

INSTALLATION MANUAL

SINGLE PIECE, 3 POSITION AIR HANDLERS

MODELS: AHE SERIES



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SECTION I: GENERAL

The AHE single piece air handler provides the flexibility for installation in any upflow or horizontal application.

These versatile models may be used for cooling or heat pump operation with or without electric heat.

A BRAND LABEL (available from Distribution) may be applied to the center of the blower access panel.

The unit can be positioned for bottom return air in the upflow position, and right or left return in the horizontal position.

Top and side power wiring and control wiring, accessible screw terminals for control wiring, easy to install drain connections and electric heaters all combine to make the installation easy, and minimize installation cost.

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

Improper installation may create a condition where the operation of the product could cause personal injury or property damage.

Improper installation, adjustment, alteration, service or maintenance can cause 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.

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.

SAFETY REQUIREMENTS

1. This air handler should be installed in accordance with all national and local building/safety codes and requirements, local plumbing or wastewater codes, and other applicable codes.
2. Refer to the unit rating plate for the air handler model number, and then see the dimensions page of this instruction for supply air plenum dimensions in Figure 2. The plenum must be installed according to the instructions.
3. Provide clearances from combustible materials as listed under Clearances.
4. Provide clearances for servicing ensuring that service access is allowed for electric heaters and blower.
5. Failure to carefully read and follow all instructions in this manual can result in air handler malfunction, death, personal injury and/or property damage.
6. Check the rating plate and power supply to be sure that the electrical characteristics match.
7. Air handler shall be installed so the electrical components are protected from water.
8. Installing and servicing heating/cooling equipment can be hazardous due to the electrical components. Only trained and qualified personnel should install, repair, or service heating/cooling equipment. Untrained service personnel can perform basic maintenance functions such as cleaning and replacing the air filters. When working on heating/cooling equipment, observe precautions in the manuals and on the labels attached to the unit and other safety precautions that may apply.

9. 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.

INSPECTION

As soon as a unit is received, it should be inspected for possible damage during transit. If damage is evident, the extent of the damage should be noted on the carrier's freight bill. A separate request for inspection by the carrier's agent should be made in writing. Also, before installation the unit should be checked for screws or bolts, which may have loosened in transit. There are no shipping or spacer brackets which need to be removed.

Also check to be sure all accessories such as heater kits, suspension kits, and coils are available. Installation of these accessories or field conversion of the unit should be accomplished before setting the unit in place or connecting any wiring, electric heat, ducts or piping.

LIMITATIONS

These units must be wired and installed in accordance with all national and local safety codes. Voltage limits are as follows:

Air Handler Voltage	Voltage code	Normal Operating ¹ Voltage Range
208/230-1-60	06	187-253

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

Airflow must be within the minimum and maximum limits approved for electric heat, evaporator coils and outdoor units.

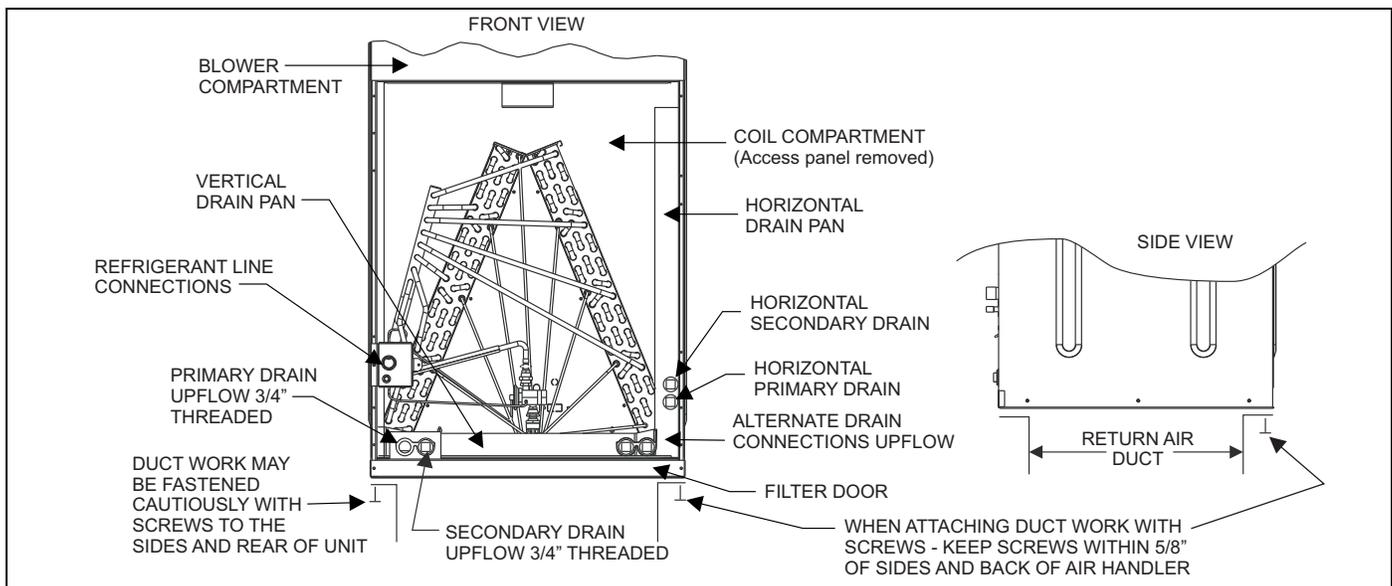


FIGURE 1: Return Duct Attachment & Component Location

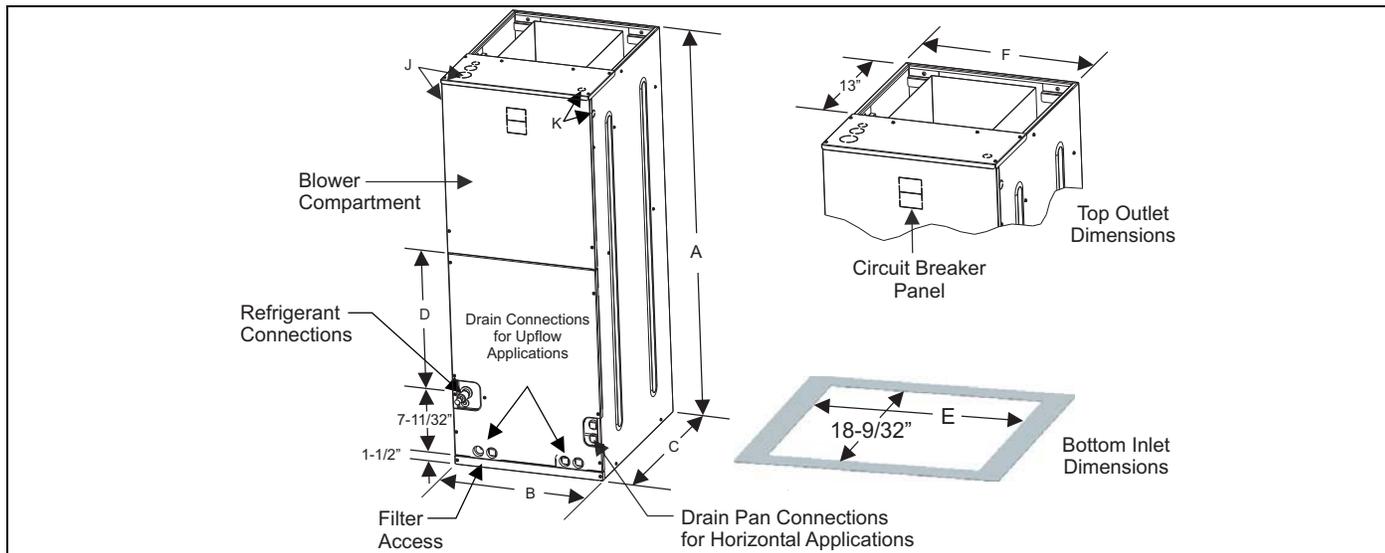


FIGURE 2: Dimensions & Duct Connection Dimensions

SECTION III: UNIT INSTALLATION

TABLE 1: Dimensions¹

Models	Dimensions						Wiring Knockouts ²		Refrigerant Connections Line Size	
	A	B	C	D	E	F	J	K	Liquid	Vapor
	Height	Width	Depth				Power	Control		
AHE18B/AHE22B/AHE24B/AHE30B	46	17 1/2	21 1/2	16 1/2	13-29/32	16 1/2	7/8 (1/2)	7/8 (1/2)	3/8	3/4
AHE34C/AHE36C	52	21		21 1/2	17-13/32	20	1-3/8(1)			
AHE42D/AHE48D/AHE60D	57	24 1/2		26	20-29/32	23-1/2	1-23/32 (1-1/4)			

1. All dimensions are in inches.

2. Actual size (conduit size).

CLEARANCES

Clearances must be taken into consideration, and provided for as follows:

1. Refrigerant piping and connections - minimum 12" recommended.
2. Maintenance and servicing access - minimum 36" from front of unit recommended for blower motor / coil replacement.
3. Condensate drain lines routed to clear filter and panel access.
4. Filter removal - minimum 36" recommended.
5. The ductwork and plenum connected to this unit are designed for zero clearance to combustible materials.
6. 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 owner's or dealer's installation plans. If location has not been decided, consider the following in choosing a suitable location:

1. Select a location with adequate structural support, space for service access, clearance for air return and supply duct connections.
2. Use hanging brackets to wall mount this single piece air handler unit, is not recommended.

3. Normal operating sound levels may be objectionable if the air handler is placed directly over some rooms such as bedrooms, study, etc.
4. Select a location that will permit installation of condensate line to an open drain or outdoors allowing condensate to drain away from structure.

NOTICE

The primary and secondary drain line must be trapped to allow proper drainage of condensate water. If the secondary drain line is not used, it must be capped.

The coil is provided with a secondary drain. It should be piped to a location that will give the occupant a visual warning that the primary drain is clogged. If the secondary drain is not used it must be capped.

5. When an evaporator coil is installed in an attic or above a finished ceiling, an auxiliary drain pan should be provided under the air handler as is specified by most local building codes.
6. Proper electrical supply must be available.
7. If unit is located in an area of high humidity (i.e. an unconditioned garage or attic), nuisance sweating of casing may occur. On these installations, unit duct connections and other openings should be properly sealed, and a wrap of 2" fiberglass insulation with vinyl vapor barrier should be used.

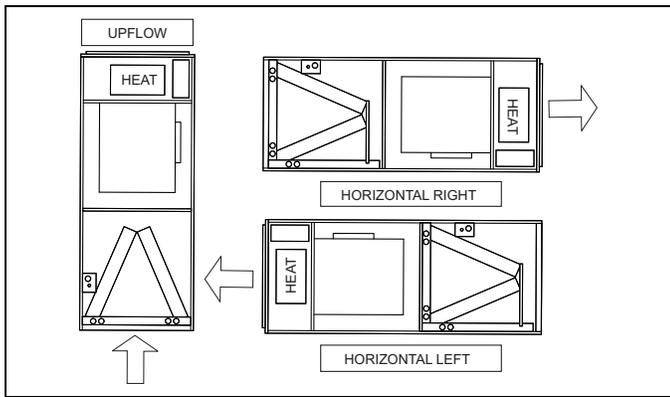


FIGURE 3: Typical Installation

HORIZONTAL CONVERSION

These air handler units are supplied ready to be installed in a upflow and right hand horizontal position. If unit requires left hand positioning, the unit must have the coil assembly repositioned.

NOTICE

For both horizontal applications, the condensate deflector should be positioned as shown in Figure 2.

1. Remove blower, coil, and filter access panels.

NOTICE

Conversion must be made before brazing the refrigerant connections to the coil.

- For horizontal left installations, follow steps 2 - 8.
2. Remove tubing connection panel.
 3. Slide coil assembly out of air handler.
 4. Rotate cabinet 180° so blower outlet is facing down.
 5. Re-install coil assembly on coil support bracket.
 6. Re-attach tubing connection panel.
 7. For horizontal applications, rotate air handler 90° into desired orientation.
 8. Re-position drain plugs as necessary based on air handler orientation.
 9. Re-position and replace access panels.

SUCTION FEEDER TUBECONDENSATE DEFLECTOR

UPFLOW

No action required. See Figure 4.

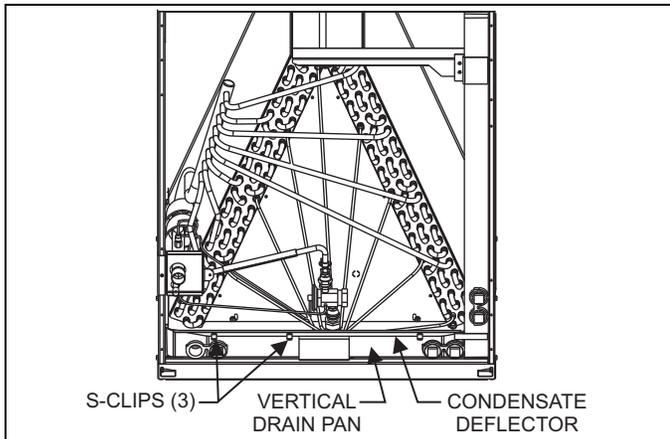


FIGURE 4: Condensate Deflector on Vertical Drain Pan

HORIZONTAL LEFT OR RIGHT

Use an appropriate tool to pry out water deflector with two or three s-clips from the vertical drain pan, see Figure 4. Relocate the deflector with s-clips on the Horizontal Drain Pan lined up to the coil support bracket. See Figure 5. This positions the deflector below the feeder tubes to channel the condensate to the drain pan.

NOTICE

The condensate deflector should be installed in the s-clip section which is inside the drain pan edge. See Figure 6.

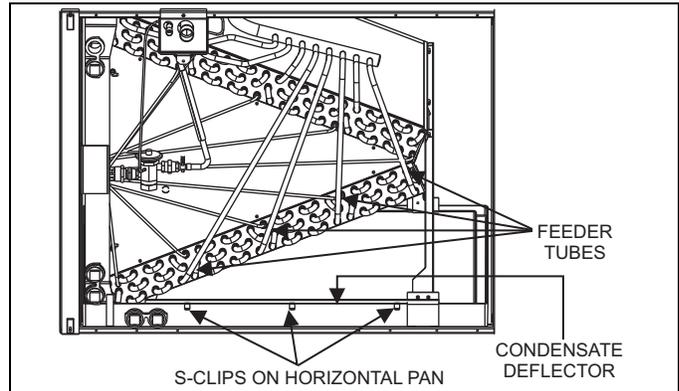


FIGURE 5: Condensate Deflector on Horizontal Drain Pan Edge

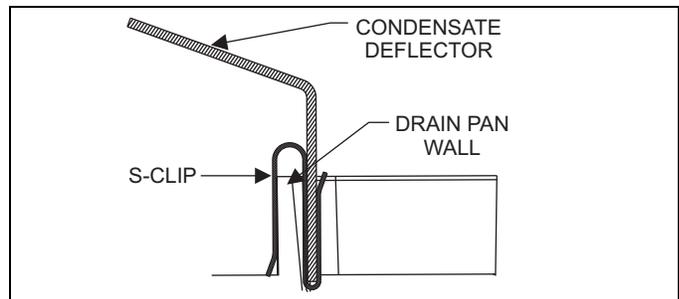


FIGURE 6: S-Clip Installation

DUCT FLANGES

Four flanges are provided to attach ductwork to the furnace. These flanges are rotated down for shipment. In order to use the flanges, remove the screw holding an individual flange, rotate the flange so it is in the upward position and reinstall the screw then repeat this for all 4 flanges. See Figure 7.

If the flanges are not used, they must remain in the rotated down position as shipped.

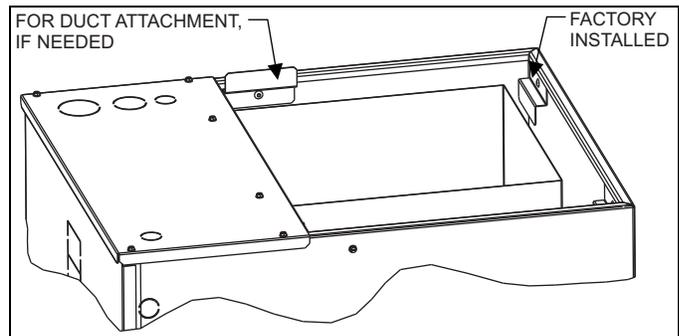


FIGURE 7: Duct Attachment

DUCT CONNECTIONS

⚠ WARNING

Use 1/2" screws to connect ductwork to bottom of unit. Longer screws will pierce the drain pan and cause leakage. If pilot holes are drilled, drill only through field duct and unit bottom flange.

Air supply and return may be handled in one of several ways best suited to the installation. See Figure 2 for dimensions for duct inlet and outlet connections.

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

Use flexible duct collars to minimize the transmission of vibration/noise into the conditioned space. If electric heat is used, non-flammable material must be used.

Where return air duct is short, or where sound may be a problem, sound absorbing glass fiber should be used inside the duct. 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. The use of a vapor barrier is recommended to prevent absorption of moisture from the surrounding air into the insulation.

The supply air duct should be properly sized by use of a transition to match unit opening. All ducts should be suspended using flexible hangers and never fastened directly to the structure. This unit is not designed for non-ducted (freeblow) applications. Size outlet plenum or transition to discharge opening sizes shown in Figure 2.

Ductwork should 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.

DUCTWORK TRANSITION

Ductwork that is not designed to match the supply air opening can cause turbulence inside the plenum box. This turbulence can change the air flow patterns across the heat kit limit switch. If the factory suggested transition can not be fabricated, it is recommended a block off plate (approximately 8" in height and running the full width of the plenum) be attached to the supply opening. Please refer to Figure 8 as a visual aid. The use of this block off plate will keep better air circulation across the limit switch.

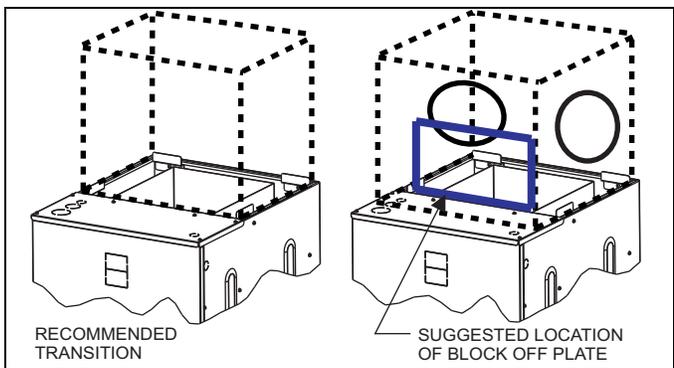


FIGURE 8: Ductwork Transition

AIR FILTERS

Air filters must be field supplied. A 1" filter access rack has been built into the unit. See Figure 2. Remove filter access cover shown. Install proper size filter. Standard 1" size permanent or throw away filter may be used, or, permanent washable filters are available using model numbers: 1PF0601, 602 or 603BK. See Table 2 for filter size.

⚠ CAUTION

Equipment should never be operated without filters.

HORIZONTAL SUSPENSION

For suspension of these units in horizontal applications, it is recommended to use angle steel support brackets with threaded rods, supporting the units from the bottom, at the locations shown in Figure 9.

When an evaporator coil is installed in an attic or above a finished ceiling, an auxiliary drain pan should be provided under the air handler as is specified by most local building codes.

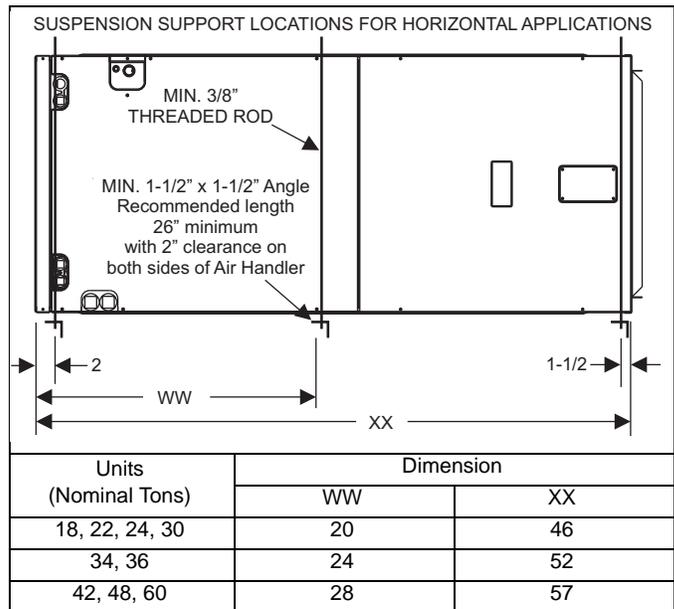


FIGURE 9: Typical Horizontal Installation

TXV METERING DEVICES

If the model number is of the following model series: 3X, the coil will require a R22 or R410A Orifice or TXV to be installed in the field. Refer to installation manual with TXV kit. It is recommended to install the TXV kit prior to brazing line sets.

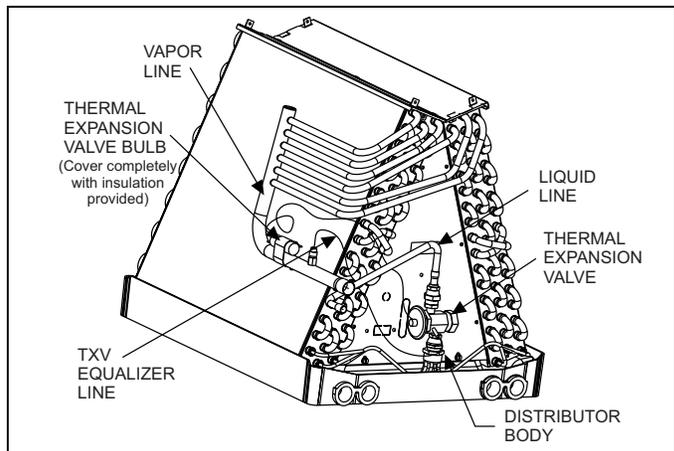


FIGURE 10: TXV

Please refer to Outdoor Unit Tech Guide to verify which TXV is installed in this coil and that this is a valid system match for the AC or HP unit installed.

The temperature sensing bulb is attached to the coil suction header line. See Figure 11;

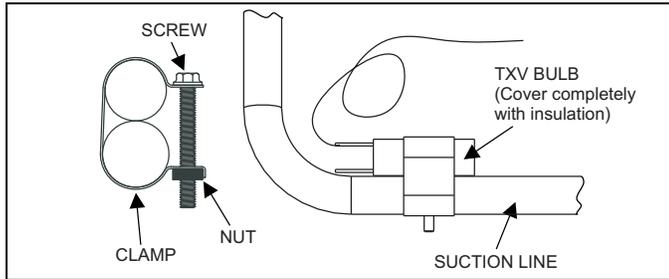


FIGURE 11: Proper Bulb Location

CAUTION

COIL UNDER PRESSURE.

Relieve pressure by depressing schrader core. Coil requires orifice or TXV to be added. See outdoor unit documentation for correct orifice or TXV to be used. Refer to unit nameplate for orifice or TXV identification for this unit.

NOTICE

The coil should be open to the air for no more than 2 minutes to keep moisture and contaminants from entering the system. If the coil cannot be brazed into the refrigeration system in that time, the ends should be temporarily closed or plugged. For a short term delay, use masking tape over the ends of the copper tubing to close the tube to the air. For a longer term delay, use plugs or caps. There is no need to purge the coil if this procedure is followed.

REFRIGERANT LINE CONNECTION

CAUTION

Dry nitrogen should 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 should 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.

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, or filter.

1. Suction and liquid line connections are made outside the cabinet. Leave the tubing connection panel attached to the cabinet with the tubes protruding through it. Coil access panel should be removed for brazing. The lines are swedged to receive the field line set tubes.
2. Remove the heat shield from the Customer Packet, soak in water, and install over coil tubing to prevent overheating of cabinet.

3. Wrap a water soaked rag around the coil connection tubes inside the cabinet to avoid damaging the TXV bulb.
4. Remove grommets where tubes exit the cabinet to prevent burning them during brazing.
5. Purge refrigerant lines with dry nitrogen.
6. Braze the suction and liquid lines. Suction line must be insulated.
7. Remove the heat shield.
8. Re-attach the grommets to the lines carefully to prevent air leakage.
9. Attach the coil access panel to the cabinet.

NOTICE

ALWAYS evacuate the coil and line. Set tubing to 500 microns before opening outdoor unit service valves.

Refer to Outdoor unit Installation Manual for evacuation, leak check and charging instructions.

Lines should be sound isolated by using appropriate hangers or strapping.

All evaporator coil connections are copper-to-copper and should be brazed with a phosphorous-copper alloy material such as Silfos-5 or equivalent. DO NOT use soft solder.

DRAIN CONNECTIONS

All drain lines should be trapped a minimum of three inches, should be pitched away from unit drain pan and should be no smaller than the coil drain connection.

CAUTION

Threaded drain connection should be hand-tightened, plus no more than 1/16 turn.

Route the drain line so that it does not interfere with accessibility to the coil, air handling system or filter and will not be exposed to freezing temperatures. See Figure 2 for drain connection locations.

CAUTION

When the coil is installed in an attic or above a finished ceiling, an auxiliary drain pan should be provided under the coil if specified by local building codes. When this exterior secondary drain pan is used that drain should be piped to a location that will give the occupant a visual warning that the primary drain is clogged.

Coils should be installed level or pitched slightly toward the drain end. Suggested pitch should not exceed 1/4 inch per foot of coil.

The coil is provided with a secondary drain that should be trapped and piped to a location that will give the occupant a visual warning that the primary drain is clogged. If the secondary drain is not used it must be capped.

The drain pan connections are designed to ASTM Standard D 2466 Schedule 40. Use 3/4" PVC or steel threaded pipe. Since the drains are not subject to any pressure it is not necessary to use Schedule 40 pipe for drain lines.

SECTION IV: 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 6HK heater kits, as listed on Air Handler name plate and in these instructions. Use data from Tables 4 through 9 for information on required minimum motor speed tap to be used for heating operation, maximum over-current protection device required and minimum electrical supply wiring size required – for listed combination of Air Handler and Heater Kit.

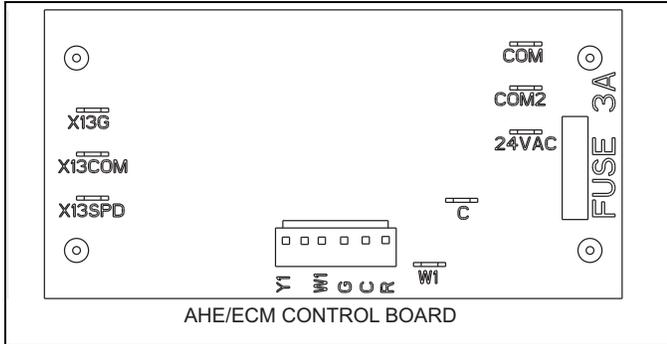


FIGURE 12: Blower Delay Control Board

SECTION V: LINE POWER CONNECTIONS

Power may be brought into the unit through the supply air end of the unit (top when unit is vertical) or the left side panel. Use the hole appropriate to the unit's orientation in each installation to bring conduit from the disconnect. The power lead conduit should be terminated at the electrical control box. Refer to Tables 6 through 9 to determine proper wire sizing. To minimize air leakage, seal the wiring entry point at 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.

If wire other than uncoated (non-plated), 75° C ambient, copper wire is used, consult applicable tables of the National Electric Code (ANSI/NFPA 70). The chosen conductor and connections all must meet or exceed the amperage rating of the overcurrent protector (circuit breaker or fuse) in the circuit.

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

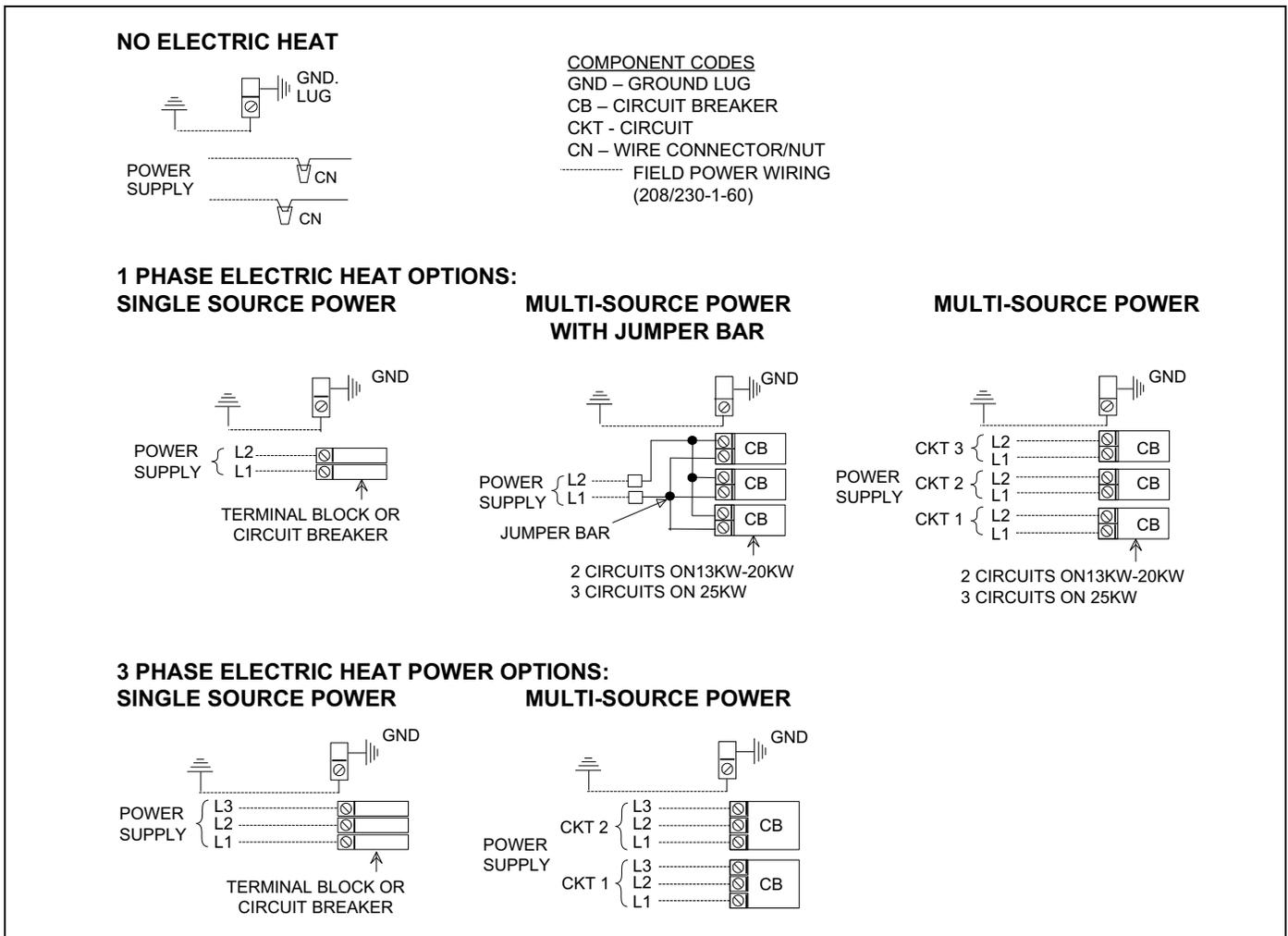


FIGURE 13: Line Power Connections

SECTION VI: LOW VOLTAGE CONTROL CONNECTIONS

The 24 volt power supply is provided by an internally wired low voltage transformer which is standard on all models. However, if the unit is connected to a 208 volt power supply, the low voltage transformer must be rewired to the 208 volt tap. See the unit wiring label.

Field supplied low voltage wiring can exit the unit on the top right hand corner or the right hand side panel. Refer to Figure 2.

Remove desired knockout and pierce 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" 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.

The field wiring is to be connected at the pigtails supplied with the control board harness. Refer to SECTIONS X and XI for system wiring.

NOTICE
<i>All wiring must comply with local and national electrical code requirements. Read and heed all unit caution labels.</i>

NOTICE
<i>It is possible to vary the amount of electric heat turned on during the defrost cycle of a heat pump. Standard wiring will only bring on the first stage of electric heat during defrost. See Table 5 for additional information on heat during defrost cycle.</i>

SECTION VII: BLOWER SPEED CONNECTIONS

Adjust blower motor speed to provide airflow within the minimum and maximum limits approved for evaporator coil, electric heat and outdoor unit. Speed tap adjustments are made at the motor terminal block. Airflow data is shown in Table 10.

Connect motor wires to motor speed tap receptacle for speed desired. See unit wiring label for motor wiring details.

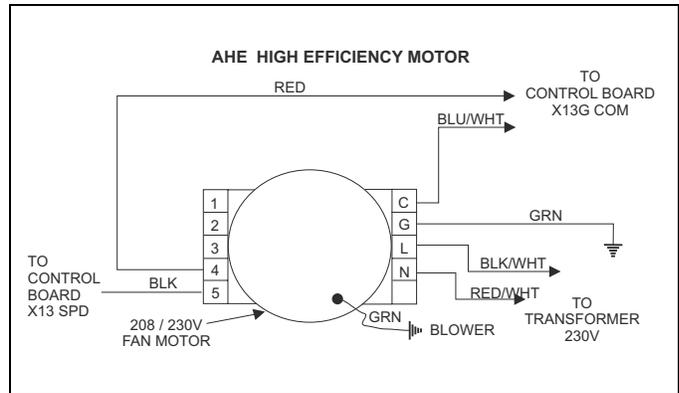


FIGURE 14: Blower Speed Connections

SECTION VIII: UNIT DATA

TABLE 2: Physical and Electrical Data

Models	AHE18B	AHE22B	AHE24B	AHE30B	AHE34C	AHE36C	AHE42D	AHE48D	AHE60D	
Blower - Diameter x Width	10 x 8	10 x 8	10 x 8	10 x 8	11 x 10					
Motor	HP	1/3 HP	1/3 HP	1/3 HP	1/3 HP	1/2 HP	1/2 HP	1/2 HP	3/4 HP	
	Nominal RPM	1050	1050	1050	1050	1050	1050	1050	1050	
Voltage	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	208/230	
Full Load Amps @230V	2.8	2.8	2.8	2.8	4.1	4.1	4.1	6.0	6.0	
Filter ¹	Type	DISPOSABLE OR PERMANENT								
	Size	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	22 x 20 x 1	22 x 20 x 1	22 x 20 x 1
	Permanent Type Kit	1PF0601BK	1PF0601BK	1PF0601BK	1PF0601BK	1PF0602BK	1PF0602BK	1PF0603BK	1PF0603BK	1PF0603BK
Shipping / Operating Weight (lbs.)	115/103	120/105	120/105	120/105	152/137	152/137	168/150	171/153	174/156	

1. Field supplied.

TABLE 3: Electrical Data - Cooling Only

Models	Motor FLA ¹	Minimum Circuit Ampacity	MOP ²	Minimum Wire Size (AWG) ³
AHE18B / AHE22B / AHE24B / AHE30B	2.8	3.5	15	14
AHE34C / AHE36C / AHE42D	4.1	5.1	15	14
AHE48D / AHE60D	6.0	7.5	15	14

1. FLA = Full Load Amps

2. MOP = Maximum Overcurrent Protection device; must be HACR type circuit breaker or time delay fuse.

3. 75°C, copper wire only. If wire other than non-plated, 75°C ambient, copper wire is used, consult applicable tables of the NEC and local codes..

TABLE 4: Electric Heat: Minimum Fan Speed

Heater Kit Models ^{1,2}	Nom. kW @240V	Air Handler Models						
		AHE18B	AHE22B AHE24B	AHE30B	AHE34C AHE36C	AHE42D	AHE48D	AHE60D
6HK(0,1)6500206	2.4kW	Med Low #2	Med Low #2	Low #1	Med #3	Low #1	Med Low #2	Med Low #2
6HK(0,1)6500506	4.8kW	Med Low #2	Med Low #2	Med Low #2	Med Low #2	Med #3	Med #3	Med Low #2
6HK(0,1)6500806	7.7kW	Med High #4	Med High #4	Med #3	Med #3	Med #3	Med #3	Med Low #2
6HK(0,1)6501006 6HK06501025	9.6kW	Med High #4	Med High #4	Med High #4	Med High #4	Med High #4	Med High #4	Med #3
6HK(1,2)6501306	12.5kW	-	Med High #4	Med High #4	Med High #4	Med High #4	Med High #4	Med #3
6HK(1,2)6501506 6HK06501525	14.4kW	-	High #5	High #5	Med High #4	Med High #4	Med High #4	Med #3
6HK(1,2)6501806 6HK06501825	17.3kW	-	-	-	High #5	High #5	High #5	Med High #4
6HK(1,2)6502006 6HK16502025	19.2kW	-	-	-	High #5	High #5	High #5	High #5
6HK(1,2)6502506 6HK16502525	24kW	-	-	-	-	-	-	High #5

- (0,1) - 0 = no circuit breaker OR 1 = with circuit breaker
- (1,2) - 1 = with circuit breaker, no breaker jumper bar OR 2 = with circuit breaker & breaker jumper bar

TABLE 5: ELECTRIC HEAT PERFORMANCE DATA: 208/230-1-60 & 208/230-3-60

Heater Models ^{1,2}		Nominal kW @240V	Total Heat ³				kW Staging			
			kW		MBH		W1 Only		W1 + W2	
			208V	230V	208V	230V	208V	230V	208V	230V
1PH	6HK(0,1)6500206	2.4	1.8	2.2	6.2	7.5	1.8	2.2	1.8	2.2
	6HK(0,1)6500506	4.8	3.6	4.4	12.3	15.0	3.6	4.4	3.6	4.4
	6HK(0,1)6500806	7.7	5.8	7.1	19.7	24.1	5.8	7.1	5.8	7.1
	6HK(0,1)6501006	9.6	7.2	8.8	24.6	30.1	7.2	8.8	7.2	8.8
	6HK(1,2)6501306	12.5	9.4	11.5	32.0	39.2	3.1	3.8	9.4	11.5
	6HK(1,2)6501506	14.4	10.8	13.2	36.9	45.1	3.6	4.4	10.8	13.2
	6HK(1,2)6501806	17.3	13.0	15.9	44.3	54.2	6.5	7.9	13.0	15.9
	6HK(1,2)6502006	19.2	14.4	17.6	49.2	60.2	7.2	8.8	14.4	17.6
3PH	6HK(1,2)6502506	24.0	18.0	22.0	61.5	75.2	7.2	8.8	18.0	22.0
	6HK06501025	9.6	7.2	8.8	24.6	30.1	7.2	8.8	7.2	8.8
	6HK06501525	14.4	10.8	13.2	36.9	45.1	10.8	13.2	10.8	13.2
	6HK06501825	17.3	13.0	15.9	44.3	54.2	13.0	15.9	13.0	15.9
	6HK16502025	19.2	14.4	17.6	49.2	60.2	7.2	8.8	14.4	17.6
	6HK16502525	24.0	18.0	22.0	61.5	75.2	9.0	11.0	18.0	22.0

- (0,1) - 0 = no circuit breaker OR 1 = with circuit breaker.
- (1,2) - 1 = with circuit breaker, no breaker jumper bar OR 2 = with circuit breaker & breaker jumper bar.
- For different power distributions, see conversion table on Page 4.

TABLE 6: ELECTRICAL DATA FOR SINGLE SOURCE POWER SUPPLY: 208/230-1-60

Air Handler Models	Heater Models ^{1,2}	Heater Amps @240V	Field Wiring					
			Min. Circuit Ampacity		MOP. ³		Min Wire Size (AWG) ⁴	
			208V	230V	208V	230V	208V	230V
AHE18B	6HK(0,1)6500206	10.0	14.3	16.0	15	20	12	12
	6HK(0,1)6500506	20.0	25.2	28.5	30	30	10	10
	6HK(0,1)6500806	32.0	38.2	43.5	40	45	8	8
	6HK(0,1)6501006	40.0	46.8	53.5	50	60	8	6
AHE22B AHE24B AHE30B	6HK(0,1)6500206	10.0	14.3	16.0	15	20	12	12
	6HK(0,1)6500506	20.0	25.2	28.5	30	30	10	10
	6HK(0,1)6500806	32.0	38.2	43.5	40	45	8	8
	6HK(0,1)6501006	40.0	46.8	53.5	50	60	8	6
	6HK(1,2)6501306	52.0	59.8	68.5	60	70	6	4
	6HK(1,2)6501506	60.0	68.5	78.5	70	80	4	4

Continuation on Page 10.

TABLE 6: ELECTRICAL DATA FOR SINGLE SOURCE POWER SUPPLY: 208/230-1-60 (Continued)

Air Handler Models	Heater Models ^{1,2}	Heater Amps @240V	Field Wiring						
			Min. Circuit Ampacity			MOP ³		Min Wire Size (AWG) ⁴	
			208V	230V	208V	230V	208V	230V	
AHE34C AHE36C AHE42D	6HK(0,1)6500206	10.0	16.0	17.6	20	20	12	12	
	6HK(0,1)6500506	20.0	26.8	30.1	30	35	10	10	
	6HK(0,1)6500806	32.0	39.8	45.1	40	50	8	8	
	6HK(0,1)6501006	40.0	48.5	55.1	50	60	8	6	
	6HK(1,2)6501306	52.0	61.5	70.1	70	80	6	4	
	6HK(1,2)6501506	60.0	70.1	80.1	80	90	4	4	
	6HK(1,2)6501806	72.0	83.1	95.1	90	100	4	3	
	6HK(1,2)6502006	80.0	91.8	105.1	100	110	3	2	
AHE48D	6HK(0,1)6500206	10.0	18.3	20.0	20	20	12	12	
	6HK(0,1)6500506	20.0	29.2	32.5	30	35	10	8	
	6HK(0,1)6500806	32.0	42.2	47.5	45	50	8	8	
	6HK(0,1)6501006	40.0	50.8	57.5	60	60	6	6	
	6HK(1,2)6501306	52.0	63.8	72.5	70	80	6	4	
	6HK(1,2)6501506	60.0	72.5	82.5	80	90	4	4	
	6HK(1,2)6501806	72.0	85.5	97.5	90	100	3	3	
	6HK(1,2)6502006	80.0	94.2	107.5	100	110	3	2	
AHE60D	6HK(0,1)6500206	10.0	18.3	20.0	20	20	12	12	
	6HK(0,1)6500506	20.0	29.2	32.5	30	35	10	8	
	6HK(0,1)6500806	32.0	42.2	47.5	45	50	8	8	
	6HK(0,1)6501006	40.0	50.8	57.5	60	60	6	6	
	6HK(1,2)6501306	52.0	63.8	72.5	70	80	6	4	
	6HK(1,2)6501506	60.0	72.5	82.5	80	90	4	4	
	6HK(1,2)6501806	72.0	85.5	97.5	90	100	3	3	
	6HK(1,2)6502006	80.0	94.2	107.5	100	110	3	2	
	6HK(1,2)6502506	100.0	115.8	132.5	125	150	1	1/0	

1. (0,1) - maybe 0 (no circuit breaker) or 1 (with circuit breaker).

2. (1,2) maybe 1 (with circuit breaker, no breaker jumper bar) or 2 (with circuit breaker & breaker jumper bar).

3. MOP = Maximum Overcurrent Protection device; must be HACR type circuit breaker or time delay fuse.

4. Stated sizes are for 75°C, copper wire only. If wire other than non-plated, 75°C ambient, copper wire is used, consult applicable tables of the NEC and local codes.

TABLE 7: ELECTRICAL DATA FOR MULTI-SOURCE POWER SUPPLY: 208/230-1-60

Air Handlers Models	Heater Models	Total Heater Amps @240V	Min. Circuit Ampacity						MOP ¹						Min. Wire Size (AWG) ²														
			208V			230V			208V			230V			208V			230V											
			Circuit									Circuit									Circuit								
			1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd						
AHE22B AHE24B AHE30B	6HK16501306	52.0	22.2	37.6	–	24.6	43.3	–	25	40	–	25	45	–	10	8	–	10	8	–									
	6HK16501506	60.0	25.1	43.3	–	27.9	50.0	–	30	45	–	30	50	–	10	8	–	10	8	–									
	6HK16501306	52.0	23.3	37.6	–	25.7	43.3	–	25	40	–	30	45	–	10	8	–	10	8	–									
AHE34C AHE36C AHE42D	6HK16501506	60.0	26.2	43.3	–	29.0	50.0	–	30	45	–	30	50	–	10	8	–	10	8	–									
	6HK16501806	72.0	43.5	39.0	–	49.0	45.0	–	45	40	–	50	45	–	8	8	–	8	8	–									
	6HK16502006	80.0	47.8	43.3	–	54.0	50.0	–	50	45	–	60	50	–	8	8	–	6	8	–									
AHE48D	6HK16501306	52.0	25.4	37.6	–	27.8	43.3	–	30	40	–	30	45	–	10	8	–	10	8	–									
	6HK16501506	60.0	28.3	43.3	–	31.1	50.0	–	30	45	–	35	50	–	10	8	–	8	8	–									
	6HK16501806	72.0	45.6	39.0	–	51.1	45.0	–	50	40	–	60	45	–	8	8	–	6	8	–									
	6HK16502006	80.0	49.9	43.3	–	56.1	50.0	–	50	45	–	60	50	–	8	8	–	6	8	–									
AHE60D	6HK16501306	52.0	25.4	37.6	–	27.8	43.3	–	30	40	–	30	45	–	10	8	–	10	8	–									
	6HK16501506	60.0	28.3	43.3	–	31.1	50.0	–	30	45	–	35	50	–	10	8	–	8	8	–									
	6HK16501806	72.0	45.6	39.0	–	51.1	45.0	–	50	40	–	60	45	–	8	8	–	6	8	–									
	6HK16502006	80.0	49.9	43.3	–	56.1	50.0	–	50	45	–	60	50	–	8	8	–	6	8	–									
	6HK16502506	100.0	49.9	43.3	21.7	56.1	50.0	25.0	50	45	25	60	50	25	8	8	10	6	8	10									

1. MOP = Maximum Overcurrent Protection device; must be HACR type circuit breaker or time delay fuse.

2. Stated sizes are for 75°C, copper wire only. If wire other than non-plated, 75°C ambient, copper wire is used, consult applicable tables of the NEC and local codes.

3. 1st Circuit includes the blower motor amps.

TABLE 8: ELECTRICAL DATA FOR SINGLE SOURCE POWER SUPPLY - 208/230-3-60

Air Handler Models	Heater Models	Heater Amps @ 240V	Field Wiring					
			Min. Circuit Ampacity		MOP ¹		Min. Wire Size (AWG) ²	
			208V	230V	208V	230V	208V	230V
AHE22B AHE24B AHE30B	6HK06501025	23.1	28.5	32.4	30	35	10	8
	6HK06501525	34.6	41.0	46.8	45	50	8	8
AHE34C AHE36C AHE42D	6HK06501025	23.1	30.2	34.0	30	35	10	8
	6HK06501525	34.6	42.6	48.4	45	50	8	8
	6HK06501825	41.6	50.2	57.1	60	60	6	6
	6HK16502025 ³	46.2	55.2	62.9	60	70	6	6
AHE48D	6HK06501025	23.1	32.5	36.4	35	40	8	8
	6HK06501525	34.6	45.0	50.8	45	60	8	6
	6HK06501825	41.6	52.6	59.5	60	60	6	6
	6HK16502025 ³	46.2	57.6	65.3	60	70	6	4
AHE60D	6HK06501025	23.1	32.5	36.4	35	40	8	8
	6HK06501525	34.6	45.0	50.8	45	60	8	6
	6HK06501825	41.6	52.6	59.5	60	60	6	6
	6HK16502025 ³	46.2	57.6	65.3	60	70	6	4
	6HK16502525 ³	57.7	70.0	79.6	70	80	4	4

- MOP = Maximum Overcurrent Protection device; must be HACR type circuit breaker or time delay fuse.
- Stated sizes are for 75°C, copper wire only. If wire other than non-plated, 75°C ambient, copper wire is used, consult applicable tables of the NEC and local codes.
- The 20kW and 25kW heater models (6HK16502025 and 6HK16502525) come with circuit breakers standard. Single source power MCA and MOP requirements are given here only for reference if used with field installed single point power modification.

TABLE 9: ELECTRICAL DATA FOR MULTI-SOURCE POWER SUPPLY: 208/230-3-60

Air Handler Models	Heater Models	Total Heater Amps @ 240V	Min. Circuit Ampacity				MOP ¹				Min. Wire Size (AWG) ²			
			208V		230V		208V		230V		208V		230V	
			Circuit				Circuit				Circuit			
			1st ³	2nd	1st ³	2nd	1st ³	2nd	1st ³	2nd	1st ³	2nd	1st ³	2nd
AHE34C AHE36C AHE42D	6HK16502025	46.2	30.2	25.0	34.0	28.9	35	25	35	30	8	10	8	10
AHE48D	6HK16502025	46.2	32.5	25.0	36.4	28.9	35	25	40	30	8	10	8	10
AHE60D	6HK16502025	46.2	32.5	25.0	36.4	28.9	35	25	40	30	8	10	8	10
	6HK16502525	57.7	38.8	31.3	43.6	36.1	40	35	45	40	8	8	8	8

- MOP = Maximum Overcurrent Protection device; must be HACR type circuit breaker or time delay fuse.
- Stated sizes are for 75°C, copper wire only. If wire other than non-plated, 75°C ambient, copper wire is used, consult applicable tables of the NEC and local codes.
- 1st Circuit includes the fan motor.

TABLE 10: AIR FLOW DATA (CFM)¹

Models	Blower Motor Speed	External Static Pressure (in. wc.)						
		0.10	0.20	0.30	0.40	0.50	0.60	0.70
AHE18B	High #5	1075	1041	1003	970	930	885	842
	Med High #4	895	845	808	767	709	647	561
	Med #3	663	618	557	490	348	267	192
	Med Low #2	629	468	356	197	175	68	23
	Low #1	629	468	356	197	175	68	23
AHE22B AHE24B AHE30B	High #5	1156	1120	1093	1056	1014	951	862
	Med High #4	1021	987	952	918	873	836	787
	Med #3	829	789	754	698	654	585	532
	Med Low #2	681	621	575	496	435	336	262
	Low #1	598	503	437	340	259	203	74

Continuation on Page 12.

TABLE 10: AIR FLOW DATA (CFM)¹

Models	Blower Motor Speed	External Static Pressure (in. wc.)						
		0.10	0.20	0.30	0.40	0.50	0.60	0.70
AHE34C	High #5	1471	1429	1387	1337	1289	1233	1172
	Med High #4	1301	1248	1198	1147	1008	999	927
	Med #3	1097	1044	972	906	815	748	680
	Med Low #2	943	868	768	689	617	566	520
	Low #1	869	668	515	424	365	287	NA
AHE36C	High #5	1465	1415	1360	1307	1246	1183	1118
	Med High #4	1260	1204	1142	1075	1008	946	876
	Med #3	1088	1022	939	862	782	721	626
	Med Low #2	998	810	717	630	562	493	444
	Low #1	903	707	411	323	265	152	NA
AHE42D	High #5	1632	1589	1542	1494	1446	1391	1335
	Med High #4	1430	1390	1346	1294	1238	1168	960
	Med #3	1238	1198	1145	1082	993	908	805
	Med Low #2	1118	1020	947	851	734	666	563
	Low #1	998	772	477	418	349	NA	NA
AHE48D	High #5	1861	1823	1787	1750	1708	1666	1620
	Med High #4	1674	1640	1599	1562	1516	1472	1432
	Med #3	1442	1405	1358	1311	1262	1197	1108
	Med Low #2	1257	1220	1163	1103	1031	942	864
	Low #1	1153	1031	967	867	764	718	633
AHE60D	High #5	2091	2053	2016	1975	1937	1906	1869
	Med High #4	1903	1868	1832	1791	1748	1703	1660
	Med #3	1634	1598	1562	1516	1468	1422	1350
	Med Low #2	1447	1404	1361	1318	1257	1164	1092
	Low #1	1268	1203	1148	1073	978	907	839

1. Air handler units have been tested to UL 1995 / CSA 22.2 standards up to 0.30" wc. external static pressure.

Dry coil conditions only, tested without filters.

For optimal performance, external static pressures of 0.2" to 0.5" are recommended. Applications above 0.6" are not recommended.

Airflow data shown is from testing performed at 230V. AHE units use a X13 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 IX: MAINTENANCE

Filters must be cleaned or replaced when they become dirty. Inspect at least once per month. The frequency of cleaning depends upon the hours of operation and the local atmospheric conditions. Clean filters keep unit efficiency high.

COIL CLEANING

If the coil needs to be cleaned, it should be wash with a evaporator coil cleaner. Follow directions from coil cleaner.

LUBRICATION

The bearings of the blower motor are permanently lubricated.

CONDENSATE DRAINS

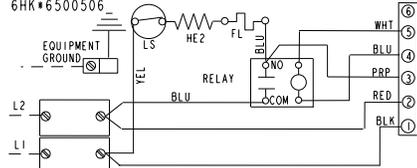
During the cooling season check the condensate drain lines to be sure that condensate is flowing from the primary drain but not from the secondary drain. If condensate ever flows from the secondary drain the unit should be promptly shut off and the condensate pan and drains cleaned to insure a free flowing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

SECTION X: WIRING DIAGRAM

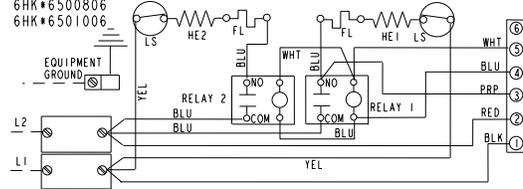
WHEN INSTALLING HEATER KIT, BE SURE THE BLOWER SPEED IS SET TO THE SPEED SPECIFIED FOR THE AIR HANDLER/HEATER KIT COMBINATION ON THIS UNIT'S INSTALLATION INSTRUCTIONS.

SEE INSTALLATION INSTRUCTIONS FOR PROPER LOW VOLTAGE FIELD WIRING CONNECTIONS.

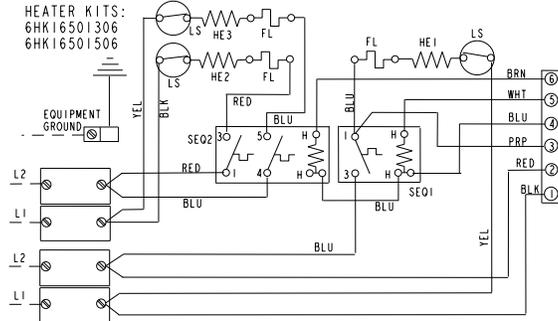
HEATER KITS:
6HK#6500206
6HK#6500506



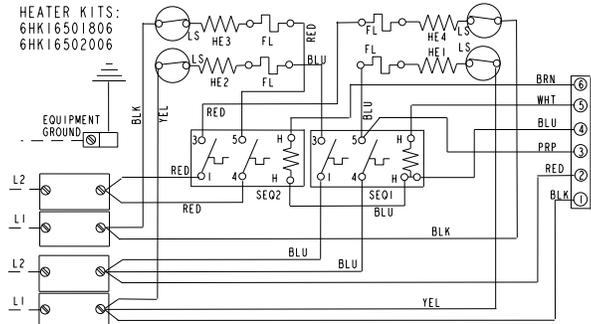
HEATER KITS:
6HK#6500806
6HK#6501006



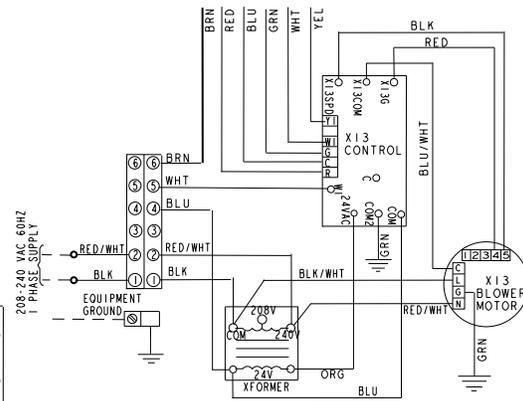
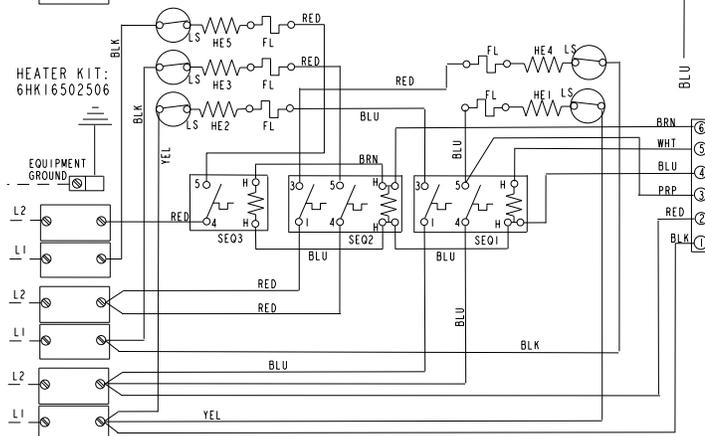
HEATER KITS:
6HK16501306
6HK16501506



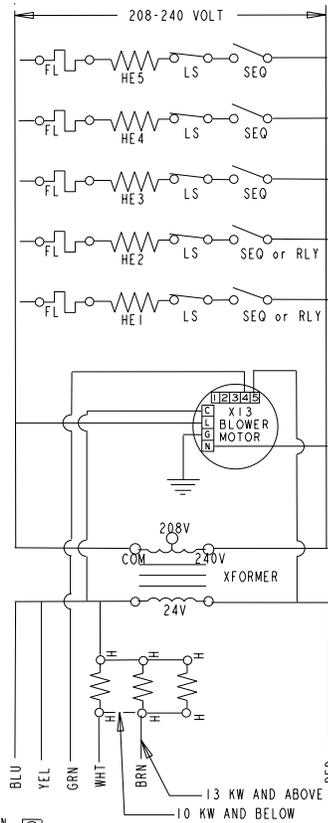
HEATER KITS:
6HK16501806
6HK16502006



HEATER KIT:
6HK16502506



AIR HANDLER - WITH NO HEAT KIT WIRING DIAGRAM



LEGEND
LS - LIMIT SWITCH
SEO - SEQUENCER
HE - HEATING ELEMENT
FL - FUSIBLE LINK
H - SEQUENCER HEATER
RC - RUN CAPACITOR

USE COPPER CONDUCTORS ONLY.
IF ALUMINUM CONDUCTORS ARE PRESENT,
ALL APPLICABLE LOCAL AND NATIONAL
CODES MUST BE FOLLOWED.

661691-UWD-B-0111

FIGURE 15: Wiring Diagram - ECM - Single Phase Heat Kits

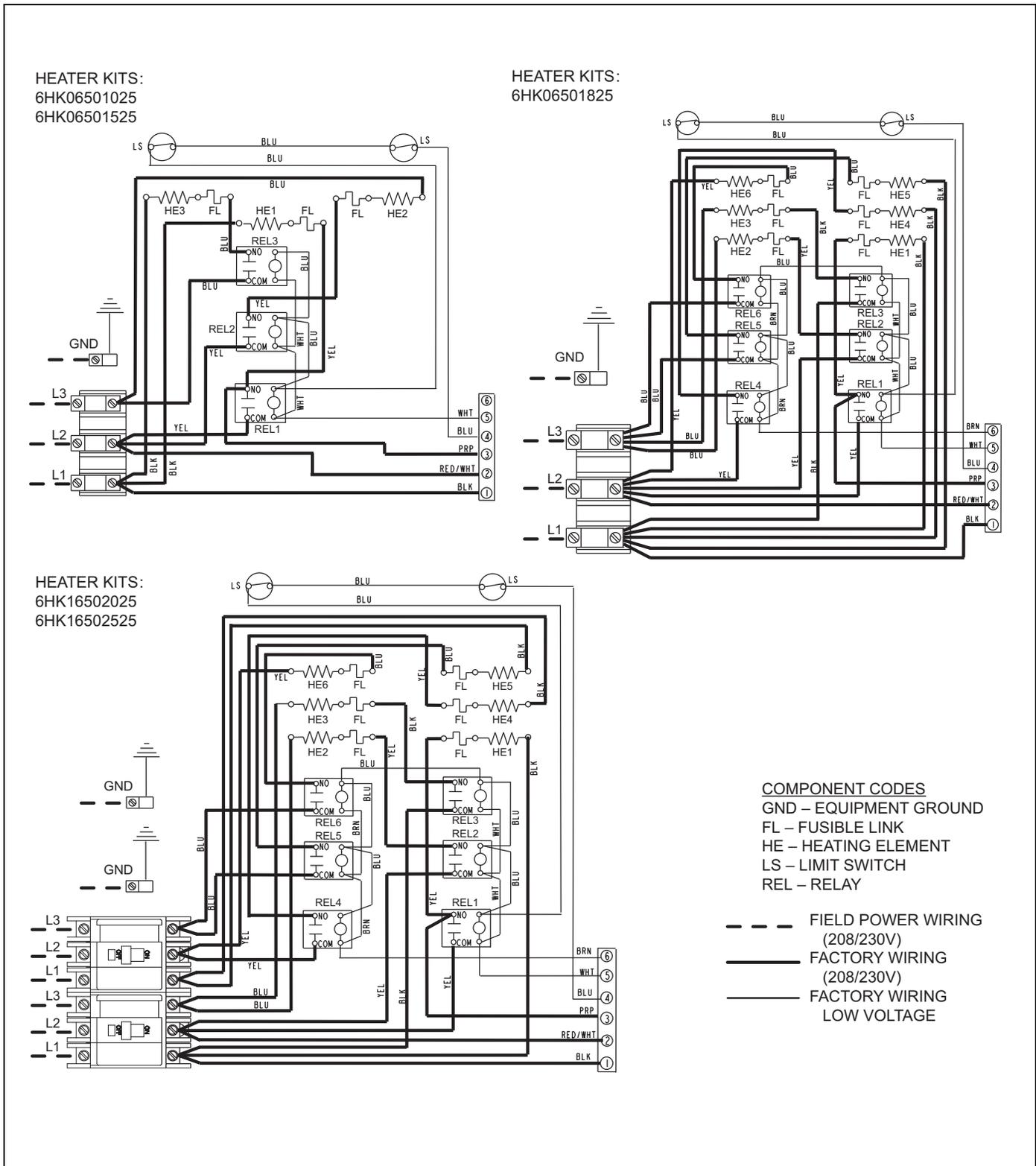
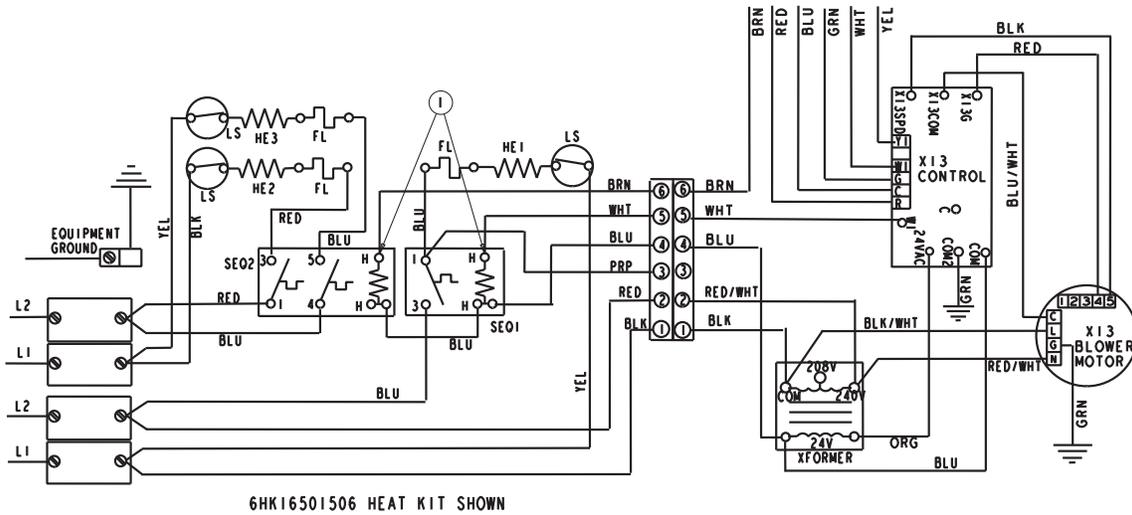
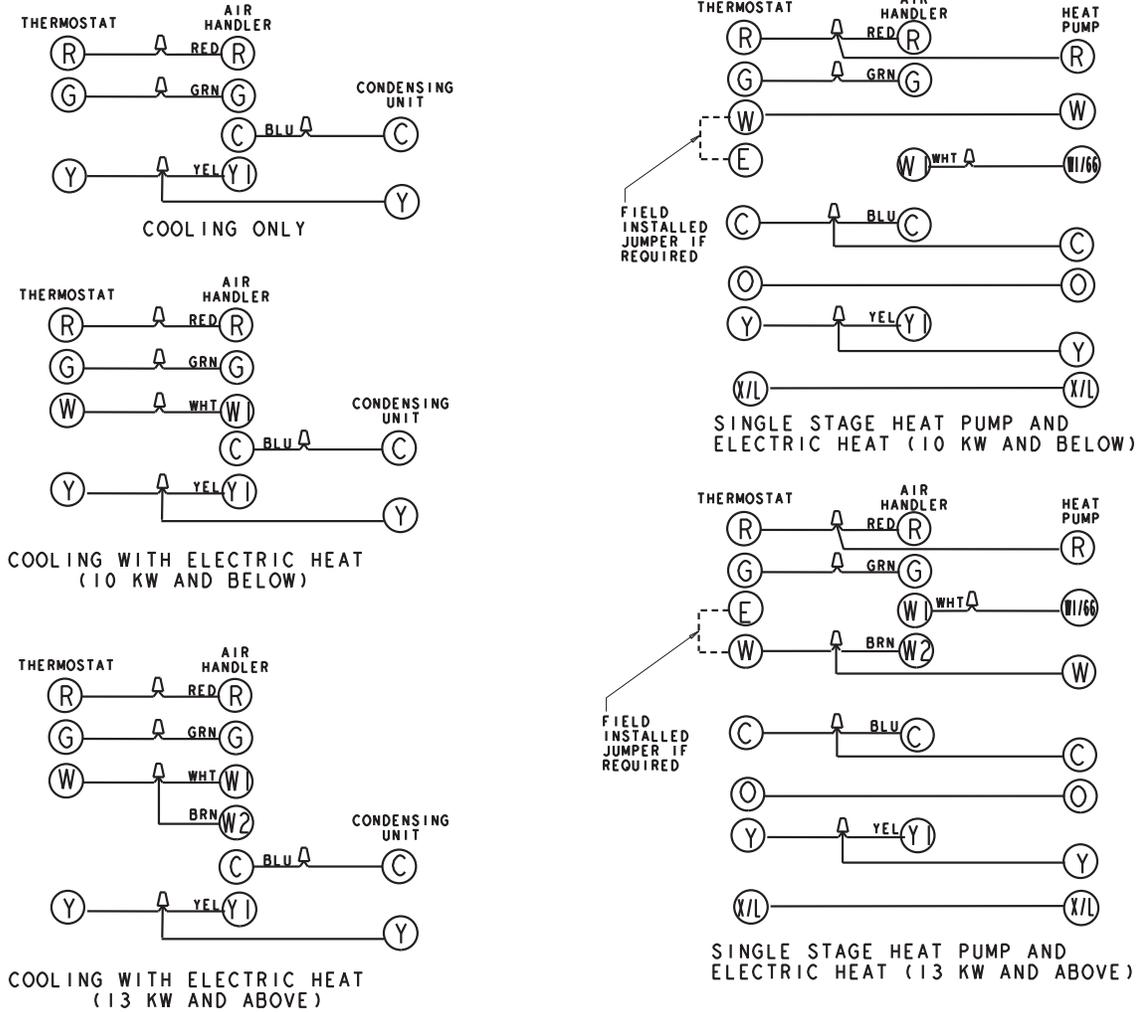


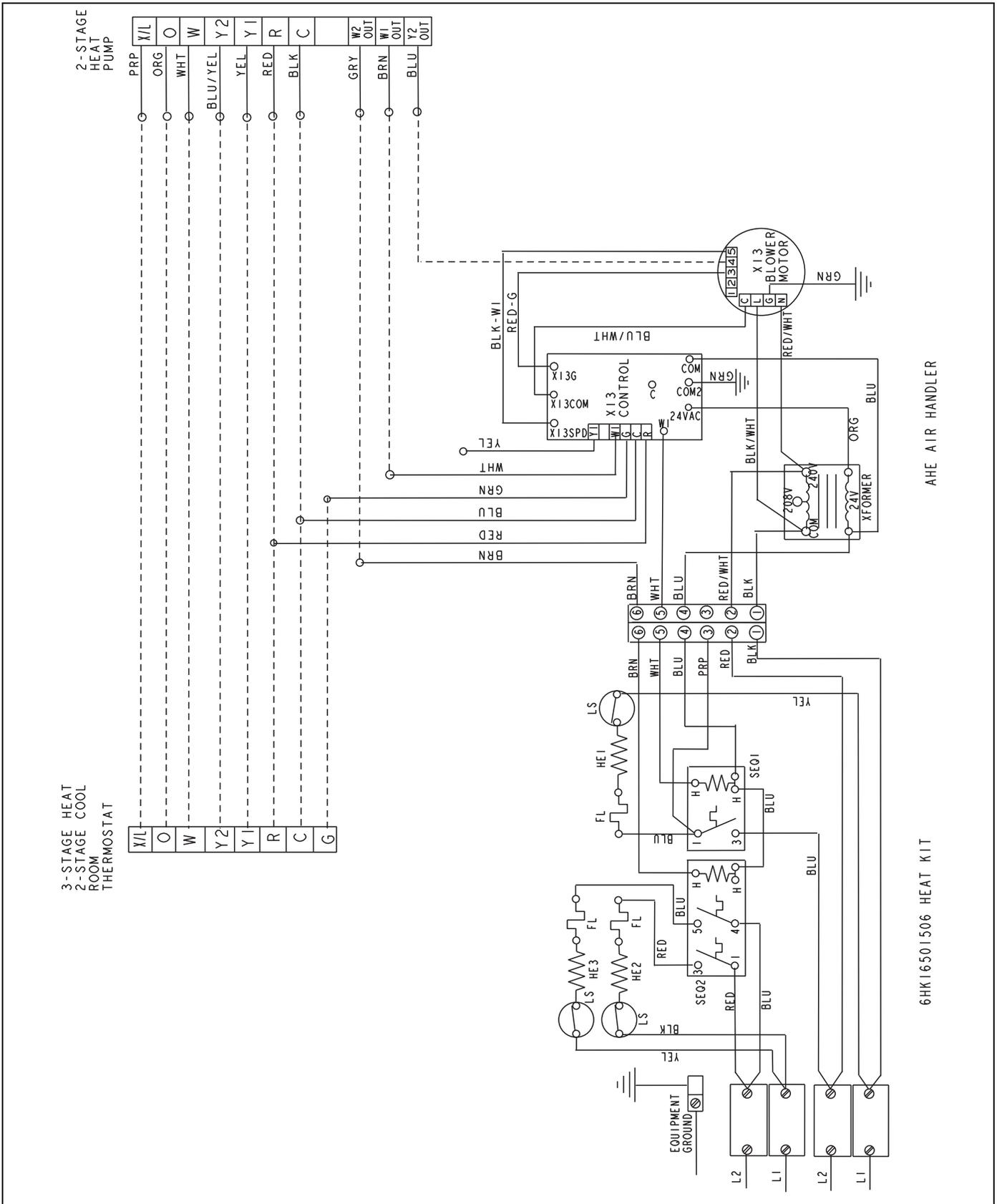
FIGURE 16: Wiring Diagram - 3 Phase Heat Kits

SECTION XI: TYPICAL THERMOSTAT CONNECTIONS



TO CHANGE THE QUANTITY OF HEAT DURING HEAT PUMP DEFROST CYCLE ① REVERSE THE BROWN AND WHITE WIRE CONNECTIONS ON THE SEQUENCERS IN THE HEATER KIT.

FIGURE 17: Typical Wiring Diagram - ECM



AHE AIR HANDLER

6HK16501506 HEAT KIT

FIGURE 18: Typical Thermostat Wiring for 2-Stage Heat Pump with ECM Blower Motor - ECM

SECTION XII: START UP SHEET

Print Form

Residential Air Handler
with Electric Heat Start-Up Sheet

Reset Form

Proper 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 # Unit Serial #

General Information (Check all that apply)

New Construction Up flow Horizontal Left
 Retrofit Down flow Horizontal Right

Unit Location and Connections (Check all that apply)

Unit is level Duct connections are complete: Supply Return
 Condensate drain properly connected per the installation instructions Condensate trap has been primed with water

Filters

Filters installed Number of filters Filter size

Electrical Connections & Inspection (Complete all that apply)

208 volts AC 230 volt AC
 Inspect wires and electrical connections Transformer wired properly for primary supply voltage Ground connected
 Line Voltage Measured (Volts AC) Low voltage value between "R" and "C" at control board (Volts AC)
 Thermostat wiring is complete Thermostat cycle rate or heat anticipator adjusted to Installation Manual specifications

Air Flow Setup

Blower Type & Set-Up	<input type="radio"/> ECM	COOL <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D
		ADJUST <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D
		DELAY <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D
		HEAT <input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input type="radio"/> D
<input type="radio"/> X-13	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5	
<input type="radio"/> PSC	<input type="radio"/> Low <input type="radio"/> Medium Low <input type="radio"/> Medium <input type="radio"/> Medium High <input type="radio"/> High	

Supply static (inches of water column) <input type="text"/>	Supply air dry bulb temperature <input type="text"/>	Outside air dry bulb temperature <input type="text"/>
Return static (inches of water column) <input type="text"/>	Return air dry bulb temperature <input type="text"/>	Return air wet bulb temperature <input type="text"/>
Total external static pressure <input type="text"/>	Temperature drop <input type="text"/>	Supply air wet bulb temperature <input type="text"/>

Other Jumpers (Check all that apply)

HUM STAT YES NO AC/HP AC HP CONT FAN L M H

Continued on next Page

Electric Heat (Complete all that apply)

Electric heat kit - Model number		Serial number		Rated KW	
Number of elements	Measured Amperage	Heater 1	Heater 2	Heater 3	
		Heater 4	Heater 5	Heater 6	
	Measured Voltage	Heater 1	Heater 2	Heater 3	
		Heater 4	Heater 5	Heater 6	
Heating return air dry bulb temperature		Heating supply air dry bulb temperature		Air temperature rise	

Clean Up Job Site

- Job site has been cleaned, 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 owner with the owner's manual
- Explain operation of system to equipment owner
- Explain thermostat use and programming (if applicable) to owner
- Explain the importance of regular filter replacement and equipment maintenance

Comments and Additional Job Details