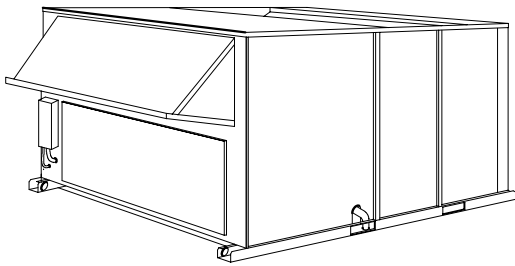


PAE SERIES

15 to 20 Ton



PAE180-240

Commercial Package Electric Cooling Units

Meets Ashrae 90.1 - 2001 Standards

FEATURES:

- Dual, Electrically and mechanically independent circuits
- Scroll Compressor on each circuit
- TXV refrigerant metering devices
- Pre-painted galvanized steel cabinet for long life and quality appearance
- Commercial strength base rails with built-in rigging capability
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62-89
- Two-inch return-air filters
- High and low (loss-of-charge) pressure switches
- Refrigerant filter drier
- Freeze Thermostat
- Thru-the-curb service connections
- 25% Manual Outside Air Damper
- Warranty: Five year compressor, One year parts



RESIDENTIAL AND COMMERCIAL SYSTEMS • SPLIT SYSTEMS • PACKAGED AIR CONDITIONERS • COMBINATION GAS / ELECTRIC UNITS • HEAT PUMPS • AIR HANDLERS • MANUFACTURED HOME AIR CONDITIONERS • GAS, OIL AND ELECTRIC FURNACES)

International Comfort Products
650 Heil-Quaker Avenue, Lewisburg, TN 37091

513 71 2101 04

1/13/03

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MODEL NUMBER IDENTIFICATION GUIDE							
MODEL NUMBER	P	A	E	180	H	000	A
PRODUCT FAMILY Package Units							Sales Code
TYPE H= Heat Pump G = Gas/Electric A = Air Conditioner							OPTIONS
DESIGN SERIES							VOLTAGE / PHASE / HERTZ H = 208/230-3-60 ... L = 460-3-60 S = 575-3-60
							COOLING CAPACITY (NOMINAL BTUH) 180 = 15 Ton 240 = 20 Ton

UNIT SPECIFICATIONS - MODELS						
COOLING	PAE180H	PAE180L	PAE180S	PAE240H	PAE240L	PAE240S
ARI Rated Capacity Btuh (Net)	180,000			232,000		
Nominal Tons	15			20		
Standard CFM	5250			6600		
EER	9.7			9.7		
IPLV	11.6			10.3		
Sound Rating (Bels)	8.8			9.5		
Base Unit Operating Weights (lbs)	1550			1700		
ELECTRICAL						
Volts/ 3 Phase/ 60Hertz	208/230	460	575	208/230	460	575
Voltage Range Min/Max	187 / 253	414 / 508	518 / 633	187 / 253	414 / 508	518 / 633
Power Supply MCA	82 / 82	41	31	124 / 124	61	48
Power Supply MOCP*	110 / 110	50	40	150 / 150	80	60
COMPRESSOR						
SCROLL / COPELAND						
Quantity...Model	1...ZR49KC / 1...ZR72KC			1...ZR125KC / 1...ZR108KC		
No. of Circuits	2			2		
RLA / LRA	Circuit #1	32.1 / 195	16.4 / 95	12.0 / 80	42.0 / 239	19.2 / 125
	Circuit #2	20.7 / 156	10.0 / 70	8.2 / 54	33.6 / 225	17.3 / 114
Oil (Oz.) per circuit	85, 60			106, 106		
REFRIGERATION TYPE						
R-22						
Expansion Device	TXV			TXV		
Operating Charge (lb. oz.) *	CKT 1 = 19-6 CKT 2 = 13-4			CKT 1 = 19-7 CKT 2 = 13-9		
CONDENSER FAN						
Propeller Type						
Nominal CFM	10,500			14,200		
Quantity..Diameter (in.)	3...22			2...30		
Motor Hp...RPM (each)	1/2...1050			1...1075		
Watts Input (Total)	1100			3400		
FLA	1.7	0.8	0.75	6.6	3.3	3.4
CONDENSER COIL						
Cross Hatched 3/8 in. Copper Tubes, Aluminum Lanced						
Rows...Fin/In.	4...15			4...15		
Total Face Area (Sq. Ft.)	21.7			21.7		
EVAPORATOR COIL						
Cross Hatch 3/8 in. Copper Tubes, Aluminum Lanced, Face Split						
Rows...Fins/Inche	4...15			4...15		
Total Face Aea (sq. ft.)	17.5			17.5		
EVAPORATOR FAN						
Centrifugal Type						
Quantity...Size (in.)	2...12 x 12			2...12 x 12		
Type Drive	Belt			Belt		
Nominal CFM	6000			8000		
Motor Hp, RPM, Max. Continuous Bhp	5, 1745, 6.13	5, 1745, 6.13	5, 1745, 6.13	7.5, 1745, 8.7	7.5, 1745, 9.5	7.5, 1745, 8.7
FLA (Each)	15.8 / 15.8	7.9	6.0	25.0 / 25.0	13.0	10.0
Motor Frame Size	184T			213T		
Fan RPM Range	873 - 1021			1002 - 1225		
Motor Bearing	Ball			Ball		
Maximum Allowable RPM	1550			1550		
Motor Pulley Pitch / Diameter Min/Max. (in.)	4.9 - 5.9			5.4 - 6.6		
Motor Shaft Diameter (in.)	1 - 1/8			1 - 3/8		
Fan Pulley Pitch Diam (in)	9.4			9.4		
Belt, Quantity...Type... Length (in.)	1.BX.50			1.BX.53		
Pulley Center Line Distance (in)	13.3 - 14.8			14.6 - 15.4		
Speed Change per Full Turn of Movable Pulley Flange (RPM)	37			37		
Pulley Max. full Turns From Closed Postion	4			5		
Factory Setting	3.5			3.5		
Factory Speed Setting RPM	965			1120		
Fan Shaft Diam. at Pulley	1 - 7/16			1 - 7/16		
SEE LEGENDS AND NOTES ON FOLLOWING PAGES						

UNIT SPECIFICATIONS (CONT)	MODELS	
	PAE180	PAE240
HIGH-PRESSURE SWITCH (psig)		
Internal Relief (Differential) Cutout	426	426
Reset (Auto.)	320	320
LOSS-OF-CHARGE SWITCH (psig) (LOW-PRESS.)		
Cutout	27	27
Reset (Auto.)	44	44
FREEZE PROTECTION THERMOSTAT (F)		
Opens	30 +/- 5	30 +/- 5
Closes	45 +/- 5	45 +/- 5
RETURN-AIR FILTERS (THROWAWAY)		
Quantity...Size (in.)	4...20 x 20 x 2	4...20 x 20 x 2
	4...16 x 20 x 2	4...16 x 20 x 2

LEGENDS AND NOTES

Bhp = Brake Horsepower

Legend

Bels	-	Sound Levels
EER	-	Energy Efficiency Ratio
IPLV	-	Integrated Part Load Values
MCA	-	Minimum Circuit Amps
MOCP	-	Maximum Over-current Protection
FLA	-	Full Load Amps
LRA	-	Locked Rotor Amps
*	-	Fuse or HACR circuit breaker
RLA	-	Rated Load Amps

NOTES:

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

2. Unbalanced 3-Phase Supply Voltage

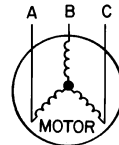
Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent voltage imbalance.

% Voltage Imbalance

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

- NOTES: 1. Rated in accordance with ARI Standards 210/240, latest revision (for sizes 090 & 120) or 360, latest revision (for size 150).
2. ARI ratings are net values, reflecting the effects of circulating fan heat.
3. Ratings are based on:
Cooling Standard: 80F db, 67F wb indoor entering air temperature and 95F db air entering outdoor unit.
IPLV Standard: 80F db, 67F wb indoor entering air temperature and 80F db entering air temperature.

EXAMPLE: Supply voltage is 460-3-60.



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

Determine maximum deviation from average voltage.

$$(\text{AB}) 457 - 452 = 5 \text{ V}$$

$$(\text{BC}) 464 - 457 = 7 \text{ V}$$

$$(\text{AB}) 457 - 455 = 2 \text{ V}$$

Maximum deviation is 7 v.

Determine percent 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%.

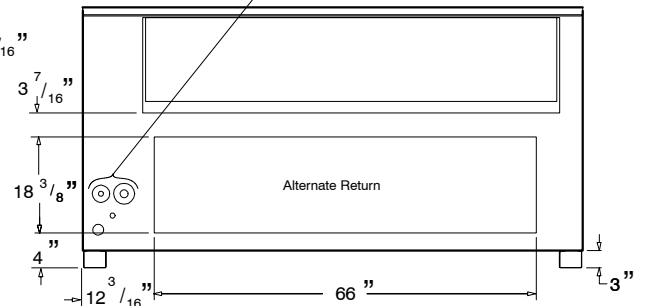
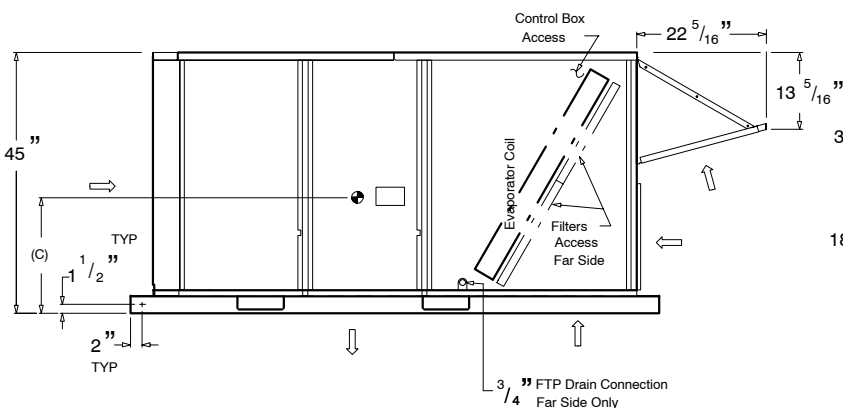
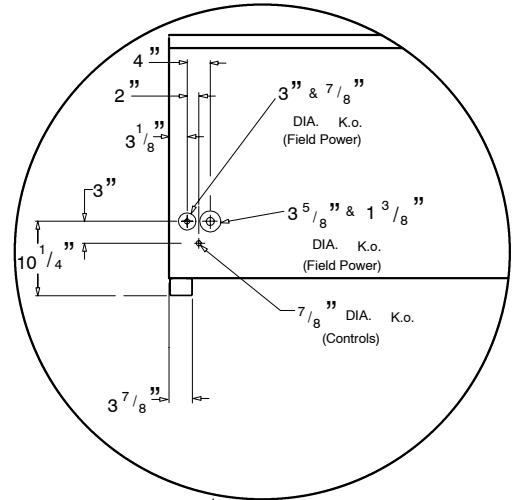
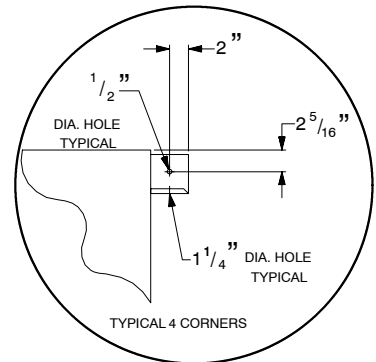
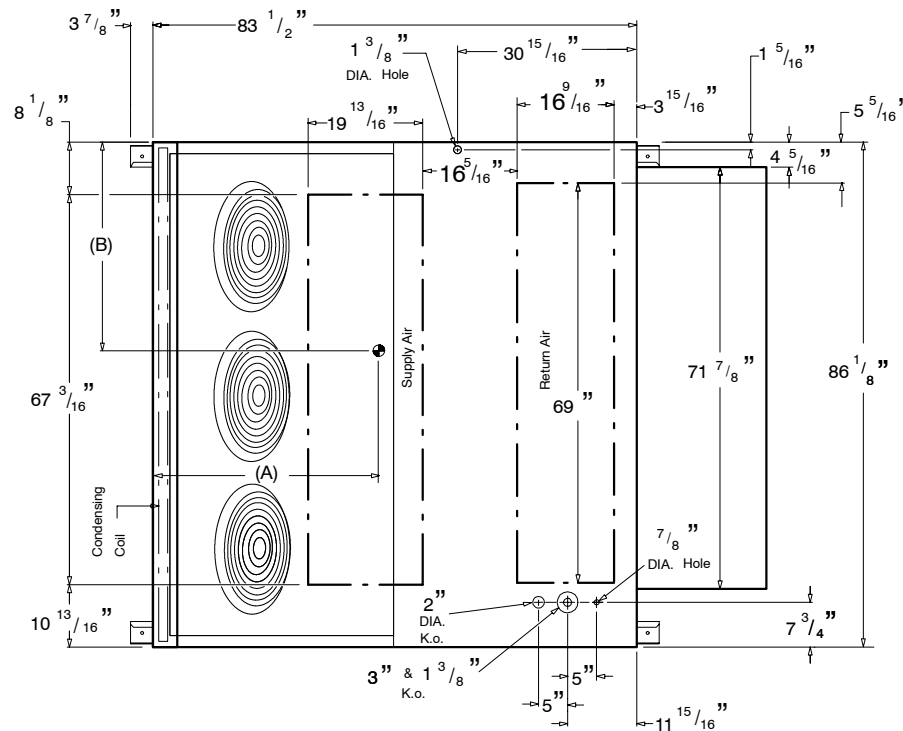
IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

BASE UNIT DIMENSIONS - PAE180

Unit	Total Weight		Corner A		Corner B		Corner C		Corner D		Dim A		Dim B		Dim C	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	ft-in	mm	ft-in	mm	ft-in	mm
PAE180	1550	703	391	177	365	166	384	174	410	186	3-5	1041	3-6	1067	1-10	559

NOTES:

- Dimensions in () are in millimeters.
-  Center of Gravity.
-  Direction of Airflow
- Ductwork to be attached to accessory roof curb only.
- Minimum clearance:
Rear: 7'-0" (2134) for coil removal. This dimension can be reduced to 4'-0" (1219) if conditions permit coil removal from the top.
Left side: 4'-0" (1219) for proper condenser coil airflow.
Front: 4'-0" (1219) for control box access.
Right Side: 4'-0" (1219) for proper operation of damper and power exhaust if so equipped.
Top: 6'-0" (1829) to assure proper condenser fan operation.
Local Codes jurisdiction may prevail.
- With the exception of clearance for the condenser coil and the damper/power exhaust as stated in Note #5, a removeable fence or barricade requires no clearance.
- Dimensions are from outside of corner post. Allow 0-5/16" (8) on each side for top cover drip edge.



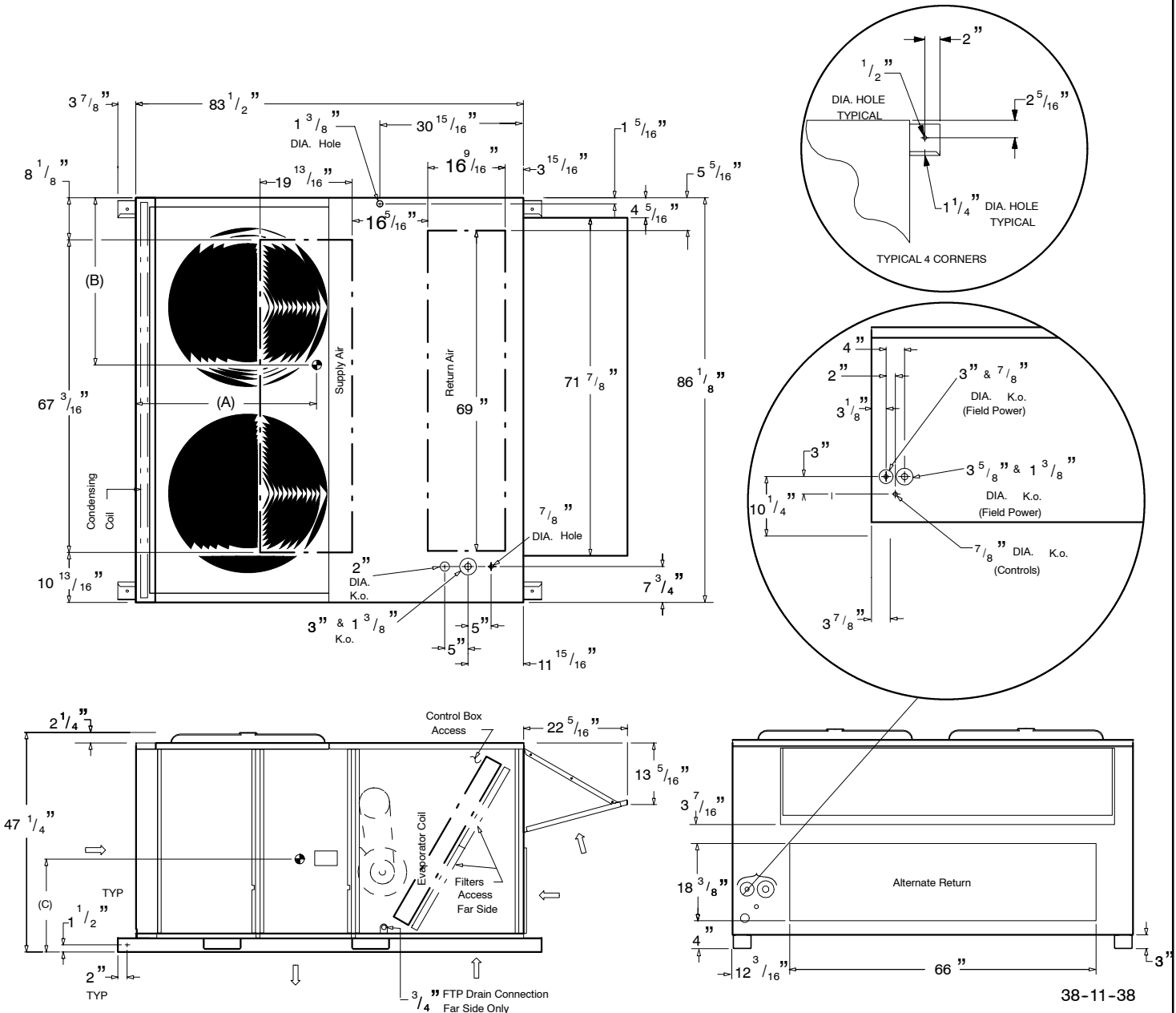
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BASE UNIT DIMENSIONS - PAE240

Unit	Total Weight		Corner A		Corner B		Corner C		Corner D		Dim A		Dim B		Dim C	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	ft-in	mm	ft-in	mm	ft-in	mm
PAE240	1700	771	419	190	394	179	425	193	463	210	3-4	1016	3-5	1041	1-5	508

NOTES:

- Dimensions in () are in millimeters.
-  Center of Gravity.
-  Direction of Airflow
- Ductwork to be attached to accessory roof curb only.
- Minimum clearance:
 - Rear: 7'-0" (2134) for coil removal. This dimension can be reduced to 4'-0" (1219) if conditions permit coil removal from the top.
 - Left side: 4'-0" (1219) for proper condenser coil airflow.
 - Front: 4'-0" (1219) for control box access.
 - Right Side: 4'-0" (1219) for proper operation of damper and power exhaust if so equipped.
 - Top: 6'-0" (1829) to assure proper condenser fan operation.
 - Local Codes jurisdiction may prevail.
- With the exception of clearance for the condenser coil and the damper/power exhaust as stated in Note #5, a removeable fence or barricade requires no clearance.
- Dimensions are from outside of corner post. Allow 0-5/16" (8) on each side for top cover drip edge.



38-11-38

EXPANDED PERFORMANCE DATA (COOLING) 15 Ton (GROSS Capacity)

Airflow CFM IDB (BF)			Outdoor Ambient Temperature - Degrees F, Dry Bulb														
			75			85			95			105			115		
			Entering Indoor Air Temperature - Degrees F, Wet Bulb														
			62	67	72	62	67	72	62	67	72	62	67	72	62	67	72
80	6750 (0.15)	MBH	191.1	202.9	216.7	185.2	197.0	209.8	178.3	189.1	201.9	170.4	179.3	191.1	163.5	169.4	180.3
		S/T	0.93	0.74	0.55	0.93	0.74	0.54	0.94	0.75	0.53	0.94	0.77	0.53	0.93	0.79	0.54
		KW	12.59	12.91	13.24	13.78	14.11	14.43	15.08	15.41	15.84	16.49	16.82	17.14	18.01	18.23	18.55
	6000 (0.14)	MBH	186.2	200.9	215.7	180.3	195.0	208.8	173.4	187.2	200.0	166.5	178.3	190.1	158.6	168.4	178.3
		S/T	0.92	0.70	0.52	0.92	0.70	0.50	0.93	0.72	0.50	0.93	0.73	0.51	0.94	0.75	0.52
		KW	12.37	12.80	13.13	13.67	14.00	14.43	14.97	15.30	15.73	16.38	16.71	17.03	17.79	18.12	18.45
	5250 (0.12)	MBH	183.2	198.0	213.7	177.3	191.1	205.9	169.4	184.2	198.0	162.5	175.3	188.1	154.6	165.5	177.3
		S/T	0.86	0.66	0.48	0.87	0.67	0.49	0.90	0.68	0.49	0.91	0.70	0.50	0.92	0.71	0.51
		KW	12.26	12.69	13.13	13.56	13.89	14.32	14.76	15.19	15.62	16.17	16.60	17.03	17.58	18.01	18.45

FORMULAS AND NOTES FOR USING EXPANDED PERFORMANCE DATA

To find leaving wet bulb and dry bulb from the expanded performance charts, use the following formulas.

1. Direct interpolation is permissible. Do not extrapolate.

2. The following formulas may be used:

$$t/db = t edb - \text{sensible capacity Btuh} / (1.10 \times \text{cfm})$$

$$t/wb = \text{Wet bulb temp. corresponding to enthalpy of air leaving evaporator coil (h/wb)}$$

$$h/wb = h ewb - \text{total capacity Btuh} / (4.5 \times \text{cfm})$$

where h ewb = Enthalpy of air entering evap. coil

3. The SHC is based on 80F edb of air entering evap coil.
Below 80F edb, subtract (corr factor x cfm) from SHC.
Above 80F edb, add (corr factor x cfm) to SHC.

LEGEND

MBH = Total Capacity (Gross)
S/T = Sensible to Total Ratio
KW = Compressor Motor Power Input.
IDB = Indoor Dry Bulb
edb = Entering Dry Bulb
ewb = Entering Wet Bulb
t/db = Leaving Dry Bulb
t/wb = Leaving Wet Bulb
h/wb = Enthalpy of Leaving Wet Bulb
SHC = Sensible Heat Capacity

BYPASS FACTOR (BF)	ENTERING AIR DRY BULB					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
Correction Factor						
.05	1.04	2.07	3.11	4.14	5.18	Use formulas shown below
.10	0.98	1.96	2.94	3.92	4.90	
.20	0.87	1.74	2.62	3.49	4.36	
.30	0.76	1.53	2.29	3.05	3.82	

$$\text{Correction Factor} = 1.10 \times (1 - \text{BF}) \times (\text{edb} - 80).$$

EXPANDED PERFORMANCE DATA (COOLING) 20 Ton (GROSS Capacity)

Airflow CFM IDB (BF)			Outdoor Ambient Temperature - Degrees F, Dry Bulb														
			75			85			95			105			115		
			Entering Indoor Air Temperature - Degrees F, Wet Bulb														
			62	67	72	62	67	72	62	67	72	62	67	72	62	67	72
80	9000 (0.110)	MBH	248.2	266.9	290.6	241.3	258.1	281.7	231.5	247.2	270.9	221.7	236.4	258.1	212.5	223.6	244.3
		S/T	0.98	0.77	0.55	0.98	0.78	0.55	0.99	0.79	0.55	1.00	0.81	0.56	1.00	0.83	0.58
		KW	17.07	17.60	18.33	18.42	19.00	19.76	19.83	20.33	21.08	21.28	21.77	22.56	22.85	23.25	24.03
	8000 (0.100)	MBH	243.3	264.0	286.6	235.4	256.1	278.8	226.6	245.3	266.9	216.9	233.4	255.1	207.3	221.8	240.3
		S/T	0.96	0.74	0.54	0.96	0.74	0.53	0.97	0.75	0.54	0.98	0.77	0.54	0.99	0.79	0.56
		KW	16.88	17.48	18.18	18.20	18.82	19.58	19.64	20.26	20.98	21.08	21.67	22.36	22.56	23.05	23.84
	7000 (0.085)	MBH	238.4	260.0	283.7	230.5	250.2	273.8	221.8	241.3	263.0	212.3	230.5	250.2	201.6	218.2	237.4
		S/T	0.91	0.70	0.51	0.92	0.71	0.51	0.94	0.72	0.52	0.95	0.73	0.53	0.97	0.75	0.53
		KW	16.69	17.33	18.04	18.01	18.63	19.37	19.37	20.07	20.83	20.83	21.47	22.16	22.36	22.95	23.64

FORMULAS AND NOTES FOR USING EXPANDED PERFORMANCE DATA

To find leaving wet bulb and dry bulb from the expanded performance charts, use the following formulas.

1. Direct interpolation is permissible. Do not extrapolate.

2. The following formulas may be used:

$$t/db = t\ edb - \text{sensible capacity Btuh} / (1.10 \times \text{cfm})$$

$$t/wb = \text{Wet bulb temp. corresponding to enthalpy of air leaving evaporator coil (h/wb)}$$

$$h/wb = h\ ewb - \text{total capacity Btuh} / (4.5 \times \text{cfm})$$

where h ewb = Enthalpy of air entering evap. coil

3. The SHC is based on 80F edb of air entering evap coil.
Below 80F edb, subtract (corr factor x cfm) from SHC.
Above 80F edb, add (corr factor x cfm) to SHC.

LEGEND

MBH = Total Capacity (Gross)
S/T = Sensible to Total Ratio
KW = Compressor Motor Power Input.
IDB = Indoor Dry Bulb
edb = Entering Dry Bulb
ewb = Entering Wet Bulb
t/db = Leaving Dry Bulb
t/wb = Leaving Wet Bulb
h/wb = Enthalpy of Leaving Wet Bulb
SHC = Sensible Heat Capacity

BYPASS FACTOR (BF)	ENTERING AIR DRY BULB					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
Correction Factor						
.05	1.04	2.07	3.11	4.14	5.18	Use formulas shown below
.10	0.98	1.96	2.94	3.92	4.90	
.20	0.87	1.74	2.62	3.49	4.36	
.30	0.76	1.53	2.29	3.05	3.82	

$$\text{Correction Factor} = 1.10 \times (1 - \text{BF}) \times (\text{edb} - 80).$$

PERFORMANCE DATA

CIRCULATING BLOWER PERFORMANCE - 15 TON UNITS (5 HP Std Motor w/873-1021 rpm drive pkg)

CFM	EXTERNAL STATIC PRESSURE IN INCHES WATER COLUMN - DRY COIL WITH FILTER															
	0.3		0.5		0.7		0.9		1.1		1.3		1.5		1.7	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
5250	740	1514	765	1599	840	1848	909	2103	974	2365	1036	2635	1095	2911	1150	3193
5500	730	1596	785	1780	856	2035	923	2295	985	2562	1045	2836	1101	3115	1155	3401
5750	734	1726	805	1972	873	2233	937	2500	998	2771	1055	3048	1110	3332	1163	3621
6000	759	1854	832	2118	901	2388	965	2663	1026	2943	1083	3228	1139	3520	1192	3817
6250	787	2003	860	2275	928	2554	992	2837	1054	3126	1111	3419	1167	3719		
6500	812	2231	881	2510	946	2794	1008	3082	1067	3375	1123	3674				
6750	837	2476	903	2761	966	3050	1026	3344	1082	3643						

- NOTES:
- 1) Maximum motor Watts is 5180 for standard 5 HP motor.
 - 2) Maximum blower wheel speed is 1550 rpm.
 - 3) Motor drive range is 873 to 1021 rpm.
 - 4) Air flow data based on dry coil with filters. Deduct 0.08 inches for wet coil performance.
 - 5) Operation in shaded areas requires accessory high static drive kit sold separately.
 - 6) Boldface indicates field-supplied drive is required.

CIRCULATING BLOWER PERFORMANCE - 20 TON UNITS (7.5 HP Standard Motor w/1002-1225 rpm drive pkg)

CFM	EXTERNAL STATIC PRESSURE IN INCHES WATER COLUMN - DRY COIL WITH FILTER															
	0.3		0.5		0.7		0.9		1.1		1.3		1.5		1.7	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
6750	819	2945	885	3166	947	3392	1007	3623	1064	3858	1119	4095	1172	4335	1224	4579
7000	844	3151	908	3372	968	3598	1026	3828	1082	4062	1136	4299	1188	4538	1239	4780
7250	870	3374	932	3595	991	3820	1047	4050	1102	4283	1155	4519	1206	4758	1256	4999
7500	895	3596	955	3817	1013	4042	1068	4271	1121	4504	1173	4739	1223	4977	1272	5217
7750	921	3835	980	4056	1036	4280	1090	4509	1142	4741	1192	4976	1241	5213	1289	5453
8000	947	4073	1004	4294	1058	4518	1111	4747	1162	4978	1211	5212	1259	5449	1306	5688
8250	973	4328	1029	4549	1082	4773	1133	5001	1183	5232	1231	5465	1278	5702	1324	5940

- NOTES:
- 1) Maximum motor Watts is 7915 for standard 7.5 HP motor.
 - 2) Maximum blower wheel speed is 1550 rpm.
 - 3) Motor drive range is 1002-1225 rpm.
 - 4) Air flow data based on dry coil with filters. Deduct 0.08 inches for wet coil performance.
 - 5) Operation in shaded areas requires accessory high static drive kit sold separately.
 - 6) Boldface indicates field-supplied drive is required.

PERFORMANCE DATA (cont.)

AIR QUANTITY LIMITS		
UNIT	MINIMUM CFM	MAXIMUM CFM
PAE180	4,500	7,500
PAE240	6,000	10,000

EVAPORATOR-FAN MOTOR EFFICIENCY		
UNIT		MOTOR EFFICIENCY %
PAE180	(5.0 hP)	87.5
PAE240	(7.5 hP)	88.5

OUTDOOR SOUND POWER										
UNIT PAE	SOUND RATING (60 Hz)	A-WEIGHTED (db)	OCTAVE BANDS							
			63	125	250	500	1000	2000	4000	8000
180	8.8 Bels	87.8	90.8	88.7	86.4	84.3	83.5	78.4	75.6	66.8
240	9.5 Bels	94.1	98.7	92.3	93.8	90.9	89.6	85.9	80.3	74.3

Bels - Sound Levels (1 bel = 10 decibels)

FAN RPM AT MOTOR PULLEY SETTINGS*													
UNIT PAE	MOTOR PULLEY TURNS OPEN												
	0	1/2	1	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5	5-1/2	6
180**	****	****	****	****	1021	1002	984	965	947	928	910	891	873
180***	****	****	****	****	1200	1178	1156	1134	1112	1091	1069	1047	1025
240**	****	****	1225	1209	1187	1165	1143	1120	1098	1076	1053	1031	1002
240***	****	****	1458	1434	1407	1381	1354	1328	1301	1275	1248	1222	1193

* Approximate fan rpm shown.

** Indicates standard drive package

***Indicates alternate drive package.

****Due to belt and pulley size, pulley cannot be set to this number of turns open.

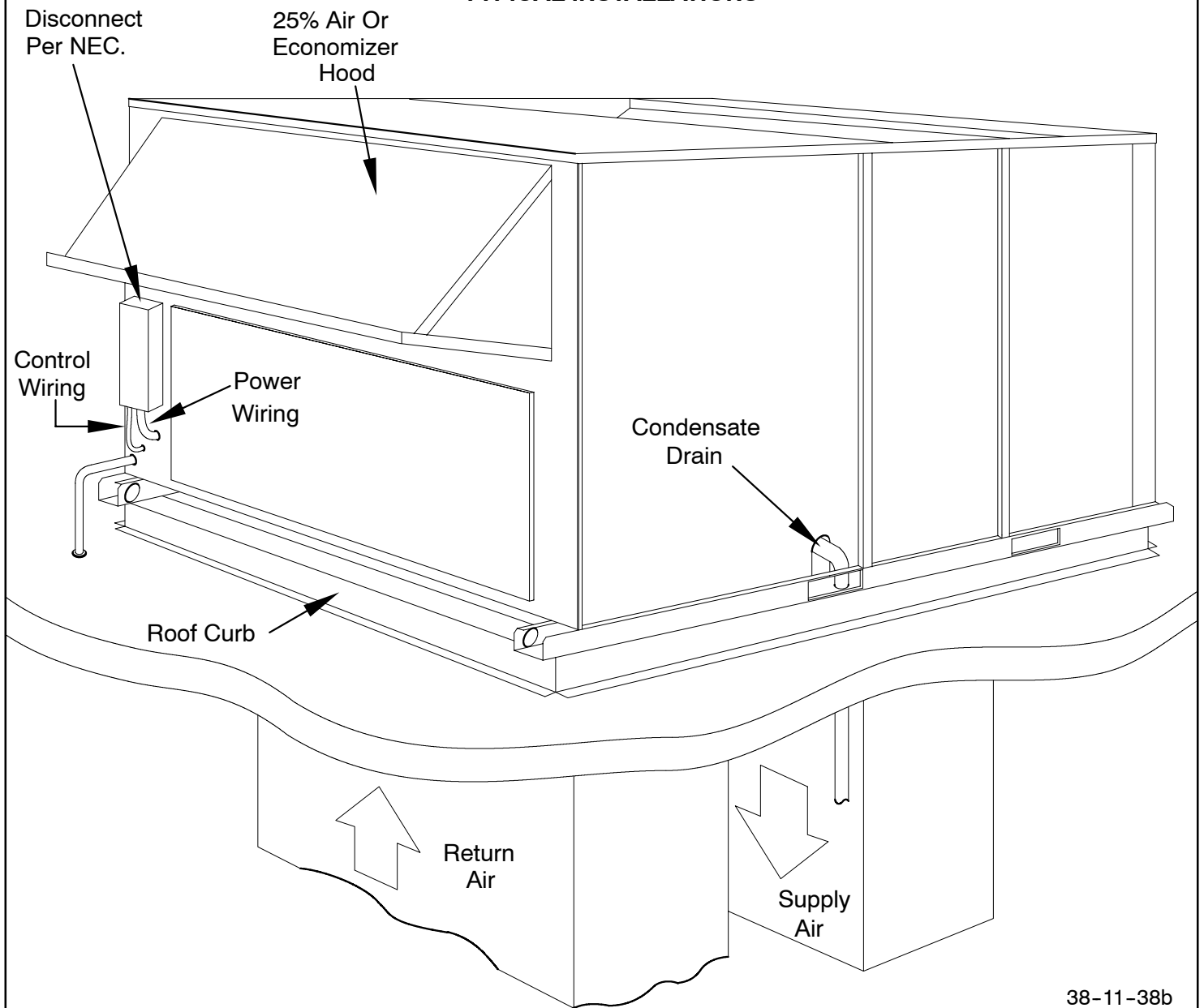
Evaporator-Fan Motor Performance				
UNIT PAE	UNIT VOLTAGE	MAXIMUM ACCEPTABLE CONTINUOUS BHP*	MAXIMUM ACCEPTABLE CONTINUOUS WATTS	MAXIMUM AMP DRAW
180	208/230	3.13	2700	15.8
	460			7.9
	575			6.0
240	208/230	8.70	7,915	22.0
	460	9.50	8,640	13.0
	575	8.70	7,915	10.0

Bhp - Brake Horsepower

*Extensive motor and electrical testing on these units ensures that the full horsepower range of the motors can be utilized with confidence Using your fan motors up to the horsepower ratings shown in this table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

NOTE: All indoor-fan motors 5 hp and larger meet the minimum efficiency requirements as established by the Energy Policy Act of 1992 (EPACT) effective October 24, 1997.

TYPICAL INSTALLATIONS



ELECTRICAL DATA - ELECTRIC HEAT ACCESSORY							
Unit Voltage	Qty	Model Number	Evap. Fan Motor FLA	Electric Heater *		Power Supply	
				kW	FLA	MCA	MOCP **
PAE180 208-3-60	1	AES034EHA	15.8	26.0	71.0	109.0	110
	1	AES056EHA		42.0	117.0	166.0	175
	1	AES075EHA		56.0	156.0	176.0	200
PAE180 240-3-60	1	AES034EHA	15.8	34.0	82.0	122.0	125
	1	AES056EHA		56.0	135.0	155.0	175
	1	AES075EHA		75.0	180.0	200.0	225
PAE180 480-3-60	1	AES132ELA	7.9	32.0	39.0	59.0	60
	1	AES055ELA		55.0	66.0	76.0	90
	1	AES080ELA		80.0	96.0	106.0	125
PAE240 208-3-60	1	AES034EHA	25.0	26.0	71.0	124.0	150
	1	AES056EHA		42.0	117.0	178.0	200
	1	AES075EHA		56.0	156.0	187.0	200
PAE240 240-3-60	1	AES034EHA	25.0	34.0	82.0	134.0	150
	1	AES056EHA		56.0	135.0	166.0	175
	1	AES075EHA		75.0	180.0	211.0	225
PAE240 480-3-60	1	AES132ELA	13.0	32.0	39.0	65.0	80
	1	AES055ELA		55.0	66.0	82.0	90
	1	AES080ELA		80.0	96.0	112.0	125

* Heater capacity (kW) is based on heater voltage of 208 v, 240 v, and 480 v. Heaters are rated at 240 v and 480 v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly. To determine heater capacity at actual unit voltage, multiply 240v, 480v capacity by multipliers found at bottom of page.

** Fuse or HACR circuit breaker.



ACCESSORY STATIC PRESSURE (in. wg)												
15 Ton Electric Heater	CFM					20 Ton Electric Heater	CFM					
	4500	5000	6000	7200	7500		5400	6000	7200	9000	10,000	11,250
AES034EHA	0.06	0.07	0.09	0.11	0.12	AES034EHA	0.08	0.09	0.11	0.15	0.17	0.20
AES056EHA	0.07	0.08	0.12	0.16	0.17	AES056EHA	0.11	0.12	0.15	0.19	0.21	0.24
AES075EHA	0.09	0.1	0.15	0.2	0.21	AES075EHA	0.14	0.15	0.20	0.24	0.26	0.29
AES132ELA	0.06	0.07	0.09	0.11	0.12	AES132ELA	0.08	0.09	0.11	0.15	0.17	0.20
AES055ELA	0.07	0.08	0.12	0.15	0.17	AES055ELA	0.11	0.12	0.15	0.19	0.21	0.24
AES080ELA	0.09	0.1	0.15	0.2	0.21	AES080ELA	0.14	0.15	0.20	0.24	0.26	0.29

The static pressure must be added to external static pressure. The sum and the evaporator entering-air cfm should then be used in conjunction with the Fan Performance tables to determine blower rpm and watts.

MULTIPLICATION FACTORS							
Heater Rating Voltage	ACTUAL HEATER VOLTAGE						
	208	230	240	380	440	460	480
240	0.751	0.918	1.000				
480				0.626	0.840	0.918	1.000

NOTE: The following equation converts kW of heat energy to Btuh: kW x 3.412 = Btuh.

LEGEND

FLA - Full Load Amps

MCA - Minimum Circuit Amps

MOCP - Maximum Overcurrent Protection

LRA - Locked Rotor Amps

NEC - National Electrical Code

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. 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.

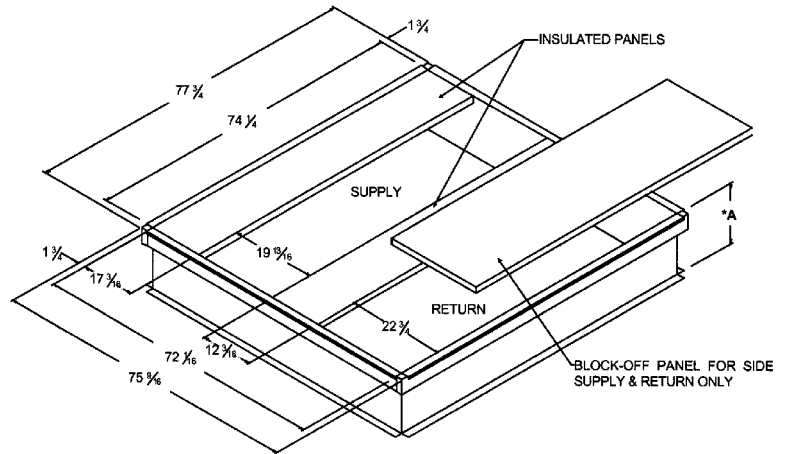
% Voltage Imbalance = $100 \times (\text{max voltage deviation from average voltage} / \text{average voltage})$

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

ACCESSORIES

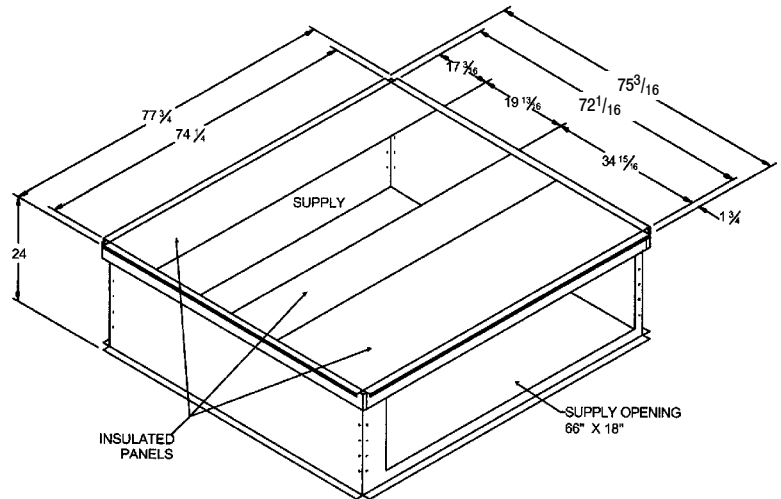
VERTICAL DISCHARGE ROOF CURBS

Description	Model Number	Where Used
14" High	AXB060CMA	180, 240
24" High	AXB060CHA	180, 240



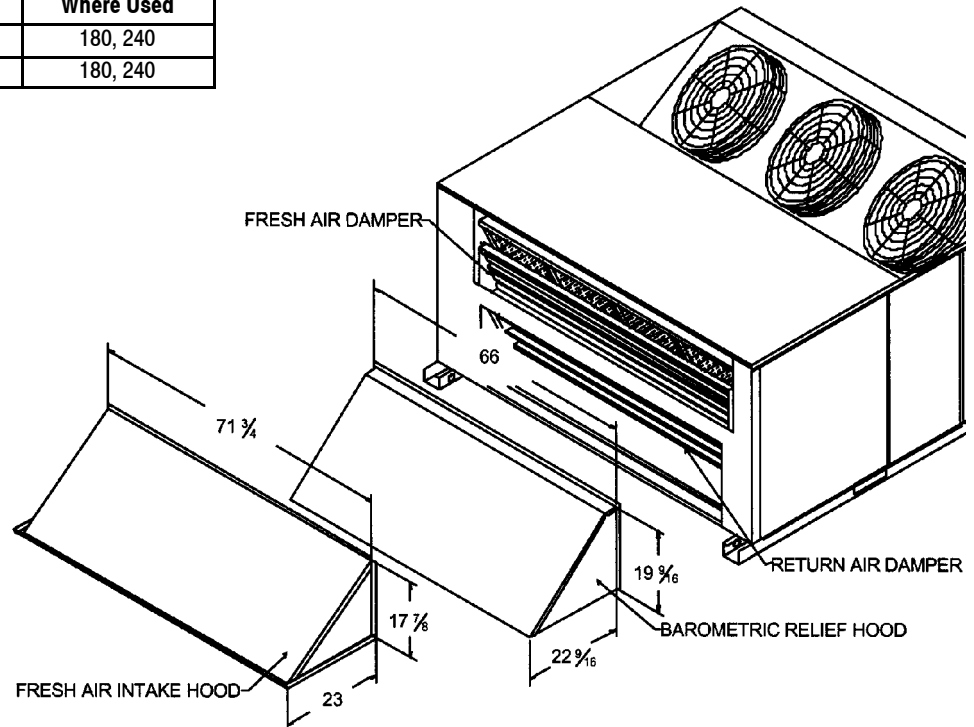
HORIZONTAL DISCHARGE ROOF CURBS

Description	Model Number	Where Used
24" High	AXB065CHA	180, 240
24" High w/ Duct	AXB165CHA	180, 240



ECONOMIZER - HORIZONTAL / DOWNFLOW

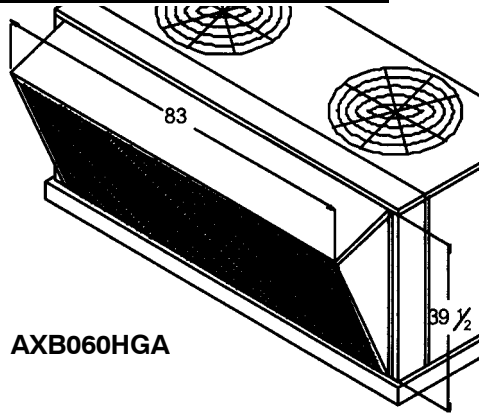
Description	Model Number	Where Used
Fully Modulating	AXB060EMA	180, 240
Three Position	AXB060EPA	180, 240



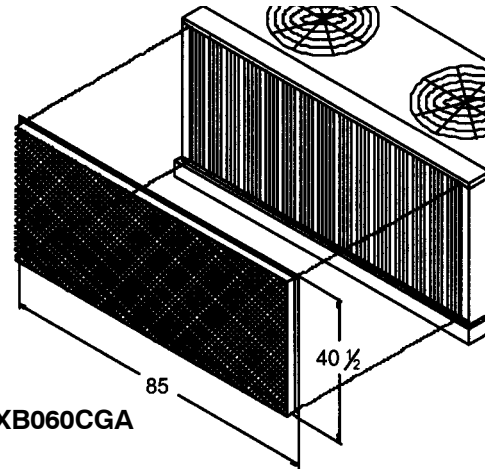
ACCESSORIES (CONT.)

COIL PROTECTION

Description	Model Number	Where Used
Coil Guard	AXB060CGA	180, 240
Hail Guard	AXB060HGA	180, 240



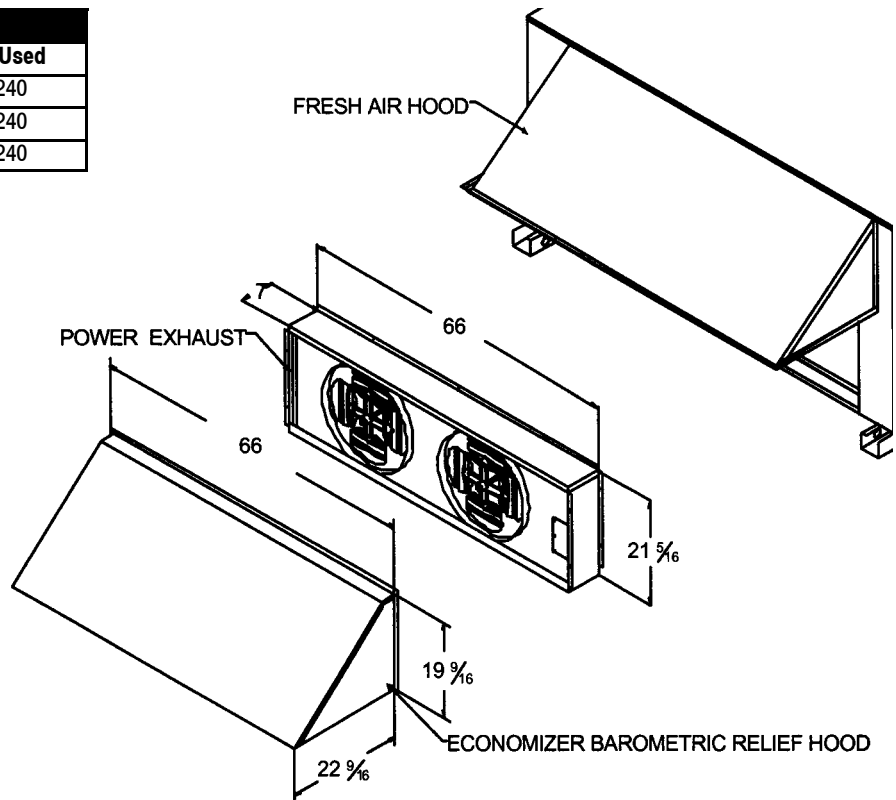
AXB060HGA



AXB060CGA

POWER EXHAUST

Description	Model Number	Where Used
208/230 Volt	AXB060PEH	180, 240
460 Volt	AXB060PEL	180, 240
575 Volt	AXB060PES	180, 240



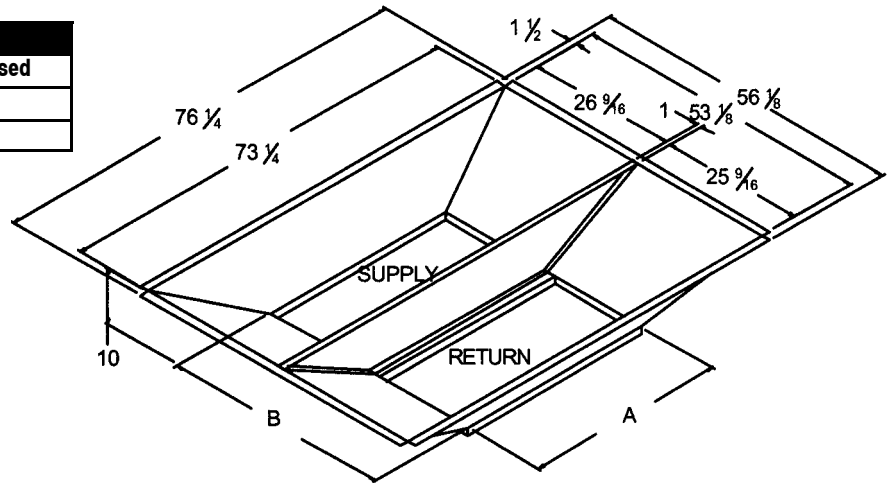
POWER EXHAUST PERFORMANCE DATA

Model	Volt/Phase/ Hertz	Motor			Unit					
		Qty	HP	RPM	Cir. Qty	LRA	FLA	MCA	Fuse Size	@0.1 CFM
AXB060PEH	208-230/3/60	2	3/4	1075	1	24.9	10.0	12.6	15	9,600
AXB060PEL	460/3/60	2	3/4	1075	1	N/A	4.4	5.6	8	9,600
AXB060PES	575/3/60	2	3/4	1050	1	N/A	3.0	3.8	5	9,600

ACCESSORIES (CONT.)

CONCENTRIC DUCT KIT

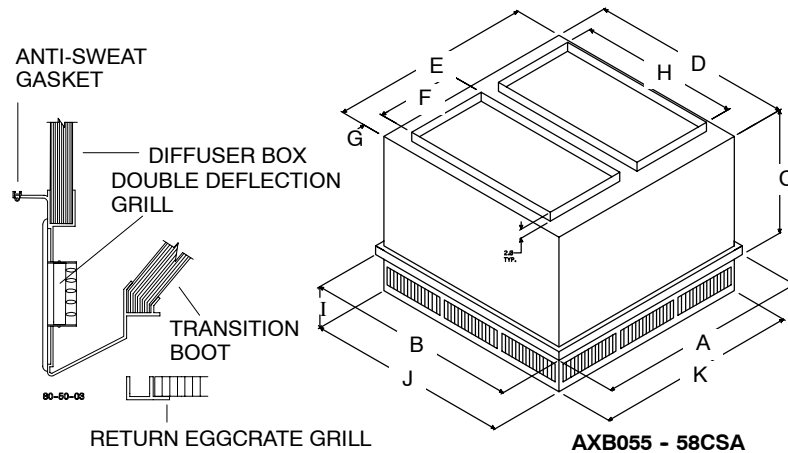
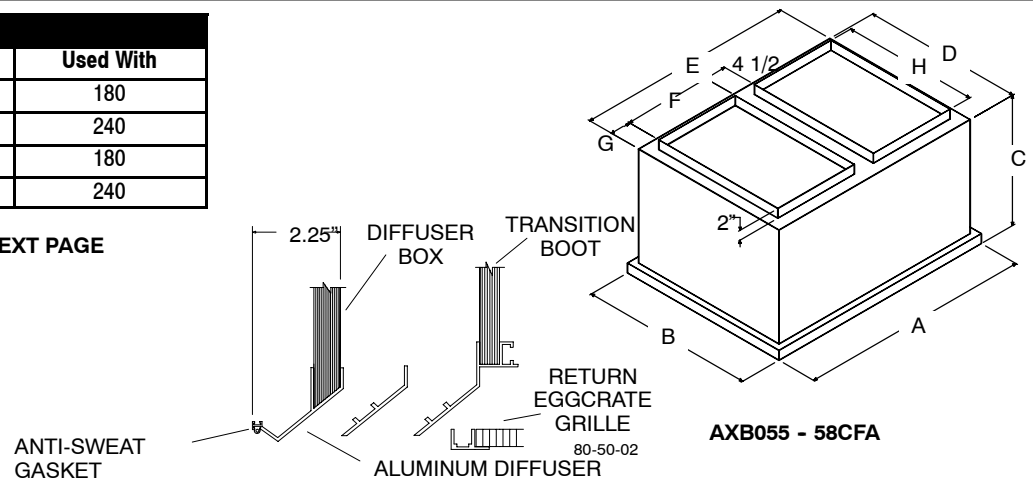
Description	Model Number	Where Used
18" x 36"	AXB160CTA	180
24" x 48"	AXB260CTA	240



CONCENTRIC DIFFUSER

Description	Model Number	Used With
Flush Mount	AXB055CFA	180
Flush Mount	AXB058CFA	240
Step Down	AXB055CSA	180
Step Down	AXB058CSA	240

SEE PERFORMANCE DATA ON NEXT PAGE



DIMENSIONS

Model Number	A	B	C	D	E	F	G	H	I	J	K	Duct Size
AXB055CFA	47-5/8	47-5/8	29-1/4	45	45	18	2-1/4	38	N/A	N/A	N/A	18 x 36
AXB058CFA	59-5/8	59-5/8	35-1/4	57	57	24	2-1/4	48	N/A	N/A	N/A	24 x 48
AXB055CSA	47-5/8	47-5/8	24-5/8	45	45	18	2-1/2	36	10-1/8	45-1/2	45-1/2	18 x 36
AXB058CSA	59-5/8	59-5/8	30-5/8	57-1/2	57-1/2	24	2-1/2	48	11-1/8	57-1/2	57-1/2	24 x 48

ACCESSORIES (CONT.)

CFA SERIES PERFORMANCE DATA

Part No. AXB	CFM	Static Pressure In. WC	Throw Feet	Neck Velocity FPM	Jet Velocity FPM	db Sound Level
055CFA	5600	.36	28-37	1000	2082	45
	5800	.39	29-38	1036	2156	45
	6000	.42	40-50	1071	2230	45
	6200	.46	42-51	1107	2308	50
	6400	.50	43-52	1143	2379	50
	6600	.54	45-56	1179	2454	50
058CFA	7200	.39	26-35	996	2093	45
	7400	.41	28-37	1024	2151	45
	7600	.43	29-38	1051	2209	45
	7800	.47	40-50	1079	2276	45
	8000	.50	42-51	1107	2326	50
	8200	.53	43-52	1134	2384	50

CSA SERIES PERFORMANCE DATA

Part No. AXB	CFM	Static Pressure In. WC	Throw Feet	Neck / Jet Velocity FPM	db Sound Levels
055CSA	5600	.36	39-49	920	30
	5800	.39	42-51	954	30
	6000	.42	44-54	1022	30
	6200	.46	45-55	1056	30
	6400	.50	46-55	1090	30
	6600	.54	47-56	1124	30
058CSA	7200	.39	33-38	827	25
	7400	.41	35-40	850	25
	7600	.43	36-41	873	25
	7800	.47	38-43	896	30
	8000	.50	39-44	918	30
	8200	.53	41-46	941	30

CSA/CFA NOTES:

1. All data is based on the Air Diffusion Council guidelines.
2. Throw data is based on Terminal Velocities of 75 FPM using isothermal air.
3. Throw is based on diffuser blades being directed in a straight pattern.
4. Actual sound levels are less than those shown.
5. Minimum height 9' above floor.

FRESH AIR DAMPERS

Description	Model Number	Used With
35% Motorized	AXB060FMA	180, 240

LOW AMBIENT KIT

Model Number	Used With
AXB160LAA	180
AXB260LAA	240

PART NUMBERS FOR APPROVED HIGH STATIC CONVERSIONS*

Unit Size	Voltage	Motor	Motor Pulley	Blower Pulley	Belt	Circuit Breaker	Circuit Breaker Bracket
15 Ton	208/230 & 460	No Change	1170552	1171427	No Change	N/A	N/A
15 Ton	575	N/A	N/A	N/A	N/A	N/A	N/A
20 Ton	All Voltages	No Change	1171414	1170569	1171528	N/A	N/A

* Available thru service parts only.

OPERATING SEQUENCE

Cooling, Units Without Economizer — When thermostat calls for cooling, terminals G and Y1 are energized. The indoor (evaporator) fan contactor (IFC) and compressor contactor no. 1 (C1) are energized, and evaporator-fan motor (IFM), compressor no. 1, and condenser fan(s) start. The condenser fan motor(s) runs continuously while unit is cooling. When the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts.

Heating, Units Without Economizer — If Accessory or Optional Heater is Installed — Upon a call for heating through terminal W1, IFC and heater contactor no. 1 (HC1) are energized. On units equipped for 2 stages of heat, when additional heat is needed, HC2 is energized through W2.

APPLICATION DATA

1. **DUCTWORK** — Ductwork should be attached to the curb on all units. Interior installation may proceed before unit is set in place on roof. If ductwork will be attached to the unit, do not drill in condensate drain pan area — leaks may result. See figures below for information on field-installed concentric ductwork when applicable.
2. **THRU-THE-CURB SERVICE CONNECTIONS** — Roof curb connections allow field power wires, control wires, and gas supply to enter through the roof curb opening.
3. **THERMOSTAT** — Use of 2-stage cooling thermostat is recommended for all units. A 2-stage cooling thermostat is required on units with accessory economizer to provide integrated cooling.
4. **HEATING-TO-COOLING CHANGEOVER** — All units are automatic changeover from heating to cooling when automatic changeover thermostat and subbase are used.
5. **AIRFLOW** — Units are draw-thru on cooling and blow-thru on heating.
6. **MAXIMUM AIRFLOW** — To minimize the possibility of condensate blow-off from evaporator, airflow through units should not exceed 500 cfm/nominal ton on size 180–240 units.
7. **MINIMUM AIRFLOW** — The minimum airflow for cooling is 300 cfm/nominal ton on size 180–240 units.
8. **MINIMUM AMBIENT COOLING OPERATION TEMPERATURE** — Units are designed to operate at outdoor temperatures down to 40 F. To operate at lower outdoor-air temperatures, see Trade Prices or contact your local representative for appropriate accessory combinations for specific applications.
9. **MAXIMUM OPERATING OUTDOOR-AIR TEMPERATURE** — For cooling, this temperature is 120 F for 180, 125 F for 240 size, and 121 F for 300 size. Refer to Cooling Capacities tables on pages 20 and 21 for further details.
10. **INTERNAL UNIT DESIGN** — Due to the internal unit design (draw-thru over the motor), air path, and specially designed motors, the full horsepower (maximum continuous bhp) listed in the Physical Data table and the notes following each Fan Performance table can be utilized with extreme confidence. Using motors with the values listed in the Physical and Fan Performance Data tables will not result in nuisance tripping or premature motor failure. The unit warranty will not be affected.

GUIDE SPECIFICATIONS: PAE180-240

CABINET:

The cabinet shall be made of sturdy baked enamel coated galvanized steel. Base rails shall be 16 gauge steel and have fork lift slots and holes provided for lifting shackles. Unit shall be designed with convertible airflow and shipped ready for downflow applications with conversion to horizontal air flow accomplished by relocating two panels.

Return air compartments shall be insulated with not less than 1/2" of water resistant coated glass fiber and not less than 1/2" of aluminum foil faced glass fiber in the furnace/supply compartments.

COOLING SECTION:

Units shall be factory charged and operationally ready. Each refrigeration circuit shall have a compressor, with internal overload protection, high and low pressure switches, filter drier and copper tube/aluminum fin evaporator and condenser coils.

Units shall be capable of cooling operation down to 25°F as shipped from the factory.

COILS:

The evaporator and condenser coils shall be fabricated with aluminum fins mechanically bonded to copper tubing. Both coils shall be pressure tested prior to assembly into the unit and electronically leak tested after assembly onto the unit. The evaporator coil shall be protected from dust and debris on the return air side by factory installed 2" air filters.

CONDENSER FAN:

The unit shall have a single direct drive propeller fan/motor assembly mounted directly to a vertical-discharge grille panel that is easily removable. Motors shall have permanently lubricated sleeve bearings and inherent overload protection.

EVAPORATOR BLOWER:

The units shall have a single belt driven evaporator blower. The motor shall have permanently lubricated ball bearings and internal overload protection. An adjustable motor drive sheave for matching air flow requirements shall be standard. Additionally high static accessory kits shall be available for air flows above the standard requirement.