SINGLE PIECE, 3 POSITION

AIR HANDLERS

MODELS: 41HP SERIES







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SECTION I: GENERAL

The AHR 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, <u>will result in death or serious injury</u>.

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

Electrical Data For Single Source Power Supply: 208/230-1-60 9 Electrical Data For Multi-Source Power Supply: 208/230-1-60 10 Electrical Data For Single Source Power Supply: 208/230-3-60 11 Electrical Data For Multi-Source Power Supply: 208/230-3-60 11

A 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.

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.



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.

- 1. Install this air handler only in a location and position as specified in SECTION III of these instructions.
- 2. Always install the air handler to operate within the air handler's intended maximum outlet air temperature. Only connect the air handler to a duct system which has an external static pressure within the allowable range, as specified on the air handler rating plate.
- 3. 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 shall also be handled by duct(s) sealed to the air handler casing and terminating in the space to be cooled/ heated.
- 4. The air handler is not to be used for temporary heating of buildings or structures under construction.
- The size of the unit should be based on an acceptable heat loss or gain calculation for the structure. ACCA, Manual J or other approved methods may be used.

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.
- Failure to carefully read and follow all instructions in this manual can result in air handler malfunction, death, personal injury and/or property damage.
- 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

TABLE 1:	Dimensions ¹
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			Dim	ensions	Wiring Knoo	Refrigerant Connections				
Models	Α	В	С	D	Е	F	J K		Line Size	
	Height	Width	Depth	_	-		Power	Control	Liquid	Vapor
AHR18B/AHR24B/ AHR30B/AHR36B	46	17 1/2	21 1/2	16 1/2	13-29/32	16 1/2	7/8 (1/2)	7/9 (1/2)	2/9	3/4
AHR 42C	52	21	21 1/2 21 1/2 17-13/32 20 1-3/8(1) 1-23/32 (1-1/4)		7/8 (1/2)	3/8				
AHR48D/AHR60D	57	24 1/2		26	20-29/32	23-1/2	1 20/02 (1 1/1)			7/8

1. All dimensions are in inches.

2. Actual size (conduit size).

SECTION III: UNIT INSTALLATION

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.

- Normal operating sound levels may be objectionable if the air handler is placed directly over some rooms such as bedrooms, study, etc.
- 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.



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

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 sclips 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.



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







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

AWARNING

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 though 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 6.

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.





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.

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

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 contaminates 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

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:



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

- 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.
- 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.
- 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.



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.



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.

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.





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 throught 9 to determine proper wire sizing. Also see Figure 2. 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.



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

NOTICE

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.

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		AHR18B	AHR24B	AHR30B	AHR36B	AHR42C	AHR48D	AHR60D		
Blower - Diameter x	10 x 8	10 x 8	10 x 8	10 x 8	10 x 10	10X10	10X10			
Motor	HP	1/4 HP	1/4 HP	3/4 HP						
Wotor	Nominal RPM	1075	1075	1075	1075	1075	1075	1075		
Voltage		208/230	208/230	208/230	208/230	208/230	208/230	208/230		
Full Load Amps @23	Full Load Amps @230V			3.0	3.0	3.0	3.0	3.0		
	Туре	DISPOSABLE OR PERMANENT								
Filter ¹	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	22 x 20 x 1	22 x 20 x 1		
	Permanent Type Kit	1PF0601BK	1PF0601BK	1PF0601BK	1PF0601BK	1PF0602BK	1PF0603BK	1PF0603BK		
Shipping / Operating	112/100	117/102	117/105	122/110	148/133	165/147	168/150			

1. Field Supplied.

TABLE 3: Electrical Data - Cooling Only

Models	Motor FLA ¹	Minimum Circuit Ampacity MOP ²		Minimum Circuit Ampacity MOP ²		Minimum Wire Size (AWG) ³
AHR18B / AHR24B	1.4	1.8	15	14		
AHR30B / AHR36B / AHR42C / AHR48D / AHR60D	3.0	3.8	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: ELECTRICAL HEAT: MINIMUM FAN SPEED

Heater Kit Medala ^{1,2}	els							
Heater Kit wodels"	@240V	AHR18B	AHR24B	AHR30B	AHR36B	AHR42C	AHR48D	AHR60D
6HK(0,1)6500206	2.4kW	Low						
6HK(0,1)6500506	4.8kW	Med	Low	Low	Low	Low	Low	Low
6HK(0,1)6500806	7.7kW	Med	Med	Med	Med	Med	Low	Low
6HK(0,1)6501006 6HK06501025	9.6kW	Med	High	Med	High	Med	Med	Med
6HK(1,2)6501306	12.5kW	-	High	High	High	High	Med	Med
6HK(1,2)6501506 6HK06501525	14.4kW	-	High	High	High	High	Med	Med
6HK(1,2)6501806 6HK06501825	17.3kW	-	-	-	High	-	Med	Med
6HK(1,2)6502006 6HK16502025	19.2kW	-	-	-	High	-	High	High
6HK(1,2)6502506 6HK16502525	24kW	-	-	-	-	-	-	High

(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 IAM		Total	Heat ³		kW Staging				
		@240V	kW		MBH		W1 Only		W1 + W2		
		_	208V	230V	208V	230V	208V	230V	208V	230V	
	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	
1PH	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	
	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	
3PH	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	

1. (0,1) - 0 = no circuit breaker OR 1 = with circuit breaker.

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

3. For different power distributions, see conversion table on Page 4.

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

	Heater	Heater	Field Wiring						
Air Handler Models	Models ^{1,2}	Amps	Amps Min. Circuit Ampacity)P. ³	Min Wire S	Min Wire Size (AWG) ⁴	
	mouolo	@240V	208V	230V	208V	230V	208V	230V	
	6HK(0,1)6500206	10.0	12.6	14.3	15	15	12	12	
	6HK(0,1)6500506	20.0	23.4	26.8	25	30	10	10	
ARKIOD	6HK(0,1)6500806	32.0	36.4	41.8	40	45	8	8	
	6HK(0,1)6501006	40.0	45.1	51.8	50	60	8	6	
	6HK(0,1)6500206	10.0	12.6	14.3	15	15	12	12	
	6HK(0,1)6500506	20.0	23.4	26.8	25	30	10	10	
	6HK(0,1)6500806	32.0	36.4	41.8	40	45	8	8	
ALINZ4D	6HK(0,1)6501006	40.0	45.1	51.8	50	60	8	6	
	6HK(1,2)6501306	52.0	58.1	66.8	60	70	6	4	
	6HK(1,2)6501506	60.0	66.8	76.8	70	80	4	4	

Continuation on Page 10.

		Heater	Field Wiring										
Air Handler Models	Heater	Amps	Min. Circui	it Ampacity	МС)P. ³	Min Wire S	ize (AWG) ⁴					
	Woders	@240V	208V	230V	208V	230V	208V	230V					
	6HK(0,1)6500206	10.0	14.6	16.3	15	20	12	12					
	6HK(0,1)6500506	20.0	25.4	28.8	30	30	10	10					
AHR30B	6HK(0,1)6500806	32.0	38.4	43.8	40	45	8	8					
AHR42C	6HK(0,1)6501006	40.0	47.1	53.8	50	60	6	6					
	6HK(1,2)6501306	52.0	60.1	68.8	70	70	6	4					
	6HK(1,2)6501506	60.0	68.8	78.8	70	80	4	4					
	6HK(0,1)6500206	10.0	14.6	16.3	15	20	12	12					
	6HK(0,1)6500506	20.0	25.4	28.8	30	30	10	10					
	6HK(0,1)6500806	32.0	38.4	43.8	40	45	8	8					
AHR36B	6HK(0,1)6501006	40.0	47.1	53.8	50	60	8	6					
AHR48D	6HK(1,2)6501306	52.0	60.1	68.8	70	70	6	4					
	6HK(1,2)6501506	60.0	68.8	78.8	70	80	4	4					
	6HK(1,2)6501806	72.0	81.8	93.8	90	100	4	3					
	6HK(1,2)6502006	80.0	90.4	103.8	100	110	3	2					
	6HK(0,1)6500206	10.0	14.6	16.3	15	20	12	12					
	6HK(0,1)6500506	20.0	25.4	28.8	30	30	10	10					
	6HK(0,1)6500806	32.0	38.4	43.8	40	45	8	8					
	6HK(0,1)6501006	40.0	47.1	53.8	50	60	8	6					
AHR60D	6HK(1,2)6501306	52.0	60.1	68.8	70	70	6	4					
	6HK(1,2)6501506	60.0	68.8	78.8	70	80	4	4					
	6HK(1,2)6501806	72.0	81.8	93.8	90	100	4	3					
-	6HK(1,2)6502006	80.0	90.4	103.8	100	110	3	2					
	6HK(1,2)6502506	100.0	112.1	128.8	125	150	2	1					

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

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

(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	CONDRE DOWED	21 IDDI V. 200/220 1 60
TABLE I. ELECTRICAL	SOURCE FOWER	JUFFLI. 200/230-1-00

A :		Total		Min. Circuit Ampacity						MC)P ¹			Min. Wire Size (AWG) ²						
Air	Heater	Heater		208V			230V			208V			230V			208V			230V	
Models	Models	Amps		Circuit				Circuit						Circuit						
		@240V	1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd	1st ³	2nd	3rd
	6HK16501306	52.0	20.6	37.6	-	23.4	43.3	-	25	40	-	25	45	-	10	8	-	10	8	-
ANK24D	6HK16501506	60.0	23.5	43.3	-	26.8	50.0	-	25	45	-	30	50	-	10	8	-	10	8	-
AHR30B	6HK16501306	52.0	22.6	37.6	-	25.4	43.3	-	25	40	-	30	45	-	10	8	-	10	8	-
AHR42C	6HK16501506	60.0	25.5	43.3	-	28.8	50.0	-	30	45	-	30	50	-	10	8	-	10	8	-
	6HK16501306	52.0	22.6	37.6	-	25.4	43.3	-	25	40	-	30	45	-	10	8	-	10	8	-
AHR36B	6HK16501506	60.0	25.5	43.3	-	28.8	50.0	-	30	45	-	30	50	-	10	8	-	10	8	-
AHR48D	6HK16501806	72.0	42.8	39.0	-	48.8	45.0	-	45	40	-	50	45	-	8	8	-	8	8	-
	6HK16502006	80.0	47.1	43.3	-	53.8	50.0	-	50	45	-	60	50	-	8	8	-	6	8	-
	6HK16501306	52.0	22.6	37.6	-	25.4	43.3	-	25	40	-	30	45	-	10	8	-	10	8	-
	6HK16501506	60.0	25.5	43.3	-	28.8	50.0	-	30	45	-	30	50	-	10	8	-	10	8	-
AHR60D	6HK16501806	72.0	42.8	39.0	-	48.8	45.0	-	45	40	-	50	45	-	8	8	-	8	8	-
	6HK16502006	80.0	47.1	43.3	-	53.8	50.0	-	50	45	-	60	50	-	8	8	-	6	8	-
	6HK16502506	100	47.1	43.3	21.7	53.8	50.0	25.0	50	45	25	60	50	25	6	6	10	6	8	10

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 blower motor amps.

		Heater			Field	Wiring				
Air Handler Models	Heater Models	Amps	Min. Circu	it Ampacity	M	OP ¹	Min. Wire	Min. Wire Size (AWG) ²		
		@ 240V	208V	230V	208V	230V	208V	230V		
	6HK06501025	23.1	26.8	30.7	30	35	10	10		
ARK24D	6HK06501525	34.6	39.2	45.0	40	45	8	8		
AHR30B	6HK06501025	23.1	28.8	32.7	30	35	10	8		
AHR42C	6HK06501525	34.6	41.2	47.0	45	50	8	8		
	6HK06501025	23.1	28.8	32.7	30	35	10	8		
AHR36B	6HK06501525	34.6	41.2	47.0	45	50	8	8		
AHR48D	6HK06501825	41.6	48.8	55.8	50	60	8	6		
	6HK16502025 ³	46.2	53.8	61.5	60	70	6	6		
	6HK06501025	23.1	28.8	32.7	30	35	10	8		
	6HK06501525	34.6	41.2	47.0	45	50	8	8		
AHR60D	6HK06501825	41.6	48.8	55.8	50	60	8	6		
	6HK16502025 ³	46.2	53.8	61.5	60	70	6	6		
	6HK16502525 ³	57.7	66.3	75.9	70	80	4	4		

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

1. 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

			Min. Circuit Ampacity				MOP ¹				Min. Wire Size (AWG) ²			
Air Handlor Models	Heater	Total Heater	20	208V		230V		208V		0V	208V		230V	
All Handler Models	Models	@ 240V	Circuit			Circuit				Circuit				
			1st ³	2nd	1st ³	2nd	1st ³	2nd	1st ³	2nd	1st ³	2nd	1st ³	2nd
AHR36B AHR48D	6HK16502025	46.2	28.8	25.0	32.6	28.9	30	25	35	30	10	10	8	10
AHREOD	6HK16502025	46.2	28.8	25.0	32.6	28.9	30	25	35	30	10	10	8	10
	6HK16502525	57.7	35.0	31.3	39.8	36.1	35	35	40	40	8	8	8	8

1. 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 blower motor amps.

TABLE 10: AIR FLOW DATA (CFM)¹

Madala	Blower			External S	Static Pressu	re (in. wc.)		
woders	Motor Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70
			208 Volt					
	High	1024	1000	970	930	860	810	NA
AHR18B3XH21	Medium	756	731	700	670	620	550	NA
	Low	557	531	495	445	375	315	195
	High	995	970	935	900	925	795	645
AHR24B3XH21	Medium	820	810	780	745	695	545	485
	Low	715	695	640	405	370	375	220
	High	1380	1315	1245	1160	1075	990	885
AHR30B3XH21	Medium	1060	1040	1005	955	890	860	820
	Low	1035	980	910	825	770	685	485
	High	1410	1335	1270	1190	1110	990	820
AHR36B3XH21	Medium	1215	1170	1115	1050	935	850	740
	Low	950	935	895	855	NA	NA	NA
	High	1800	1725	1645	1545	1360	1200	1050
AHR42C3XH21	Medium	1535	1480	1415	1280	1155	1010	870
	Low	1225	1195	1095	1025	925	825	680

Continuation on Page 12.

TABLE 10: AIR FLOW DATA (CFM)¹

Madala	Blower			External	Static Pressu	re (in. wc.)		
Models	Motor Speed	0.10	0.20	0.30	0.40	0.50	0.60	0.70
	High	1890	1830	1755	1650	1565	1450	1285
AHR48D3XH21	Medium	1515	1480	1450	1380	1295	1115	985
	Low	1170	1165	1140	1100	965	860	745
	High	1911	1841	1757	1668	1564	1439	1233
AHR60D3XH21	Medium	1556	1507	1450	1388	1266	1246	989
	Low	1211	1181	1151	1062	992	911	827
		-	230 Volt					
	High	1145	1100	1055	1005	930	845	725
AHR18B3XH21	Medium	755	750	725	665	605	485	435
	Low	680	655	625	585	540	395	300
	High	1305	1285	1225	1175	920	915	835
AHR24B3XH21	Medium	930	920	890	845	705	760	505
	Low	735	730	700	670	545	470	NA
	High	1450	1380	1300	1215	1130	1030	910
AHR30B3XH21	Medium	1330	1280	1205	1135	1050	975	780
	Low	1160	1120	1065	1005	930	825	635
	High	1470	1390	1325	1245	1155	1045	880
AHR36B3XH21	Medium	1325	1265	1205	1125	1025	965	840
	Low	1115	1075	1025	950	NA	NA	NA
	High	1750	1670	1570	1477	1260	1125	935
AHR42C3XH21	Medium	1590	1520	1435	1277	1150	1010	870
	Low	1330	1280	1200	1083	980	850	NA
	High	2005	1940	1850	1755	1650	1530	1405
AHR48D3XH21	Medium	1705	1665	1605	1510	1425	1340	1185
	Low	1355	1330	1300	1245	1170	990	980
	High	2034	1955	1858	1753	1640	1522	1296
AHR60D3XH21	Medium	1733	1672	1609	1527	1431	1272	1220
	Low	1388	1359	1313	1255	1133	1004	912

 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.

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 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 evaportor coil cleaner. Follow directions from coil cleaner.

SECTION X: WIRING DIAGRAM



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



FIGURE 16: Wiring Diagram - 3 Phase Heat Kits

SECTION XI: TYPICAL THERMOSTAT CONNECTIONS



FIGURE 17: Typical Wiring Diagram - PSC

SECTION ALL START OF SHEET	SECTION	XII:	START	UP	SHEET
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Print Form	Residential Air Handler with Electric Heat Start-Up Sheet											
	Proper start	-up is critical to cu	stomer comfort a	nd equipn	nent longevity							
Start-Up Date	Company Nar	ne		Start-Up 7	Fechnician							
Owner Information												
Name	Ade	dress			Daytime Phone							
City		State or Province			Zip or Postal Code							
Equipment Data												
Unit Model #		Unit Serial #	ŧ									
General Informatio	n (Check all tha	it apply)										
O New Construction		O Up flow		0	Horizontal Left							
Retrofit		O Down flow		0	Horizontal Right							
Unit Location and	Connections	(Check all that ap	oply)									
Unit is level		connections are co	omplete: 🗌 Su	pply	Return							
Condensate drain pro	perly connected	per the installation	instructions	Conde	ensate trap has been	primed with water						
Filters												
Filters installed Nur	mber of filters	Filter size										
Electrical Connecti	ions & Inspe	ction (Complete	all that apply)									
○ 208 volts AC	230 volt AC											
Inspect wires and elect	trical connection	s 🗌 Transform	er wired properly	for primary	y supply voltage	Ground connected						
Line Voltage Measured (Volts AC)	Low voltag	ge value between	"R" and "C"	' at control board (Vo	lts AC)						
Thermostat wiring	is complete 🛛	Thermostat cycle r	ate or heat anticip	ator adjus	ted to Installation Ma	nual specifications						
Air Flow Setup	_											
		COOL OA	0	В	⊖ c	⊖ D						
Plawar Typa	⊂ FCM	ADJUST OA	0	В	⊖ C	⊖ D						
ыоwei туре &		DELAY OA	0	В	⊖ c	⊖ D						
Set-Up		HEAT OA	0	В	⊖ c	⊖ D						
	○ X-13	01 02	0	3	<u> </u>	<u> </u>						
	⊖ PSC		edium Low	Medium	🔿 Medium Hig	h 🔿 High						
Supply static (inches of w	ater column)	Supply air dry	bulb temperature		Outside air dry bulb 1	temperature						
Return static (inches of wa	ater column)	Return air dry	bulb temperature		Return air wet bulb t	emperature						
Total external static press	sure	Temperature	drop		Supply air wet bulb t	emperature						
Other Jumpers (Che	eck all that apply	/)										
HUM STAT 🔿 YI	ES 🔿 NO	AC/HP	AC 🔿 HP	CON	IT FAN 🔿 L	ОМ ОН						

Continued on next Page

Electric Heat (Complete all that apply)

Electric heat kit - Mo	del number			Serial	numbe	r		R	ated KW	
			Heater 1			Heat	er 2	Heater	.3	
Number	Measu	red Ampe	rage Heater 4			Heat	er 5	Heater	6	
of elements			Heater 1			Heat	er 2	Heater	· 3	
	Meas	ured Volta	ge Heater 4			 Heat	er 5	Heater	6	
Heating return air			Heating supply a	ir 🗌					<u> </u>	
dry bulb temperatur	re		dry bulb temperat	ure				Air temperature rise		
Clean Up Job Sit	е		l							
Job site has been o	cleaned, indo	or and ou	tdoor debris remove	d from	job site					
Tools have been re	emoved from	unit								
All panels have be	en installed									
Unit Operation a	nd Cycle	Test (Co	mplete all that appl	y)						
Operate the unit t	hrough conti	inuous fan	cycles from the ther	mostat	, noting	and co	orrec	ting any problems		
Operate the unit t	hrough cooli	ng cycles f	rom the thermostat,	noting	and cor	recting	g any	<i>r</i> problems		
Operate the unit t	Operate the unit through mechanical heating cycles from the thermostat, noting and correcting any problems									
Operate the unit t	hrough emer	gency hea	iting cycles from the	thermo	ostat, no	ting ar	nd co	prrecting any problems		
Owner Education	1									
Provide owner wit	h the owner	s manual								
Explain operation	of system to	equipmer	nt owner							
Explain thermosta	t use and pro	ogrammin	g (if applicable) to ov	vner						
Explain the import	tance of regu	ılar filter re	placement and equi	pment	mainter	nance				
Comments and A	Additional	Job De	etails							

NOTES

661693-UIM-E-1212 Supersedes: 661693-UIM-D-1012