



# Installation Instructions

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## SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform the basic maintenance functions of cleaning coils and filters and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that may apply.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguishers available for all brazing operations.

### WARNING

Before performing service or maintenance operations on unit, turn off main power switch to unit. Electrical shock could cause personal injury.

### WARNING

1. Improper installation, adjustment, alteration, service, or maintenance can cause property damage, personal injury, or loss of life. Refer to the User's Information Manual provided with this unit for more details.
2. Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

#### What to do if you smell gas:

1. DO NOT try to light any appliance.
2. DO NOT touch any electrical switch, or use any phone in your building.
3. IMMEDIATELY call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
4. If you cannot reach your gas supplier, call the fire department.

### WARNING

Disconnect gas piping from unit when pressure testing at pressure greater than 0.5 psig. Pressures greater than 0.5 psig will cause gas valve damage resulting in hazardous condition. If gas valve is subjected to pressure greater than 0.5 psig, it *must* be replaced before use. When pressure testing field-supplied gas piping at pressures of 0.5 psig or less, a unit connected to such piping must be isolated by closing the manual gas valve(s).

## INSTALLATION

### Step 1 — Provide Unit Support

### CAUTION

1. All panels must be in place when rigging or damage to unit may occur.
2. Unit is not designed for handling by fork truck.

**ROOF CURB** — For vertical discharge units, assemble or install accessory roof curb in accordance with instructions shipped with this accessory. See Fig. 1-3. Install insulation, cant strips, roofing, and counter flashing as shown. Ductwork can be installed to roof curb before unit is set in place. Curb should be level. This is necessary to permit unit drain to function properly. Unit leveling tolerance is shown in Fig. 1-3. Refer to Accessory Roof Curb Installation Instructions for additional information as required. When accessory roof curb is used, unit may be installed on class A, B, or C roof covering material.

**IMPORTANT:** The gasketing of the unit to the roof curb is critical for a watertight seal. Install gasket with the roof curb as shown in Fig. 1-3. Improperly applied gasket can also result in air leaks and poor unit performance.

**ALTERNATE UNIT SUPPORT** — When the preferred curb or slab mount cannot be used, support unit with sleepers on perimeter, using unit curb support area. If sleepers cannot be used, support long sides of unit (refer to Fig. 4-10) with a minimum number of 4-in. x 4-in. pads spaced as follows: 48AJ,AK,AW,AY020-035 units require 3 pads on each side; 48AJ,AK,AW,AY036-050 units require 4 pads on each side; 48AJ,AK,AW,AY051 and 060 units require 6 pads on each side. Unit may sag if supported by corners only.

**Step 2 — Rig and Place Unit** — Inspect unit for transportation damage. See Tables 1-6 for physical data and specifications. File any claim with transportation agency.

Do not drop unit; keep upright. Use spreader bars over unit to prevent sling or cable damage. This unit must be handled with a crane and can not be handled by a fork truck. Level by using unit frame as a reference; leveling tolerance is shown in Fig. 1-3. See Fig. 10 for additional information. Unit operating weight is shown in Table 2.

**NOTE:** On retrofit jobs, ductwork may be attached to the old unit instead of a roof curb. Be careful not to damage ductwork when removing old unit. Attach existing ductwork to roof curb instead of unit.

Four lifting lugs are provided on the unit base rails as shown in Fig. 4-10. Refer to rigging instructions on unit.

**POSITIONING** — Maintain clearance, per Fig. 4-10, around and above unit to provide minimum distance from combustible materials, proper airflow, and service access.

Do not install unit in an indoor location. Do not locate unit air inlets near exhaust vents or other sources of contaminated air. For proper unit operation, adequate combustion and ventilation air must be provided in accordance with Section 5.3 (Air for Combustion and Ventilation) of the National Fuel Gas Code, ANSI Z223.1 (American National Standards Institute).

Although unit is weatherproof, guard against water from higher level runoff and overhangs.

Locate mechanical draft system flue assembly at least 4 ft from any opening through which combustion products could enter the building, and at least 4 ft from any adjacent building. When unit is located adjacent to public walkways, flue assembly must be at least 7 ft above grade.

**ROOF MOUNT** — Check building codes for weight distribution requirements. See Fig. 11. Unit operating weight is shown in Table 2.

**Step 3 — Field Fabricate Ductwork** — Secure all ducts to building structure. Use flexible duct connectors between unit and ducts as required. Insulate and weatherproof all external ductwork, joints, and roof openings with counter flashing and mastic in accordance with applicable codes.

**NOTE:** Due to width of the horizontal supply and return ductwork, provisions should be made for servicing of the outdoor air filters (i.e., catwalk over ductwork).

Ducts passing through an unconditioned space must be insulated and covered with a vapor barrier. Outlet grilles must not lie directly below unit discharge. The return duct must have a 90-degree elbow before opening into the building space if the unit is equipped with power exhaust.

To attach ductwork to roof curb, insert duct approximately 10 to 11 in. up into roof curb. Connect ductwork to 14-gage roof curb material with sheet metal screws driven from inside the duct.

Follow AMCA (Air Movement and Control Association) guidelines relating to ductwork connections to the unit. These guidelines recommend a minimum 2½ equivalent duct diameters of straight duct connected to supply air inlet and outlet openings before any transitions, fittings, dampers, etc. Failure to adhere to these guidelines may result in system effects which can impact the unit's ability to achieve published performance.

**⚠ WARNING**

For vertical supply and return units, tools or parts could drop into ductwork and cause an injury. Install a 90-degree elbow turn in the supply and return ductwork between the unit and the conditioned space. If a 90-degree elbow cannot be installed, then a grille of sufficient strength and density should be installed to prevent objects from falling into the conditioned space.

**Step 4 — Make Unit Duct Connections**

**48AJ AND AK UNITS** — Unit is shipped for thru-the-bottom duct connections. Field-fabricated ductwork should be **attached to the roof curb**. Supply and return duct dimensions are shown in Fig. 4-6. Air distribution is shown in Fig. 12. Refer to installation instructions shipped with roof curb for more information.

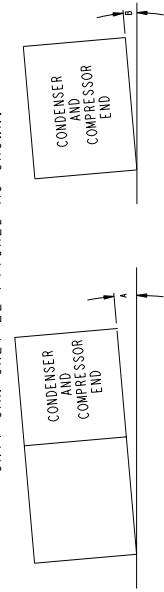
**48AW AND AY UNITS** — Remove shipping covers from supply and return air openings. Attach field-supplied ductwork to unit. Connect to the unit with a single duct for **all** supply openings and with a single duct for all return openings. Splitting of the airflow into branch ducts should not be done at the unit. Sufficient duct length should be used prior to branching to ensure the air temperatures are well mixed within the ductwork. See Fig. 7-9 for duct opening dimensions. Secure all ducts to building structure. Air distribution is shown in Fig. 7-9 and Fig. 13.

Install accessory barometric relief or power exhaust in the field-fabricated return ductwork. Refer to Step 10 — Position Power Exhaust/Barometric Relief Damper Hood section on page 33 for more information.

*Instructions continued on page 19.*

- NOTES:
1. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO OUTSIDE OF PART.
  2. ROOF CURB ACCESSORY CRFCURB005A00 IS SHIPPED DISASSEMBLED.
  3. ALL ROOF CURB PARTS ARE TO BE 14 GA. GALVANIZED STEEL.
  4. UNITS WITH ELECTRIC HEAT MUST BE INSTALLED WITH A 90° ELBOW ON THE SUPPLY DUCT PRIOR TO ANY SUPPLY TAKE OFFS OR BRANCHES.
  5. DIMENSIONS IN [ ] ARE IN MILLIMETERS. ALL OTHER DIMENSIONS ARE IN INCHES.

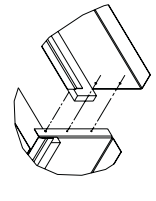
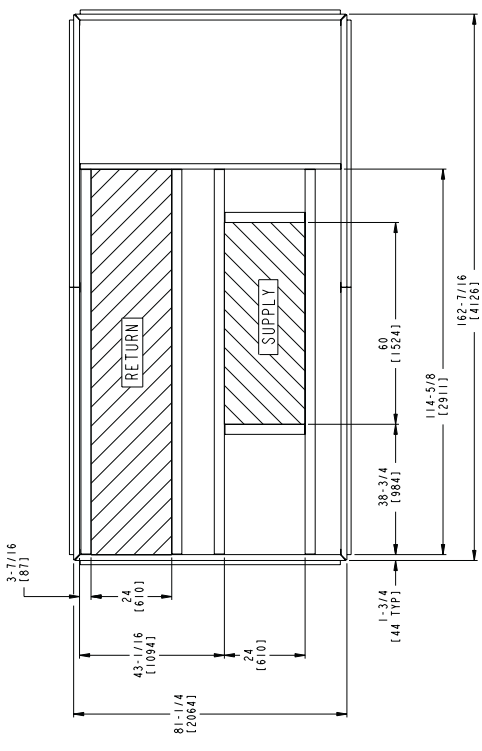
NOTE:  
TO PREVENT STANDING WATER IN THE DRAIN PAN OF THE  
INDOOR SECTION, AND THE HEAT EXCHANGERS  
UNIT CAN ONLY BE PITCHED AS SHOWN.



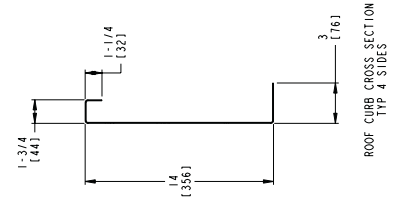
DIMENSIONS  
(DEGREES AND INCHES)

A		B	
DEG.	IN.	mm	mm
1.0	2.9	73	.50
			.75
			19

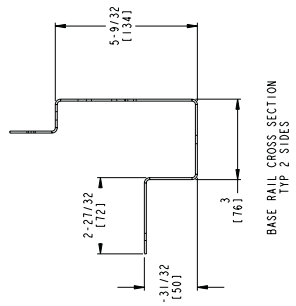
UNIT LEVELING TOLERANCES  
\*FROM EDGE OF UNIT TO HORIZONTAL



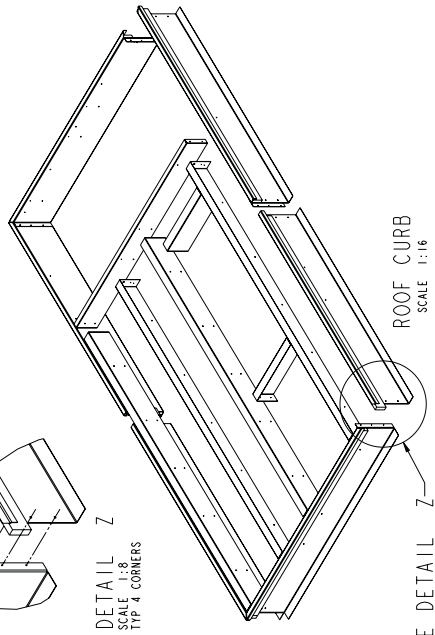
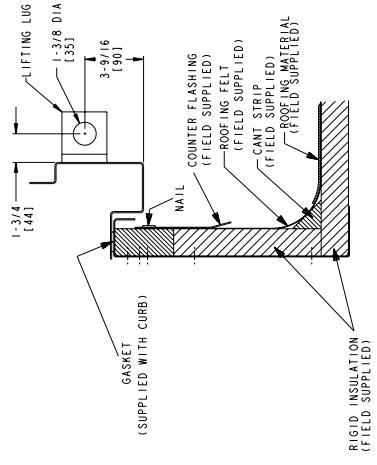
DETAIL Z  
SCALE 1:8  
TYP 4 CORNERS



ROOF CURB CROSS SECTION  
TYP 4 SIDES



BASE RAIL CROSS SECTION  
TYP 2 SIDES



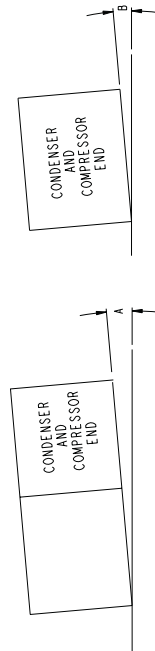
ROOF CURB  
SCALE 1:16

SEE DETAIL Z

Fig. 1 — Roof Curb — 48AJ, AK020-035 Units

- NOTES:
1. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO OUTSIDE OF PART.
  2. ROOF CURB ACCESSORY, CRRCURB05A00 IS SHIPPED DISASSEMBLED.
  3. ALL ROOF CURB PARTS ARE TO BE 14 GA. GALVANIZED STEEL.
  4. UNITS WITH ELECTRIC HEAT MUST BE INSTALLED WITH A 90° ELBOW ON THE SUPPLY DUCT PRIOR TO ANY SUPPLY TAKE OFFS OR BRANCHES.
  5. DIMENSIONS IN [ ] ARE IN MILLIMETERS, ALL OTHER DIMENSIONS ARE IN INCHES.

NOTE: WEIGHT STANDING WATER IN THE DRAIN PAN OF THE INDOOR SECTION AND THE HEAT EXCHANGERS UNIT CAN ONLY BE PITCHED AS SHOWN.



DIMENSIONS (DEGREES AND INCHES)

A		B	
DEG.	IN.	DEG.	IN.
1.0	2.9	7.3	.50
			.75
			.19

UNIT LEVELING TOLERANCES \*FROM EDGE OF UNIT TO HORIZONTAL

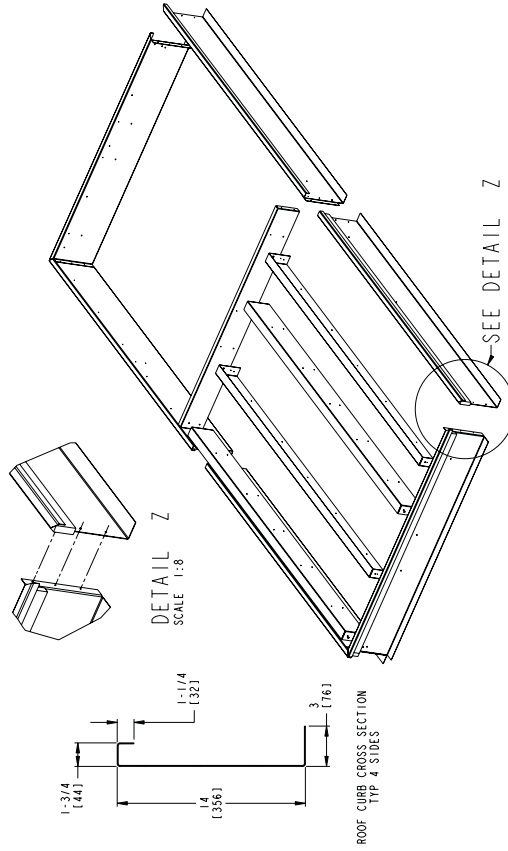
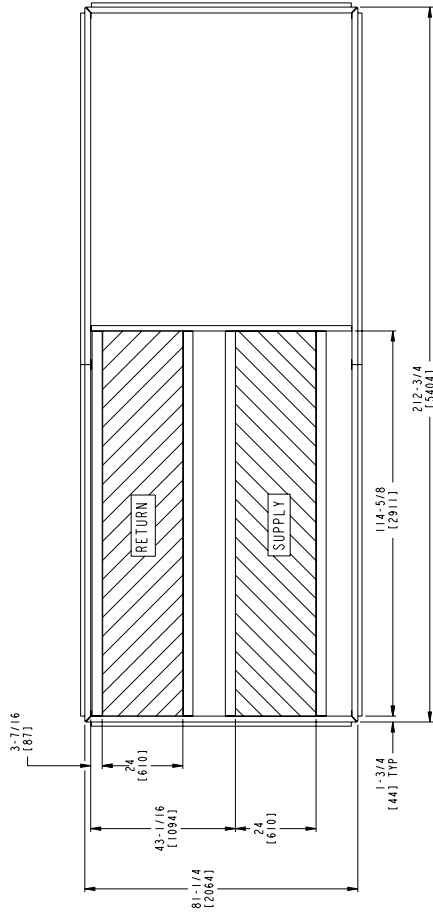
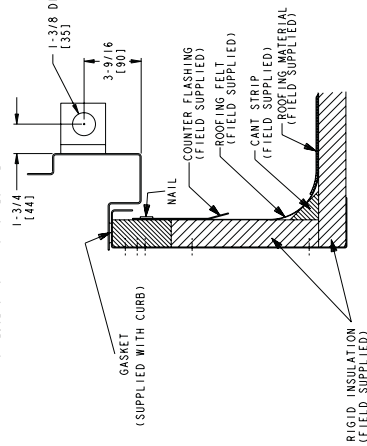
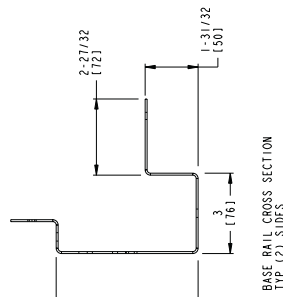
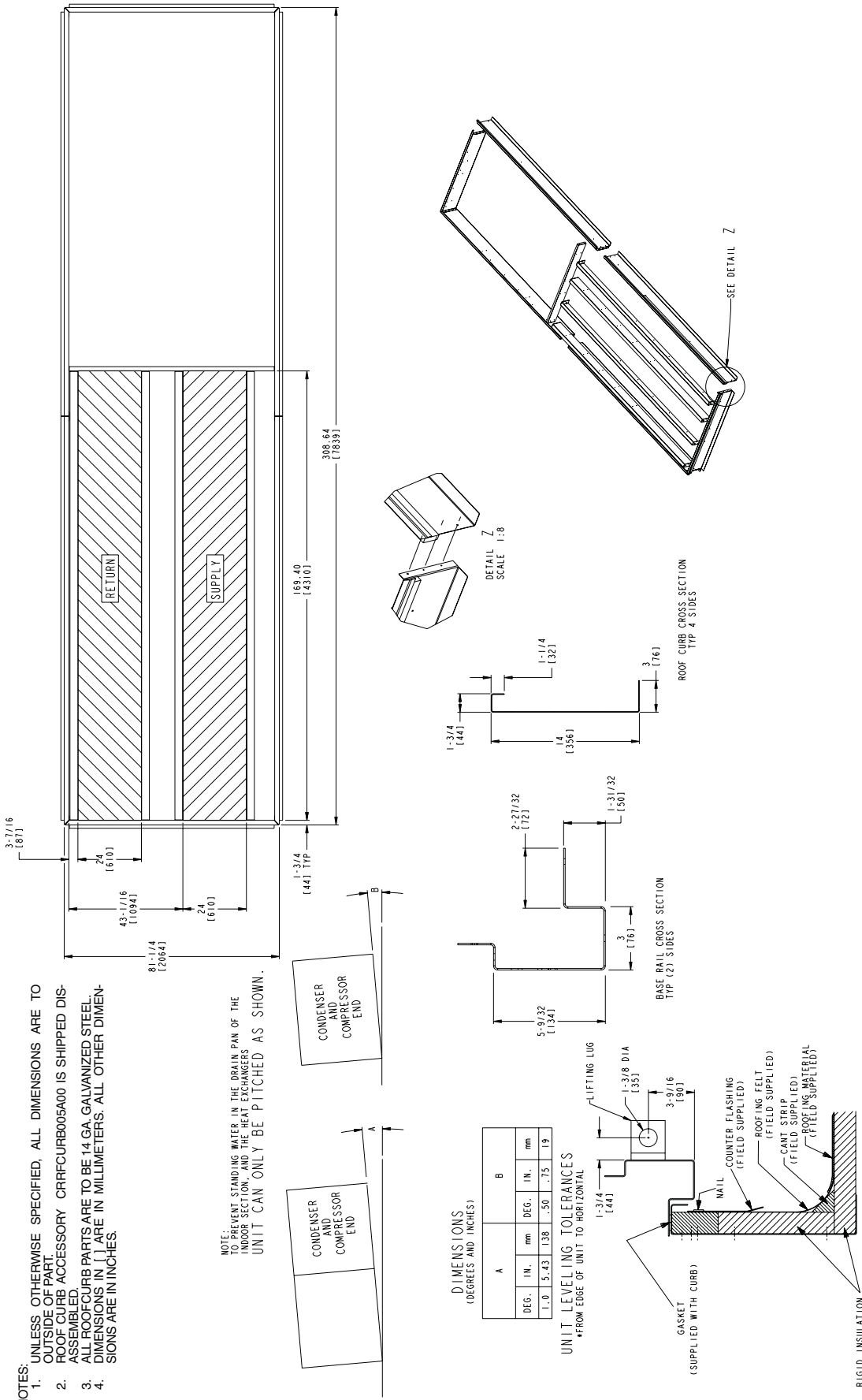


Fig. 2 — Roof Curb — 48AJ,AK036-050 Units



- NOTES:
1. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE TO OUTSIDE OF PART.
  2. ROOF CURB ACCESSORY CRRFCURB005A00 IS SHIPPED DISASSEMBLED.
  3. ALL ROOF CURB PARTS ARE TO BE 14 GA. GALVANIZED STEEL. DIMENSIONS IN [ ] ARE IN MILLIMETERS. ALL OTHER DIMENSIONS ARE IN INCHES.

NOTE:  
TO PREVENT STANDING WATER IN THE DRAIN PAN OF THE INDOOR SECTION, AND THE HEAT EXCHANGERS UNIT CAN ONLY BE PITCHED AS SHOWN.

Fig. 3 — Roof Curb — 48AJ, AK051 and 060 Units

NOTES:  
 1. WEIGHTS INCLUDE ECONOMIZER (STD).  
 2. CENTER OF GRAVITY.  
 3. UNIT CLEARANCES.  
 4. TOP OF UNITS: NO OVERHANG  
 ECONOMIZER COIL: 4'-0" (1219)  
 CONDENSER COIL: 4'-0" (1219)  
 HEAT SIDE: 4'-0" (1219)  
 5. REMOVAL OF EVAPORATOR COIL  
 FOR SMALLER SERVICE AND OPERATIONAL  
 CLEARANCES, CONTACT CARRIER APPLI-  
 CATION ENGINEERING DEPARTMENT.  
 6. BOTTOM DUCTS ARE DESIGNED TO BE AT-  
 TACHED TO ACCESSORY ROOF CURB. IF UNIT  
 IS MOUNTED ON DUNNAGE, IT IS RECOM-  
 MENDED THAT THE DUCTS BE SUPPORTED  
 BY ROOF CURB.  
 7. DIMENSIONS IN [ ] ARE IN MILLIMETERS. ALL  
 OTHER DIMENSIONS ARE IN INCHES.

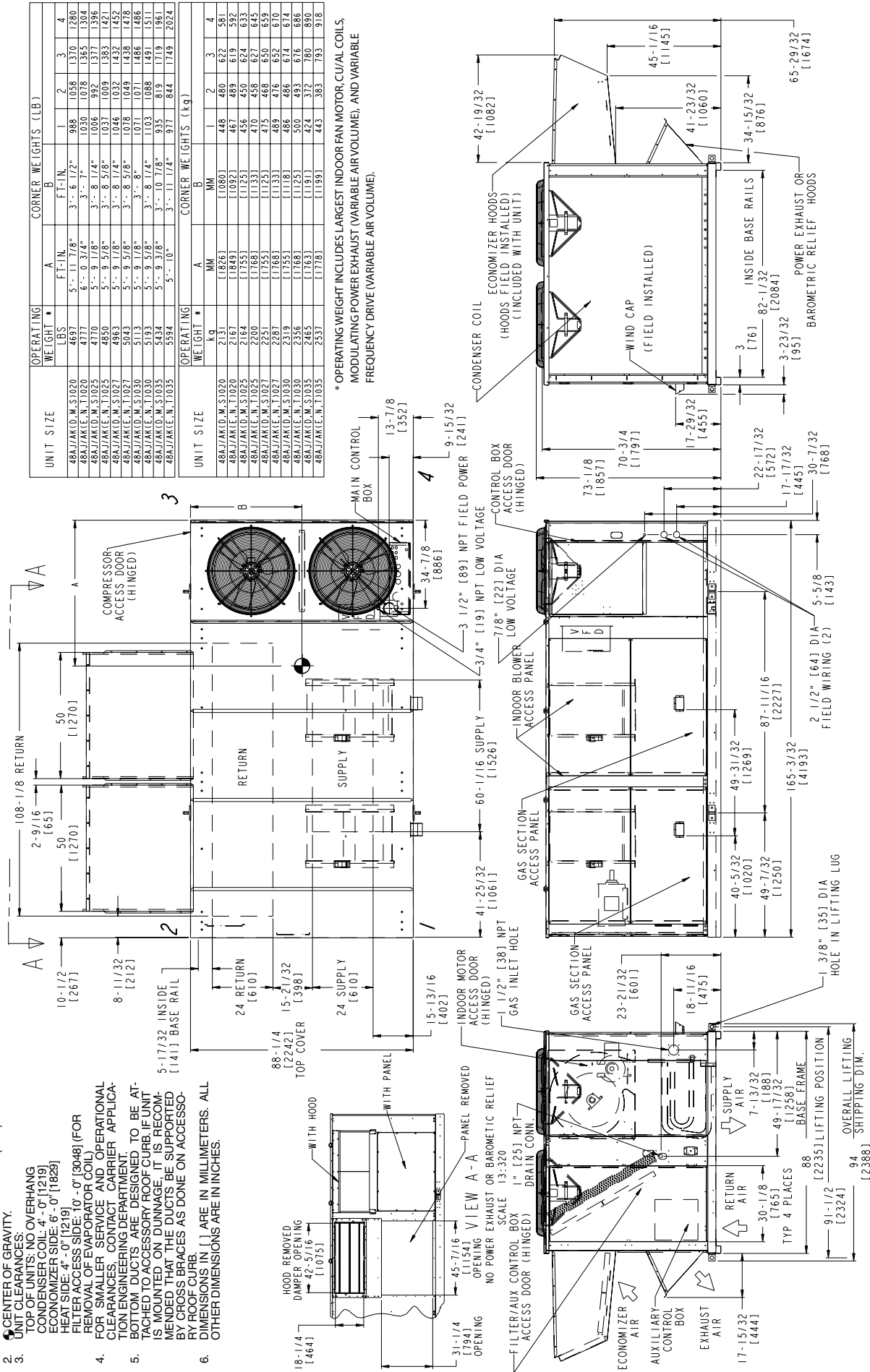
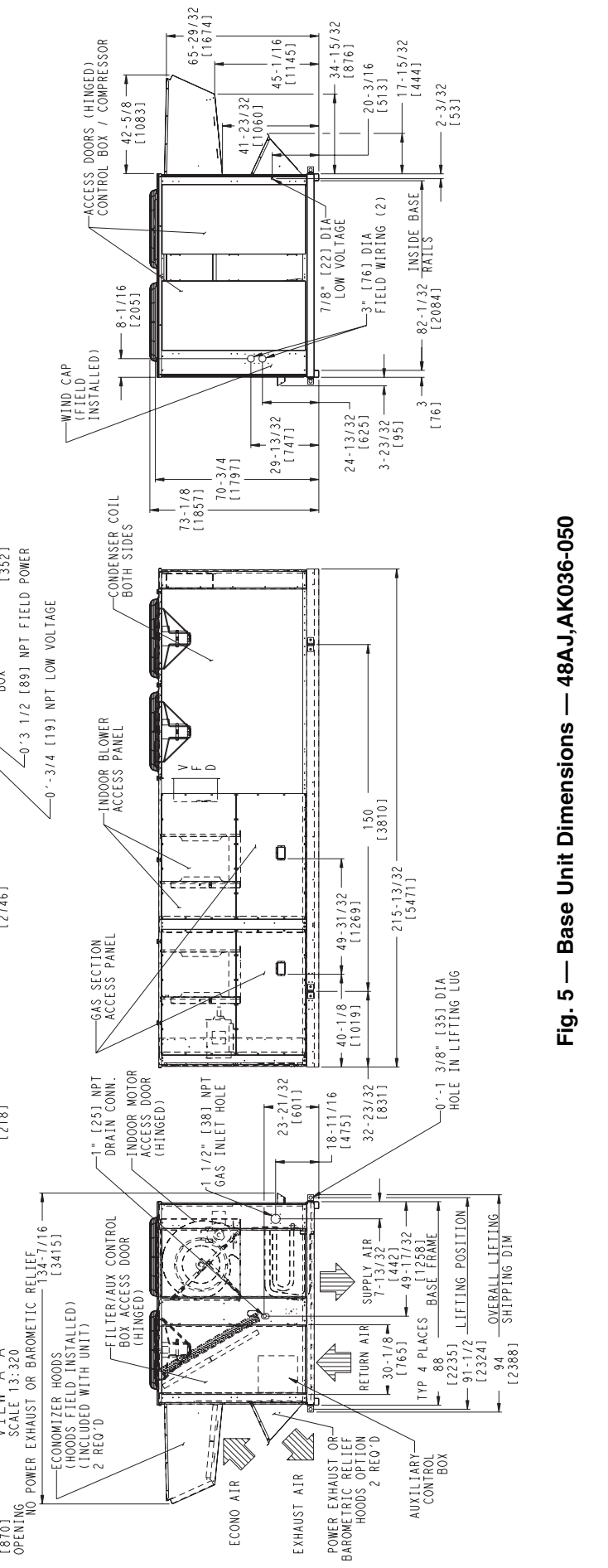
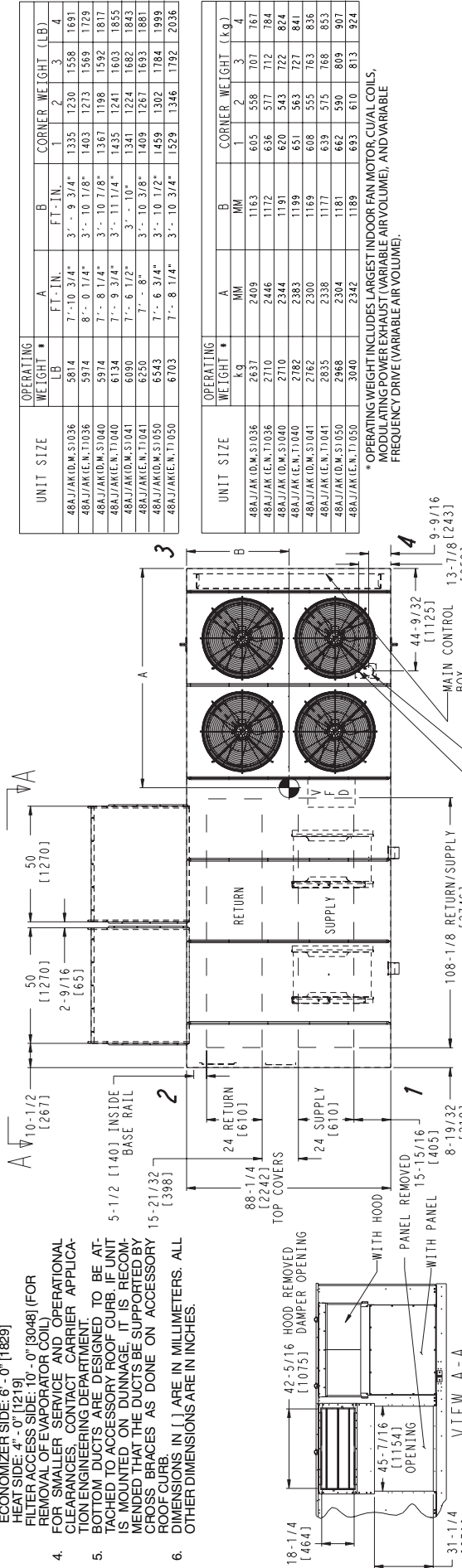


Fig. 4 — Base Unit Dimensions — 48AJ, AK020-035



- NOTES:
- WEIGHTS INCLUDE ECONOMIZER (STD).
  - CENTER OF GRAVITY.
  - UNIT CLEARANCES:  
TOP OF UNITS: NO OVERHANG  
CONDENSER COIL: 4" - 0" [1219]  
ECONOMIZER SIDE: 6" - 0" [1829]  
HEAT SIDE: 4" - 0" [1219]  
FILTER ACCESS SIDE: 10" - 0" [3048] (FOR REMOVAL OF EVAPORATOR COIL)
  - FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES, CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT.
  - BOTTOM DUCTS ARE DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB. IF UNIT IS MOUNTED ON DUNNAGE, IT IS RECOMMENDED THAT THE DUCTS BE SUPPORTED BY CROSS BRACES AS DONE ON ACCESSORY ROOF CURB.
  - DIMENSIONS IN [ ] ARE IN MILLIMETERS. ALL OTHER DIMENSIONS ARE IN INCHES.



UNIT SIZE	OPERATING WEIGHT *		CORNER WEIGHT (LB)	
	LB	FT.-IN.	1	2
48AJ/AK (D.M.S) 036	5814	3' - 9 3/4"	1335	1230
48AJ/AK (D.M.S) 1036	5974	8' - 0 1/4"	1403	1273
48AJ/AK (D.M.S) 1040	5974	7' - 8 1/4"	1367	1198
48AJ/AK (D.M.S) 1040	6134	7' - 9 3/4"	1435	1241
48AJ/AK (D.M.S) 1041	6030	7' - 6 1/2"	1341	1224
48AJ/AK (E.N.) 1041	6220	7' - 8"	1409	1267
48AJ/AK (E.N.S) 1050	6535	7' - 6 3/4"	1459	1302
48AJ/AK (E.N.S) 1050	6703	7' - 8 1/4"	1529	1346

UNIT SIZE	OPERATING WEIGHT *		CORNER WEIGHT (kg)	
	kg	MM	1	2
48AJ/AK (D.M.S) 036	2637	2409	605	558
48AJ/AK (E.N.S) 1036	2710	2446	636	577
48AJ/AK (D.M.S) 1040	2710	2344	620	543
48AJ/AK (E.N.S) 1041	2782	2383	651	563
48AJ/AK (D.M.S) 1041	2762	2300	608	555
48AJ/AK (E.N.S) 1041	2835	2338	639	575
48AJ/AK (E.N.S) 1050	2968	2304	662	590
48AJ/AK (E.N.S) 1050	3040	2342	683	610

\* OPERATING WEIGHT INCLUDES LARGEST INDOOR FAN MOTOR, CU/AL COILS, MODULATING POWER EXHAUST (VARIABLE AIR VOLUME), AND VARIABLE FREQUENCY DRIVE (VARIABLE AIR VOLUME).

Fig. 5 — Base Unit Dimensions — 48AJ, AK036-050

FOR CENTERS OF GRAVITY, OPERATING & CORNER WEIGHTS, SEE FIGURE 10

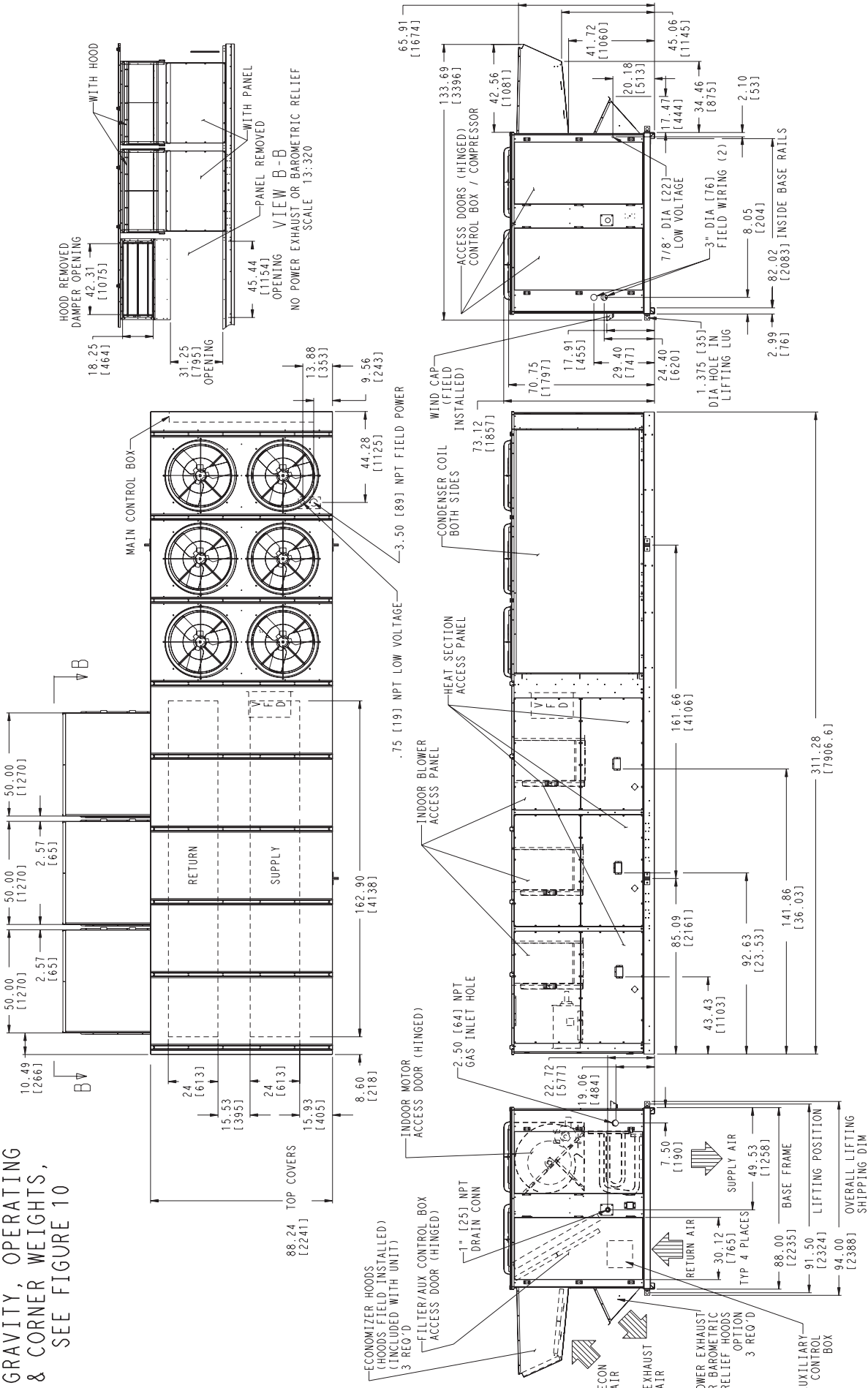
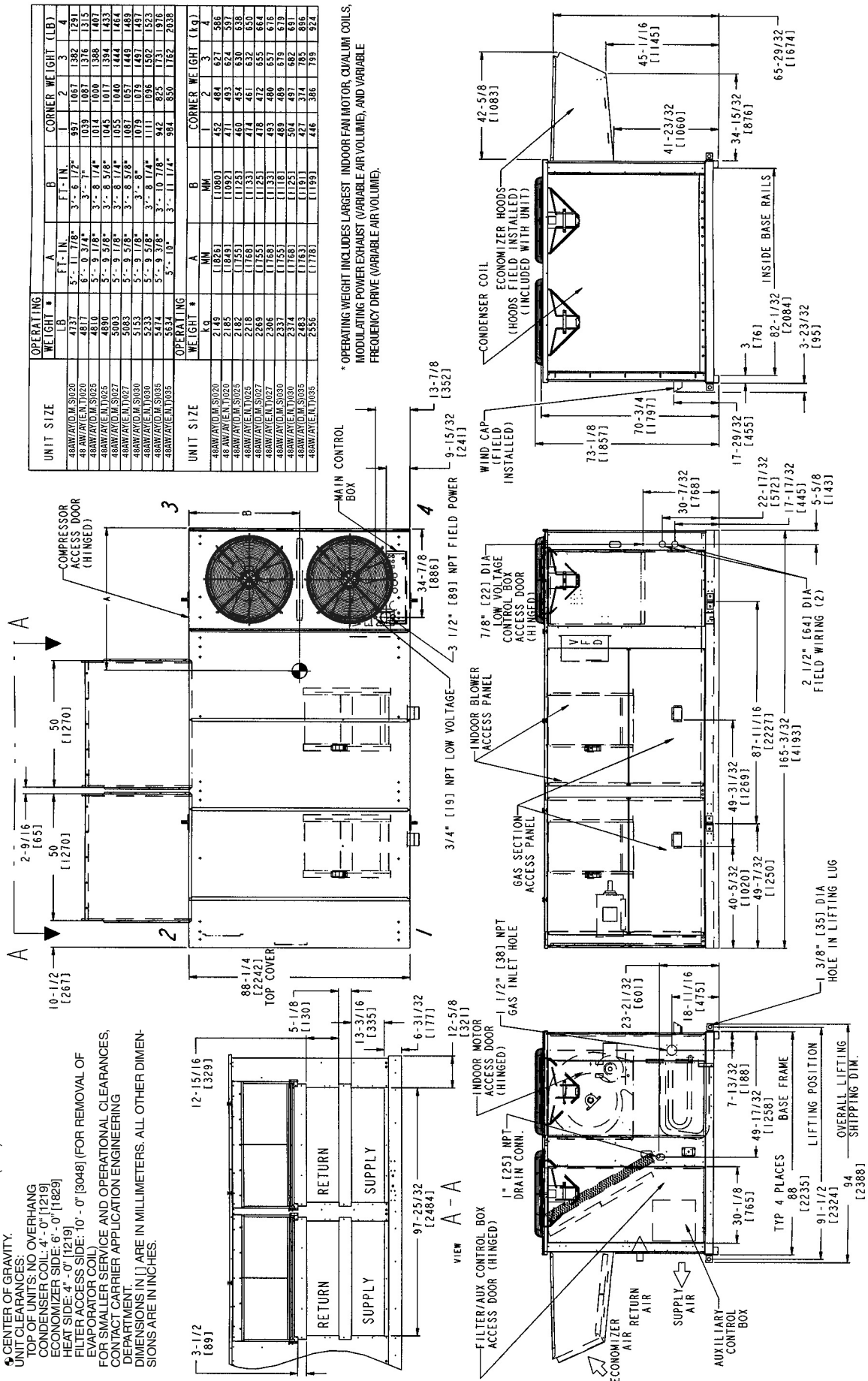


Fig. 6 — Base Unit Dimensions — 48AJ,AK051 and 060



- NOTES:
- WEIGHTS INCLUDE ECONOMIZER (STD).
  - CENTER OF GRAVITY.
  - UNIT CLEARANCES:
  - TOP OF UNITS: NO OVERHANG  
ECONOMIZER COIL: 4" - 0" [1219]  
CONDENSER COIL: 6" - 0" [1829]  
HEAT SIDE: 4" - 0" [1219]  
FILTER ACCESS SIDE: 10" - 0" [3048] (FOR REMOVAL OF EVAPORATOR COIL)
  - FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES, CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT.
  - DIMENSIONS IN ( ) ARE IN MILLIMETERS. ALL OTHER DIMENSIONS ARE IN INCHES.



UNIT SIZE	OPERATING WEIGHT (LB)		CORNER WEIGHT (LB)	
	A	B	1	2
48AW/A/E.N.S1020	5'-11 1/8"	3'-6 1/2"	487	1067
48AW/A/E.N.1020	5'-0 3/4"	3'-6 1/2"	487	1067
48AW/A/E.N.S1025	5'-9 1/8"	3'-8 1/4"	1014	1000
48AW/A/E.N.1025	5'-9 1/8"	3'-8 1/4"	1014	1000
48AW/A/E.N.1027	5'-9 1/8"	3'-8 1/4"	1014	1000
48AW/A/E.N.S1030	5'-9 1/8"	3'-8 1/4"	1014	1000
48AW/A/E.N.1030	5'-9 1/8"	3'-8 1/4"	1014	1000
48AW/A/E.N.S1035	5'-10 1/8"	3'-11 1/4"	1111	1096
48AW/A/E.N.1035	5'-10 1/8"	3'-11 1/4"	1111	1096
OPERATING WEIGHT (KG)		CORNER WEIGHT (KG)		
UNIT SIZE	A	B	1	2
48AW/A/E.N.S1020	(1826)	(1080)	452	484
48AW/A/E.N.1020	(1849)	(1092)	471	493
48AW/A/E.N.S1025	(1755)	(1125)	460	454
48AW/A/E.N.1025	(1768)	(1133)	474	461
48AW/A/E.N.S1027	(1755)	(1125)	478	472
48AW/A/E.N.1027	(1768)	(1133)	493	480
48AW/A/E.N.S1030	(1755)	(1125)	489	489
48AW/A/E.N.1030	(1768)	(1133)	537	537
48AW/A/E.N.S1035	(1783)	(1141)	424	374
48AW/A/E.N.1035	(1783)	(1139)	446	385

\* OPERATING WEIGHT INCLUDES LARGEST INDOOR FAN MOTOR, CU/ALUM COILS, MODULATING POWER EXHAUST (VARIABLE AIR VOLUME), AND VARIABLE FREQUENCY DRIVE (VARIABLE AIR VOLUME).

Fig. 7 — Base Unit Dimensions — 48AW, A Y020-035

- NOTES:
- WEIGHTS INCLUDE ECONOMIZER (STD).
  - CENTER OF GRAVITY.
  - UNIT CLEARANCES:
  - FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES, CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT. DIMENSIONS IN [ ] ARE IN MILLIMETERS. ALL OTHER DIMENSIONS ARE IN INCHES.

UNIT SIZE	OPERATING WEIGHT *		A		B		CORNER WEIGHT (LB.)			
	LB	KG	FT-IN	MM	FT-IN	MM	1	2	3	
48AW/AYD.M.S1036	5854	2655	7'-10 3/4"	2408	3'-9 3/4"	1163	1344	1238	1569	1703
48AW/AYE.N.T1036	6014	2728	8'-0 1/4"	2446	3'-10 1/8"	1172	1412	1281	1579	1741
48AW/AYD.M.S1040	6014	2728	7'-8 1/4"	2344	3'-10 7/8"	1172	1376	1206	1603	1829
48AW/AYE.N.T1040	6174	2801	7'-9 3/4"	2383	3'-11 1/4"	1199	1445	1249	1614	1867
48AW/AYD.M.S1041	6130	2781	7'-6 1/2"	2300	3'-10"	1169	1350	1232	1683	1855
48AW/AYE.N.T1041	6290	2853	7'-8"	2339	3'-10 3/8"	1177	1418	1275	1703	1883
48AW/AYD.M.S1050	6583	2986	7'-6 3/4"	2304	3'-10 1/2"	1161	1467	1310	1795	2011
48AW/AYE.N.T1050	6743	3059	7'-8 1/4"	2342	3'-10 3/4"	1189	1538	1354	1803	2048

UNIT SIZE	OPERATING WEIGHT *		A		B		CORNER WEIGHT (kg)		
	kg	MM	MM	MM	MM	MM	1	2	3
48AW/AYD.M.S1036	2655	2408	2408	1163	914	610	562	712	713
48AW/AYE.N.T1036	2728	2446	2446	1172	641	581	716	730	790
48AW/AYD.M.S1040	2728	2344	2344	1191	624	547	721	830	847
48AW/AYE.N.T1040	2801	2383	2383	1199	655	566	732	847	847
48AW/AYD.M.S1041	2781	2300	2300	1169	612	559	768	842	842
48AW/AYE.N.T1041	2853	2339	2339	1177	643	579	772	859	859
48AW/AYD.M.S1050	2986	2304	2304	1181	666	594	814	912	912
48AW/AYE.N.T1050	3059	2342	2342	1189	696	614	818	929	929

\* OPERATING WEIGHT INCLUDES LARGEST INDOOR FAN MOTOR, CURIAL COILS, MODULATING POWER EXHAUST (VARIABLE AIR VOLUME), AND VARIABLE FREQUENCY DRIVE (VARIABLE AIR VOLUME).

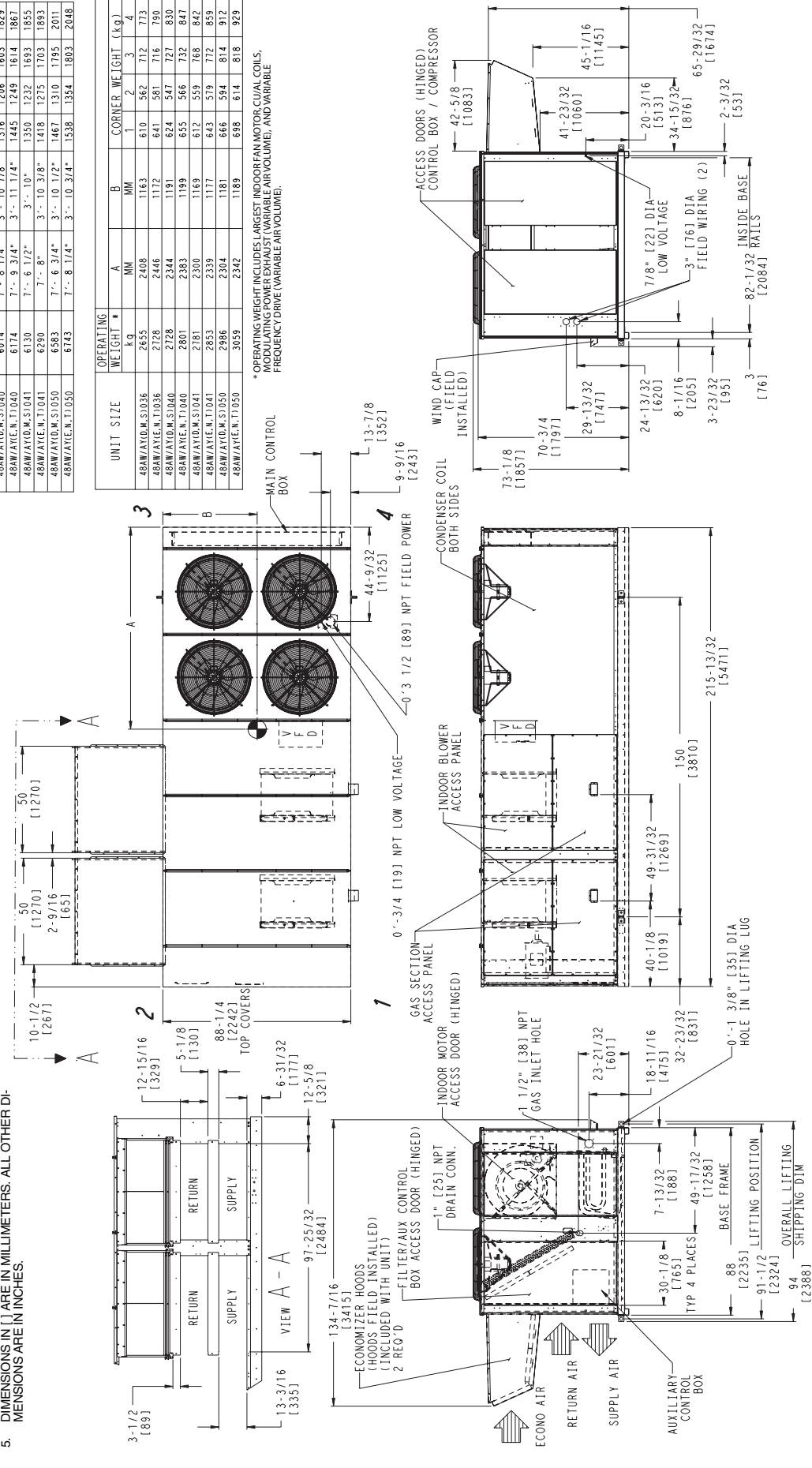
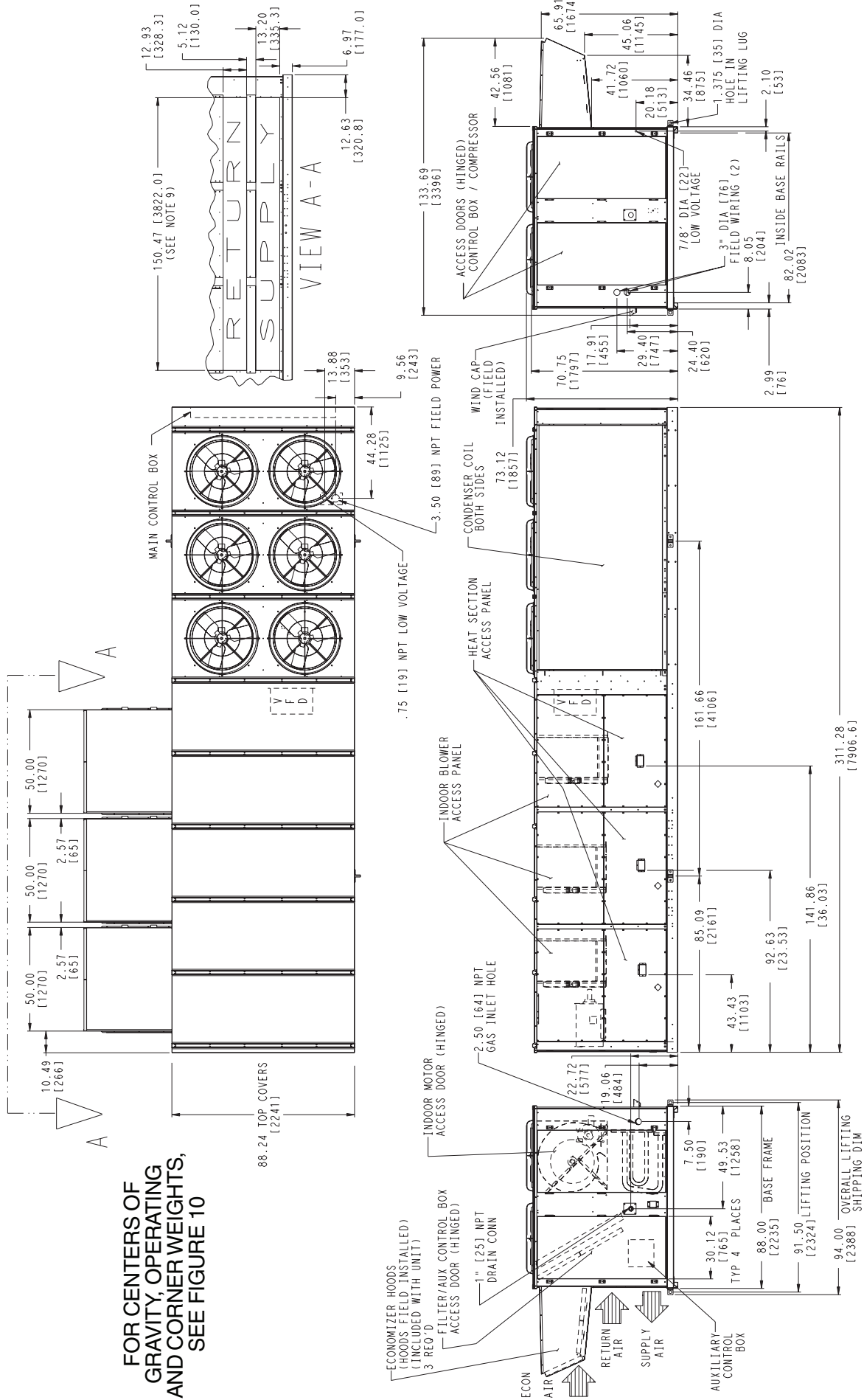


Fig. 8 — Base Unit Dimensions — 48AW, AY036-050



**Fig. 9 — Base Unit Dimensions — 48AW,AY051 and 060**

- NOTES:
- WEIGHTS INCLUDE ECONOMIZER OR OUTDOOR AIR DAMPER.
  - CENTER OF GRAVITY.
  - UNIT CLEARANCES:  
 CONDENSER COIL: 4" - 0" (1219)  
 ECONOMIZER SIDE: 6" - 0" (1524)  
 HEAT SIDE: 4" - 0" (1219)  
 FILTER ACCESS SIDE: 15" - 0" (4572) (FOR REMOVAL OF EVAPORATOR COIL)  
 CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT.
  - FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES, BOTTOM DUCTS ARE DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB IF UNIT IS MOUNTED ON DUNNAGE. IT IS RECOMMENDED THAT THE DUCTS BE SUPPORTED BY CROSS BRACES AS DONE ON ACCESSORY ROOF CURB.
  - BASE UNIT WEIGHTS INCLUDE OUTDOOR AIR HOODS AND FILTERS (INDOOR FAN MOTOR IS NOT INCLUDED). ADD INDOOR FAN MOTOR, FIOPS, AND ACCESSORIES FOR TOTAL OPERATING WEIGHT.
  - VAV MOTOR WEIGHTS INCLUDE INDOOR MOTOR, VFD TRANSDUCER AND ASSOCIATED WIRING.
  - DIMENSIONS IN ( ) ARE IN MILLIMETERS. ALL OTHER DIMENSIONS ARE IN INCHES.
  - FOR SIDE-SUPPLY RETURN APPLICATIONS, A SINGLE RETURN AND SUPPLY DUCTWORK CONNECTION IS RECOMMENDED FOR COVERING ALL THREE RETURN AND ALL THREE SUPPLY OPENINGS. THE ENTIRE AREA AROUND THE DUCT OPENINGS IS AVAILABLE FOR A 1.5" DUCT FLANGE ATTACHMENT.

BASE UNIT WEIGHTS (SEE NOTE 7)  
LB. (Kg)

48AJ/AK LOW HEAT	051
48AJ/AK HIGH HEAT	7224 (32717)
48AW/AY LOW HEAT	7484 (3386)
48AW/AY HIGH HEAT	7284 (3295)
48AW/AY HIGH HEAT	7514 (3408)
48AJ/AK LOW HEAT	060
48AJ/AK HIGH HEAT	7388 (3331)
48AW/AY LOW HEAT	7628 (3460)
48AW/AY HIGH HEAT	7428 (3369)
48AW/AY HIGH HEAT	7678 (3483)
OPTIONS / ACCESSORIES (SEE NOTE 7)	
BAROMETRIC RELIEF	450 (204)
NON MOD. POWER EXHAUST	675 (306)
MOD. POWER EXHAUST	725 (329)
CU, FIN COND COIL	651 (295)

UNIT SIZE	CENTER OF GRAVITY		MILLIMETERS		% OF TOTAL WEIGHT AT EACH CORNER		
	A	B	A	B	1	2	3
48AJ/AK051 LOW HEAT 48AW/AY051 LOW HEAT	11' - 1 1/4"	3' - 10 5/8"	3383	1185	22.7	20.1	26.9
48AJ/AK051 HIGH HEAT 48AW/AY051 HIGH HEAT	11' - 8 1/4"	4' - 0 5/8"	3562	1237	24.9	20.1	24.6
48AJ/AK060 LOW HEAT 48AW/AY060 LOW HEAT	10' - 10 3/4"	3' - 10 5/8"	3320	1184	22.2	19.7	27.3
48AJ/AK060 HIGH HEAT 48AW/AY060 HIGH HEAT	11' - 5 3/4"	4' - 0 5/8"	3498	1235	24.4	19.8	25.0

LEGEND

- CV — Constant Volume
- FIOF — Factory-Installed Option
- IFM — Indoor Fan Motor
- VAV — Volume Air volume
- VFD — Variable Frequency Drive

	CV MOTOR WEIGHTS LB. (Kg)		VAV MOTOR WEIGHTS LB. (Kg)	
	HIGH EFFC'Y IFM	PREMIUM EFFC'Y IFM	HIGH EFFC'Y IFM	PREMIUM EFFC'Y IFM
25 HP (18.65 kW)	230/460 575	240 (109) 319 (145)	309 (140) 375 (170)	377 (171) 446 (202)
30 HP (22.38 kW)	230/460 575	283 (128) 359 (163)	480 (218) 418 (190)	552 (250) 494 (224)
40 HP (29.84 kW)	230/460 575	372 (169) 410 (186)	637 (289) 587 (266)	680 (308) 625 (284)
20 HP (14.92 kW)	230/460 575	212 (96) 258 (117)	348 (158) 304 (138)	386 (175) 350 (159)

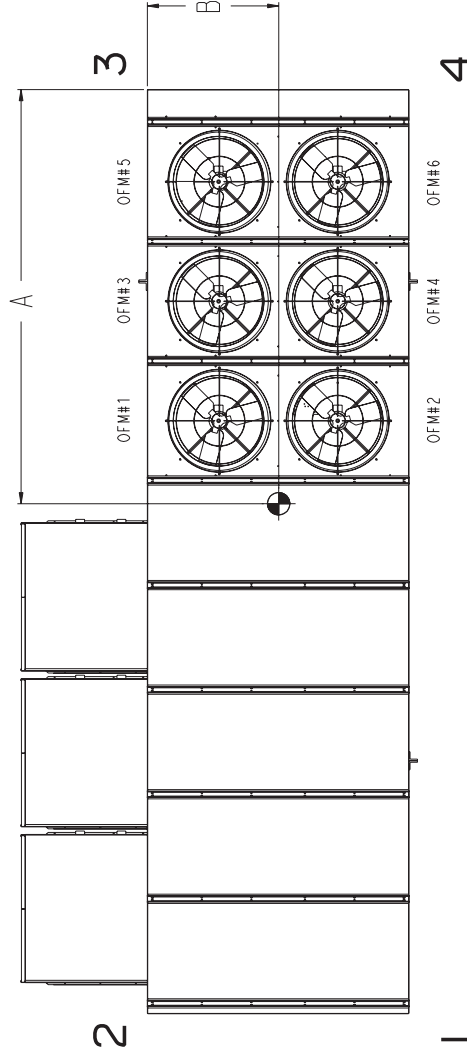


Fig. 10 — Center of Gravity and Weights — 48AJ,AK,AW,AY051,060

**Table 1 — Physical Data — 48AJ,AK,AW,AY Units**

UNIT 48AJ,AK,AW,AY	020			025			027			030		
NOMINAL CAPACITY (tons)	20			25			27			30		
BASE UNIT OPERATING WEIGHT (lb)	See Operating Weights Table											
COMPRESSOR	2...SR*782AT/1...SR*782AE			1...SR*812AT, 1...SR*942AT/ 1...SR*942AE			2 ... SR*942AT/1...SR*942AE			2...SR*782AT/2...SR*812AT		
Quantity ... Type (Ckt 1/Ckt 2)	2			2			2			2		
Number of Refrigerant Circuits	2			2			2			2		
Oil (oz) (Ckt 1, Ckt 2)	Precharged			Precharged			Precharged			Precharged		
REFRIGERANT TYPE	R-22											
Operating Charge (lb-oz)	26-8 14-0			33-8 17-8			35-8 20-0			29-0 30-8		
CONDENSER COIL*	Internally Enhanced, 3/8" Copper Tubes, Aluminum Lanced, Aluminum Pre-Coated, or Copper Plate Fins											
Quantity	1			1			1			1		
Rows ... Fins/in.	2 ... 15			3 ... 15			3 ... 15			4 ... 15		
Total Face Area (sq ft)	33.3			33.3			33.3			33.3		
CONDENSER FAN	Propeller Type											
Nominal Cfm	17,200			15,850			15,850			14,500		
Quantity... Diameter (in.)	2 ... 30			2 ... 30			2 ... 30			2 ... 30		
Motor Hp	1			1			1			1		
EVAPORATOR COIL	Internally Enhanced Copper Tubes, Aluminum Plate Fins with Intertwined Circuits											
Tube Size (in.)	3/8			3/8			3/8			3/8		
Rows ... Fins/in.	3 ... 15			3 ... 15			4 ... 15			4 ... 15		
Total Face Area (sq ft)	31.7			31.7			31.7			31.7		
EVAPORATOR FAN	Centrifugal Type											
Quantity ... Size (in.)	2 ... 20 X 15			2 ... 20 X 15			2 ... 20 X 15			2 ... 20 X 15		
Type Drive	Belt			Belt			Belt			Belt		
Nominal Cfm	8,000			10,000			11,000			12,000		
Motor Hp	5	10	15	5	10	15	10	15	20	10	15	20
Motor Frame Size	184T	215T	254T	184T	215T	254T	215T	254T	256T	215T	254T	256T
Motor Bearing Type	Ball			Ball			Ball			Ball		
Maximum Allowable Rpm	1200			1200			1200			1200		
Motor Pulley Pitch Diameter (in.)	4.8	4.4	5.7	4.8	6.1	5.5	4.4	4.9	5.9	4.4	5.7	5.9
Nominal Motor Shaft Diameter (in.)	1 1/8	1 3/8	1 5/8	1 1/8	1 3/8	1 5/8	1 3/8	1 5/8	1 5/8	1 3/8	1 5/8	1 5/8
Fan Pulley Pitch Diameter (in.)	12.4	8.6	9.1	12.4	11.1	8.7	9.4	8.1	8.7	9.5	9.1	8.7
Nominal Fan Shaft Diameter (in.)	1 15/16			1 15/16			1 15/16			1 15/16		
Belt Quantity	1			1			2			2		
Belt Type	BX56	BX50	5VX530	BX56	5VX570	5VX530	BX50	5VX530	5VX530	BX50	5VX530	5VX530
Belt Length (in.)	56	63	53	56	57	53	50	50	53	50	53	53
Pulley Center Line Distance (in.)	16.0-18.7	15.6-18.4	15.0-17.9	15.6-18.4	15.6-18.4	15.0-17.9	15.6-18.4	15.0-17.9	15.0-17.9	15.6-18.4	15.0-17.9	15.0-17.9
Factory Speed Setting (rpm)	677	895	1096	677	962	1106	819	1096	1187	884	1096	1187
FURNACE SECTION	5.0-in. wg min/13.5-in. wg max.											
Supply Line Pressure Range	5.0-in. wg min/13.5-in. wg max.											
Rollout Switch Cutout Temp (F)†	225			225			225			225		
Burner Orifice Diameter (in. ...drill size)	.111 ... 34			.111 ... 34			.111 ... 34			.111 ... 34		
Natural Gas Std	.089 ... 43			.089 ... 43			.089 ... 43			.089 ... 43		
Liquid Propane Alt	.089 ... 43			.089 ... 43			.089 ... 43			.089 ... 43		
Thermostat Heat Anticipator Setting	0.24			0.24			0.24			0.24		
Stage 1 (amps)	0.13			0.13			0.13			0.13		
Stage 2 (amps)	0.13			0.13			0.13			0.13		
Gas Input (Btuh) Stage 1 (Low Heat/High Heat)	262,500/394,000			262,500/394,000			262,500/394,000			262,500/394,000		
Stage 2 (Low Heat/High Heat)	350,000/525,000			350,000/525,000			350,000/525,000			350,000/525,000		
Efficiency (Steady State) (%)	82			82			82			82		
Temperature Rise Range	15-45/35-65			15-45/35-65			15-45/35-65			15-45/35-65		
Manifold Pressure (in. wg)	3.5			3.5			3.5			3.5		
Natural Gas Std	3.5			3.5			3.5			3.5		
Liquid Propane Alt	3.5			3.5			3.5			3.5		
Gas Valve Quantity	2			2			2			2		
HIGH-PRESSURE SWITCH (psig)	426			426			426			426		
Cutout	320			320			320			320		
Reset (Auto.)	320			320			320			320		
MIXED-AIR FILTERS	10 ... 20 x 24 x 2											
Quantity ... Size (in.) Standard	5 ... 20 x 20 x 4			5 ... 20 x 20 x 4			5 ... 20 x 20 x 4			5 ... 20 x 20 x 4		
Pleated	5 ... 20 x 24 x 4			5 ... 20 x 24 x 4			5 ... 20 x 24 x 4			5 ... 20 x 24 x 4		
OUTDOOR-AIR FILTERS	8...16 x 25 x 2											
Quantity...Size (in.)	4...20 x 25 x 2											
POWER EXHAUST	Direct Drive, Single-Phase Motors (Factory-Wired for High Speed Operation), Forward-Curved Fan Wheels with Backdraft Dampers on Each Fan Housing											
Motor, Quantity...Hp	4...1											
Fan, Diameter...Width (in.)	11 x 10											

LEGEND  
 Al — Aluminum  
 Cu — Copper

\*Sizes 020-040: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion.  
 Sizes 041-060: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.  
 †Rollout switch is manual reset.

**Table 1 — Physical Data — 48AJ,AK,AW,AY Units (cont)**

UNIT 48AJ,AK,AW,AY	035			036			040			041		
NOMINAL CAPACITY (tons)	35			35			40			40		
BASE UNIT OPERATING WEIGHT (lb)	See Operating Weights Table											
COMPRESSOR	1...SR*812AT, 1...SR*942AT/2...SR*942AT 2 Precharged			1...SR*812AT, 1...SR*942AT/2...SR*942AT 2 Precharged			2...SR*942AT/2...SM125 2 Precharged			2...SR*942AT/2...SM125 2 Precharged		
REFRIGERANT TYPE	R-22											
Operating Charge (lb-oz)	33-0 38-0			36-0 58-0			36-0 47-0			47-0 47-0		
CONDENSER COIL*	Internally Enhanced, 3/8" Copper Tubes, Aluminum Lanced, Aluminum Pre-Coated, or Copper Plate Fins											
Quantity	1			2			2			2		
Rows ... Fins/in.	4 ... 15			2...15/4...15			2 ... 15 / 4 ... 15			4...15/4...15		
Total Face Area (sq ft)	33.3			66.7			66.7			66.7		
CONDENSER FAN	Propeller Type											
Nominal Cfm	14,500			30,000			30,000			30,000		
Quantity... Diameter (in.)	2 ... 30			4...30			4 ... 30			4...30		
Motor Hp	1			1			1			1		
EVAPORATOR COIL	Internally Enhanced Copper Tubes, Aluminum Plate Fins with Intertwined Circuits											
Tube Size (in.)	1/2			1/2			1/2			1/2		
Rows ... Fins/in.	6 ... 16			4...17			4 ... 16			4...17		
Total Face Area (sq ft)	31.3			31.3			31.3			31.3		
EVAPORATOR FAN	Centrifugal Type											
Quantity ... Size (in.)	2 ... 20 X 15			2...20 X 15			2 ... 20 X 15			2...20 X 15		
Type Drive	Belt			Belt			Belt			Belt		
Nominal Cfm	14,000			14,000			16,000			16,000		
Motor Hp	15			15			15			15		
Motor Frame Size	254T   256T   284T			254T   256T   284T			254T   256T   284T			254T   256T   284T		
Motor Bearing Type	Ball			Ball			Ball			Ball		
Maximum Allowable Rpm	1300			1300			1300			1300		
Motor Pulley Pitch Diameter (in.)	5.1   5.7   6.2			5.3   5.7   7.5			5.3   5.7   7.5			5.3   5.7   7.5		
Nominal Motor Shaft Diameter (in.)	1 5/8   1 5/8   1 7/8			1 5/8   1 5/8   1 7/8			1 5/8   1 5/8   1 7/8			1 5/8   1 5/8   1 7/8		
Fan Pulley Pitch Diameter (in.)	8.7   8.7   8.7			9.5   9.5   11.1			9.5   9.5   11.1			9.5   9.5   11.1		
Nominal Fan Shaft Diameter (in.)	1 15/16			1 15/16			1 15/16			1 15/16		
Belt Quantity	2			2			2			2		
Belt Type	5VX500			5VX530			5VX550			5VX590		
Belt Length (in.)	50			53			55			59		
Pulley Center Line Distance (in.)	15.0-17.9			15.0-17.9			15.0-17.9			15.0-17.9		
Factory Speed Setting (rpm)	1005			1147			1247			976		
FURNACE SECTION	5.0-in. wg min/13.5-in. wg max.											
Supply Line Pressure Range												
Rollout Switch Cutout Temp (F)†	225			225			225			225		
Burner Orifice Diameter (in ...drill size)												
Natural Gas Std	.111 ... 34			.120...31			.120 ... 31			.120...31		
Liquid Propane Alt	.089 ... 43			.096...41			.096 ... 41			.096...41		
Thermostat Heat Anticipator Setting												
Stage 1 (amps)	0.24			0.1			0.24			0.1		
Stage 2 (amps)	0.13			0.1			0.13			0.1		
Gas Input (Btuh) Stage 1 (Low Heat/High Heat)	262,500/394,000			300,000/600,000			300,000/600,000			300,000/600,000		
Stage 2 (Low Heat/High Heat)	350,000/525,000			400,000/800,000			400,000/800,000			400,000/800,000		
Efficiency (Steady State) (%)	82			82			82			82		
Temperature Rise Range	15-45/35-65			10-40/30-60			10-40/3 -60			10-40/30-60		
Manifold Pressure (in. wg)												
Natural Gas Std	3.5			3.5			3.5			3.5		
Liquid Propane Alt	3.5			3.5			3.5			3.5		
Gas Valve Quantity	2			2			2			2		
HIGH-PRESSURE SWITCH (psig)												
Cutout	426			426			426			426		
Reset (Auto.)	320			320			320			320		
MIXED-AIR FILTERS												
Quantity ... Size (in.) Standard Pleated	10 ... 20 x 24 x 2			10...20 x 24 x 2			10 ... 20 x 24 x 2			10...20 x 24 x 2		
	5 ... 20 x 20 x 4			5...20 x 20 x 4			5 ... 20 x 20 x 4			5...20 x 20 x 4		
	5 ... 20 x 24 x 4			5...20 x 20 x 4			5 ... 20 x 24 x 4			5...20 x 20 x 4		
OUTDOOR-AIR FILTERS												
Quantity...Size (in.)	8...16 x 25 x 2 4...20 x 25 x 2											
POWER EXHAUST	Direct Drive, Single-Phase Motors (Factory-Wired for High Speed Operation), Forward-Curved Fan Wheels with Backdraft Dampers on Each Fan Housing											
Motor, Quantity...Hp	4...1											
Fan, Diameter...Width (in.)	11 x 10											

LEGEND  
Al — Aluminum  
Cu — Copper

\*Sizes 020-040: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion.  
Sizes 041-060: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.  
†Rollout switch is manual reset.



**Table 1 — Physical Data — 48AJ,AK,AW,AY Units (cont)**

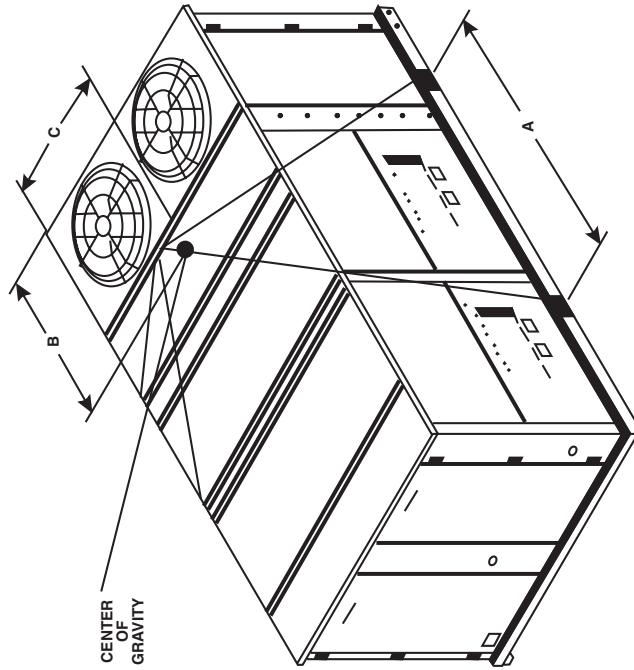
UNIT 48AJ,AK,AW,AY	050			051						060		
NOMINAL CAPACITY (tons)	50			50						60		
BASE UNIT OPERATING WEIGHT (lb)	See Operating Weights Table											
COMPRESSOR	2...SM125/1...SM125, 1...SM175			2...SM125/2...SM125						1..SM160.1..SM175/ 1..SM160.1..SM175		
Quantity ... Type (Ckt 1/Ckt 2)	2 2			2 2						2 2		
Number of Refrigerant Circuits	2			2						2		
Oil (oz) (Ckt 1, Ckt 2)	Precharged			Precharged						Precharged		
REFRIGERANT TYPE	R-22											
Operating Charge (lb-oz)	64-4 58-8			98-0 98-0						81-0 81-0		
Circuit 1												
Circuit 2												
CONDENSER COIL*	Internally Enhanced, 3/8" Copper Tubes, Aluminum Lanced, Aluminum Pre-Coated, or Copper Plate Fins											
Quantity	2			2						2		
Rows ... Fins/in.	4 ... 15			4...15						4...15		
Total Face Area (sq ft)	66.7			100						100		
CONDENSER FAN	Propeller Type											
Nominal Cfm	25,600			38,400						38,400		
Quantity... Diameter (in.)	4 ... 30			6...30						6 ... 30		
Motor Hp	1			1						1		
EVAPORATOR COIL	Internally Enhanced Copper Tubes, Aluminum Plate Fins with Intertwined Circuits											
Tube Size (in.)	1/2			1/2						1/2		
Rows ... Fins/in.	6 ... 16			4...17						4 ... 17		
Total Face Area (sq ft)	31.3			48.1						48.1		
EVAPORATOR FAN	Centrifugal Type											
Quantity ... Size (in.)	2 ... 20 X 15			3...20 X 15						3 ... 20 X 15		
Type Drive	Belt			Belt						Belt		
Nominal Cfm	20,000			20,000						24,000		
Motor Hp	20	25	30	20	25	30	40 (High Eff.)	40 (Prem. Eff.)	25	30	40 (High Eff.)	40 (Prem. Eff.)
Motor Frame Size	256T	284T	286T	256T	284T	286T	324T	324T	284T	286T	324T	324T
Motor Bearing Type	Ball			Ball						Ball		
Maximum Allowable Rpm	1300			1200						1200		
Motor Pulley Pitch Diameter (in.)	5.7	6.2	6.7	5.9	5.3	5.9	6.5	9.5	5.3	5.9	6.5	9.5
Nominal Motor Shaft Diameter (in.)	1 5/8	1 7/8	1 7/8	1 5/8	1 7/8	1 7/8	2 1/8	2 1/8	1 7/8	1 7/8	2 1/8	2 1/8
Fan Pulley Pitch Diameter (in.)	9.5	9.5	9.5	11.1	9.1	9.5	9.5	13.7	9.1	9.5	9.5	13.7
Nominal Fan Shaft Diameter (in.)	1 15/16			1 15/16						1 15/16		
Belt Quantity	2	2	2	2	3	3	3	2	3	3	3	2
Belt Type	5VX550	5VX570	5VX570	5VX560	5VX530	5VX550	5VX570	5VX650	5VX530	5VX550	5VX570	5VX650
Belt Length (in.)	55	57	57	56	53	55	57	65	53	55	57	65
Pulley Center Line Distance (in.)	15.0-17.9	14.6-17.6	14.6-17.6	15.0-17.9	15.2-17.5	14.7-17.2	14.2-17.0	14.2-17.0	15.2-17.5	14.7-17.2	14.2-17.0	14.2-17.0
Factory Speed Setting (rpm)	1061	1154	1249	930	1019	1086	1197	1214	1019	1086	1197	1214
FURNACE SECTION	5.0-in. wg min/13.5-in. wg max.											
Supply Line Pressure Range												
Rollout Switch Cutout	225			225						225		
Temp (F)†												
Burner Orifice Diameter (in ...drill size)												
Natural Gas	.120 ... 31			.120...31						.120 ... 31		
Liquid Propane	.096 ... 41			.096...41						.096 ... 41		
Thermostat Heat Anticipator Setting												
Stage 1 (amps)	0.24			0.1						0.36		
Stage 2 (amps)	0.13			0.1						0.13		
Gas Input (Btuh)												
Stage 1 (Low Heat/High Heat)	300,000/600,000			582,000/873,000						582,000/873,000		
Stage 2 (Low Heat/High Heat)	400,000/800,000			776,000/1,164,000						776,000/1,164,000		
Efficiency (Steady State) (%)	82			82						82		
Temperature Rise Range	10-40/30-60			10-40/30-60						10-40/30-60		
Manifold Pressure (in. wg)												
Natural Gas	3.5			3.3						3.3		
Liquid Propane	3.5			3.3						3.3		
Gas Valve Quantity	2			3						3		
HIGH-PRESSURE SWITCH (psig)												
Cutout	426			426						426		
Reset (Auto.)	320			320						320		
MIXED-AIR FILTERS												
Quantity ... Size (in.)	10 ... 20 x 24 x 2			16...20 x 24 x 2						16 ... 20 x 24 x 2		
Standard Pleated	5 ... 20 x 20 x 4			8...20 x 20 x 4						8 ... 20 x 20 x 4		
	5 ... 20 x 24 x 4			8...20 x 24 x 4						8 ... 20 x 24 x 4		
OUTDOOR-AIR FILTERS												
Quantity...Size (in.)	8...16 x 25 x 2			12...16 x 25 x 2						6...20 x 25 x 2		
	4...20 x 25 x 2											
POWER EXHAUST	Direct Drive, Single-Phase Motors (Factory-Wired for High Speed Operation), Forward-Curved Fan Wheels with Backdraft Dampers on Each Fan Housing											
Motor, Quantity...Hp	4...1			6...1						6...1		
Fan, Diameter...Width (in.)	11 x 10			11 x 10						11 x 10		

LEGEND  
 Al — Aluminum  
 Cu — Copper

\*Sizes 020-040: Circuit 1 uses the lower portion of condenser coil, Circuit 2 uses the upper portion.  
 Sizes 041-060: Circuit 1 uses the left condenser coil, Circuit 2 the right. All units have intertwined evaporator coils.  
 †Rollout switch is manual reset.

# ⚠ CAUTION - NOTICE TO RIGGERS: ALL PANELS MUST BE IN PLACE WHEN RIGGING.

**NOTE:** Rig with four cables and spread with two 92 inch (2337 MM) spreader bars. Maintain a distance of 74 inches (1880 MM) from top of unit to eyehook.



**NOTE:**  
 Add 312 lb (142 kg) for export crating. (020-035 units)  
 Add 346 lb (157 kg) for export crating. (036-050 units)  
 Add 588 lb (266 kg) for export crating. (051 and 060 units)  
 Add 220 lb (100 kg) for copper condenser coil. (020-035 units)  
 Add 380 lb (172 kg) for copper condenser coil. (036-050 units)  
 Add 651 lb (295 kg) for copper condenser coil. (051 and 060 units)

UNIT	WEIGHT		A		B		C	
	LB	KG	INCHES	MM	INCHES	MM	INCHES	MM
50AJAK020	4607	2090	87.7	2227	70.9	1801	42.0	1067
48AJJAK020	4697	2131	87.7	2227	71.9	1826	42.5	1080
48AJJAK020	4777	2167	87.7	2227	72.8	1849	41.0	1041
50AWAY020	4685	2125	87.7	2227	70.9	1801	42.0	1067
48WJAY020	4737	2149	87.7	2227	71.9	1826	42.5	1080
50AJAK025	4690	2132	87.7	2227	68.0	1727	43.0	1115
48AJJAK025	4770	2164	87.7	2227	69.1	1755	44.3	1125
48AJJAK025	4850	2200	87.7	2227	69.6	1768	44.6	1133
50AWAY025	4758	2158	87.7	2227	66.0	1727	43.9	1125
48WJAY025	4810	2182	87.7	2227	69.1	1755	44.3	1125
48WJAY025	4890	2218	87.7	2227	69.6	1768	44.6	1133
50AJJAK027	4873	2210	87.7	2227	68.0	1727	43.9	1125
48AJJAK027	4963	2251	87.7	2227	69.1	1755	44.3	1125
48AJJAK027	5043	2287	87.7	2227	69.6	1768	44.6	1133
50WJAY027	4951	2246	87.7	2227	66.0	1727	43.9	1125
48WJAY027	5031	2282	87.7	2227	69.1	1755	44.3	1125
48WJAY027	5093	2308	87.7	2227	69.6	1768	44.6	1133
50AJJAK030	5023	2278	87.7	2227	66.0	1727	43.6	1107
48AJJAK030	5113	2319	87.7	2227	69.1	1755	44.0	1118
48AJJAK030	5193	2356	87.7	2227	69.6	1768	44.3	1125
50AWAY030	5101	2314	87.7	2227	66.0	1727	43.6	1107
48WJAY030	5153	2337	87.7	2227	69.1	1755	44.0	1118
48WJAY030	5233	2374	87.7	2227	69.6	1768	44.3	1125
50AJJAK035	5229	2372	87.7	2227	66.3	1735	46.5	1181
48AJJAK035	5494	2485	87.7	2227	69.4	1763	46.9	1191
48AJJAK035	5594	2537	87.7	2227	70.0	1778	47.2	1189
50WJAY035	5474	2483	87.7	2227	66.3	1735	46.5	1181
48WJAY035	5574	2526	87.7	2227	69.3	1763	46.9	1191
48WJAY035	5634	2556	87.7	2227	70.0	1778	47.2	1189
50AJJAK036	5609	2544	87.7	2227	93.4	2372	45.3	1152
48AJJAK036	5914	2637	87.7	2227	94.8	2409	45.8	1163
48AJJAK036	5974	2710	87.7	2227	96.3	2446	46.1	1172
50AWAY036	5802	2632	87.7	2227	92.1	2370	45.4	1153
48WJAY036	5954	2695	87.7	2227	94.8	2408	45.8	1163
48WJAY036	6014	2728	87.7	2227	96.3	2446	46.1	1172
50AJJAK040	5789	2617	87.7	2227	90.8	2306	46.5	1181
48AJJAK040	5974	2710	87.7	2227	92.3	2344	46.9	1191
48AJJAK040	6134	2782	87.7	2227	93.8	2383	47.2	1199
50WJAY040	6014	2728	87.7	2227	90.3	2344	46.9	1191
48WJAY040	6174	2801	87.7	2227	93.8	2383	47.2	1199
48WJAY040	6174	2801	87.7	2227	93.8	2383	47.2	1199
50AJJAK041	5885	2669	87.7	2227	89.0	2281	45.6	1158
48AJJAK041	6090	2762	87.7	2227	90.5	2300	46.0	1169
48AJJAK041	6250	2835	87.7	2227	92.1	2338	46.3	1177
50AWAY041	6078	2767	87.7	2227	89.1	2282	45.6	1159
48WJAY041	6130	2781	87.7	2227	90.6	2300	46.0	1169
48WJAY041	6290	2853	87.7	2227	92.1	2339	46.3	1177
50AJJAK050	6338	2875	87.7	2227	88.2	2286	46.1	1171
48AJJAK050	6743	3088	87.7	2227	90.7	2324	46.5	1181
48AJJAK050	6843	3120	87.7	2227	92.2	2362	46.8	1191
50AWAY050	6531	2942	87.7	2227	89.2	2286	46.1	1171
48WJAY050	6583	2986	87.7	2227	90.7	2304	46.5	1181
48WJAY050	6743	3059	87.7	2227	92.2	2342	46.8	1189
50AJJAK051	6544	2976	161.7	4106	126.0	3200	44.6	1133
48AJJAK051	6674	3035	161.7	4106	133.2	3383	46.6	1185
48AJJAK051	6914	3143	161.7	4106	140.2	3562	48.7	1237
50AWAY051	6759	3073	161.7	4106	125.9	3198	44.6	1133
48WJAY051	6854	3116	161.7	4106	133.2	3382	46.6	1185
48WJAY051	6954	3159	161.7	4106	140.2	3562	48.7	1237
50AJJAK060	6798	3089	161.7	4106	125.9	3198	44.6	1133
48AJJAK060	7038	3180	161.7	4106	133.2	3382	46.6	1185
48AJJAK060	7278	3288	161.7	4106	140.2	3562	48.7	1237
50AWAY060	6923	3139	161.7	4106	123.6	3139	44.6	1133
48WJAY060	7078	3207	161.7	4106	130.7	3320	46.6	1184
48WJAY060	7228	3261	161.7	4106	137.7	3498	48.6	1234

**Fig. 11 — Rigging Information**

**Table 2 — Unit Operating Weights**

UNIT	BASE UNIT WEIGHTS — lb										
	020	025	027	030	035	036	040	041	050	051	060
48AJ/AK Low Heat	3842	3915	4032	4182	4435	4815	4975	5091	5446	7224	7388
48AJ/AK High Heat	3922	3995	4112	4262	4595	4975	5135	5251	5606	7464	7628
48AW/ay Low Heat	3882	3955	4072	4222	4475	4855	5015	5131	5486	7264	7428
48AW/ay High Heat	3962	4035	4152	4302	4635	5015	5175	5291	5646	7514	7678

**Table 3 — Option and Accessory Weights**

OPTION/ ACCESSORY	OPTION/ACCESSORY WEIGHTS — lb											
	020	025	027	030	035	036	040	041	050	051	060	
Barometric Relief	300	300	300	300	300	300	300	300	300	300	450	450
Power Exhaust	450	450	450	450	450	450	450	450	450	450	675	675
Mod. Power Exhaust	500	500	500	500	500	500	500	500	500	500	725	725
Cu Tubing/Cu Fin Condenser Coil	220	220	220	220	285	380	285	380	380	380	651	651
Outdoor Air Hood Crate and Packaging (Less Hoods' Weight)	45	45	45	45	45	45	45	45	45	45	45	45
	(Packaging Only)						(Packaging Only)					
Outdoor Air Hoods/Filters	170	170	170	170	170	170	170	170	170	170	255	255
Hail Guard	73	73	73	73	73	146	146	146	146	146	219	219
Roof Curb (14-in.)	365	365	365	365	410	410	410	410	410	410	540	585

**Table 4 — Constant Volume Fan Motor Weights**

CV MOTOR WEIGHTS — lb			
MOTOR HP	UNIT VOLTAGE	HIGH EFFICIENCY IFM	PREMIUM EFFICIENCY IFM
5	230/460	78	94
	575	78	92
10	230/460	118	164
	575	118	156
15	230/460	150	217
	575	150	220
20	230/460	212	250
	575	212	258
25	230/460	240	309
	575	240	319
30	230/460	283	355
	575	283	359
40	230/460	372	415
	575	372	410

**Table 5 — Variable Volume Fan Motor Weights**

VAV MOTOR WEIGHTS — lb			
MOTOR HP	UNIT VOLTAGE	HIGH EFFICIENCY IFM	PREMIUM EFFICIENCY IFM
5	230/460	125	141
	575	163	177
10	230/460	204	250
	575	204	242
15	230/460	238	305
	575	240	310
20	230/460	348	386
	575	304	350
25	230/460	377	446
	575	375	454
30	230/460	480	552
	575	418	494
40	230/460	637	680
	575	587	625

LEGEND AND NOTES FOR TABLES 2-5

- LEGEND**
- Cu** — Copper
  - CV** — Constant Volume
  - FIOP** — Factory-Installed Option
  - HP** — Horsepower
  - IFM** — Indoor Fan Motor
  - VAV** — Variable Air Volume
  - VFD** — Variable Frequency Drive

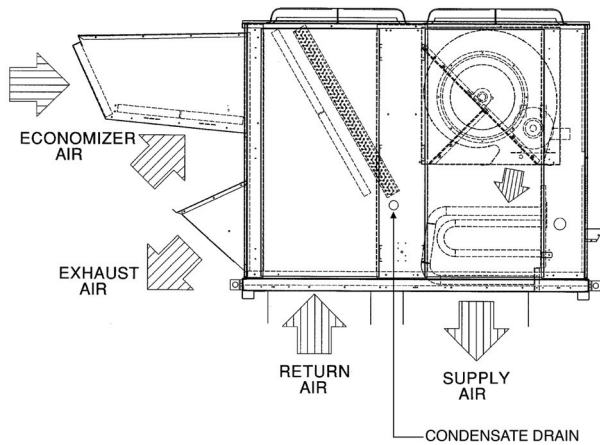
- NOTES:**
1. Base unit weight includes outdoor-air hoods. Base unit weight does NOT include indoor-fan motor. ADD indoor-fan motor, FIOPs, and accessories for TOTAL operating weight.
  2. The VAV motor weights include indoor fan motor and the VFD (variable frequency drive), VFD transducers, and associated wiring.

**Table 6 — Evaporator Fan Motor Data**

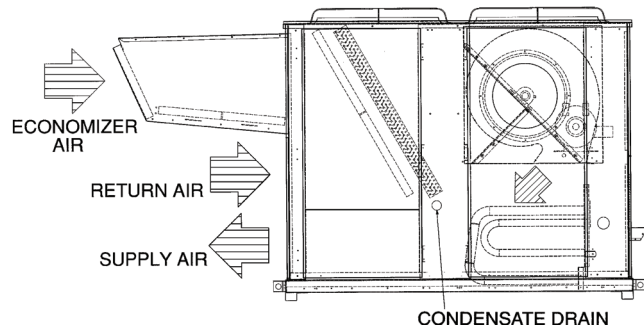
UNIT SIZE 48A,J,AK, AW,AY	MOTOR HP	MOTOR SHAFT DIA. (in.)	FAN SHAFT SPEED (rpm)	MOTOR SHEAVE (P/N)	MOTOR SHEAVE PITCH DIAMETER (in.)	BUSHING DIAMETER (in.)	FAN SHEAVE (P/N)	FAN SHEAVE PITCH DIAMETER (in.)	BUSHING DIAMETER (in.)	BELT (Quantity) (P/N)	BELT TENSION (lb at .25 in.)
020	5	1.125	677	BK55	4.8	NONE - 1.125	1B5V124	12.4	B - 1.9375	BX56	8
	10	1.375	895	2BK50	4.4	NONE - 1.375	2B5V86	8.6	B - 1.9375	BX50	8
	15	1.625	1096	2B5V56	5.7	B - 1.625	2B5V90	9.1	B - 1.9375	(2) 5VX530	9
025	5	1.125	677	BK55	4.8	NONE - 1.125	1B5V124	12.4	B - 1.9375	BX56	8
	10	1.375	962	1B5V60	6.1	H - 1.375	1B5V110	11.1	B - 1.9375	5VX570	11
	15	1.625	1106	2B5V54	5.5	B - 1.625	2B5V86	8.7	B - 1.9375	(2) 5VX530	9
027	10	1.375	819	2BK50	4.4	NONE - 1.375	2B5V94	9.4	B - 1.9375	(2) BX50	8
	15	1.625	1096	2B5V56	5.7	B - 1.625	2B5V90	9.1	B - 1.9375	(2) 5VX530	10
	20	1.625	1187	2B5V58	5.9	B - 1.625	2B5V86	8.7	B - 1.9375	(2) 5VX530	11
030	10	1.375	884	2BK50	4.4	H - 1.375	2B5V94	9.5	B - 1.9375	(2) BX50	8
	15	1.625	1096	2B5V56	5.7	B - 1.625	2B5V90	9.1	B - 1.9375	(2) 5VX530	9
	20	1.625	1187	2B5V58	5.9	B - 1.625	2B5V86	8.7	B - 1.9375	(2) 5VX530	11
035	15	1.625	1005	2B5V50	5.1	B - 1.625	2B5V86	8.7	B - 1.9375	(2) 5VX500	9
	20	1.625	1147	2B5V56	5.7	B - 1.625	2B5V86	8.7	B - 1.9375	(2) 5VX530	10
	25	1.875	1247	2B5V62	6.2	B - 1.875	2B5V86	8.7	B - 1.9375	(2) 5VX530	11
036	15	1.625	976	2B5V52	5.3	B - 1.625	2B5V94	9.5	B - 1.9375	(2) 5VX530	10
	20	1.625	1050	2B5V56	5.7	B - 1.625	2B5V94	9.5	B - 1.9375	(2) 5VX550	11
	25	1.875	1182	2B5V74	7.5	B - 1.875	2B5V110	11.1	B - 1.9375	(2) 5VX590	11
040	15	1.625	976	2B5V52	5.3	B - 1.625	2B5V94	9.5	B - 1.9375	(2) 5VX530	10
	20	1.625	1050	2B5V56	5.7	B - 1.625	2B5V94	9.5	B - 1.9375	(2) 5VX550	11
	25	1.875	1182	2B5V74	7.5	B - 1.875	2B5V110	11.1	B - 1.9375	(2) 5VX590	11
041	15	1.625	976	2B5V52	5.3	B - 1.625	2B5V94	9.5	B - 1.9375	(2) 5VX530	10
	20	1.625	1050	2B5V56	5.7	B - 1.625	2B5V94	9.5	B - 1.9375	(2) 5VX550	11
	25	1.875	1182	2B5V74	7.5	B - 1.875	2B5V110	11.1	B - 1.9375	(2) 5VX590	11
050	20	1.625	1061	2B5V56	5.7	B - 1.625	2B5V94	9.5	B - 1.9375	(2) 5VX550	10
	25	1.875	1154	2B5V62	6.2	B - 1.875	2B5V94	9.5	B - 1.9375	(2) 5VX570	11
	30	1.875	1247	2B5V66	6.7	B - 1.875	2B5V94	9.5	B - 1.9375	(2) 5VX570	13
051	20	1.625	930	2B5V58	5.9	B - 1.625	2B5V110	11.1	B - 1.9375	(2) 5VX560	11
	25	1.875	1019	3B5V52	5.3	B - 1.875	3B5V90	9.1	B - 1.9375	(3) 5VX530	12
	30	1.875	1086	3B5V58	5.9	B - 1.875	3B5V94	9.5	B - 1.9375	(3) 5VX550	12
	40 High	2.125	1197	3B5V64	6.5	B - 2.125	3B5V94	9.5	B - 1.9375	(3) 5VX570	14
	40 Prem.	2.125	1214	2B5V94	9.5	B - 2.125	2B5V136	13.7	B - 1.9375	(2) 5VX650	15
060	25	1.875	1019	3B5V52	5.3	B - 1.875	3B5V90	9.1	B - 1.9375	(3) 5VX530	12
	30	1.875	1086	3B5V58	5.9	B - 1.875	3B5V94	9.5	B - 1.9375	(3) 5VX550	12
	40 High	2.125	1197	3B5V64	6.5	B - 2.125	3B5V94	9.5	B - 1.9375	(3) 5VX570	14
	40 Prem.	2.125	1214	2B5V94	9.5	B - 2.125	2B5V136	13.7	B - 1.9375	(2) 5VX650	15

**NOTES:**

1. Motor shaft speed is 1750 rpm. The fan shaft diameter is 1<sup>5</sup>/<sub>16</sub> inches.
2. All indoor fan motors meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT), effective October 24, 1997.



**Fig. 12 — Air Distribution — Thru-the-Bottom**



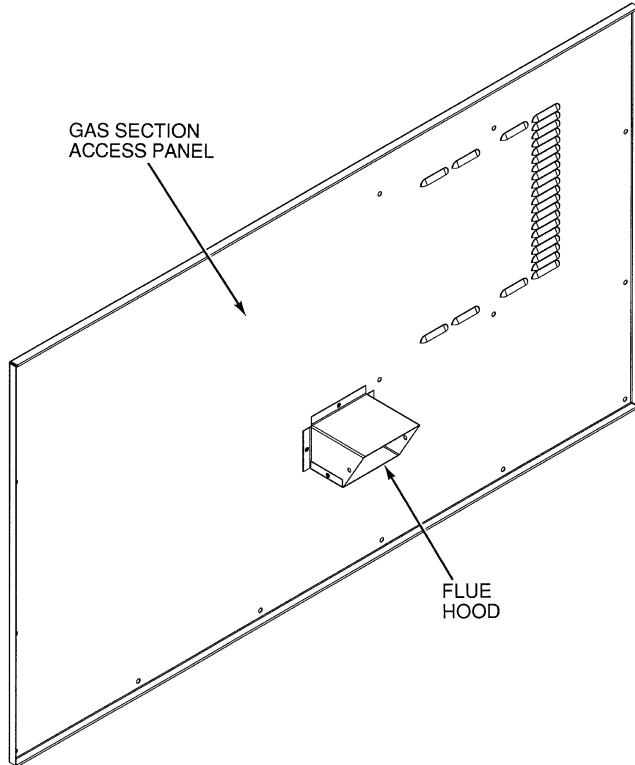
**Fig. 13 — Air Distribution — Thru-the-Side**

### Step 5 — Install Flue Hood

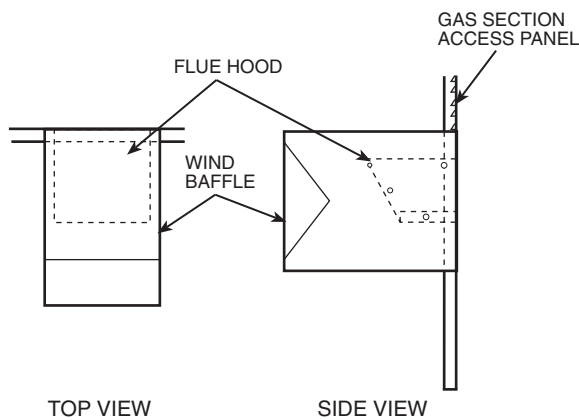
48AJ,AK,AW,AY020-050 UNITS — Flue hood is shipped inside gas section of unit. To install, secure flue hood to access panel. See Fig. 14.

48AJ,AK,AW,AY051 AND 060 UNITS — Flue hood and wind baffle are shipped inside gas section of unit. To install, secure flue hood to access panel. Install the two pieces of the wind baffle over the flue hood. See Fig. 15.

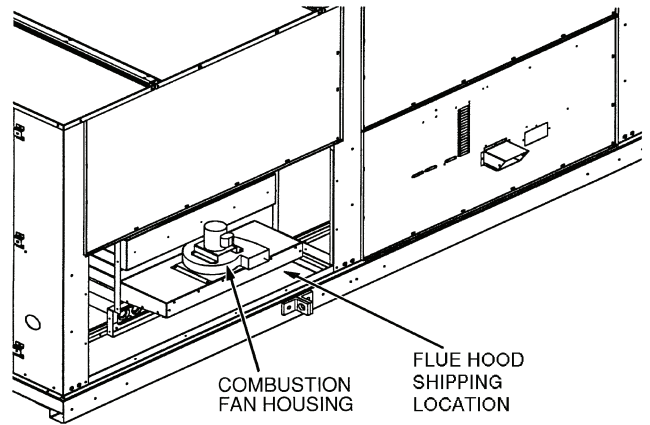
NOTE: When properly installed, flue hood will line up with combustion fan housing. See Fig. 16.



**Fig. 14 — Flue Hood Location  
(48AJ,AK,AW,AY020-050 Units)**



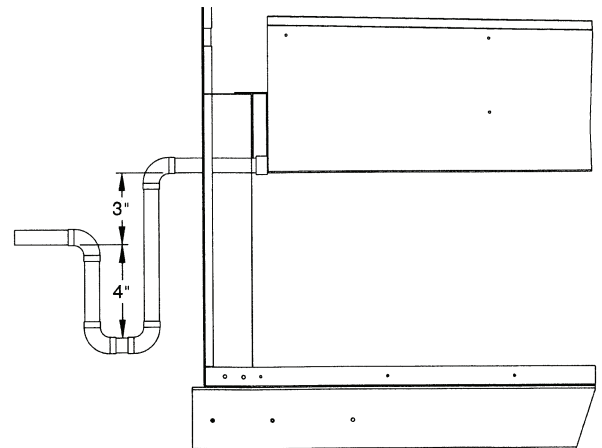
**Fig. 15 — Flue Hood Location  
(48AJ,AK,AW,AY051 and 060 Units)**



**Fig. 16 — Combustion Fan Housing Location  
(48AJ,AK,AW,AY020-050 Shown)**

**Step 6 — Trap Condensate Drain** — See Fig. 4-9 for drain location. Condensate drain is open to atmosphere and must be trapped. Install a trapped drain at the drain location. One 1-in. FPT coupling is provided inside the unit evaporator section for condensate drain connection. A trap at least 4-in. deep must be used. See Fig. 17. Trap must be installed to prevent freeze-up.

Condensate pans are sloped so that water will completely drain from the condensate pan to comply with indoor air quality guidelines. The condensate drain pans are not insulated.



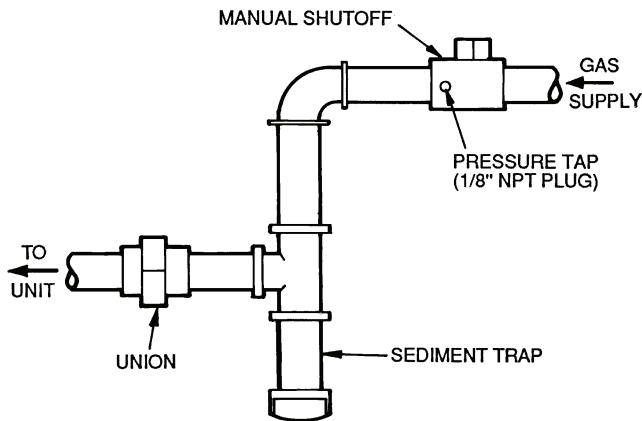
**Fig. 17 — Condensate Drain Trap Piping Details  
(Typical Roof Curb or Slab Mount Shown)**

**Step 7 — Install Gas Piping** — Unit is equipped for use with natural gas. Installation must conform with local building codes or, in the absence of local codes, with the National Fuel Gas Code, ANSI Z223.1.

Install manual gas shutoff valve with a 1/8-in. NPT pressure tap for test gage connection at unit. Field gas piping must include sediment trap and union. See Fig. 18. An 1/8-in. NPT is also located on the gas manifold adjacent to the gas valve.

### **⚠ WARNING**

Do not pressure test gas supply while connected to unit. Always disconnect union before servicing. Serious injury could result.



**Fig. 18 — Field Gas Piping**

**IMPORTANT:** Natural gas pressure at unit gas connection must not be less than 5 in. wg or greater than 13.5 in. wg.

Size gas-supply piping for 0.5-in. wg maximum pressure drop. Do not use supply pipe smaller than unit gas connection.

**OPTIONAL STAGED GAS UNITS** — See Table 7 for staged gas information. Staging pattern is selected during controls start-up.

For complete information and service instructions for Staged Gas Control Units, see Control Operation and Troubleshooting literature.

**Table 7 — 48A Series Staged Gas Control**

MODEL NUMBER	POSITION	NUMBER OF STAGES	HEAT SIZE
5	6,7,8		
S	020	5 stages	Low
	025		
	027		
	030		
	035		
	036		
	040		
	041		
T	050	5 stages	Low
	035		
	036		
	040		
	041		
T	050	7 stages	High
	020		
	025		
	027		
T	030	7 stages	High
	040		
T	051,060	9 stages	High
S	051,060	11 stages	Low

### Step 8 — Make Electrical Connections

**POWER WIRING** — Units are factory wired for the voltage shown on the unit nameplate.

Provide a unit safety disconnect switch in the main power supply to each unit (see Fig. 19). Select switch size and mounting location in accordance with applicable local codes or National Electrical Code (NEC). If combining the functions of safety disconnect with maximum overcurrent protection (MOCP) fuses (“fused disconnect”), coordinate safety switch size with MOCP size data as marked on unit informative plate.

Unit may be equipped with optional factory-installed non-fused disconnect switch (see Fig. 19). Provide maximum overcurrent protection devices (fuses or HACR breakers, per

local codes) in branch circuit wiring remote from unit. Observe requirements of NEC Article 440. Install service switch upstream of remote fuses if required.

The main power terminal block is suitable for use with aluminum or copper wire. See Fig. 19. Units have circuit breakers for compressors, fan motors, and control circuit. The unit must be electrically grounded in accordance with local codes, or in absence of local codes, with NEC, ANSI C1-latest year.

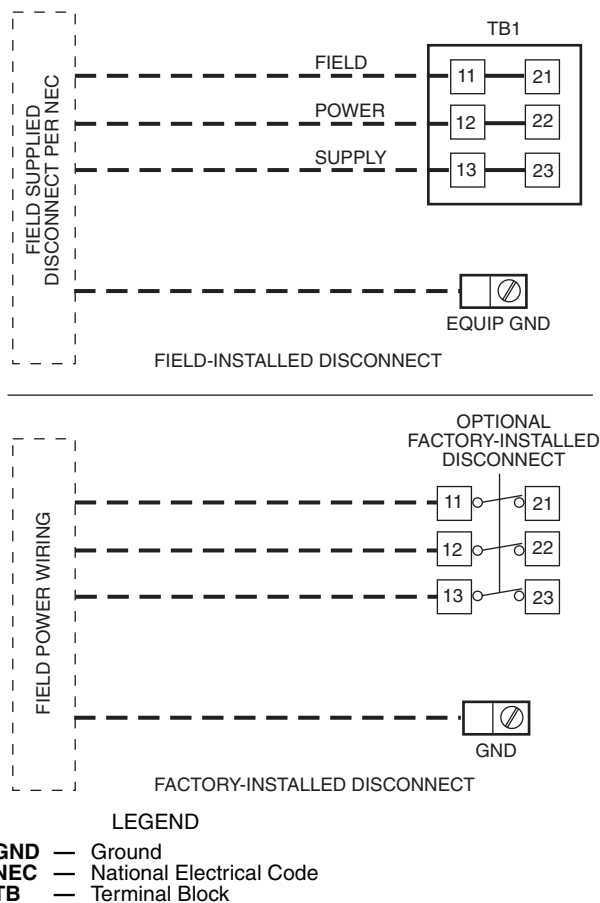
**FIELD POWER SUPPLY** — Unit is factory wired for voltage shown on unit nameplate. See Tables 8A and 8B for electrical data.

Field wiring can be brought into the unit from bottom (through basepan and roof curb) or through side of unit (corner post next to control box).

A 3/2-in. NPT coupling for field power wiring and a 3/4-in. NPT coupling for 24-v control wiring are provided in basepan. In the side post, there are two 2 1/2-in. (48A020-035) or 3-in. (48A036-060) knockouts for the field power wiring. See Fig. 4-9. If control wiring is to be brought in through the side of unit, a 7/8-in. diameter hole is provided in the condenser side post next to the control box.

Do not route control wiring in the same conduit as power wiring.

If disconnect box is mounted to corner post, be careful not to drill or screw into the condenser coil.



**Fig. 19 — Field Power Wiring Connections**



**Table 8A — Electrical Data — 48AJ,AK,AW,AY Units without Convenience Outlet**

UNIT SIZE 48A	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		POWER EXHAUST	POWER SUPPLY		
				Cir A, No. 1		Cir A, No. 2		Cir B, No. 1		Cir B, No. 2		Qty	FLA	Hp	FLA	FLA (total)	MCA	MOCP*	
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA								
020	208	187	229	23	184	23	184	23	184	—	—	2	6.5 (ea)	5	16.7	—	23.6	104.5	125
														10	30.8	—	23.6	120.5	150
														15	46.2	—	23.6	139.8	175
	230	207	253	23	184	23	184	23	184	—	—	2	6.6 (ea)	5	15.2	—	23.6	103.2	125
														10	28.0	—	23.6	117.2	150
														15	42.0	—	23.6	134.7	175
	460	414	508	10.2	90	10.2	90	10.2	90	—	—	2	3.3 (ea)	5	7.6	—	12.6	47.4	50
														10	14.0	—	12.6	54.7	60
														15	21.0	—	12.6	63.5	80
	575	518	632	9	73	9	73	9	73	—	—	2	2.6 (ea)	5	6.1	—	9.6	40.6	50
														10	11.0	—	9.6	46.0	50
														15	17.0	—	9.6	53.5	70
025	208	187	229	21.8	184	25.6	190	25.6	190	—	—	2	6.5 (ea)	5	16.7	—	23.6	109.1	125
														10	30.8	—	23.6	124.5	150
														15	46.2	—	23.6	143.8	175
	230	207	253	21.8	184	25.6	190	25.6	190	—	—	2	6.6 (ea)	5	15.2	—	23.6	107.8	125
														10	28.0	—	23.6	121.2	150
														15	42.0	—	23.6	138.7	175
	460	414	508	11	90	13.5	95	13.5	95	—	—	2	3.3 (ea)	5	7.6	—	12.6	55.6	60
														10	14.0	—	12.6	62.1	70
														15	21.0	—	12.6	70.9	80
	575	518	632	9	73	10.2	75	10.2	75	—	—	2	2.6 (ea)	5	6.1	—	9.6	43.3	50
														10	11.0	—	9.6	48.4	50
														15	17.0	—	9.6	55.9	70
027	208	187	229	25.6	190	25.6	190	25.6	190	—	—	2	6.5 (ea)	10	30.8	—	23.6	128.3	150
														15	46.2	—	23.6	147.6	175
														20	59.4	—	23.6	164.1	200
	230	207	253	25.6	190	25.6	190	25.6	190	—	—	2	6.6 (ea)	10	28.0	—	23.6	125.0	150
														15	42.0	—	23.6	142.5	175
														20	54.0	—	23.6	157.5	200
	460	414	508	13.5	95	13.5	95	13.5	95	—	—	2	3.3 (ea)	10	14.0	—	12.6	64.6	70
														15	21.0	—	12.6	73.4	90
														20	27.0	—	12.6	80.9	100
	575	518	632	10.2	75	10.2	75	10.2	75	—	—	2	2.6 (ea)	10	11.0	—	12.6	49.6	60
														15	17.0	—	12.6	57.1	70
														20	22.0	—	12.6	63.3	80

See Legend and Notes on page 24.

**Table 8A — Electrical Data — 48AJ,AK,AW,AY Units without Convenience Outlet (cont)**

UNIT SIZE 48A	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		POWER EXHAUST	POWER SUPPLY	
				Cir A, No. 1		Cir A, No. 2		Cir B, No. 1		Cir B, No. 2		Qty	FLA	Hp	FLA	FLA (total)	MCA	MOCP*
				RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA							
030	208	187	229	23	184	23	184	21.8	184	21.8	184	2	6.5 (ea)	10	30.8	— 23.6	141.1 164.7	150 175
														15	46.2	— 23.6	160.4 184.0	200 225
														20	59.4	— 23.6	176.9 200.5	225 250
	230	207	253	23	184	23	184	21.8	184	21.8	184	2	6.6 (ea)	10	28.0	— 23.6	137.8 161.4	150 175
														15	42.0	— 23.6	155.3 178.9	175 200
														20	54.0	— 23.6	170.5 193.9	200 225
	460	414	508	10.2	90	10.2	90	11	90	11	90	2	3.3 (ea)	10	14.0	— 12.6	66.5 79.1	80 90
														15	21.0	— 12.6	75.3 87.9	90 100
														20	27.0	— 12.6	82.8 95.4	100 110
	575	518	632	9	73	9	73	9	73	9	73	2	2.6 (ea)	10	11.0	— 12.6	55.0 68.0	60 80
														15	17.0	— 12.6	62.5 75.1	70 90
														20	22.0	— 12.6	68.7 81.3	90 100
035	208	187	229	21.8	184	25.6	190	25.6	190	25.6	190	2	6.5 (ea)	15	46.2	— 23.6	169.4 193.6	200 225
														20	59.4	— 23.6	185.9 209.5	225 250
														25	74.8	— 23.6	205.1 228.7	250 300
	230	207	253	21.8	184	25.6	190	25.6	190	25.6	190	2	6.6 (ea)	15	42.0	— 23.6	164.3 187.9	200 225
														20	54.0	— 23.6	179.3 202.9	225 250
														25	68.0	— 23.6	196.8 220.4	250 250
	460	414	508	11	90	13.5	95	13.5	95	13.5	95	2	3.3 (ea)	15	21.0	— 12.6	84.4 97.0	100 110
														20	27.0	— 12.6	91.9 104.5	110 125
														25	34.0	— 12.6	100.6 113.2	125 125
	575	518	632	9	73	10.2	75	10.2	75	10.2	75	2	2.6 (ea)	15	17.0	— 12.6	66.1 78.7	80 90
														20	22.0	— 12.6	72.3 84.9	90 100
														25	27.0	— 12.6	78.6 91.2	100 110
036	208	187	229	21.8	184	25.6	190	25.6	190	25.6	190	4	6.5 (ea)	15	46.2	— 23.6	182.4 206.0	225 250
														20	59.4	— 23.6	198.9 222.5	250 250
														25	74.8	— 23.6	218.1 241.7	250 300
	230	207	253	21.8	184	25.6	190	25.6	190	25.6	190	4	6.6 (ea)	15	42.0	— 23.6	177.5 201.1	200 225
														20	54.0	— 23.6	192.5 216.1	225 250
														25	68.0	— 23.6	210.0 233.6	250 300
	460	414	508	11	90	13.5	95	13.5	95	13.5	95	4	3.3 (ea)	15	21.0	— 12.6	91.0 103.6	110 110
														20	27.0	— 12.6	98.5 111.1	125 125
														25	34.0	— 12.6	107.2 119.8	125 150
	575	518	632	9	73	10.2	75	10.2	75	10.2	75	4	2.6 (ea)	15	17.0	— 9.6	71.3 80.9	80 90
														20	22.0	— 9.6	77.5 87.1	90 100
														25	27.0	— 9.6	83.8 93.4	110 110

See Legend and Notes on page 24.

**Table 8A — Electrical Data — 48AJ,AK,AW,AY Units without Convenience Outlet (cont)**

UNIT SIZE 48A	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		POWER EXHAUST	POWER SUPPLY	
		Min	Max	Cir A, No. 1		Cir A, No. 2		Cir B, No. 1		Cir B, No. 2		Qty	FLA	Hp	FLA	FLA (total)	MCA	MOCP*
				RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA							
040	208	187	229	25.6	190	25.6	190	34.3	265	34.3	265	4	6.5 (ea)	15	46.2	—	203.6	225
														20	59.4	23.6	227.2	250
														25	74.8	23.6	239.3	300
	230	207	253	25.6	190	25.6	190	34.3	265	34.3	265	4	6.6 (ea)	15	42.0	—	198.7	225
														20	54.0	23.6	222.3	250
														25	68.0	23.6	213.7	300
	460	414	508	13.5	95	13.5	95	16	120	16	120	4	3.3 (ea)	15	21.0	—	98.5	110
														20	27.0	12.6	111.1	125
														25	34.0	12.6	106.0	125
	575	518	632	10.2	75	10.2	75	12.9	80	12.9	80	4	2.6 (ea)	15	17.0	—	77.9	90
														20	22.0	12.6	90.5	100
														25	27.0	12.6	84.1	110
041	208	187	229	25.6	190	25.6	190	34.3	265	34.3	265	4	6.5 (ea)	15	46.2	—	203.6	225
														20	59.4	23.6	227.2	250
														25	74.8	23.6	239.3	300
	230	207	253	25.6	190	25.6	190	34.3	265	34.3	265	4	6.6 (ea)	15	42.0	—	198.7	225
														20	54.0	23.6	222.3	250
														25	68.0	23.6	213.7	300
	460	414	508	13.5	95	13.5	95	16	120	16	120	4	3.3 (ea)	15	21.0	—	98.5	110
														20	27.0	12.6	111.1	125
														25	34.0	12.6	106.0	125
	575	518	632	10.2	75	10.2	75	12.9	80	12.9	80	4	2.6 (ea)	15	17.0	—	77.9	90
														20	22.0	9.6	87.5	100
														25	27.0	9.6	84.1	110
050	208	187	229	34.3	265	34.3	265	34.3	265	47	380	4	6.5 (ea)	20	59.4	—	250.2	300
														25	74.8	23.6	273.8	300
														30	88.0	23.6	269.4	350
	230	207	253	34.3	265	34.3	265	34.3	265	47	380	4	6.6 (ea)	20	54.0	—	243.8	250
														25	68.0	23.6	267.4	300
														30	80.0	23.6	261.3	300
	460	414	508	16	120	16	120	16	120	22.4	175	4	3.3 (ea)	20	27.0	—	117.4	125
														25	34.0	12.6	130.0	150
														30	40.0	12.6	126.1	150
	575	518	632	12.9	80	12.9	80	12.9	80	18.6	140	4	2.6 (ea)	20	22.0	—	95.2	110
														25	27.0	12.6	107.8	125
														30	32.0	12.6	101.5	125

See Legend and Notes on page 24.

**Table 8A — Electrical Data — 48AJ,AK,AW,AY Units without Convenience Outlet (cont)**

UNIT SIZE 48A	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		POWER EXHAUST	POWER SUPPLY	
				Cir A, No. 1		Cir A, No. 2		Cir B, No. 1		Cir B, No. 2		Qty	FLA	Hp	FLA	FLA (total)	MCA	MOCP*
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA							
051	208	187	229	34.3	265	34.3	265	34.3	265	34.3	265	6	6.5 (ea)	20	59.4	— 35.4	250.5 285.9	300
														25	74.8	— 35.4	269.7 305.1	300
														30	88	— 35.4	286.2 321.6	350
														40	114	— 35.4	318.7 354.1	400
	230	207	253	34.3	265	34.3	265	34.3	265	34.3	265	6	6.6 (ea)	20	54	— 35.4	244.3 279.7	250
														25	68	— 35.4	261.8 297.2	300
														30	80	— 35.4	276.8 312.2	350
														40	104	— 35.4	306.8 342.2	400
	460	414	508	16	120	16	120	16	120	16	120	6	3.3 (ea)	20	27	— 18.9	117.6 136.5	125
														25	34	— 18.9	126.3 145.2	150
														30	40	— 18.9	133.8 152.7	175
														40	52	— 18.9	148.8 167.7	200
	575	518	632	12.9	80	12.9	80	12.9	80	12.9	80	6	2.6 (ea)	20	22	— 14.4	94.7 109.1	110
														25	27	— 14.4	101.0 115.4	125
														30	32	— 14.4	107.2 121.6	150
														40	41	— 14.4	118.5 132.9	150
060	208	187	229	40.8	265	47	380	40.8	265	47	380	6	6.5 (ea)	25	75.0	— 35.4	308.1 343.5	350
														30	88.0	— 35.4	324.6 360.0	400
														40	114.0	— 35.4	357.1 392.5	450
	230	207	253	40.8	265	47	380	40.8	265	47	380	6	6.6 (ea)	25	68.0	— 35.4	300.2 335.6	350
														30	80.0	— 35.4	315.2 350.6	400
														40	104.0	— 35.4	345.2 380.6	450
	460	414	508	20.2	135	22.4	175	20.2	135	22.4	175	6	3.3 (ea)	25	34.0	— 18.9	147.5 166.4	175
														30	40.0	— 18.9	155.0 173.9	200
														40	52.0	— 18.9	170.0 188.9	225
	575	518	632	16.6	120	18.6	140	16.6	120	18.6	140	6	2.6 (ea)	25	27.0	— 18.9	119.8 138.7	125
														30	32.0	— 18.9	126.0 144.9	150
														40	41.0	— 18.9	137.3 156.2	175

**LEGEND**

- FLA** — Full Load Amps
- HACR** — Heating, Air Conditioning and Refrigeration
- LRA** — Locked Rotor Amps
- MCA** — Minimum Circuit Amps
- MOCP** — Maximum Overcurrent Protection
- NEC** — National Electrical Code
- RLA** — Rated Load Amps

\*Fuse or HACR circuit breaker per NEC.

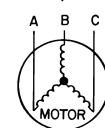
**NOTES:**

- In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. The Canadian units may be fuse or circuit breaker.
- Unbalanced 3-Phase Supply Voltage**

Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



AB = 452 v  
BC = 464 v  
AC = 455 v

$$\text{Average Voltage} = \frac{452 + 464 + 455}{3} = \frac{1371}{3} = 457$$

Determine maximum deviation from average voltage.

- (AB) 457 - 452 = 5 v
- (BC) 464 - 457 = 7 v
- (AC) 457 - 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457} = 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

**Table 8B — Electrical Data — 48AJ,AK,AW,AY Units with Convenience Outlet**

UNIT SIZE 48A	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		POWER EXHAUST	CONVENIENCE OUTLET	POWER SUPPLY	
		Min	Max	Cir A, No. 1		Cir A, No. 2		Cir B, No. 1		Cir B, No. 2		Qty	FLA	Hp	FLA	FLA (total)	FLA	MCA	Fuse or HACR Brkr*
				RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA								
020	208	187	229	23	184	23	184	23	184	—	—	2	6.5 (ea)	5	16.7	— 23.6	7.0 7.0	111.5 135.2	125 150
														10	30.8	— 23.6	7.0 7.0	127.5 151.1	150 175
														15	46.2	— 23.6	7.0 7.0	146.8 170.4	175 200
	230	207	253	23	184	23	184	23	184	—	—	2	6.6 (ea)	5	15.2	— 23.6	7.0 7.0	110.2 133.9	125 150
														10	28.0	— 23.6	7.0 7.0	124.2 147.8	150 175
														15	42.0	— 23.6	7.0 7.0	141.7 165.3	175 200
	460	414	508	10.2	90	10.2	90	10.2	90	—	—	2	3.3 (ea)	5	7.6	— 12.6	3.5 3.5	50.9 64.1	60 70
														10	14.0	— 12.6	3.5 3.5	58.2 70.8	70 80
														15	21.0	— 12.6	3.5 3.5	67.0 79.6	80 100
	575	518	632	9	73	9	73	9	73	—	—	2	2.6 (ea)	5	6.1	— 9.6	2.5 2.5	43.1 52.8	50 60
														10	11.0	— 9.6	2.5 2.5	48.5 58.1	50 60
														15	17.0	— 9.6	2.5 2.5	56.0 65.6	70 80
025	208	187	229	21.8	184	25.6	190	25.6	190	—	—	2	6.5 (ea)	5	16.7	— 23.6	7.0 7.0	116.1 139.7	125 150
														10	30.8	— 23.6	7.0 7.0	131.5 155.1	150 175
														15	46.2	— 23.6	7.0 7.0	150.8 174.4	175 200
	230	207	253	21.8	184	25.6	190	25.6	190	—	—	2	6.6 (ea)	5	15.2	— 23.6	7.0 7.0	114.8 138.4	125 150
														10	28.0	— 23.6	7.0 7.0	128.2 151.8	150 175
														15	42.0	— 23.6	7.0 7.0	145.7 169.3	175 200
	460	414	508	11	90	13.5	95	13.5	95	—	—	2	3.3 (ea)	5	7.6	— 12.6	3.5 3.5	59.1 71.7	70 80
														10	14.0	— 12.6	3.5 3.5	65.6 78.2	70 90
														15	21.0	— 12.6	3.5 3.5	74.4 87.0	90 100
	575	518	632	9	73	10.2	75	10.2	75	—	—	2	2.6 (ea)	5	6.9	— 6.1	2.5 2.5	46.6 52.7	50 60
														10	11.0	— 6.1	2.5 2.5	50.9 57.0	60 60
														15	17.0	— 6.1	2.5 2.5	58.4 64.5	70 80
027	208	187	229	25.6	190	25.6	190	25.6	190	—	—	2	6.5 (ea)	10	30.8	— 23.6	7.0 7.0	135.3 158.9	150 175
														15	46.2	— 23.6	7.0 7.0	154.6 178.2	200 200
														20	59.4	— 23.6	7.0 7.0	171.1 194.7	225 250
	230	207	253	25.6	190	25.6	190	25.6	190	—	—	2	6.6 (ea)	10	28.0	— 23.6	7.0 7.0	132.0 155.6	150 175
														15	42.0	— 23.6	7.0 7.0	149.5 173.1	175 200
														20	54.0	— 23.6	7.0 7.0	164.5 188.1	200 225
	460	414	508	13.5	95	13.5	95	13.5	95	—	—	2	3.3 (ea)	10	14.0	— 12.6	3.5 3.5	68.1 80.7	80 90
														15	21.0	— 12.6	3.5 3.5	76.9 89.5	90 110
														20	27.0	— 12.6	3.5 3.5	84.4 97.0	110 110
	575	518	632	10.2	75	10.2	75	10.2	75	—	—	2	2.6 (ea)	10	11.0	— 9.6	2.5 2.5	52.1 61.7	60 70
														15	17.0	— 9.6	2.5 2.5	59.6 69.2	70 80
														20	22.0	— 9.6	2.5 2.5	65.8 75.4	80 90

See Legend and Notes on page 28.

**Table 8B — Electrical Data — 48AJ,AK,AW,AY Units with Convenience Outlet (cont)**

UNIT SIZE 48A	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		POWER EXHAUST	CONVENIENCE OUTLET	POWER SUPPLY	
		Min	Max	Cir A, No. 1		Cir A, No. 2		Cir B, No. 1		Cir B, No. 2		Qty	FLA	Hp	FLA	FLA (total)	FLA	MCA	Fuse or HACR Brkr*
				RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA								
030	208	187	229	23	184	23	184	21.8	184	21.8	184	2	6.5 (ea)	10	30.8	— 23.6	7.0 7.0	148.1 171.7	175 200
														15	46.2	— 23.6	7.0 7.0	167.4 191.0	200 225
														20	59.4	— 23.6	7.0 7.0	183.9 207.5	225 250
	230	207	253	23	184	23	184	21.8	184	21.8	184	2	6.6 (ea)	10	28.0	— 23.6	7.0 7.0	144.8 168.4	150 175
														15	42.0	— 23.6	7.0 7.0	162.3 185.9	200 225
														20	54.0	— 23.6	7.0 7.0	177.3 200.9	225 250
	460	414	508	10.2	90	10.2	90	11	90	11	90	2	3.3 (ea)	10	14.0	— 12.6	3.5 3.5	70.0 82.6	80 90
														15	21.0	— 12.6	3.5 3.5	78.8 91.4	90 110
														20	27.0	— 12.6	3.5 3.5	86.3 98.9	110 125
	575	518	632	9	73	9	73	9	73	9	73	2	2.6 (ea)	10	11.0	— 9.6	2.5 2.5	57.5 67.1	60 70
														15	17.0	— 9.6	2.5 2.5	65.0 74.6	80 90
														20	22.0	— 9.6	2.5 2.5	71.2 80.8	90 100
035	208	187	229	21.8	184	25.6	190	25.6	190	25.6	190	2	6.5 (ea)	15	46.2	— 23.6	7.0 7.0	176.4 200.0	200 225
														20	59.4	— 23.6	7.0 7.0	192.9 216.5	250 250
														25	74.8	— 23.6	7.0 7.0	212.1 235.7	250 300
	230	207	253	21.8	184	25.6	190	25.6	190	25.6	190	2	6.6 (ea)	15	42.0	— 23.6	7.0 7.0	171.3 194.9	200 225
														20	54.0	— 23.6	7.0 7.0	186.3 209.9	225 250
														25	68.0	— 23.6	7.0 7.0	203.8 227.4	250 250
	460	414	508	11	90	13.5	95	13.5	95	13.5	95	2	3.3 (ea)	15	21.0	— 12.6	3.5 3.5	87.9 100.5	100 110
														20	27.0	— 12.6	3.5 3.5	95.4 108.0	110 125
														25	34.0	— 12.6	3.5 3.5	104.1 116.7	125 150
	575	518	632	9	73	10.2	75	10.2	75	10.2	75	2	2.6 (ea)	15	17.0	— 9.6	2.5 2.5	68.6 78.2	80 90
														20	22.0	— 9.6	2.5 2.5	74.8 84.4	90 100
														25	27.0	— 9.6	2.5 2.5	81.1 90.7	100 110
036	208	187	229	21.8	184	25.6	190	25.6	190	25.6	190	4	6.5 (ea)	15	46.2	— 23.6	7.0 7.0	189.4 213.0	225 250
														20	59.4	— 23.6	7.0 7.0	205.9 229.5	250 250
														25	74.8	— 23.6	7.0 7.0	225.1 248.7	250 300
	230	207	253	21.8	184	25.6	190	25.6	190	25.6	190	4	6.6 (ea)	15	42.0	— 23.6	7.0 7.0	184.5 208.1	225 250
														20	54.0	— 23.6	7.0 7.0	199.5 223.1	250 250
														25	68.0	— 23.6	7.0 7.0	217.0 240.6	250 300
	460	414	508	11	90	13.5	95	13.5	95	13.5	95	4	3.3 (ea)	15	21.0	— 12.6	3.5 3.5	94.5 107.1	110 125
														20	27.0	— 12.6	3.5 3.5	102.0 114.6	125 125
														25	34.0	— 12.6	3.5 3.5	110.7 123.3	125 150
	575	518	632	9	73	10.2	75	10.2	75	10.2	75	4	2.6 (ea)	15	17.0	— 9.6	2.5 2.5	73.8 83.4	90 100
														20	22.0	— 9.6	2.5 2.5	80.0 89.6	100 110
														25	27.0	— 9.6	2.5 2.5	86.3 95.9	110 110

See Legend and Notes on page 28.



**Table 8B — Electrical Data — 48AJ,AK,AW,AY Units with Convenience Outlet (cont)**

UNIT SIZE 48A	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		POWER EXHAUST	CONVENIENCE OUTLET	POWER SUPPLY	
		Min	Max	Cir A, No. 1		Cir A, No. 2		Cir B, No. 1		Cir B, No. 2		Qty	FLA	Hp	FLA	FLA (total)	FLA	MCA	Fuse or HACR Brkr*
				RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA								
040	208	187	229	25.6	190	25.6	190	34.3	265	34.3	265	2	6.5 (ea)	15	46.2	— 23.6	7.0 7.0	210.6 234.2	250 250
														20	59.4	— 23.6	7.0 7.0	227.1 250.7	250 300
														25	74.8	— 23.6	7.0 7.0	246.3 269.9	300 300
	230	207	253	25.6	190	25.6	190	34.3	265	34.3	265	2	6.6 (ea)	15	42.0	— 23.6	7.0 7.0	205.7 229.3	225 250
														20	54.0	— 23.6	7.0 7.0	220.7 244.3	250 250
														25	68.0	— 23.6	7.0 7.0	238.2 261.8	300 300
	460	414	508	13.5	95	13.5	95	16.0	120	16.0	120	2	3.3 (ea)	15	21.0	— 12.6	3.5 3.5	102.0 114.6	110 125
														20	27.0	— 12.6	3.5 3.5	109.5 122.1	125 125
														25	34.0	— 12.6	3.5 3.5	118.2 130.8	150 150
	575	518	632	10.2	75	10.2	75	12.9	80	12.9	80	2	2.6 (ea)	15	17.0	— 9.6	2.5 2.5	80.4 90.0	90 100
														20	22.0	— 9.6	2.5 2.5	86.6 96.2	100 110
														25	27.0	— 9.6	2.5 2.5	92.9 102.5	110 125
041	208	187	229	25.6	190	25.6	190	34.3	265	34.3	265	4	6.5 (ea)	15	46.2	— 23.6	7.0 7.0	210.6 234.2	250 250
														20	59.4	— 23.6	7.0 7.0	227.1 250.7	250 300
														25	74.8	— 23.6	7.0 7.0	246.3 269.9	300 300
	230	207	253	25.6	190	25.6	190	34.3	265	34.3	265	4	6.6 (ea)	15	42.0	— 23.6	7.0 7.0	205.7 229.3	225 250
														20	54.0	— 23.6	7.0 7.0	220.7 244.3	250 250
														25	68.0	— 23.6	7.0 7.0	238.2 261.8	300 300
	460	414	508	13.5	95	13.5	95	16	120	16	120	4	3.3 (ea)	15	21.0	— 12.6	3.5 3.5	102.0 114.6	110 125
														20	27.0	— 12.6	3.5 3.5	109.5 122.1	125 125
														25	34.0	— 12.6	3.5 3.5	118.2 130.8	150 150
	575	518	632	10.2	75	10.2	75	12.9	80	12.9	80	4	2.6 (ea)	15	17.0	— 9.6	2.5 2.5	80.4 90.0	90 100
														20	22.0	— 9.6	2.5 2.5	86.6 96.2	100 110
														25	27.0	— 9.6	2.5 2.5	92.9 102.5	110 125
050	208	187	229	34.3	265	34.3	265	34.3	265	47	380	4	6.5 (ea)	20	59.0	— 23.6	7.0 7.0	257.2 280.8	300 300
														25	75.0	— 23.6	7.0 7.0	276.4 300.0	350 350
														30	88.0	— 23.6	7.0 7.0	292.9 316.5	350 400
	230	207	253	34.3	265	34.3	265	34.3	265	47	380	4	6.6 (ea)	20	54.0	— 23.6	7.0 7.0	250.8 274.4	300 300
														25	68.0	— 23.6	7.0 7.0	268.3 291.9	300 350
														30	80.0	— 23.6	7.0 7.0	283.3 306.9	350 350
	460	414	508	16	120	16	120	16	120	22.4	175	4	3.3 (ea)	20	27.0	— 12.6	3.5 3.5	120.9 133.5	125 150
														25	34.0	— 12.6	3.5 3.5	129.6 142.2	150 175
														30	40.0	— 12.6	3.5 3.5	137.1 149.7	175 175
	575	518	632	12.9	80	12.9	80	12.9	80	18.6	140	4	2.6 (ea)	20	22.0	— 9.6	2.5 2.5	97.7 107.3	110 125
														25	27.0	— 9.6	2.5 2.5	104.0 113.6	125 125
														30	32.0	— 9.6	2.5 2.5	110.2 119.8	125 150

See Legend and Notes on page 28.

**Table 8B — Electrical Data — 48AJ,AK,AW,AY Units with Convenience Outlet (cont)**

UNIT SIZE 48A	VOLTAGE 3 PH, 60 Hz	VOLTAGE RANGE		COMPRESSOR								CONDENSER FAN MOTOR		EVAPORATOR FAN MOTOR		POWER EXHAUST	CONVENIENCE OUTLET	POWER SUPPLY	
		Min	Max	Cir A, No. 1		Cir A, No. 2		Cir B, No. 1		Cir B, No. 2		Qty	FLA	Hp	FLA	FLA (total)	FLA	MCA	Fuse or HACR Brkr*
				RLA	LRA	RLA	LRA	RLA	LRA	RLA	LRA								
051	208	187	229	34.3	265	34.3	265	34.3	265	34.3	265	6	6.5 (ea)	20	59.4	—	7.0	257.5	300
														25	74.8	—	7.0	276.7	350
														30	88	—	7.0	293.2	350
														40	114	—	7.0	325.7	400
	230	207	253	34.3	265	34.3	265	34.3	265	34.3	265	6	6.6 (ea)	20	54	—	7.0	251.3	300
														25	68	—	7.0	268.8	300
														30	80	—	7.0	283.8	350
														40	104	—	7.0	313.8	400
	460	414	508	16	120	16	120	16	120	16	120	6	3.3 (ea)	20	27	—	3.5	121.1	125
														25	34	—	3.5	129.8	150
														30	40	—	3.5	137.3	175
														40	52	—	3.5	152.3	200
575	518	632	12.9	80	12.9	80	12.9	80	12.9	80	6	2.6 (ea)	20	22	—	2.5	97.2	110	
													25	27	—	2.5	103.5	125	
													30	32	—	2.5	109.7	125	
													40	41	—	2.5	121.0	150	
060	208	187	229	40.8	265	47	380	40.8	265	47	380	6	6.5 (ea)	25	75.0	—	7.0	315.1	350
														30	88.0	—	7.0	331.6	400
														40	114.0	—	7.0	364.1	450
														40	114.0	—	7.0	399.5	500
	230	207	253	40.8	265	47	380	40.8	265	47	380	6	6.6 (ea)	25	68.0	—	7.0	307.2	350
														30	80.0	—	7.0	322.2	400
														40	104.0	—	7.0	352.2	450
														40	104.0	—	7.0	387.6	450
	460	414	508	20.2	135	22.4	175	20.2	135	22.4	175	6	3.3 (ea)	25	34.0	—	3.5	151.0	175
														30	40.0	—	3.5	158.5	175
														40	52.0	—	3.5	173.5	225
														40	52.0	—	3.5	192.4	225
575	518	632	16.6	120	18.6	140	16.6	120	18.6	140	6	2.6 (ea)	25	27.0	—	2.5	122.3	125	
													30	32.0	—	2.5	136.7	150	
													40	41.0	—	2.5	142.9	150	
													40	41.0	—	2.5	154.2	175	

**LEGEND**

- FLA — Full Load Amps
- HACR — Heating, Air Conditioning and Refrigeration
- LRA — Locked Rotor Amps
- MCA — Minimum Circuit Amps
- NEC — National Electrical Code
- RLA — Rated Load Amps

\*Fuse or HACR circuit breaker per NEC.



**NOTES:**

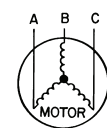
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. The Canadian units may be fuse or circuit breaker.

**2. Unbalanced 3-Phase Supply Voltage**

Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

$$\% \text{ Voltage imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 460-3-60.



- AB = 452 v
- BC = 464 v
- AC = 455 v

$$\begin{aligned} \text{Average Voltage} &= \frac{452 + 464 + 455}{3} \\ &= \frac{1371}{3} \\ &= 457 \end{aligned}$$

Determine maximum deviation from average voltage.

- (AB) 457 - 452 = 5 v
- (BC) 464 - 457 = 7 v
- (AC) 457 - 455 = 2 v

Maximum deviation is 7 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{7}{457} = 1.53\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

**Routing Through Bottom of Unit** — If wiring is brought in through bottom of unit, use field-supplied watertight conduit to route power wiring through the 3<sup>1</sup>/<sub>2</sub>-in. diameter hole provided in the unit basepan.

Install conduit connector in unit basepan as shown in Fig. 4-9. Route power and ground lines through connector to terminal connections in unit control box as shown on unit wiring diagram and Fig. 19.

Use strain relief going into control box through 3<sup>5</sup>/<sub>8</sub>-in. diameter hole provided. After wires are in unit control box, connect to power terminal block (see Power Wiring section on page 20).

Low-voltage wiring must be run in watertight conduit from the basepan to control box and through 7/8-in. diameter hole provided in bottom of unit control box. Field-supplied strain relief must be used going into the box. After wiring is in control box, make connections to proper terminals on terminal blocks (see Field Control Wiring section on this page).

**Routing Through Side of Unit** — Route power wiring in field-supplied watertight conduit into unit through 2<sup>1</sup>/<sub>2</sub>-in. (sizes 020-035) or 3-in. (sizes 036-060) hole.

Use field-supplied strain relief going into control box through 3<sup>5</sup>/<sub>8</sub>-in. diameter hole provided. After wires are in unit control box, connect to power terminal block (see Power Wiring section on page 20).

Bring low-voltage control wiring through the 7/8-in. diameter hole provided in the condenser section side post. Use strain relief going into 7/8-in. diameter hole in bottom of unit control box.

After wiring is in control box, make connection to proper terminals on terminal blocks (see Field Control Wiring section below).

**IMPORTANT:** The VAV (variable air volume) units use variable frequency drives, which generate and can radiate radio frequency energy. If units are not installed and used in accordance with these instructions, they may cause radio interference. They have been tested and found to comply with limits of a Class A computing device as defined by FCC (Federal Communications Commission) regulations, Subpart J of Part 15, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

**⚠ WARNING**

The unit must be electrically grounded in accordance with local codes and NEC ANSI/NFPA 70 (National Fire Protection Association). Electrical shock could cause personal injury.

Affix crankcase heater sticker (located in the installers packet) to unit disconnect switch.

Voltage to compressor terminals during compressor operation must be within the voltage range indicated on the unit nameplate. Phases must be balanced within 2%.

Use the formula in Tables 8A and 8B to determine the percentage of voltage imbalance.

**IMPORTANT:** If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Unit failure as a result of operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components.

**IMPORTANT:** On 208/230-v units, transformers 1-5 are wired for 230-v. If 208/230-v unit is to be run with 208-v power supply, the transformers must be rewired as follows:

For transformer 1 move the black wires connected to terminal H2 and connect it to terminal H3.

For transformers 2-4, that are used for the 24-volt control circuits, connect as follows:

1. Remove cap from red (208 v) wire.
2. Remove cap from spliced orange (230 v) wire. Disconnect orange wire from black unit power wire.
3. Cap orange wire.
4. Splice red wire and black unit power wire. Cap wires.

If the unit is equipped with the optional convenience outlet connect the yellow wire to H2 on transformer 5.

**IMPORTANT:** BE CERTAIN UNUSED WIRES ARE CAPPED. Failure to do so may damage the transformers.

**FIELD CONTROL WIRING** — The 48A Series units support a large number of control options that can impact the field control wiring.

The control options that the unit can provide relate to the following parameters:

- CV (constant volume), VAV (variable air volume), VVT<sup>®</sup> (variable volume variable temperature) or Carrier TEMP system control operation.
- Stand-alone with a thermostat (CV) or with a space sensor (CV and VAV)
- Network application with CCN (Carrier Comfort Network<sup>®</sup>) or other networks
- Demand ventilation with CO<sub>2</sub> sensor
- Economizer and economizer with changeover control
- Staged gas heat
- Building and duct static pressure control
- Fire shutdown and smoke control
- Diagnostics and monitoring

For constant volume applications a thermostat (T-Stat) or space temperature sensor (SPT) will be required.

**T-STAT (Conventional Thermostat)** — Unit can be controlled with a Carrier-approved accessory electro-mechanical or electronic thermostat that has two stages of cooling, two stages of heating control and an output for indoor fan control. It may also include time of day scheduling or use the scheduling routines built into the *ComfortLink*<sup>™</sup> controls.

Install thermostat according to the installation instructions included with accessory thermostat and the unit wiring diagrams. Locate thermostat assembly on a solid interior wall in the conditioned space to sense average temperature.

Route thermostat cable or equivalent single leads of colored wire from subbase terminals through conduit into unit to low-voltage connection in the main control box. For thermostat TB4 connections see Fig. 20.

**NOTE:** For wire runs up to 50 ft, use no. 18 AWG (American Wire Gage) insulated wire (35 C minimum). For 50 to 75 ft, use no. 16 AWG insulated wire (35 C minimum). For over 75 ft, use no. 14 AWG insulated wire (35 C Minimum). All wire larger than no. 18 AWG cannot be directly connected at the thermostat and will require a junction box and splice at the thermostat. Set heat anticipator settings as follows:

SIZE	STAGE 1 (W1) ON	STAGE 2 (W1 and W2) ON
<b>020-050</b>	0.24	0.13
<b>051, 060</b>	0.36	0.13

Settings may be changed slightly to provide a greater degree of comfort for a particular installation.

**Staged Gas Control Option Thermistors** — If the unit is equipped with the staged gas heat option, supply-air thermistors must be installed. Three supply-air thermistors are shipped with staged gas units and are inside the heating section. The supply-air thermistors should be located in the supply duct with the following criteria:

- Downstream of the heat exchanger cells
- Equally spaced as far as possible from the heat exchanger cells
- In a duct location where none of the supply-air thermistors are within sight of the heat exchanger cells
- In a duct location with good mixed supply-air portion of the unit.

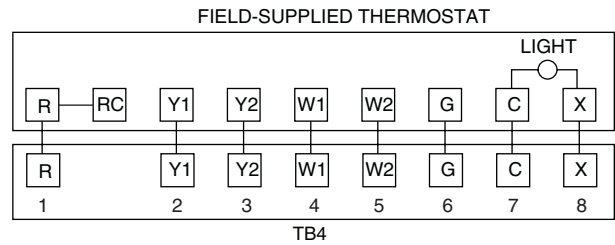
**SPT (Space Temperature Sensor)** — For constant volume applications the *ComfortLink™* controls can also be used with T55 and T56 space temperature sensors that use a 10K thermistor. The T56 sensor also has the capability for a configurable temperature set point offset. For variable air volume applications only the T55 sensor can be used.

Install sensor according to the installation instructions included with accessory sensor. Locate sensor assembly on a solid interior wall in the conditioned space to sense average temperature.

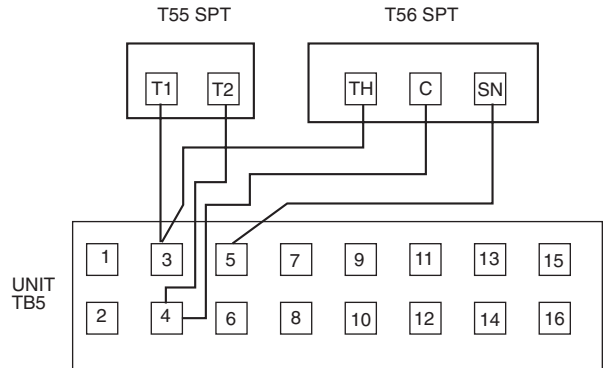
Run wiring to the space sensor as shown in Fig. 21.

Note that when the remote sensor is used, the red jumper wires provided must be connected from TB4 terminal 4 to 5 and TB4 terminal 5 to 1.

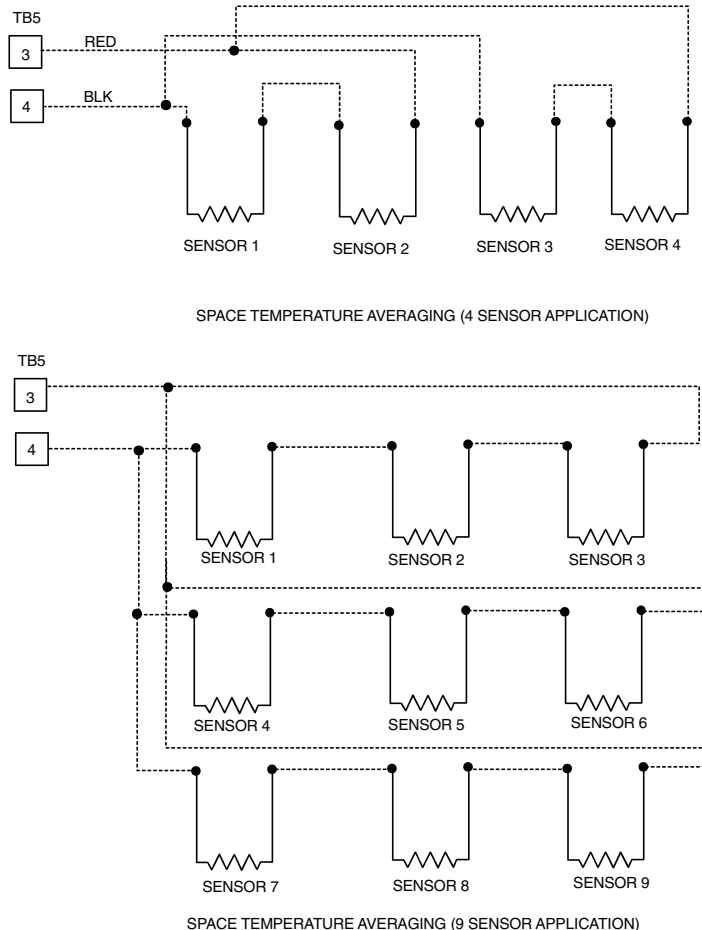
Both the T55 and T56 have a CCN communications port and this should be wired to the CCN Communications TB3 board if it is desired to have access to the CCN through the sensor. If more than one T-55 sensor is being used and averaged, sensors must be wired in multiples of 4 or 9 as shown in Fig. 22.



**Fig. 20 — Field Control Thermostat Wiring**



**Fig. 21 — Space Temperature Sensor Wiring**



NOTE: Use T55 sensor only.

**Fig. 22 — Space Temperature Averaging Wiring**

**T58 Communicating Thermostat** — Carrier also has a fully communicating thermostat which, if used, will be wired to the CCN communication connections on TB3 as described in the Carrier Comfort Network® Interface section below.

**Carrier Comfort Network Interface** — The rooftop units can be connected to the CCN system. The communication bus wiring is supplied and installed in the field. Wiring consists of shielded, 3-conductor cable with drain wire. The system elements are connected to the communication bus in a daisy chain arrangement. The positive pin of each system element communication connector must be wired to the positive pins of the system element on either side of it, the negative pins must be wired to the negative pins, and the signal pins must be wired to signal ground pins. Wiring connections for CCN should be made at the TB3 terminal block using the screw terminals. The TB3 board also contains an RJ14 CCN plug that can be used to connect a field service computer or other CCN device temporarily. There is also an RJ14 LEN (local equipment network) connection that is used to connect a Navigator™ device or download software.

Conductors and drain wire must be 20 AWG minimum stranded, tinned copper. Individual conductors must be insulated with PVC, PVC/nylon, vinyl, Teflon, or polyethylene. An aluminum/polyester 100% foil shield and an outer jacket of PVC, PVC/nylon, chrome vinyl, or Teflon with a minimum operating temperature range of -20 C to 60 C (-4 F to 140 F) is required. Table 9 lists cables that meet the requirements.

**Table 9 — CCN Connection Approved Shield Cable**

MANUFACTURER	CABLE PART NO.
Alpha	2413 or 5463
American	A22503
Belden	8772
Columbia	02525

**IMPORTANT:** When connecting to CCN communication bus to system elements, use color coding system for the entire network to simplify installation and checkout. See Table 10.

**Table 10 — Color Code Recommendations**

SIGNAL TYPE	CCN BUS CONDUCTOR INSULATION COLOR	CCN PLUG PIN NO.
Positive (+)	RED	1
Ground	WHITE	2
Negative (-)	BLACK	3

If a cable with a different color scheme is selected, a similar color code should be adopted for the entire network. At each system element, the shields of the communication bus cables must be tied together. If the communication bus is entirely within one building, the resulting continuous shield must be connected to a ground at one point only. If the communication bus cable exits from one building and enters another, the shields must be connected to grounds at the lightning suppressor in each building where the cable enters or exits the building (one point per building only).

To connect the unit to the network:

1. Turn off power to the control box.
2. Cut the CCN wire and strip the ends of the red (+), white (ground), and black (-) conductors. (If a different network color scheme is used, substitute appropriate colors.)
3. Remove the 3-pin male plug from the base control board in the main control box, and connect the wires as follows:
  - a. Insert and secure the red (+) wire to terminal 1 of the 3-pin plug.
  - b. Insert and secure the white (ground) wire to terminal 2 of the 3-pin plug.

- c. Insert and secure the black (-) wire to terminal 3 of the 3-pin plug.
4. Insert the plug into the existing 3-pin mating connector on the base module in the main control box.

**VAV Units with Heat** — For variable air volume units that will use heat, the variable air volume terminals should be interlocked with the unit at TB5 terminals 1 and 2.

**Demand Ventilation** — The unit can be equipped with a CO<sub>2</sub> sensor for use in demand ventilation. This can be factory supplied and will be mounted in the return duct. It can also be field supplied and mounted in the return duct or in the space. Connect the field-installed 4 to 20 mA sensor to TB5 terminal 6 and 7. Do not remove the factory-installed 182-ohm resistor.

If an outdoor air quality sensor is used then it should be wired to terminal 11 and 12 on TB6. This will require the use of the optional controls expansion module.

**Remote IAQ Override** — If the control is being used with non Carrier building management system it supports the use of the remote IAQ override switch. This should be connected to TB6 terminal 13 and 14. Use of this will require the optional controls expansion module.

**Remote Economizer Position Control** — The *ComfortLink*™ controls will normally control the position of the economizer, but it can also support field control of the economizer position through a 4 to 20 mA signal. If this is used it should be connected to TB5 terminal 6 and 7. If the signal is a 4 to 20 mA signal then leave the 182-ohm resistor in place.

**Remote Economizer Enable** — If the control is being used with other building management systems and the system will control the enabling and disabling of the economizer free cooling, this switch input can be connected to TB6 terminals 1 and 2. Note that the controls also support integrated economizer changeover using outdoor dry bulb, differential dry bulb, outdoor enthalpy and differential enthalpy.

**Remote Occupancy Switch** — For interface to other building management systems the control also supports a switch input for remote occupancy signals. This wiring should be connected to terminal TB6 terminal 1 and 3.

**Remote Economizer Minimum Position Control** — If the *ComfortLink* control is controlling the economizer, but a remote minimum position is required, then an external 100K potentiometer can be connected to TB5 terminal 6 and 7. Remove the factory-installed 182-ohm resistor.

**Smoke Sensor Interface** — The *ComfortLink* control includes an optional factory-installed return air smoke detector. Remote alarm circuits can be wired to TB5 terminal 8 and 9.

**Fire Shutdown and Smoke Control** — The control supports interface to fire and smoke control systems and allows for the following system overrides from remote switch inputs.

- Fire Shutdown — Connect to TB6 terminals 8 and 9.
- Smoke Pressurization — Connect to TB6 terminal 12 and 13. This requires the use of the optional controls expansion module.
- Smoke Evacuation — Connect to TB6 terminal 12 and 14. This requires the use of the optional controls expansion module.
- Smoke Purge — Connect to TB6 terminal 12 and 15. This requires the use of the optional controls expansion module.

**Demand Limiting** — The control can also be used with demand limiting control from remote building management systems. If a two stage system is going to be used with Redline Limiting where the machine is not allowed to increase load and Load Shed where the load is decreased to a configurable limit in capacity then these can be connected to TB6 terminals 4 and 5 and 5 and 6. This requires use of the controls expansion module.



## Step 9 — Make Outdoor-Air Inlet Adjustments

**ECONOMIZER AND FIXED OUTDOOR AIR DAMPER** — Hoods are used on all units with economizer or adjustable self-closing fixed outdoor air damper.

**NOTE:** If accessory power exhaust or barometric relief packages are being added to the unit, install power exhaust or barometric relief before installing economizer hoods.

**Economizer Hood Assembly** — The economizer hood is shipped in a package secured to the outside of the unit. The hood assemblies must be field-assembled. The 48AW,AY units are side supply and side return. The return duct limits access to economizer filters from below.

The 48AJ,AK,AW,AY020-050 units have two hoods on every unit. The 48AJ,AK,AW,AY051 and 060 units have 3 hoods on every unit.

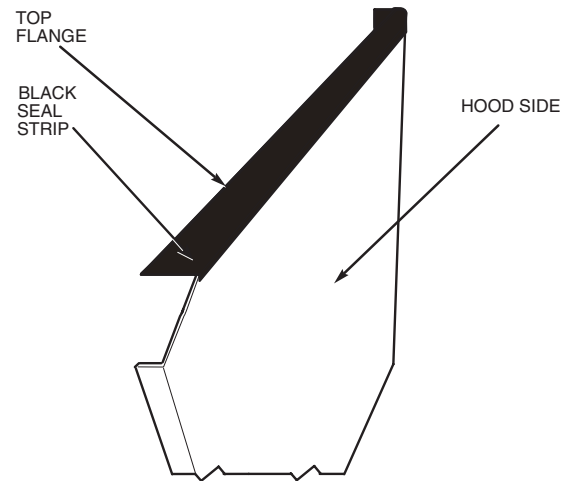
**NOTE:** Before assembly of the economizer hood, check along the outer edges of the economizer assembly for any seal strip protruding past the flanges. Trim the excess seal strip so that it is flush with the economizer assembly flanges.

Perform the following procedure to assemble the economizer hood.

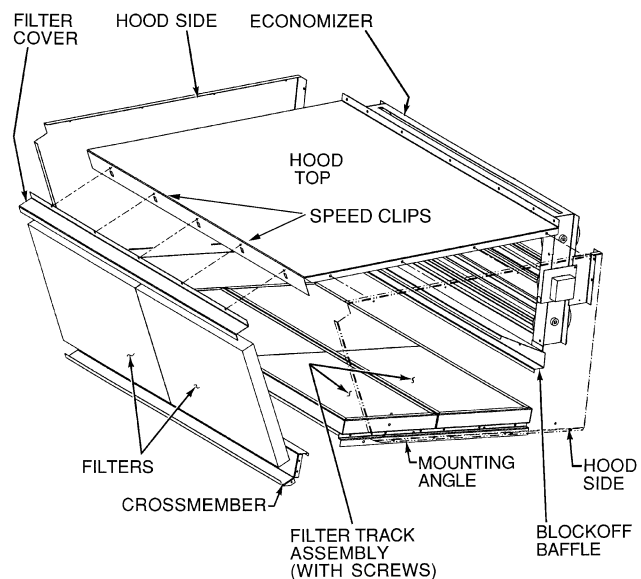
1. Apply black seal strip (provided) to outside top-edge of hood sides. Wrap seal strip over edge to cover top flange (6 hood sides). Make sure seal strip covers screw holes. Allow strip to overhang  $\frac{1}{8}$ -in. past the end opposite the mounting flange. See Fig. 23.
2. Assemble hood sides, top, and cross member with gasketed screws provided. See Fig. 24.
3. Attach 15 green speed clips (provided) to hood top.
4. Apply black seal strip (provided) to mounting flanges of hood sides being sure to cover mounting holes. See Fig. 25.
5. Apply black seal strip (provided) to back of hood top mounting flange. Seal strip of hood top mounting flange must press tightly against seal strip of hood side mounting flanges. See Fig. 26.
6. Add gray foam strip (provided) to cross members on bottom tray. See Fig. 27.
7. Attach gray foam strip (provided) to block-off baffle on outer face of flange. See Fig. 28.
8. Remove the screws on each end and along top of damper assembly of unit. Remove top 4 screws on each side of filter panel under damper assembly. Set hood assembly in place and attach to unit using these screws.
9. Remove screws along bottom of damper assembly. Locate and mount block-off baffle using these screws.
10. Assemble 2 filter tracks side-by-side with the assembled ends together.
11. Attach one mounting angle to the assembled end of the filter track. See Fig. 29.
12. Attach 9 green speed clips (provided) to hood side panels. Engagement section of clip faces up and towards the outside of the hood side panels.
13. Attach remaining mounting angle to other end of the filter track with no. 10 screws provided.
14. Place filter track assembly in bottom of hood by attaching to hood with speed clips and gasketed screws provided.

**NOTE:** Be sure the filters are installed with the airflow in the correct direction.

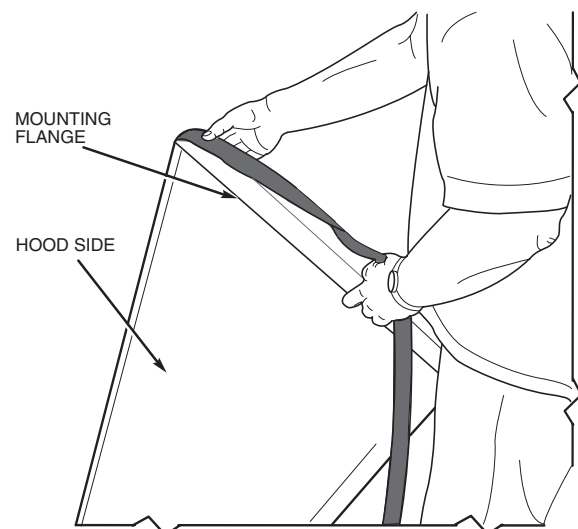
15. Attach black seal strip (provided) to filter cover. Seal strip should be applied centered over the holes of the one flange, making sure to fully cover holes and centered over the other large flange. See Fig. 30.
16. Slide two 20 x 25-in. filters into cross members of hood assembly. Attach filter cover over filters with screws and speed clips provided.



**Fig. 23 — Adding Seal Strip to Top of Hood Sides**

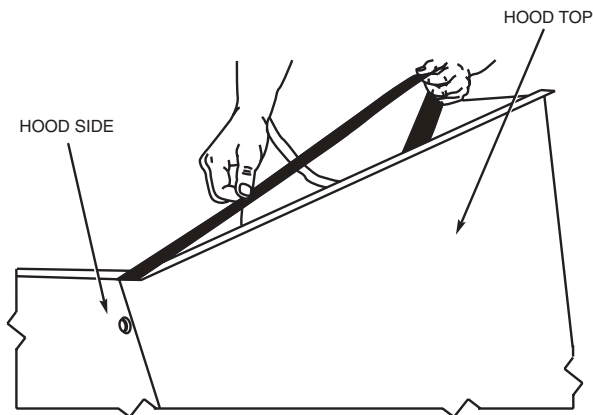


**Fig. 24 — Economizer Hood Assembly (Right Side/Center Economizer Hood Shown)**

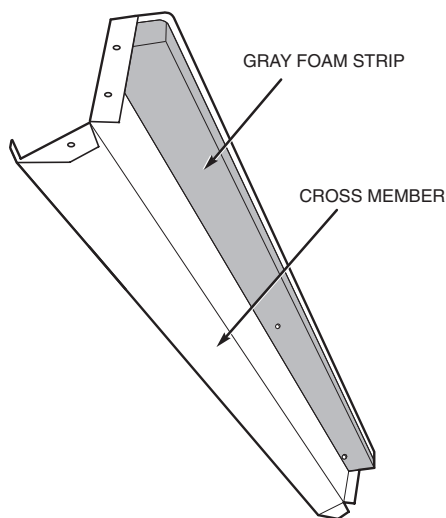


**Fig. 25 — Adding Seal Strip to Sides of Hood Top Mounting Flange**

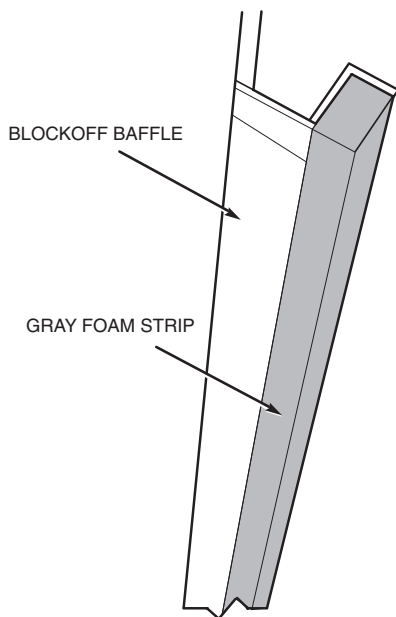




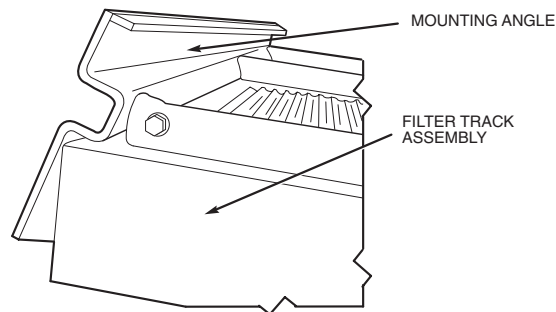
**Fig. 26 — Adding Seal Strip to Back of Hood Top Mounting Flange**



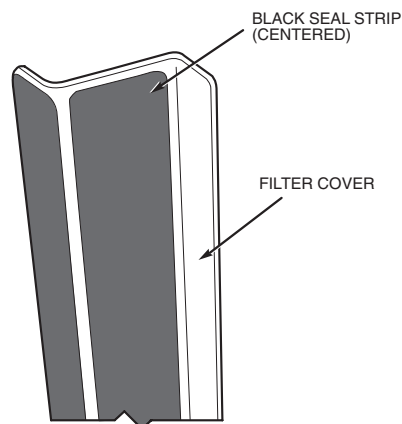
**Fig. 27 — Adding Foam Strip to Cross Member**



**Fig. 28 — Adding Seal Strip to Block-Off Baffle**



**Fig. 29 — Mounting Angle Attached to Filter Track Assembly**



**Fig. 30 — Attaching Seal Strip to Filter Cover**

**Step 10 — Position Power Exhaust/Barometric Relief Damper Hood** — All units are shipped with the hoods folded inside the unit in a shipping position. For 48AJ, and AK units the hood must be tilted out once the unit is installed. On 48AW, AY units, (designed for horizontal supply and return) the assemblies will have to be relocated to return ductwork. See Fig. 31 for dimensions and details.

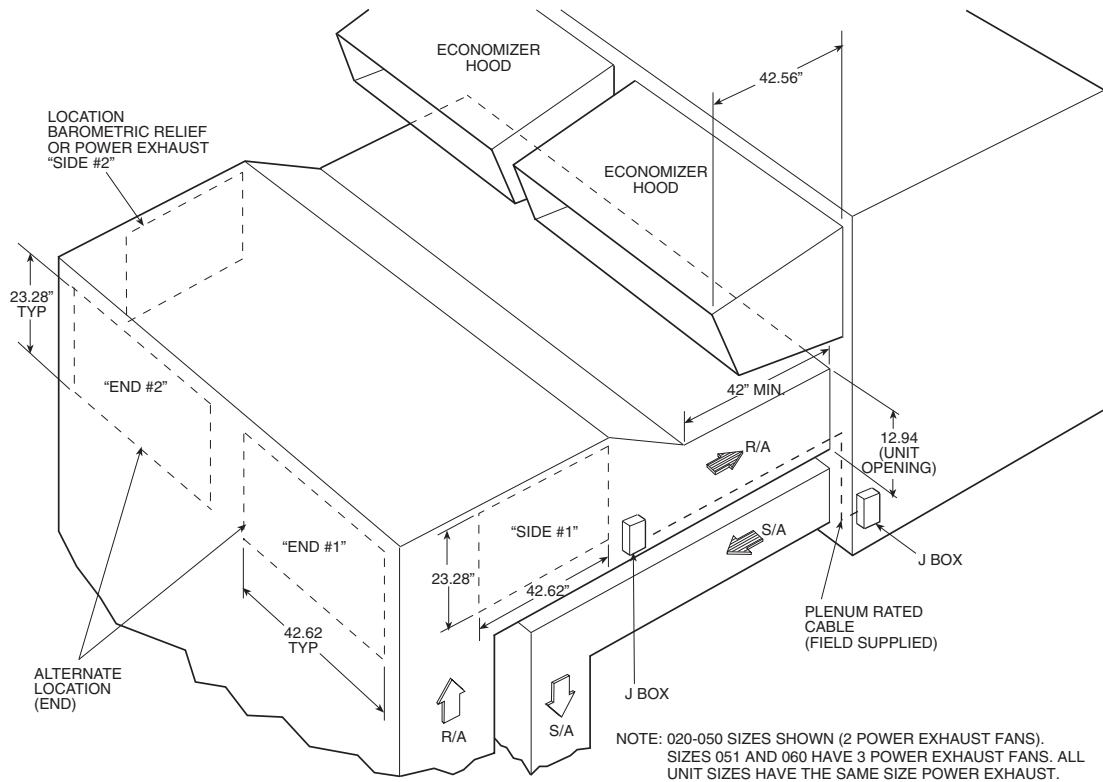
All electrical connections have been made and adjusted at the factory. The power exhaust blowers and barometric relief dampers are shipped assembled and tilted back into the unit for shipping. Brackets and extra screws are shipped in shrink wrap around the dampers. If ordered, each unit will have 4 (48AJ,AK,AW,AY020-050 units) or 6 (48AJ,AK,AW,AY051 and 060 units) power exhaust blowers and motors or barometric relief dampers.

1. Remove 9 screws holding each damper assembly in place. See Fig. 32. Each damper assembly is secured with 3 screws on each side and 3 screws along the bottom. **Save screws.**

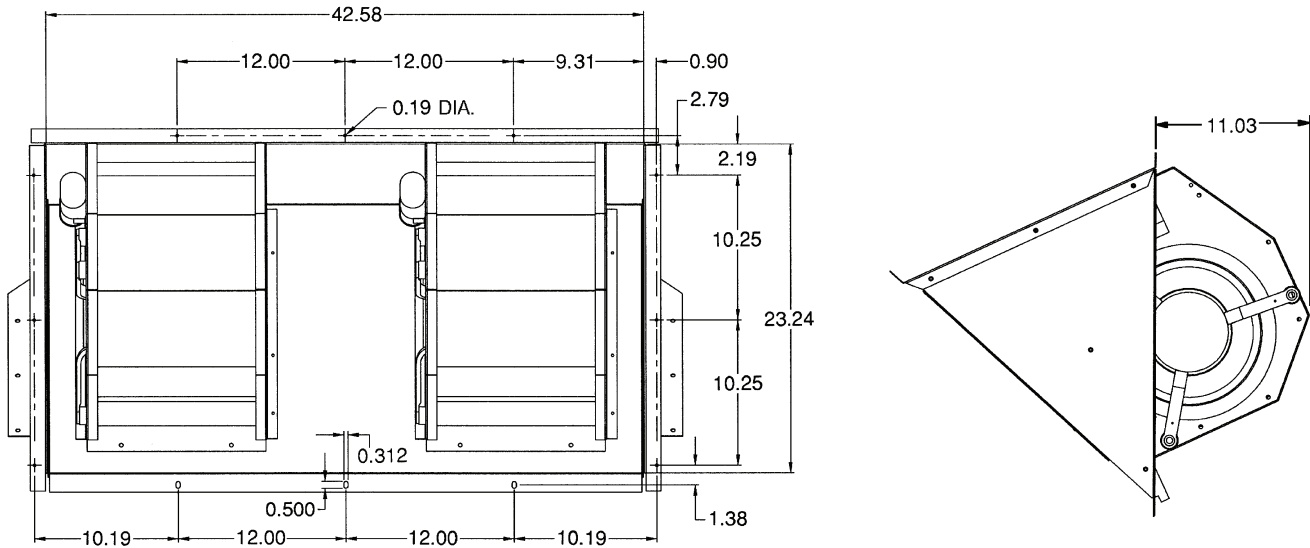
**CAUTION**

Be careful when tilting blower assembly. Hoods and blowers are heavy and can cause injury if dropped.

2. Pivot each damper assembly outward until edges of damper assembly rest against inside wall of unit.
3. Secure each damper assembly to unit with 6 screws across top (3 screws provided) and bottom (3 screws from Step 1) of damper.
4. With screws saved from Step 1, install brackets on each side of damper assembly.
5. Remove tape from damper blades.



**Fig. 31 — Power Exhaust Relocated to Side Return Duct**



**NOTES:**

1. Unless otherwise specified, all dimensions are to outside of part.
2. Dimensions are in inches.
3. On 48AW,AY units, accessory barometric relief or power exhaust must be mounted in the field-supplied return ductwork.

**Fig. 32 — Barometric Relief Damper and Power Exhaust Mounting Details**

**Step 11 — Route VAV Static Pressure Sensors**

**VAV DUCT PRESSURE TRANSDUCER** — The VAV duct pressure transducer (VAV inverter pressure transducer) is located behind the filter access door on the lower inner panel. See Fig. 33. A section of field-supplied 1/4-in. plastic tubing must be run from the high pressure tap on the differential pressure switch and connected to a field-supplied tap in the supply-air duct. The tap is usually located 2/3 of the way out on the main supply duct. Remove plug button in panel to route tubing.

**VAV BUILDING PRESSURE TRANSDUCER** — The VAV building pressure transducer (modulating power exhaust pressure transducer) is located behind the filter access door on the

lower inner panel. See Fig. 33. A section of field-supplied 1/4-in. plastic tubing must be run from the high pressure tap on the differential pressure switch to the conditioned space. The pressure tube must be terminated in the conditioned space where a constant pressure is required. This location is usually in an entrance lobby so that the building exterior doors will open and close properly. Remove plug button in panel to route tubing.

The low pressure tap is factory-routed to the atmosphere. For a positive-pressure building, route the high tap to building air and low tap to atmosphere. For a negative-pressure

building, route the high tap to atmosphere and the low tap to building air.

**Step 12 — Install All Accessories** — After all the factory-installed options have been adjusted, install all field-installed accessories. Refer to the accessory installation instructions included with each accessory.

The 48A Series units have a large number of factory-installed options which were previously available only as accessories. Some of the available options can also be installed in the field if needed. In most cases the units have been pre-wired so that the accessories can be easily installed. Instructions are shipped with each accessory. Configuration of the controls for these accessories as well as the factory-installed options can be found in the Controls, Start-Up, Operation, Service and Troubleshooting Book. The following is a list of some of the common accessories:

- Thermostats and space temperature sensors
- LP (liquid propane) conversion kit
- Accessory barometric relief damper
- Accessory power exhaust
- Non-modulating to modulating power exhaust
- Condenser coil hail guards
- Outdoor humidity sensor (used for economizer enthalpy changeover)
- Return air humidity sensors (used for economizer differential enthalpy changeover)
- Return air smoke detector
- Controls expansion module (used for interface to building management systems, not typically needed on system with the Carrier Comfort Network® [CCN] system)
- Plugged filter sensor
- Motormaster® V low ambient head pressure control

**IMPORTANT:** Carrier recommends the installation of field-fabricated wind baffles on all vertically oriented condenser coils when operating in environments with prevailing winds of more than 5 MPH and where temperatures drop below 32 F. See the Motormaster accessory installation guide for instructions.

### Step 13 — Field Modifications

#### DUCTWORK

Bottom Return Units (48AJ and AK) Field-Modified for Side Return — The 48AJ and AK units with bottom return air connections may be field-modified to accommodate side return air connections.

**IMPORTANT:** The following section is a guideline and not a comprehensive procedure to field modify the units. The installing contractor must provide some design initiative. Field-conversion is complex and is not recommended. Units with electric heat must not be converted because of potential heating mode operating problems.

Conversion to horizontal return requires that the bottom return openings of the unit must be sealed with airtight panels

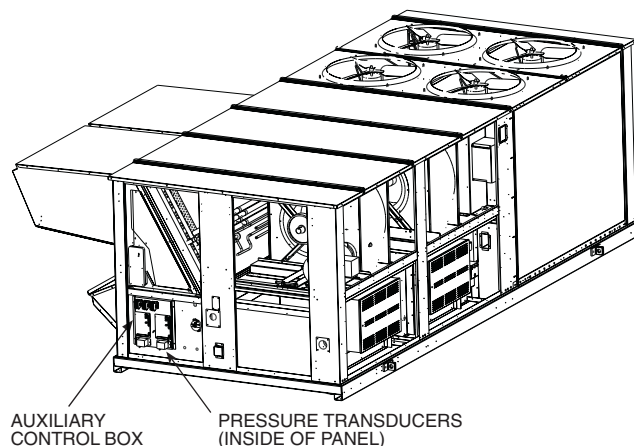
capable of supporting the weight of a person. The return ductwork connection locations on the side of the unit are higher than normal (31-in. high). Unit-mounted power exhaust or barometric relief cannot be used because of return air ductwork will cover the power exhaust or barometric relief installation locations. Power exhaust or barometric relief may be installed in the return air ductwork.

To convert the unit, perform the following:

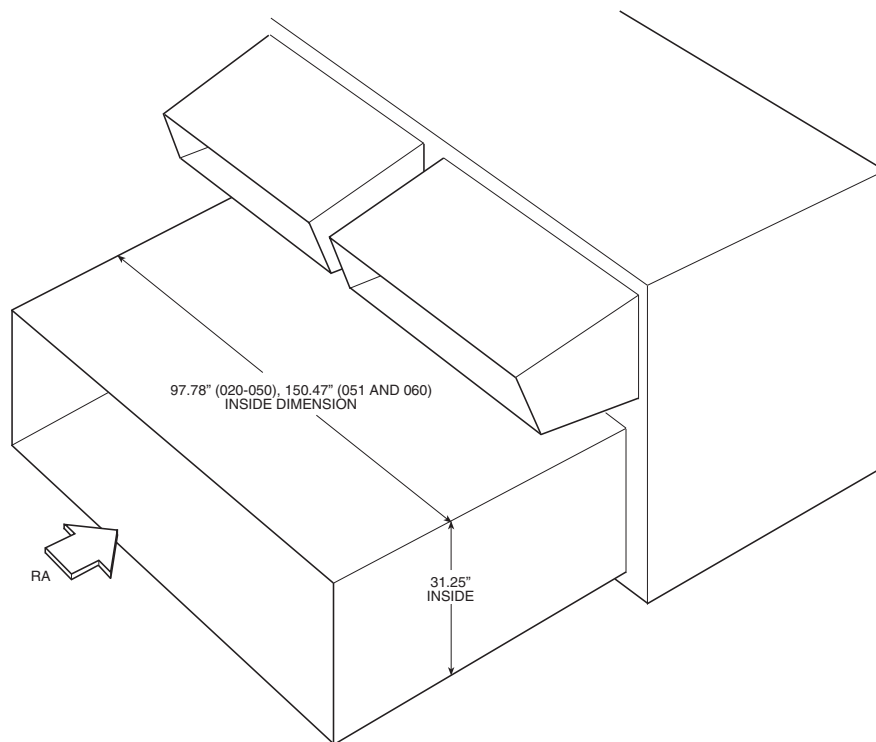
1. Seal the bottom return openings of the unit with airtight panels capable of supporting the weight of a person.
2. Remove the panels located below the economizer outdoor-air dampers. These openings will be used for the return-air ductwork. There are 2 panels on 48AJ,AK020-050 units. There are 3 panels on 48AJ,AK051 and 060 and units. These openings are normally used for power exhaust or barometric relief.
3. Run the return air ductwork up to the openings. One single duct is recommended to connect to the unit over the return air openings. See Fig. 34. The return duct must incorporate a minimum 3/4-in. flange for connection to the unit cabinet. The unit does not have duct flanges for this conversion.

Side Supply and Return Units (48AW,AY) with Field-Installed Power Exhaust in Return Duct — Space must be available in the return duct to mount the power exhaust fan (gravity relief) modules. Dimensions and suggested locations are shown in Fig. 34. These instructions are a guideline and not a comprehensive procedure. The design contractor must provide some design initiative.

The wiring harness that is provided with the power exhaust accessory is not long enough for the fan modules to be mounted in the return air duct. Field-supplied wiring must be spliced into the harness. Use a junction box at each splice. The wiring may be run in the return duct, or externally in conduit. A service access panel will be needed near each power exhaust fan.



**Fig. 33 — Pressure Transducer Locations**



**Fig. 34 — Side Return Air Conversion**