INSTALLATION MANUAL

STANDARD ECM MODULAR MULTI-POSITION AIR HANDLERS

MODELS: ME SERIES - 460 V - 3 PHASE

AMERICAN QUALITY DESIGNED, ENGINEERED & ASSEMBLED IN THE USA

AHRI CERTIFIED www.ahridirectory.org

C US

ISO 9001 Certified Quality Management System

LIST OF SECTIONS

LIST OF FIGURES

LIST OF TABLES

SECTION I: GENERAL

The ME modular 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 can be located in a closet, utility room, attic, crawl space, or basement. These versatile models can be used for cooling or heat pump operation with or without electric heat or an indoor coil.

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

Electric heat kits are available as field installed accessories. Three phase 460 V 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

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.

SAFETY REQUIREMENTS

- Failure to carefully read and follow all instructions in this manual can result in air handler malfunction, death, personal injury, and/or property damage.
- The air handler must be installed in accordance with all national and local building/safety codes and requirements, local plumbing or wastewater codes, and other applicable codes.
- The air handler must only be installed in a location and position specified in the Unit Installation section of this manual.
- The air handler is not to be used for temporary heating of buildings or structures under construction.
- Always install the air handler to operate within the intended maximum outlet air temperature of the air handler.
- The unit rating plate displays the air handler model number. The unit dimensions for the supply air plenum are provided in Figure 5 and Table 1 of this manual. The plenum must be installed according to the instructions. The return air duct attachment is shown in Figure 1.
- Clearance from combustible material is outlined in the Unit Installation section under Clearances.
- It is necessary to maintain clearances for servicing. Access must be allowed for electric heaters and blower.
- The unit rating plate and power supply must be verified to ensure that the electrical characteristics match.
- The air handler must be installed so the electrical components are protected from water.
- Installing and servicing heating/cooling equipment can be hazardous due to the electrical components. Only trained and licensed personnel should install, repair, or service heating/cooling equipment. Unlicensed service personnel can perform basic maintenance functions such as cleaning and replacing the air filters. When working on heating/cooling equipment, the precautions in the manuals, the precautions 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.

- 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 which do not reflect changing residential and non-HUD modular home construction practices. These instructions are required as a minimum for safe installation.

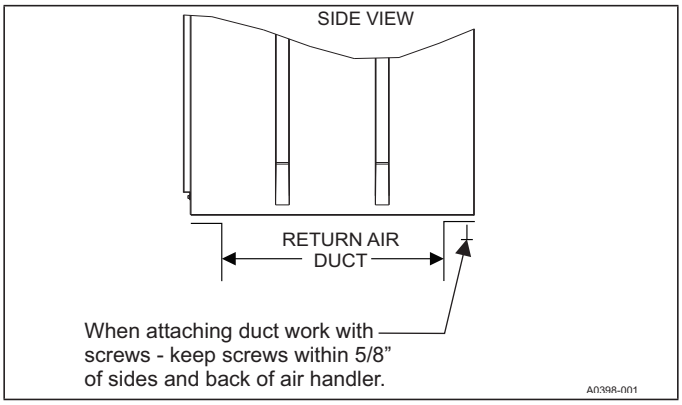


FIGURE 1: Return Air Duct Attachment

INSPECTION

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

Verify that all accessories such as heat 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, duct work, or piping.

SECTION III: UNIT INSTALLATION

UNIT SIZING

- The size of the unit must be based on an acceptable heat loss or gain calculation for the structure. The ACCA – Manual J or other approved methods may be used.
- 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 Temp.°F		Dry Bulb Temp. °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 must also be handled by ducts sealed to the air handler casing and terminating in the space to be cooled/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 the 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 [1] Voltage Range**
460-3-60	432–504

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

CLEARANCES

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

- Maintenance and servicing access - a minimum of 36" from the front of the unit is recommended for blower motor/coil replacement.
- The duct work connected to the unit is designed for zero clearance to combustible materials.
- A combustible floor base accessory is available for downflow applications of the unit, if required by local code.

LOCATION

The location is usually predetermined. Check the installation plans of the homeowner or dealer. If a location has not been decided, use the following to help identify a suitable location:

- Select a location with adequate structural support, space for service access, and clearance for air return and supply duct connections.
- Using hanging brackets to wall mount the single piece air handler unit is not recommended.
- Normal operating sound levels may be objectionable if the air handler is placed directly over certain rooms, for example, a bedroom or study.
- If using the air handler unit with an indoor coil, 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 should 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 an indoor coil is installed in an attic or above a finished ceiling, an auxiliary drain pan must be provided under the air handler as specified by most local building codes.
- Proper electrical supply must be available.
- If the unit is located in an area of high humidity (that is, an unconditioned garage or attic), nuisance sweating of casing may occur. For these installations, seal unit duct connections and other openings properly, and use a wrap of 2" fiberglass insulation with a vinyl vapor barrier.

AIR HANDLER CONFIGURATION

The air handler units are supplied ready to be installed in an upflow, downflow, horizontal right, or horizontal left position. See Figure 2. The unit requires no conversion procedures.

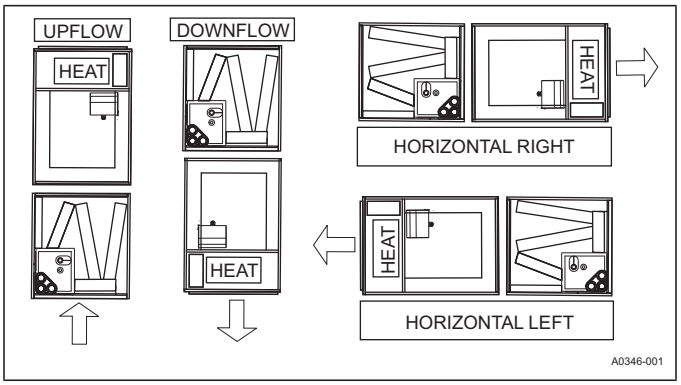


FIGURE 2: Typical Installation

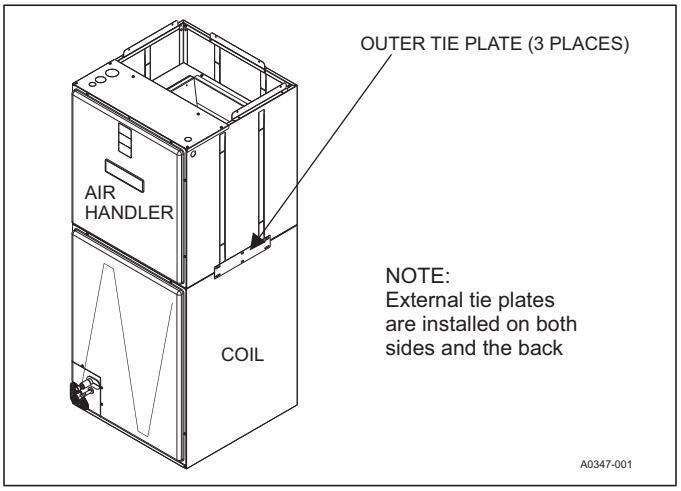


FIGURE 3: Coil and Air Handler Attachment Details

AIR HANDLER AND COIL UPFLOW, DOWNFLOW, AND HORIZONTAL POSTIONS

1. Apply the neoprene gasket to the return air end of the air handler.
2. Attach three tie plates to the external sides and back of the air handler casing using screws. See Figure 3.
3. Position the blower casing over the appropriate coil opening (depending on configuration). See Figure 2.
4. Attach the three tie plates to the coil casing using screws. See Figure 3.
5. Remove the coil access panel and coil filter door.
6. Slide the coil out of the coil cabinet, and set the coil to the side.
7. Locate the 2" wide foam gasket.
8. Apply the foam gasket over the air handler and coil mating seams on the interior of both unit sides and back. See Figure 4.
9. Slide the coil into the housing, and install the coil access panel and coil filter door.

FIGURE 4: Gasket Location

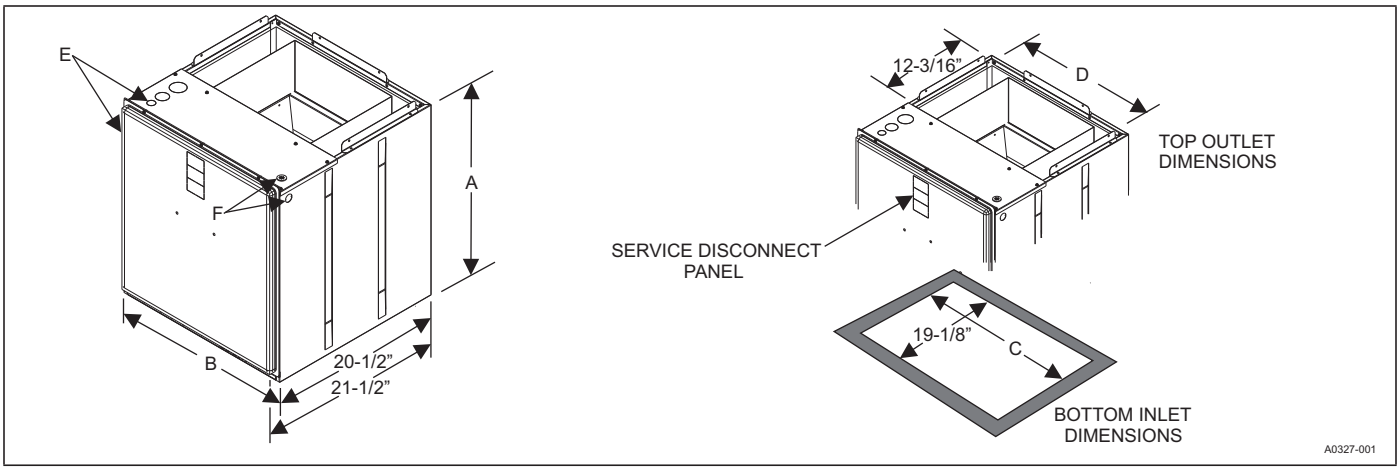


FIGURE 5: Dimensions and Duct Connection Dimensions

TABLE 1: Dimensions

ME Models	Dimensions[1]				Wiring Knockout Dimensions	
	A	B	C	D	E	F
	Height	Width	Bottom Opening	Top Opening	Power	Control
ME12B	21-1/2	17-1/2	16-1/2	16-1/2	7/8 (1/2) 1-3/8 (1) 1-23/32 (1-1/4)	7/8 (1/2)
ME12C	22-1/2	21	20	20		
ME14D	22-1/2	24-1/2	23-1/2	23-1/2		
ME16C	22-1/2	21	20	20		
ME20D	22-1/2	24-1/2	23-1/2	23-1/2		

1. Dimensions are in inches.

SECTION IV: DUCT WORK AND CONNECTIONS

⚠ WARNING

Use only 1/2" screws to connect duct work to the bottom of the unit.

Air supply and return can 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 improperly designed or installed duct systems. Therefore, it is very important to the success of an installation that the duct system is properly designed and installed.

When installing a central air return grille in or near the living space, it is advisable to design the duct work so 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 sound may be a problem, use acoustical duct liner inside the duct. Use flexible duct connectors to minimize the transmission of vibration/ 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" screws to connect duct work to the cabinet. If pilot holes are drilled, drill only through field duct and unit flange.

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

The supply air duct must be properly sized by use of a transition to match the unit opening. All ducts must be suspended using flexible hangers and must never be fastened directly to the structure.

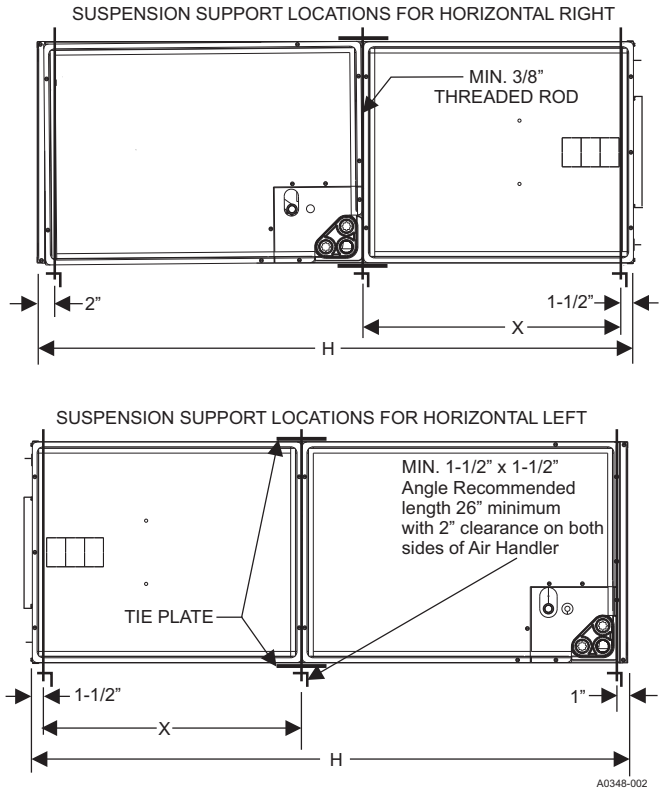
⚠ CAUTION

This unit is not designed for non-ducted (freeblow) applications. Do not operate without duct work attached to the unit. Equipment must never be operated without filters.

Duct work 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 electric heat is used, non-flammable material must be used. Duct systems must be designed in accordance with the Air Conditioning Contractors of America (ACCA) – Manual D.

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 6.



(Cabinet Width) Position	Dimensions	
	H	X
(17-1/2") Horizontal Left	40-1/2" – 47-1/2"	20"
(21" through 24-1/2") Horizontal Left	43-1/2" – 55-1/2"	21"
(17-1/2") Horizontal Right	40-1/2" – 47-1/2"	20"
(21" through 24-1/2") Horizontal Right	43-1/2" – 55-1/2"	21"

FIGURE 6: Typical Horizontal Installation

DUCT FLANGES

Three duct flanges are provided to assist in positioning and attaching duct work to the air handler. These flanges are included in the unit parts bag. With the screws from the parts bag, install one of the duct flanges. Duct flanges have holes on both legs with one leg longer than the other. The longer leg can be used to mate against the air handler so that different thicknesses of duct board can be made flush with the outer surface of the air handler. Repeat the procedure for the other two flanges. See Figure 7. If the flanges are not used, they can be discarded.

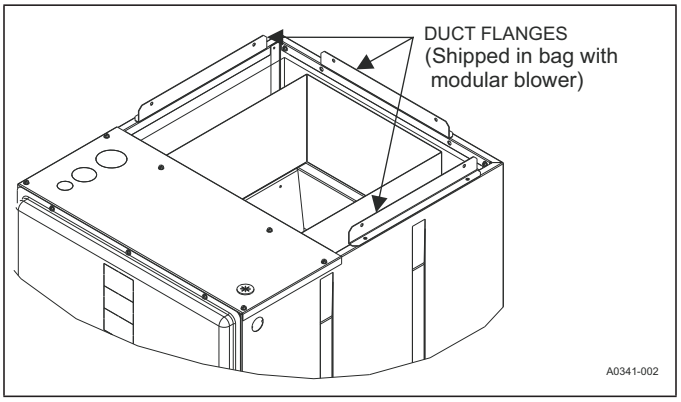


FIGURE 7: Duct Attachment

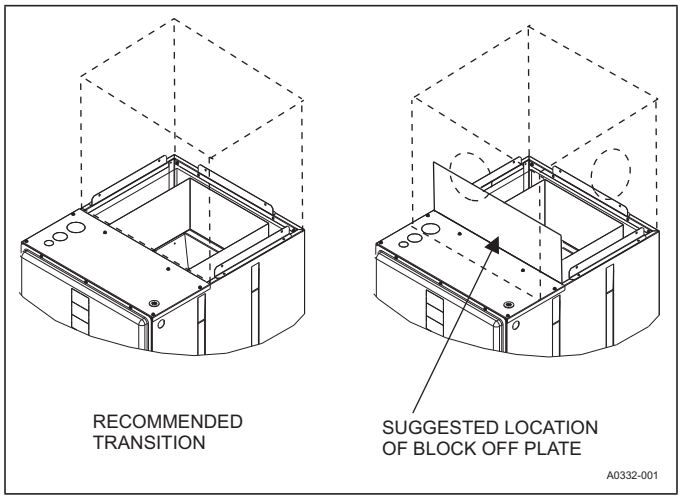


FIGURE 8: Duct Work Transition

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.

The supply air duct must be properly sized by use of a transition to match the unit opening. See Table 1 for air handler unit inlet and outlet dimensions.

⚠ CAUTION

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

Duct work 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 switches. If the factory suggested transition cannot be fabricated, it is recommended that a block off plate is attached to the supply opening. The block off plate must be approximately 8" high and run the full width of the plenum. See Figure 8 for a visual aid. Use of this block off plate enables better air circulation across the limit switches.

AIR FILTERS

Return air filters are required and must be field supplied. Filtration must be performed external to the unit.

⚠ CAUTION

Equipment must never be operated without a filter.

SECTION V: 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 name plate to designate the heat kit installed. If no heater is installed, mark the name plate to indicate that a heat kit is not installed.

Use only 6HK Revision C heat kits or later, as listed on the air handler name plate and in these instructions. Use data from Tables 4 to 6 for information on the minimum motor speed tap to be used for heating operation and the maximum overcurrent protection device required for the combination of air handler and heat kit.

For upflow, downflow, and horizontal left applications, the kits can be installed without modification.

Field modification is required for horizontal right airflow application only. Follow the instructions with the heat kit for modification.

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 UL1995, Article 26.19 (in reference to all circuit breakers).

SECTION VI: LINE POWER CONNECTIONS

Power may 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 conduit from the disconnect. The power lead conduit must be terminated at the electrical control box. To determine proper wire sizing, refer to Table 3, Table 6, the latest edition of the National Electrical Code or the Canadian Electrical Code as relevant, and local codes. 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, follow all applicable local and national codes when converting from aluminum to copper conductors prior to connection to the air handler.

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

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

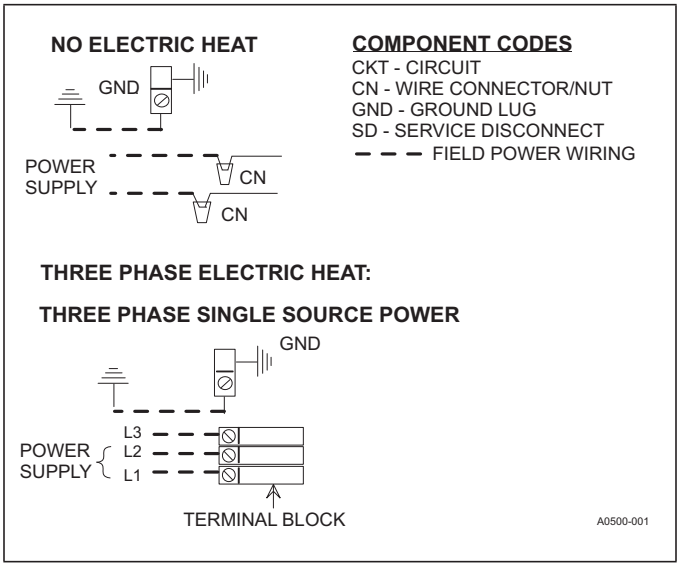


FIGURE 9: Line Power Connections

SECTION VII: LOW VOLTAGE CONTROL CONNECTIONS

The 24 V power supply is provided by an internally wired low voltage transformer that is standard on all models. See the unit wiring diagram.
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 5.
Remove the required knockout and pierce the foil faced insulation to allow wiring to pass through. Use a hole that is as small as possible to minimize air leakage. Install a plastic bushing in the selected hole and keep low voltage wiring as short as possible inside the control box.
To minimize air leakage further, seal the wiring entry point at the outside of the unit.
Connect the field wiring at the pigtails supplied with the air handler. See Figures 11 and 12 for system wiring.

NOTICE

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

SECTION VIII: 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 7 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 1, and the highest speed is 5. The air handler comes factory wired with the electric heat kit connected to tap 5 for the heating speed, and the outdoor unit speed tap connected to tap 4 for the heat pump heating/cooling speed. The thermostat G signal connected to tap 1 supplies the circulating blower speed.
Move the electric heat kit wire for the heating speed from tap 5 to the appropriate speed tap according to Table 4. If electric heat requires speed tap 5, the highest speed tap available for cooling/heat pump heating is tap 4.
If a multi-stage outdoor unit is used, the thermostat G signal is utilized for Low speed cooling. Move the Red wire that is factory installed on speed tap 1 to the appropriate blower speed tap if necessary. Connect High speed cooling to the Yellow blower motor speed tap lead and move to the appropriate speed tap if necessary. See Figure 10 for multi-stage system low voltage wiring.

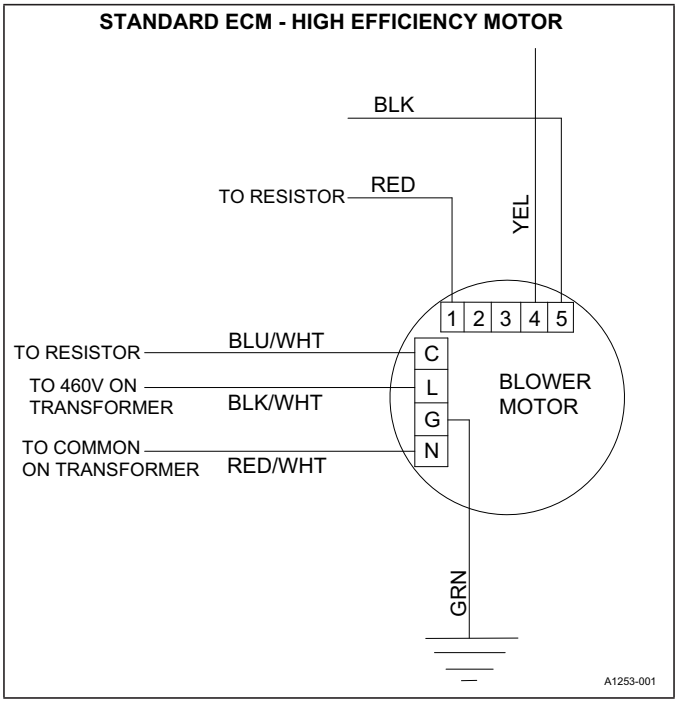


FIGURE 10: Blower Speed Connections

SECTION IX: UNIT DATA

TABLE 2: Physical and Electrical Data - Cooling Only

Models		ME12B	ME12C	ME14D	ME16C	ME20D
Blower - Diameter x Width		10 x 8	11 x 10	11 x 10	11 x 10	11 x 10
Motor	HP	1/2 HP	1/2 HP	1/2 HP	1 HP	1 HP
	Nominal RPM	1400	1400	1400	1400	1400
Voltage		460	460	460	460	460
Full Load Amps @460 V		2.0	2.0	2.0	3.2	3.2
Filter[1]	Type	DISPOSABLE OR WASHABLE				
	Size	16 x 20 x 1	20 x 20 x 1	22 x 20 x 1	20 x 20 x 1	22 x 20 x 1
	Bottom Rack Kit	1BR01117	1BR01121	1BR01124	1BR01121	1BR01124
	Permanent Type Kit	1PF0601	1PF0602	1PF0603	1PF0602	1PF0603
Shipping/Operating Weight (lb)		52/51	68/67	75/74	68/67	75/74

1. Field supplied

TABLE 3: Electrical Data - Cooling Only

Models	Motor FLA[1]	Minimum Circuit Ampacity	MOP[2]
ME12B/ME12C/ME14D	2.0	2.4	15
ME16C/ME20D	3.2	3.9	

1. FLA = Full Load Amps
2. MOP = Maximum Overcurrent Protection device. Must be HACR type circuit breaker or time delay fuse. To determine correct wire sizing, refer to the latest edition of the National Electrical Code or the Canadian Electrical Code as relevant and local codes.

TABLE 4: Electrical Heat - Minimum Fan Speed

Heat Kit Models[1]	Nom. kW @240 V	Air Handler Models				
		ME12B	ME12C	ME14D	ME16C	ME20D
6HK06501046	9.6 kW	Medium Low (2)	Medium High (4)	Medium (3)	Medium Low (2)	Medium Low (2)
6HK06501546	14.4 kW	High (5)	Medium High (4)	Medium (3)	Medium Low (2)	Medium Low (2)
6HK06501846	17.3 kW	High (5)	Medium High (4)	Medium High (4)	Medium (3)	Medium (3)
6HK06502046	19.2 kW	High (5)	High (5)	-	Medium High (4)	Medium (3)
6HK06502546	24 kW	-		-	-	Medium (3)

1. Kits have no service disconnect. Terminal blocks only

TABLE 5: Electric Heat Performance Data - 460-3-60

Heater Models[1]		Total Heat	
		kW	MBH
		480 V	48 V
3PH	6HK06501046	9.6	32.8
	6HK06501546	14.4	49.1
	6HK06501846	17.3	59.0
	6HK06502046	19.2	65.5
	6HK06502546	24	81.9

1. Kits have no service disconnect. Terminal blocks only

TABLE 6: Electrical Data for Single Source Power Supply - 460-3-60

Air Handler Models	Heater Models[1]	Heater Amps @480 V	Field Wiring	
			Min. Circuit Ampacity	MOP[2]
			480 V	480 V
ME12B	6HK06501046	11.6	17.0	20
	6HK06501546	17.3	24.2	25
	6HK06501846	20.8	28.5	30
	6HK06502046	23.1	31.4	35
ME12C	6HK06501046	11.6	17.0	20
	6HK06501546	17.3	24.2	25
	6HK06501846	20.8	28.5	30
	6HK06502046	23.1	31.4	35
ME14D	6HK06501046	11.6	17.0	20
	6HK06501546	17.3	24.2	25
	6HK06501846	20.8	28.5	30
ME16C	6HK06501046	11.6	18.5	20
	6HK06501546	17.3	25.7	30
	6HK06501846	20.8	30.0	30
	6HK06502046	23.1	32.9	35
ME20D	6HK06501046	11.6	18.5	20
	6HK06501546	17.3	25.7	30
	6HK06501846	20.8	30.0	30
	6HK06502046	23.1	32.9	35
	6HK06502546	28.9	40.1	45

1. Kits have no service disconnect. Terminal blocks only
2. MOP = Maximum Overcurrent Protection device. Must be HACR type circuit breaker or time delay fuse. To determine correct wire sizing, refer to the latest edition of the National Electrical Code or the Canadian Electrical Code as relevant and local codes.

TABLE 7: Airflow Data (CFM)[1]

Models	CM Models	Blower Motor Speed	External Static Pressure (in. wc.)						
			0.10	0.20	0.30	0.40	0.50	0.60	0.70
ME12B	CM18B	High (5)	1355	1334	1302	1270	1231	1201	1170
		Medium High (4)	1273	1244	1213	1177	1142	1109	1073
		Medium (3)	1074	1041	1009	974	936	894	809
		Medium Low (2)	862	826	798	766	688	607	587
		Low (1)	659	616	560	512	457	387	275
	CM24B	High (5)	1359	1331	1301	1269	1234	1202	1171
		Medium High (4)	1272	1245	1209	1174	1143	1106	1073
		Medium (3)	1072	1040	1007	973	937	874	778
		Medium Low (2)	857	821	794	756	676	613	567
		Low (1)	654	606	557	504	443	379	271
	CM30B	High (5)	1354	1325	1294	1263	1230	1198	1168
		Medium High (4)	1268	1235	1203	1171	1139	1107	1075
		Medium (3)	1069	1038	1003	974	935	876	781
		Medium Low (2)	859	818	794	756	681	620	563
		Low (1)	654	608	552	503	434	364	289
	CM36B	High (5)	1348	1317	1285	1254	1222	1189	1157
		Medium High (4)	1258	1225	1192	1160	1126	1093	1063
		Medium (3)	1062	1029	993	964	929	879	778
		Medium Low (2)	860	822	791	761	682	616	568
		Low (1)	642	599	554	502	431	367	294
ME12C	CM50C	High (5)	1360	1334	1291	1253	1207	1172	1076
		Medium High (4)	1274	1242	1202	1157	1109	1040	1000
		Medium (3)	1060	1022	968	923	854	766	694
		Medium Low (2)	910	863	806	722	660	567	524
		Low (1)	655	585	511	436	385	323	267
ME14D	CM30D	High (5)	1583	1546	1516	1477	1435	1401	1364
		Medium High (4)	1499	1456	1426	1393	1349	1306	1267
		Medium (3)	1295	1247	1217	1181	1135	1080	1005
		Medium Low (2)	1099	1075	1026	983	909	840	786
		Low (1)	906	875	834	754	675	589	521
	CM36D	High (5)	1604	1563	1524	1479	1450	1410	1374
		Medium High (4)	1508	1464	1428	1384	1350	1308	1271
		Medium (3)	1300	1250	1209	1175	1132	1075	1006
		Medium Low (2)	1102	1058	1028	986	909	838	784
		Low (1)	912	884	831	763	694	568	530
	CM42D	High (5)	1544	1520	1482	1440	1411	1367	1321
		Medium High (4)	1455	1426	1393	1349	1305	1272	1207
		Medium (3)	1263	1238	1197	1157	1100	1033	980
		Medium Low (2)	1074	1037	993	946	877	810	729
		Low (1)	888	853	787	736	644	571	508

Continued on next page

TABLE 7: Airflow Data (CFM)[1] (Continued)

Models	CM Models	Blower Motor Speed	External Static Pressure (in. wc.)						
			0.10	0.20	0.30	0.40	0.50	0.60	0.70
ME16C	CM36C	High (5)	1776	1735	1700	1657	1617	1577	1529
		Medium High (4)	1701	1663	1621	1583	1538	1497	1453
		Medium (3)	1522	1475	1442	1394	1349	1301	1245
		Medium Low (2)	1297	1250	1203	1151	1101	1050	957
		Low (1)	1112	1052	1002	951	854	816	756
	CM42C	High (5)	1754	1719	1678	1644	1599	1562	1513
		Medium High (4)	1676	1637	1599	1562	1517	1476	1423
		Medium (3)	1495	1454	1411	1371	1328	1280	1233
		Medium Low (2)	1286	1235	1198	1143	1097	1036	992
		Low (1)	1119	1055	1006	948	900	804	752
	CM48C	High (5)	1769	1727	1689	1650	1608	1568	1525
		Medium High (4)	1692	1648	1605	1568	1525	1485	1440
		Medium (3)	1554	1505	1461	1420	1373	1326	1273
		Medium Low (2)	1308	1256	1213	1164	1088	1007	941
		Low (1)	1116	1057	1007	955	839	792	741
	CM60C	High (5)	1794	1757	1720	1686	1639	1589	1545
		Medium High (4)	1700	1664	1624	1582	1543	1496	1443
		Medium (3)	1530	1484	1444	1402	1356	1314	1257
		Medium Low (2)	1305	1257	1217	1162	1115	1060	993
		Low (1)	1124	1060	1008	954	889	827	755
ME20D	CM36D	High (5)	2061	2021	1979	1938	1904	1865	1829
		Medium High (4)	1998	1949	1914	1879	1835	1797	1756
		Medium (3)	1769	1711	1677	1643	1603	1570	1530
		Medium Low (2)	1557	1508	1469	1439	1398	1355	1323
		Low (1)	1340	1291	1252	1216	1170	1132	1058
	CM42D	High (5)	2032	1996	1959	1913	1890	1849	1820
		Medium High (4)	1974	1938	1892	1855	1824	1785	1754
		Medium (3)	1752	1706	1680	1633	1591	1546	1511
		Medium Low (2)	1545	1505	1468	1432	1393	1351	1307
		Low (1)	1340	1296	1260	1219	1169	1118	1055
	CM48D	High (5)	2062	2024	1993	1952	1910	1868	1836
		Medium High (4)	2006	1958	1932	1890	1850	1815	1770
		Medium (3)	1785	1741	1698	1646	1610	1582	1538
		Medium Low (2)	1564	1521	1477	1443	1398	1362	1323
		Low (1)	1350	1305	1257	1226	1181	1112	1029
	CM60D	High (5)	1998	1959	1923	1888	1862	1826	1786
		Medium High (4)	1933	1887	1855	1811	1791	1757	1719
		Medium (3)	1703	1670	1633	1592	1567	1531	1485
		Medium Low (2)	1522	1474	1447	1403	1370	1328	1281
		Low (1)	1306	1260	1223	1190	1131	1078	1012
	CM64D	High (5)	1940	1897	1868	1832	1806	1770	1728
		Medium High (4)	1883	1860	1829	1789	1761	1728	1688
		Medium (3)	1686	1648	1619	1584	1537	1508	1466
		Medium Low (2)	1490	1446	1415	1385	1346	1298	1236
		Low (1)	1279	1248	1206	1167	1113	1062	972

1. Air handler units have been tested to UL 1995/CSA 22.2 No. 236 standards up to 0.50" 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. Heating applications tested at 0.50" w.c. esp.
   Airflow data shown is from testing performed at 460 V. AE units use a standard ECM constant torque motor, and there is minimal variation of airflow at other distribution voltage values.

SECTION X: MAINTENANCE

Clean or replace filters when they become dirty. Inspect filters at least once a month. The frequency of cleaning required depends on the hours of operation and the local atmospheric conditions. Clean filters keep unit efficiency high.

COIL CLEANING

If the coil needs to be cleaned, clean it with water. As an alternative to water, EVAP-Green by Nu-Calgon is the only pH neutral coil cleaner approved for use when properly diluted.

Note: Rinse coils thoroughly after use of EVAP-Green for cleaning.

LUBRICATION

The bearings of the blower motor are permanently lubricated.

CONDENSATE DRAINS

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

SECTION XI: AIR SYSTEM ADJUSTMENT

To check the Cubic Feet per Minute (CFM), you measure the static pressure drop across the air handler using a manometer and static pressure tips.

1. To prepare the coil for static pressure drop measurements, run the fan only to ensure a dry coil.

NOTICE

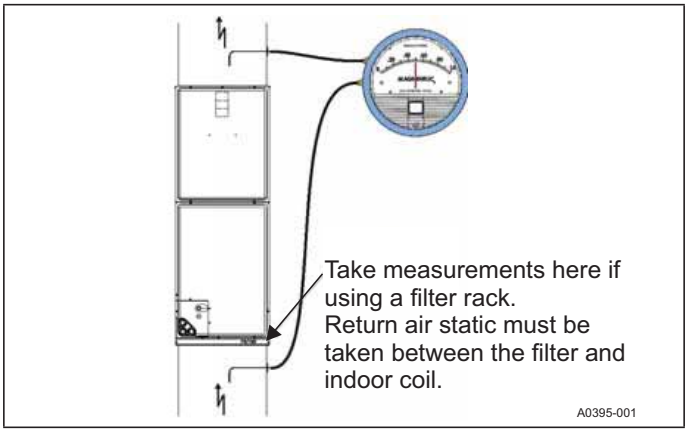
Refer to Table 7 for coil Airflow Data of Cubic Feet Per Minute (CFM). Run the fan on the highest speed to be used.

2. Drill two holes, one 12" away from the air handler in the supply air duct, and one 12" away from the air handler in the return air duct (before any elbows in the duct work).
3. Insert the pressure tips and read the pressure drop from the manometer.
4. See Table 7 to determine the airflow, and make the necessary adjustments to keep the CFM within the airflow limitations of the coil.

EXTERNAL DUCT STATIC

1. Measure the supply air static pressure and record this positive number.
2. Measure the return air static pressure and record this negative number.
3. Treat the negative number as a positive, and add the two numbers together. This is the total system static.

Note: If a filter rack is installed on the return air end of the air handler or indoor coil section, measure the return air duct static between the filter and the indoor coil.



SECTION XII: TYPICAL THERMOSTAT CONNECTIONS

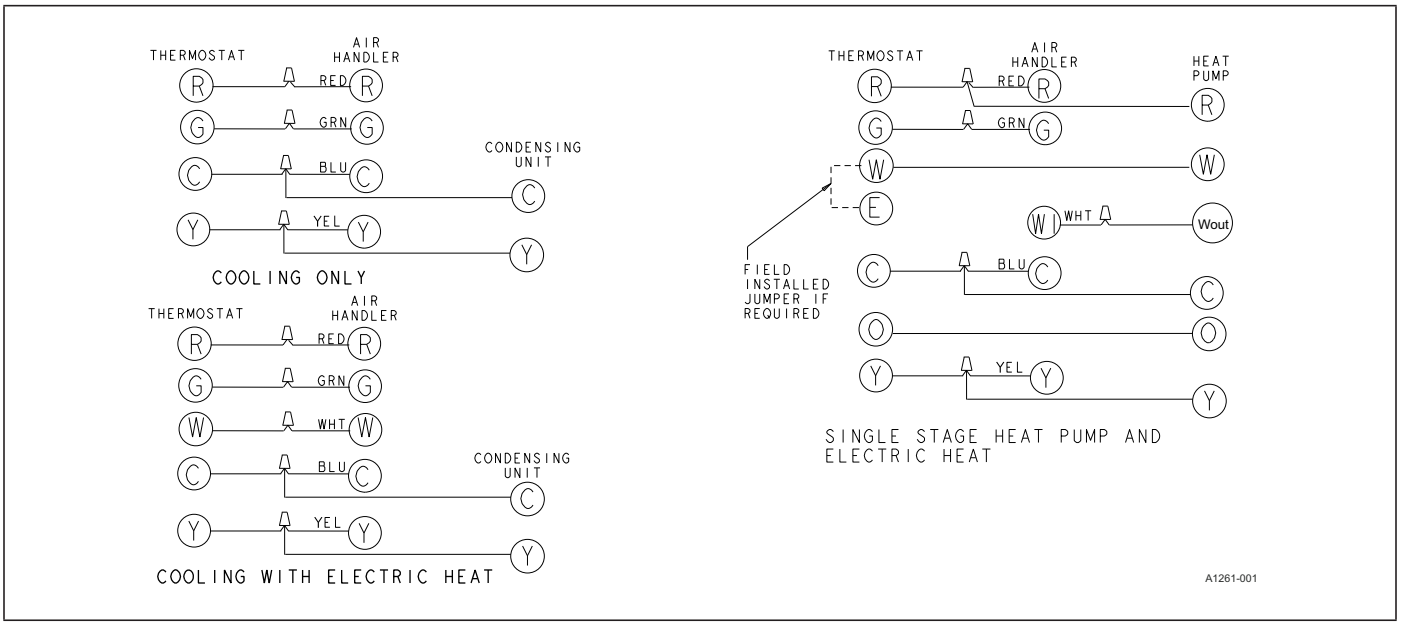


FIGURE 11: Typical Thermostat Connection

SECTION XIII: WIRING DIAGRAM

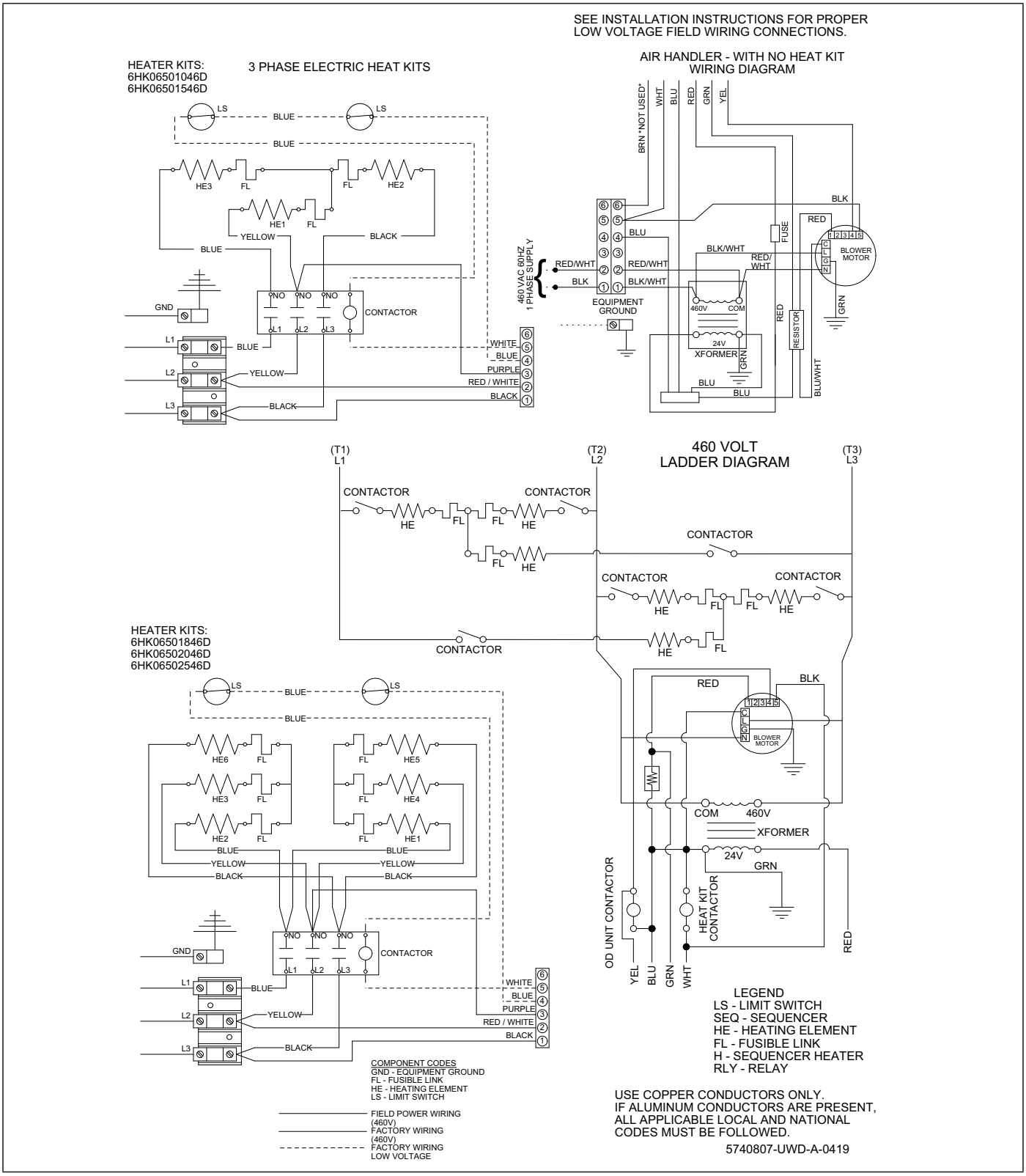


FIGURE 12: Wiring Diagram - Standard ECM - Three Phase Heat Kits

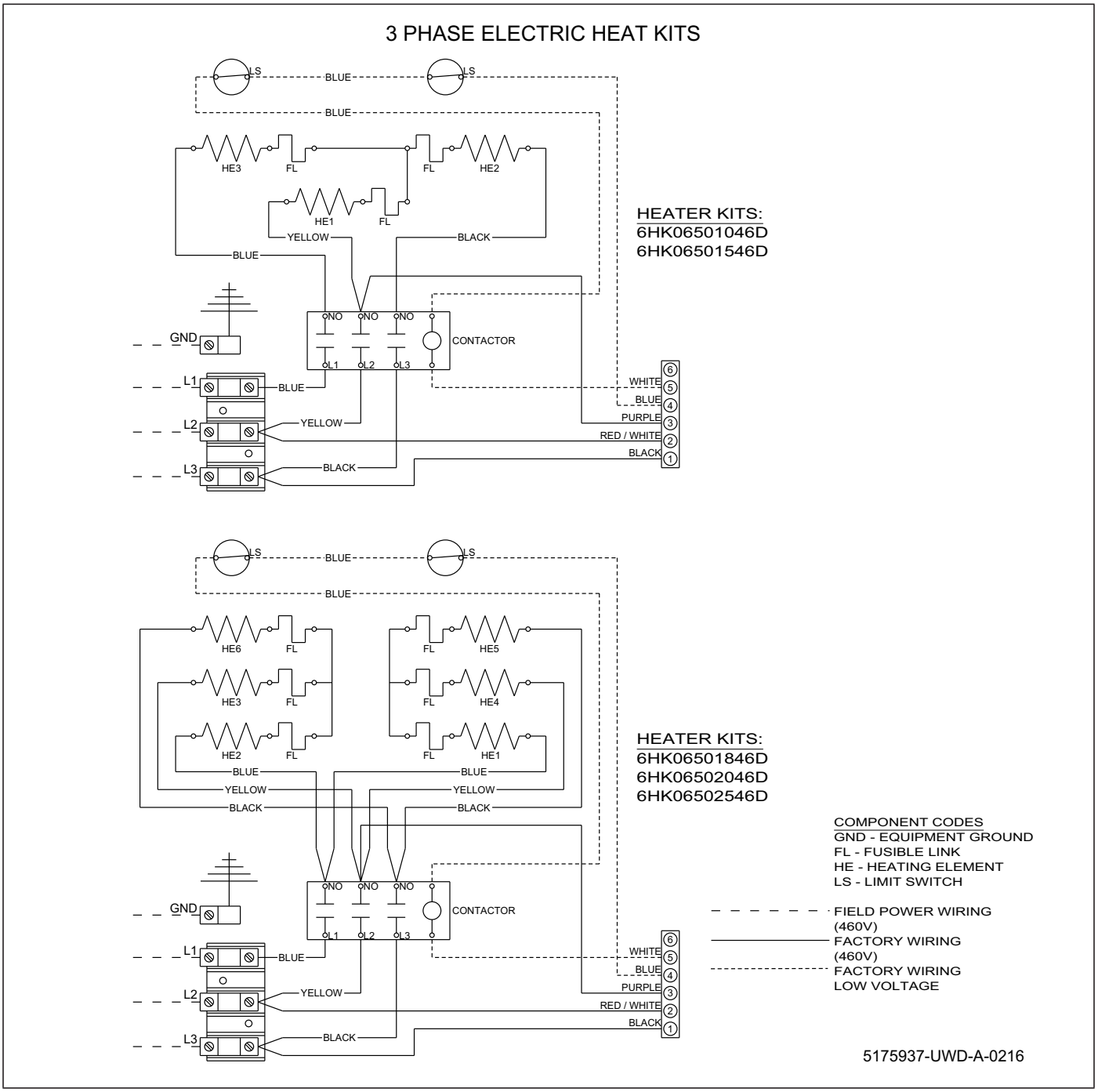


FIGURE 13: Wiring Diagram - Three Phase Heat Kits

NOTES

SECTION XIV: START UP SHEET

Residential Air Handler with Electric Heat Start-Up Sheet

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 ◯ 460 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	◯ ECM	COOL	◯ A	◯ B	◯ C	◯ D
		ADJUST	◯ A	◯ B	◯ C	◯ D
		DELAY	◯ A	◯ B	◯ C	◯ D
		HEAT	◯ A	◯ B	◯ C	◯ D
	◯ X-13	◯ 1	◯ 2	◯ 3	◯ 4	◯ 5
	◯ PSC	◯ Low	◯ Medium Low	◯ Medium	◯ Medium High	◯ High

Supply static (inches of water column)		Supply air dry bulb temperature		Outside air dry bulb temperature	
Return static (inches of water column)		Return air dry bulb temperature		Return air wet bulb temperature	
Total external static pressure		Temperature drop		Supply air wet bulb temperature	

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

5735163-UIM-B-0719
Supersedes: 5735163-UIM-A-0619

York International Corp.
5005 York Drive
Norman, OK 73069