green by Nu-Calgon is the only pH neutral coil cleaner approved for use when it is properly diluted.

Ensure to thoroughly rinse the cleaned coils after using Evap-Green.

### Lubrication

The bearings of the blower motor are permanently lubricated.

### Condensate drains

During the cooling season, check the condensate drain lines to be sure that condensate is flowing from the primary drain but not from the secondary drain. If condensate ever flows from the secondary drain, shut off the unit immediately and clean the condensate pan and drains to insure a free flowing primary drain.

## Section XIV: Air system adjustment

To check the cubic feet per minute (CFM), measure the external duct static using a manometer and static pressure tips. To prepare coil for static pressure measurements, run only the fan to ensure a dry coil.

#### NOTICE

See **Table 13** for air handling unit airflow data (CFM).

Drill two holes, one 12 in. away from the air handler in the supply air duct and one 12 in. away from the air handler in the return air duct (before any elbows in the ductwork). If the internal filter rack is utilized, the return air static pressure reading **must be taken** after the filter but before the indoor coil. Insert the pressure tips and energize the blower motor. See **Table 13** to determine the airflow and make the necessary adjustments to keep the CFM within the airflow limitations of the coil.

### External duct static

Measure the supply air static pressure. Record this positive number. Measure the return air static pressure. Record this negative number. Treat the negative number as a positive, and add the two numbers together to determine the total external system static pressure. If a filter rack is installed on the return air end of the air handler or indoor coil section, make sure to measure the return air duct static between the filter and the indoor coil.

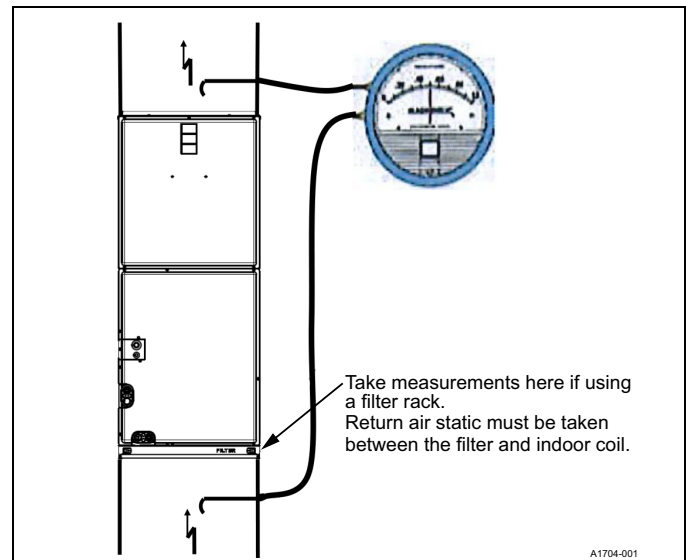


Figure 17: Duct static measurements

## Section XV: Installation verification

Before and during the completion of the installation procedures, verify all tasks are accomplished as indicated in this installation manual.

### Thermal expansion valve (TXV) check list

- Is the coil metering device installed correctly?
- Was the correct TXV installed per the outdoor unit *Technical Guide*?
- Is the TXV bulb positioned correctly?
- Is the temperature bulb insulated?
- Is the equalizer line connected?

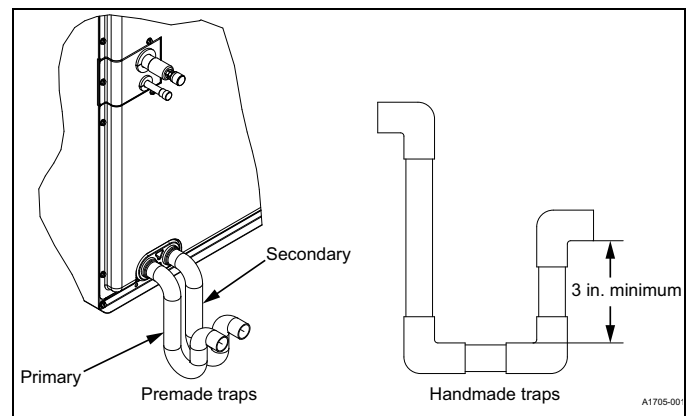


Figure 18: Drain traps

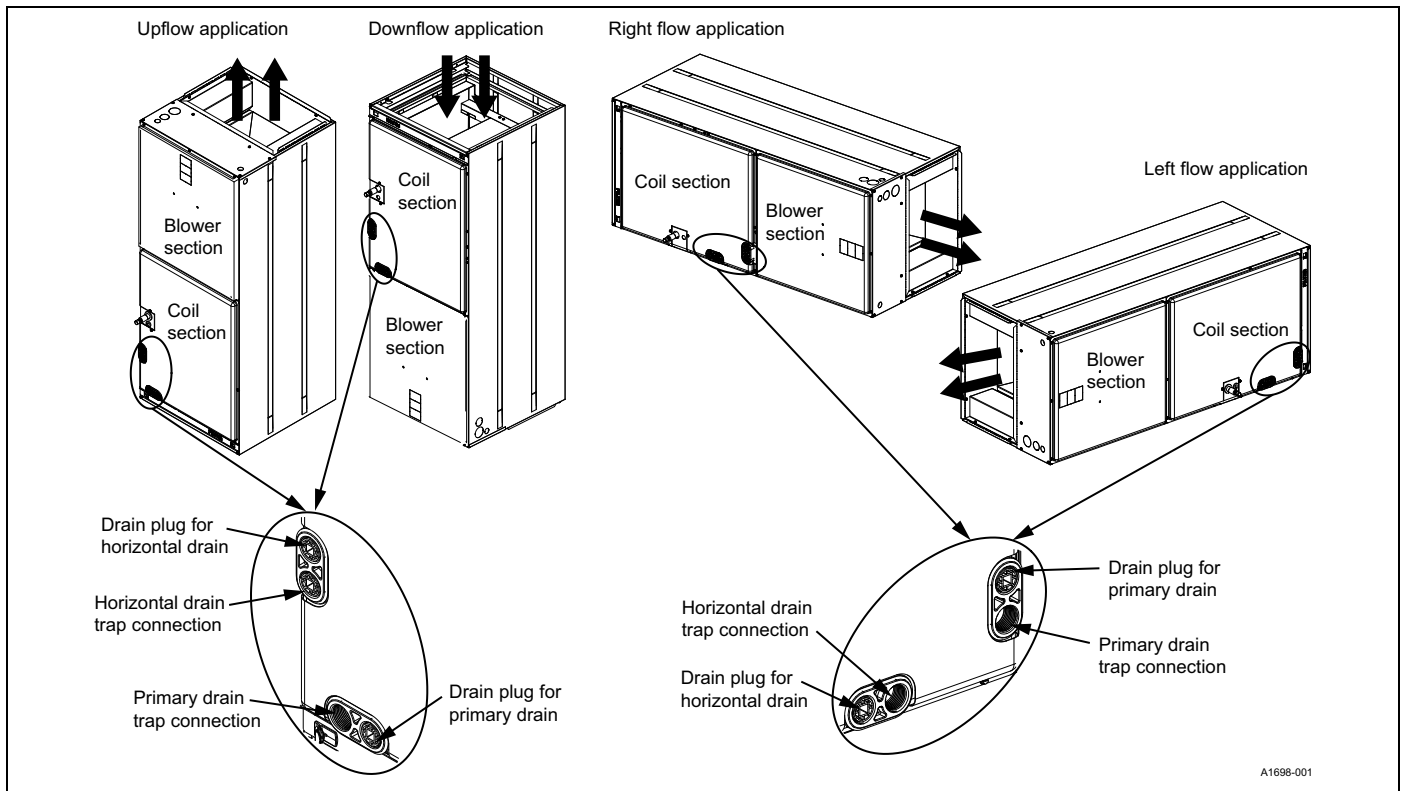


Figure 19: Location of coil trapped and plugged drain connections

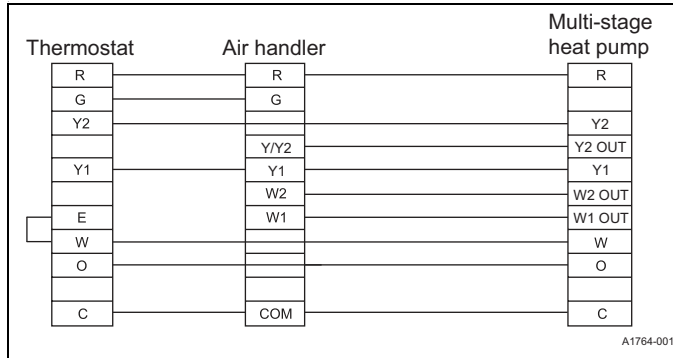
## Section XVI: Control wiring

### NOTICE

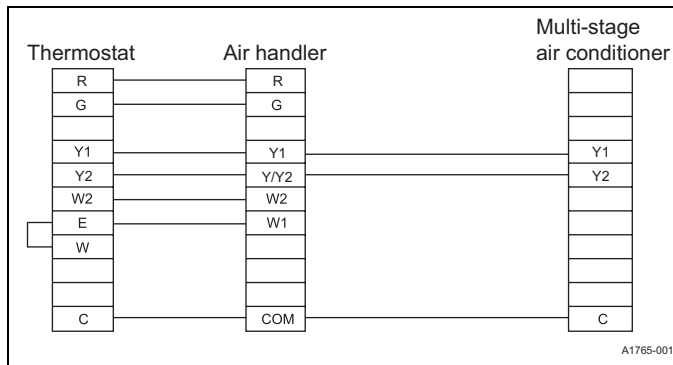
**For Figure 20, Figure 21, Figure 22, and Figure 23:**  
 Continuous fan (G) indoor blower speed tap must be set for a lower speed than first stage compressor speed. If the lowest blower speed tap must be used for first stage compressor speed, do not use the air handler Y1 connection. Allow the room thermostat to energize (G) for first stage compressor blower speed.

### NOTICE

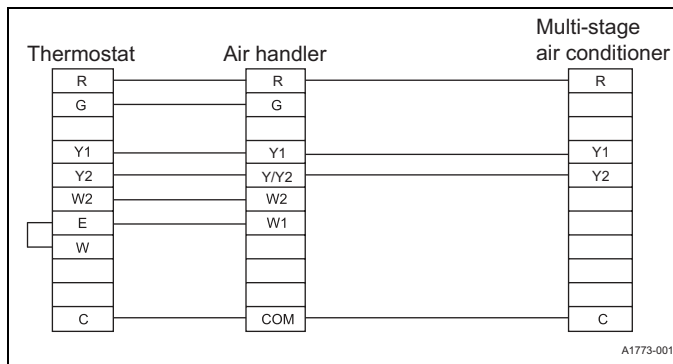
**For Figure 20, Figure 23, and Figure 25:**  
 Do not bond any of the outdoor unit W wires together.



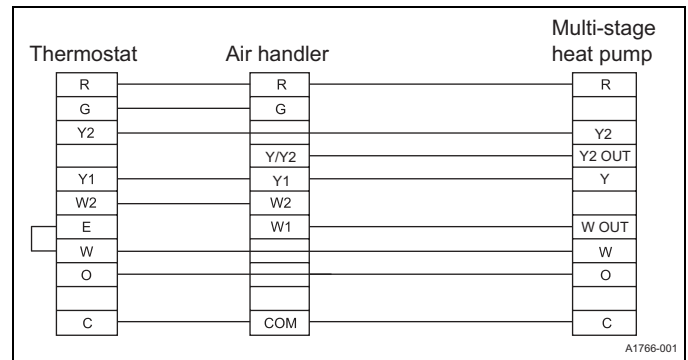
**Figure 20:** Standard ECM AH and premium multi-stage HP - conventional wiring



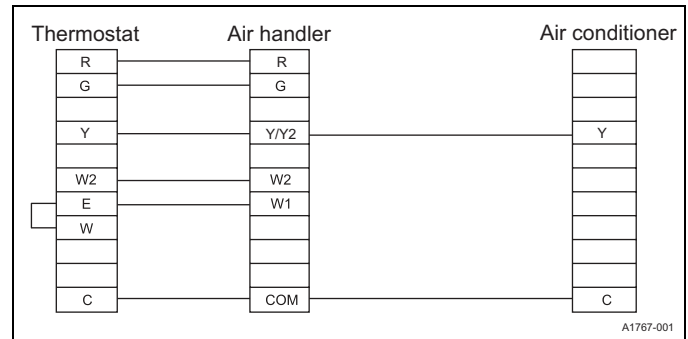
**Figure 21:** Standard ECM AH and standard multi-stage AC - conventional wiring



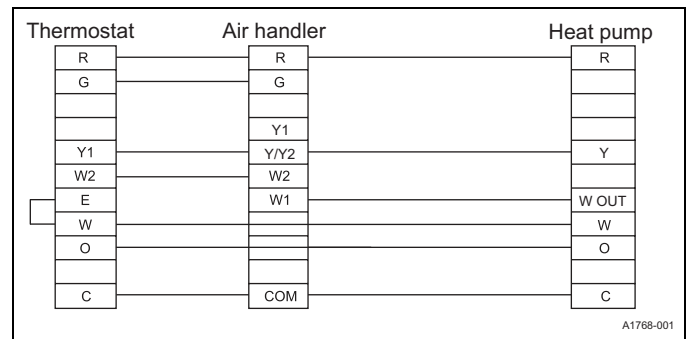
**Figure 22:** Standard ECM AH and premium multi-stage AC - conventional wiring



**Figure 23:** Standard ECM AH and standard multi-stage HP - conventional wiring



**Figure 24:** Standard ECM AH and single-stage AC - conventional wiring



**Figure 25:** Standard ECM AH and single-stage HP - conventional wiring

## NOTES

### Section XVII: Wiring diagram

WHEN INSTALLING HEATER KIT, BE SURE THE BLOWER SPEED IS SET TO THE SPEED SPECIFIED FOR THE AIR HANDLER/HEATER KIT COMBINATION ON THIS UNIT'S INSTALLATION INSTRUCTIONS.

SEE INSTALLATION INSTRUCTIONS FOR PROPER LOW VOLTAGE FIELD WIRING CONNECTIONS.

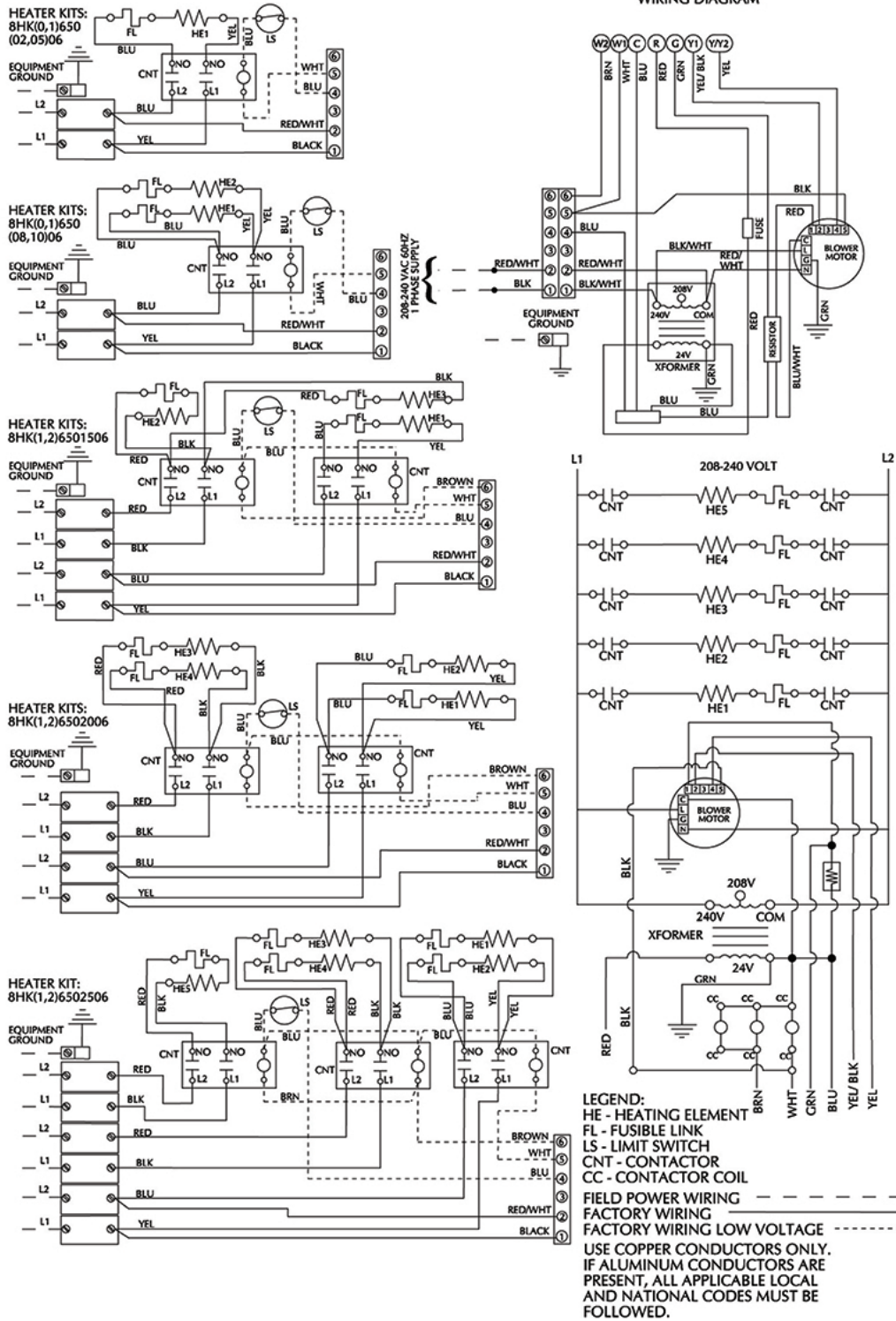


Figure 26: Wiring diagram - standard ECM - single phase heat kits

WHEN INSTALLING HEATER KIT, BE SURE THE BLOWER SPEED IS SET TO THE SPEED SPECIFIED FOR THE AIR HANDLER / HEATER KIT COMBINATION IN THIS UNIT'S INSTALLATION INSTRUCTIONS

3 PHASE ELECTRIC HEAT KITS

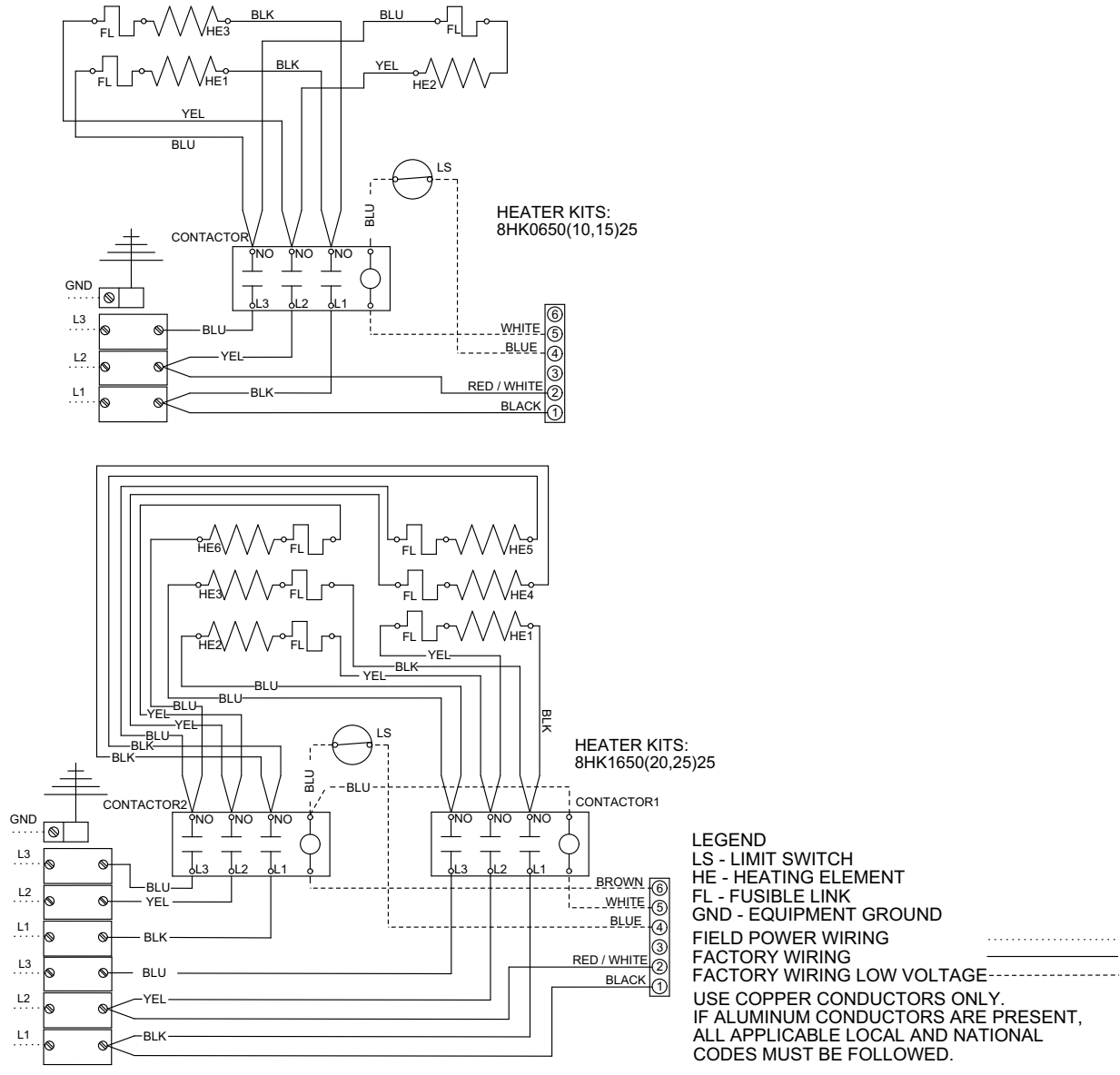


Figure 27: Wiring diagram - 208/230V three phase heat kits



**Section XVIII: Start-up sheet****Residential Air Handler with Electric Heat**

Correct start-up is critical to customer comfort and equipment longevity

Start-up date  Company name  Start-up technician **Owner information**Name  Address  Daytime phone   
City  State or province  Zip or postal code **Equipment data**Unit model number  Unit serial number **General information** (check all that apply) New construction  Upflow  Horizontal Left  
 Retrofit  Downflow  Horizontal Right**Unit location and connections** (check all that apply) Unit is level Duct connections are complete :  Supply  Return  
 Condensate drain is connected correctly (refer to installation manual)  Condensate trap is primed with water**Filters** Filters installed Number of filters  Filter size **Electrical connections and inspection** (complete all that apply) 208 VAC  230 VAC  460 VAC  
 Wires and electrical connections inspected  Transformer wired correctly for primary supply voltage  Ground connected  
Line voltage measured (VAC)  Low voltage value between R and C at control board (VAC)   
 Thermostat wiring is complete  Thermostat cycle rate or heat anticipator adjusted to Installation Manual specifications**Airflow setup**

Blower type and set-up	Variable speed ECM (circle 0 or 1)	Heat	0 / 1	0 / 1			
		Low cool	0 / 1	0 / 1	0 / 1		
		High cool	0 / 1	0 / 1	0 / 1		
		Delay	0 / 1	0 / 1			
		Stage 1 kW	0 / 1	0 / 1			
	Standard ECM	Heat kit selection	0 / 1	0 / 1	0 / 1	0 / 1	
		HP heating/cooling Y1	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
		HP heating/cooling Y/Y2	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
		Electric heat speed	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
		Continuous fan speed	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5

Supply static (in. W.C.)  Supply air dry bulb temperature  Outside air dry bulb temperature   
Return static (in. W.C.)  Return air dry bulb temperature  Return air wet bulb temperature   
Total external static pressure  Temperature drop  Supply air wet bulb temperature **Other switches** (check all that apply)HUMIDISTAT  YES  NO AC/HP  AC  HP CONT FAN  40%  60%  80%  100%

Continued on next page

**Electric heat** (complete all that apply)

Electric heat kit:	Model number	<input type="text"/>	Serial number	<input type="text"/>	Rated kW	<input type="text"/>		
Number of elements	<input type="text"/>	Measured amperage (A)	Heater 1	<input type="text"/>	Heater 2	<input type="text"/>	Heater 3	<input type="text"/>
			Heater 4	<input type="text"/>	Heater 5	<input type="text"/>	Heater 6	<input type="text"/>
		Measured voltage (V)	Heater 1	<input type="text"/>	Heater 2	<input type="text"/>	Heater 3	<input type="text"/>
			Heater 4	<input type="text"/>	Heater 5	<input type="text"/>	Heater 6	<input type="text"/>
Heating return air dry bulb temperature	<input type="text"/>	Heating supply air dry bulb temperature	<input type="text"/>	Air temperature rise	<input type="text"/>			

**Job site clean-up**

Job site has been cleaned, and indoor and outdoor debris removed from job site.

Tools have been removed from unit.

All panels have been installed.

**Unit operation and cycle test** (complete all that apply)

Operate the unit through continuous fan cycles from the thermostat, noting and correcting any problems.

Operate the unit through cooling cycles from the thermostat, noting and correcting any problems.

Operate the unit through mechanical heating cycles from the thermostat, noting and correcting any problems.

Operate the unit through emergency heating cycles from the thermostat, noting and correcting any problems.

**Owner education**

Provide the owner with the owner's manual.

Explain operation of system to the owner.

Explain thermostat use and programming (if applicable) to the owner.

Explain the importance of regular filter replacement and equipment maintenance.

**Comments and additional job details**