

COMMERCIAL STANDARD EFFICIENCY PACKAGE A/C UNIT R-22 SINGLE PACKAGE ROOFTOP 15-25 TONS (3-Phase)

REFRIGERATION CIRCUIT

- Scroll compressors on each circuit for 15 to 25 ton models
- High and low pressure switches and evaporator freeze thermostat.
- PAS180-300 have dual electrically and mechanically independent circuits.
- Anti-cycle time built into the electronic board.
- Refrigerant filter drier.

BUILT TO LAST

- 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.

EASY TO INSTALL AND SERVICE

- Electric cooling, self contained for year-round comfort. PAS180-300 units are shipped ready for downflow applications; converts to horizontal airflow with accessory horizontal discharge roof curb.
- Thru-the-bottom utility connection capability allow power, and control wiring to be routed through unit base pan, minimizing roof penetrations.
- 25% Manual outside air damper.
- Factory wired to accept economizer.

WARRANTY

- 5 year compressor limited warranty
- 1 year parts limited warranty



UNIT PERFORMANCE DATA

Model Number *	COOLING			Unit Dimensions H X W X L	Unit Weight
	Rated Capacity BTUH	E.E.R	IPLV		
PAS180H000A	174,000	8.8	9.5	45" x 86-1/8" x 87-3/8"	1500
PAS180L000A	174,000	8.8	9.5	45" x 86-1/8" x 87-3/8"	1500
PAS210H000A	188,000	8.8	9.8	45" x 86-1/8" x 87-3/8"	1650
PAS210L000A	188,000	8.8	9.8	45" x 86-1/8" x 87-3/8"	1650
PAS240H000A	216,000	8.6	8.8	47-1/4" x 86-1/8" x 87-3/8"	1750
PAS240L000A	216,000	8.6	8.8	47-1/4" x 86-1/8" x 87-3/8"	1750
PAS300H000B	268,000	8.7	9.2	47-1/2" X 83-1/2" X 86-1/8"	1985
PAS300L000B	268,000	8.7	9.2	47-1/2" X 83-1/2" X 86-1/8"	1985

* Unit voltage: H = 208/230v, L = 460v

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MODEL NUMBER IDENTIFICATION GUIDE									
MODEL NUMBER		P	A	S	180	H	000	A	Sales Code
PRODUCT FAMILY									
Package Units								OPTIONS	
TYPE								VOLTAGE / PHASE / HERTZ	
H= Heat Pump G = Gas/Electric								H = 208/230-3-60 . . .	
A = Air Conditioner								L = 460-3-60	
DESIGN SERIES								COOLING CAPACITY (NOMINAL BTUH)	
								180 = 15 Ton 210 = 17-1/2 Ton	
								240 = 20 Ton 300 = 25 Ton	

UNIT SPECIFICATIONS - MODELS					
COOLING		PAS180H	PAS180L	PAS210H	PAS210L
ARI Rated Capacity Btuh (Net)		174,000		216,000	
Nominal Tons		15		17-1/2	
Standard CFM		5250		6600	
EER		8.8		8.8	
IPLV		9.5		9.8	
Sound Rating (Bels)		8.8		8.8	
Base Unit Operating Weights (lbs)		1500		1650	
ELECTRICAL					
Volts/ 3 Phase/ 60Hertz		208/230	460	208/230	460
Voltage Range Min/Max		187 / 253	414 / 508	187 / 253	414 / 508
Power Supply MCA		73.2 / 73.7	37.6	85 / 85	41
Power Supply MOCP*		90 / 90	50	110 / 110	50
COMPRESSOR					
SCROLL					
Quantity...Model		(2)...SR*942AE		(1)...SM120 / (1)...SR*782AE	
No. of Circuits		2		2	
RLA / LRA	Circuit #1	25.6 / 190	13.5 / 95	33.0 / 237	16.2 / 130
	Circuit #2	25.6 / 190	13.5 / 95	23.0 / 184	10.2 / 90
Oil (Oz.) per circuit		90, 90		110, 72	
REFRIGERATION TYPE					
R-22					
Expansion Device		TXV		TXV	
Operating Charge (lb. oz.) **		CKT 1 = 10-13 CKT 2 = 10-5		CKT 1 = 15-2 CKT 2 = 11-5	
CONDENSER FAN					
Propeller Type					
Nominal CFM		10,400		9300	
Quantity..Diameter (in.)		3...22		3...22	
Motor Hp...RPM (each)		1/2...1050		1/2...1050	
Watts Input (Total)		1100		1100	
FLA		1.7	0.8	1.7	0.8
CONDENSER COIL					
Cross Hatched 3/8 in. Copper Tubes, Aluminum Lanced					
Rows...Fin/In.		2...17		3...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		2...17		3...15	
Total Face Aea (sq. ft.)		17.5		17.5	
EVAPORATOR FAN					
Centrifugal Type					
Quantity...Size (in.)		2...10 x 10		2...12 x 12	
Type Drive		Belt		Belt	
Nominal CFM		6000		7200	
Motor Hp, RPM, Max. Continuous Bhp		3.7, 1725, 4.25	3.7, 1725, 4.25	5, 1745, 5.9	5, 1745, 5.9
FLA (Each)		10.5 / 11.0	4.8	15.8 / 15.8	7.9
Motor Frame Size		56H		184T	
Fan RPM Range		891 - 1179		910 - 1095	
Motor Bearing		Ball		Ball	
Maximum Allowable RPM		1550		1550	
Motor Pulley Pitch / Diameter Min/Max. (in.)		3.1 - 4.1		4.9 - 5.9	
Motor Shaft Diameter (in.)		7/8		1 - 1/8	
Fan Pulley Pitch Diam (in)		6.0		9.4	
Belt, Quantity...Type... Length (in.)		1.BX.42		1.BX.50	
Pulley Center Line Distance (in)		13.5 - 15.5		13.3 - 14.8	
Speed Change per Full Turn of Movable Pulley Flange (RPM)		48		37	
Pulley Max. full Turns From Closed Postion		5		5	
Factory Setting		3.5		3.5	
Factory Speed Setting RPM		1035		1002	
Fan Shaft Diam. at Pulley		1-3/16		1-7/16	
SEE LEGENDS AND NOTES ON FOLLOWING PAGES					

UNIT SPECIFICATIONS - MODELS

COOLING		PAS240H	PAS240L	PAS300H	PAS300L
ARI Rated Capacity Btuh (Net)		216,000		270,000	
Nominal Tons		20		25	
Standard CFM		6600		10,000	
EER		8.6		8.7	
IPLV		8.4		9.2	
Sound Rating (Bels)		9.5		9.4	
Base Unit Operating Weights (lbs)		1775		1850	
ELECTRICAL					
Volts/ 3 Phase/ 60Hertz		208/230	460	208/230	460
Voltage Range Min/Max		187 / 253	414 / 508	187 / 253	414 / 506
Power Supply MCA		109 / 109	54	134 / 134	66
Power Supply MOCP*		125 / 125	70	175 / 175	80
COMPRESSOR		SCROLL		SCROLL / Maneurop	
Quantity...Model		(1)...SM120 / (1)...SM110		1...SM161 / 1...SM120	
No. of Circuits		2		2	
RLA / LRA	Circuit #1	33.0 / 237	16.2 / 130	47.5 / 265	22.9 / 145
	Circuit #2	29.5 / 237	14.1 / 130	33.0 / 237	16.2 / 130
Oil (Oz.) per circuit		CKT 1 = 110, CKT 2 = 110		CKT 1 = 112, CKT 2 = 110	
REFRIGERATION TYPE			R-22		
Expansion Device		TXV		TXV	
Operating Charge (lb. oz.) **		CKT 1 = 16-3 CKT 2 = 13-8		CKT 1 = 21-0 CKT 2 = 15-4	
CONDENSER FAN		Propeller Type			
Nominal CFM		13,650		12,500	
Quantity..Diameter (in.)		2...30		2...30	
Motor Hp...RPM (each)		1...1075		1...1075	
Watts Input (Total)		3400		3400	
FLA		6.6	3.3	6.6	3.3
CONDENSER COIL		Cross Hatched 3/8 in. Copper Tubes, Aluminum Lanced			
Rows...Fin/In.		3...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		3...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			
Nominal CFM		8000		10,000	
Motor Hp, RPM, Max. Continuous Bhp		7.5, 1745, 8.7	7.5, 1745, 9.5	10.0, 1740, 10.2	10.0, 1740, 11.8
FLA (Each)		25.0 / 25.0	13.0	28.0	14.6
Motor Frame Size		213T		215T	
Fan RPM Range		1002-1225		1066-1283	
Motor Bearing		Ball		Ball	
Maximum Allowable RPM		1550		1550	
Motor Pulley Pitch / Diameter Min/Max. (in.)		5.4-6.6		4.9 - 5.9	
Motor Shaft Diameter (in.)		1-3/8		1-3/8	
Fan Pulley Pitch Diam (in)		9.4		8.0	
Belt, Quantity...Type... Length (in.)		1.BX.54		2.BX.50	
Pulley Center Line Distance (in)		14.6-15.4		14.6-15.4	
Speed Change per Full Turn of Movable Pulley Flange (RPM)		37		36	
Pulley Max. full Turns From Closed Postion		5		5	
Factory Setting		3.5		3.5	
Factory Speed Setting RPM		1120		1182	
Fan Shaft Diam. at Pulley		1-7/16		1-7/16	

SEE LEGENDS AND NOTES ON FOLLOWING PAGES

UNIT SPECIFICATIONS (CONT)	MODELS			
HIGH-PRESSURE SWITCH (psig)	PAS180	PAS210	PAS240	PAS300
Internal Relief (Differential) Cutout	426	426	426	426
Reset (Auto.)	320	320	320	320
LOSS-OF-CHARGE SWITCH (psig) (LOW-PRESS.)				
Cutout	27	27	27	27
Reset (Auto.)	44	44	44	44
FREEZE PROTECTION THERMOSTAT (F)				
Opens	30 +/- 5	30 +/- 5	30 +/- 5	30 +/- 5
Closes	45 +/- 5	45 +/- 5	45 +/- 5	45 +/- 5
RETURN-AIR FILTERS (THROW-AWAY)				
Quantity...Size (in.)	4...20 x 20 x 2	4...20 x 20 x 2	4...20 x 20 x 2	4...20 x 20 x 2
	4...16 x 20 x 2	4...16 x 20 x 2	4...16 x 20 x 2	4...16 x 20 x 2

LEGENDS AND NOTES

LEGEND

Bhp = Brake Horsepower

TXV = Thermostatic Expansion Valve

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

RLA - Rated Load Amps

* - Fuse or HACR circuit breaker

NOTES:

- 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).

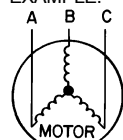
2. ARI ratings are net values, reflecting the effects of circulating fan heat.

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.

	AB = 452 v BC = 464 v AC = 455 v	Average Voltage = $\frac{452 + 464 + 455}{3}$ = $\frac{1371}{3}$ = 457
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Determine maximum deviation from average voltage.

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

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

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

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%.

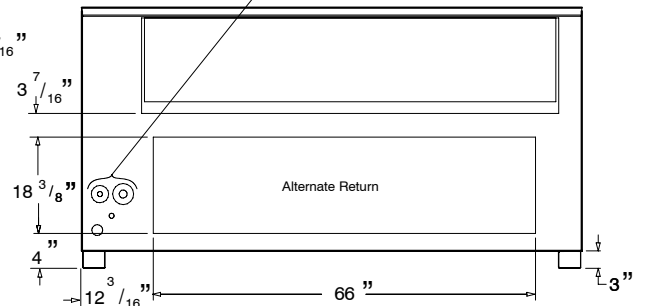
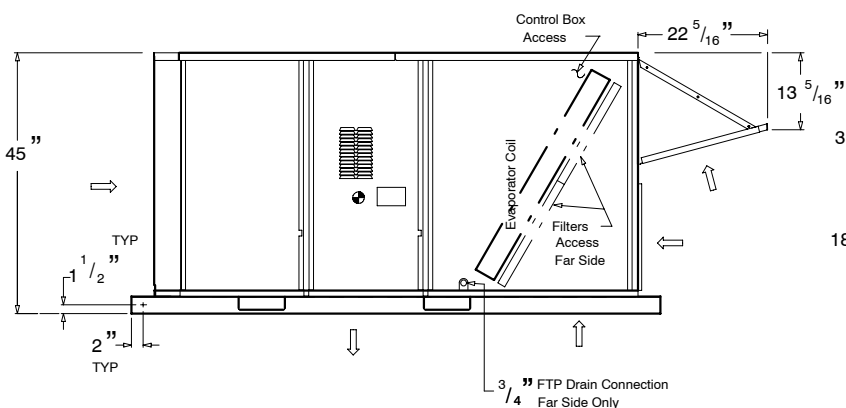
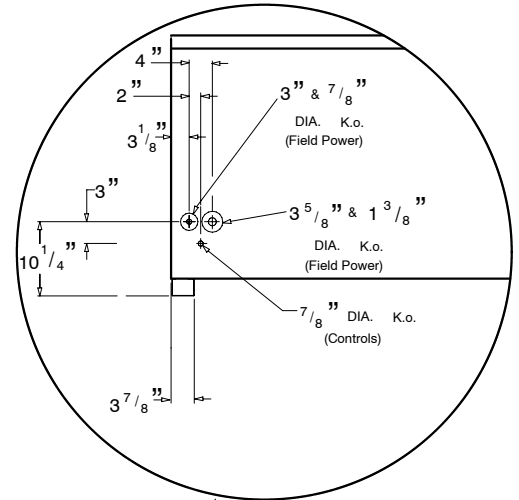
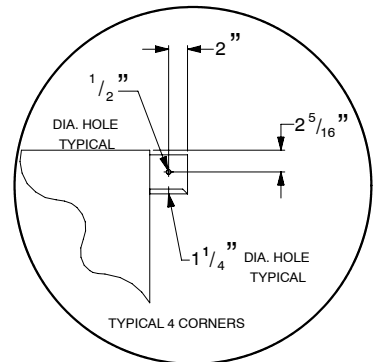
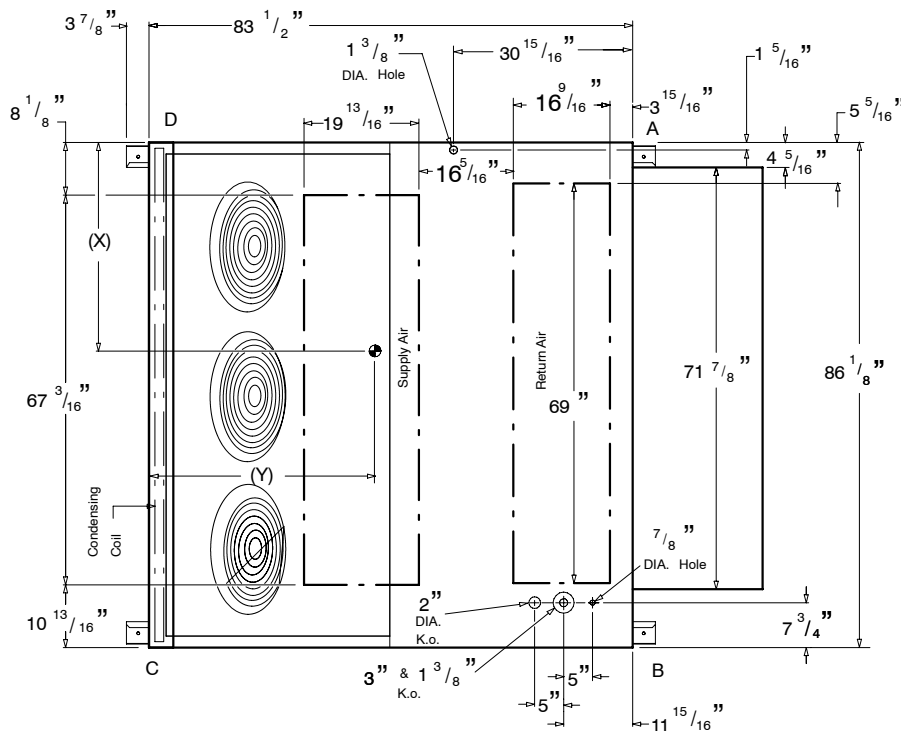
IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

BASE UNIT DIMENSIONS - PAS180, 210

Unit	Total Weight		Corner A		Corner B		Corner C		Corner D		Dim X		Dim Y	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	inches	mm	inches	mm
PAS180	1500	680	374	170	377	171	375	170	375	170	43	1096	42	1054
PAS210	1650	748	380	172	403	183	437	198	405	184	45	1147	40	1006

NOTES:

- Dimensions in () are in millimeters.
-  Center of Gravity.
-  Direction of Airflow
- Ductwork to be attached to accessory roof curb only.
- Minimum clearance:
Rear: 84" (2134) for coil removal. This dimension can be reduced to 48" (1219) if conditions permit coil removal from the top.
Left side: 48" (1219) for proper condenser coil airflow.
Front: 48" (1219) for control box access.
Right Side: 48" (1219) for proper operation of damper and power exhaust if so equipped.
Top: 72" (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.



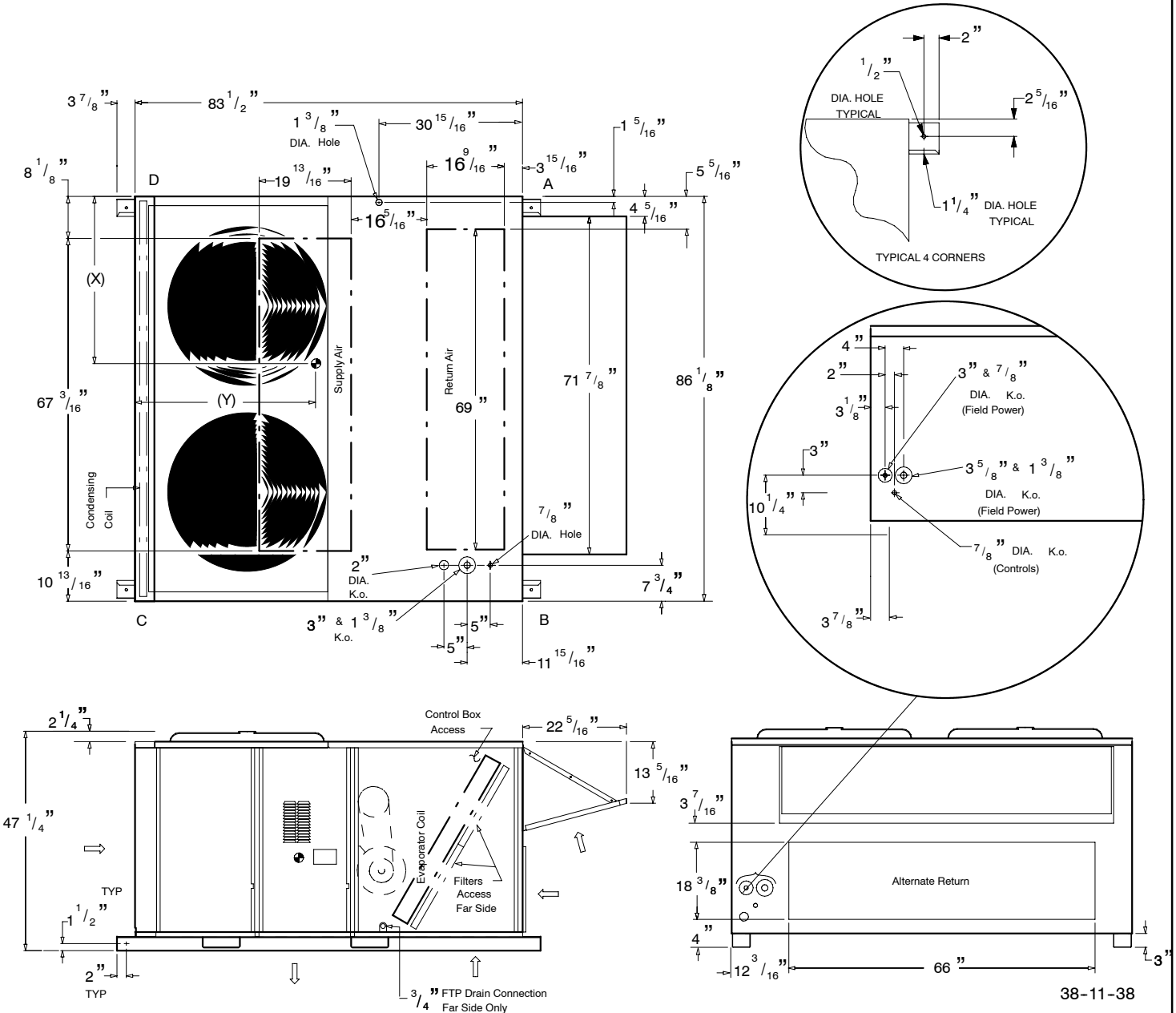
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BASE UNIT DIMENSIONS - PAS240

Unit	Total Weight		Corner A		Corner B		Corner C		Corner D		Dim X		Dim Y	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	inches	mm	inches	mm
PAS240	1775	805	412	187	416	189	468	212	479	217	43	1090	39	989
PAS300	1850	839	419	190	421	191	503	228	507	230	43	1090	38	963

NOTES:

- Dimensions in () are in millimeters.
-  Center of Gravity.
-  Direction of Airflow
- Ductwork to be attached to accessory roof curb only.
- Minimum clearance:
 - Rear: 84" (2134) for coil removal. This dimension can be reduced to 48" (1219) if conditions permit coil removal from the top.
 - Left side: 48" (1219) for proper condenser coil airflow.
 - Front: 48" (1219) for control box access.
 - Right Side: 48" (1219) for proper operation of damper and power exhaust if so equipped.
 - Top: 72" (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)

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm													
		4500							5250						
		Evaporator Air - Ewb (F)/BF													
		54/0.48	58/0.32	62/0.22	67/0.20	72/0.19	76/0.24	80/0.04	54/0.54	58/0.39	62/0.25	67/0.23	72/0.21	76/0.23	80/0.04
75	TC	-	168	177	192	209	225	240	171	171	182	197	214	229	246
	SHC	-	152	142	123	103	85	69	171	150	151	130	108	88	69
	kW	-	12.4	12.6	13.0	13.3	13.6	13.9	12.5	12.6	12.7	13.1	13.4	13.7	14.0
85	TC	159	164	171	186	202	219	233	166	172	175	190	207	222	237
	SHC	159	148	139	120	100	83	66	166	151	148	127	105	86	67
	kW	13.7	13.8	14.1	14.4	14.8	15.5	15.4	13.9	14.0	14.1	14.5	14.9	15.2	15.5
95	TC	154	159	165	179	195	210	226	161	164	169	183	199	214	229
	SHC	154	142	136	117	98	80	64	161	155	145	124	102	83	64
	kW	15.3	15.4	15.5	15.9	16.3	16.7	17.3	15.5	15.5	15.7	16.0	16.5	16.8	17.1
105	TC	149	154	158	172	187	201	216	156	156	162	176	191	205	222
	SHC	149	137	133	114	95	78	61	156	156	142	121	99	81	62
	kW	16.9	17.0	17.1	17.6	18.0	18.4	18.7	17.2	17.1	17.2	17.7	18.1	18.5	19.1
115	TC	144	145	152	165	179	193	207	150	151	156	168	183	196	210
	SHC	144	142	130	111	92	75	58	150	151	137	118	96	78	58
	kW	18.6	18.6	18.9	19.3	19.8	20.2	20.6	18.9	18.9	19.0	19.5	19.9	20.3	20.7
117	TC	143	143	150	163	178	191	205	149	149	154	167	181	194	208
	SHC	143	142	129	110	91	74	57	149	149	136	117	96	77	58
	kW	18.9	19.0	19.2	19.7	20.2	20.5	20.9	19.2	19.2	19.4	19.8	20.3	20.7	21.0
120	TC	141	141	148	161	175	-	-	147	148	152	164	179	-	-
	SHC	141	141	128	109	90	-	-	147	148	135	116	95	-	-
	kW	19.5	19.5	19.8	20.2	20.7	-	-	19.8	19.8	19.9	20.4	20.8	-	-

EXPANDED PERFORMANCE DATA (COOLING) 15 TON (GROSS CAPACITY) Cont.

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm													
		6000							6750						
		Evaporator Air - Ewb (F)/BF													
		54/0.58	58/0.43	62/0.30	67/0.25	72/0.23	76/0.24	80/0.04	54/0.62	58/0.48	62/0.36	67/0.28	72/0.25	76/0.25	80/0.03
75	TC	178	174	185	200	218	233	250	183	179	183	203	221	236	253
	SHC	178	171	159	136	112	91	70	183	179	161	142	116	93	70
	kW	12.7	12.7	12.8	13.1	13.5	13.8	14.1	12.8	12.7	12.8	13.2	13.5	13.9	14.1
85	TC	173	173	179	193	210	227	244	178	178	183	196	213	228	247
	SHC	173	172	156	133	109	89	68	178	178	161	139	113	91	68
	kW	14.1	14.1	14.2	14.6	15.0	15.8	16.2	14.2	14.2	14.3	14.7	15.1	15.3	16.3
95	TC	167	167	173	186	203	217	232	173	173	177	189	205	220	235
	SHC	167	167	152	130	106	86	64	173	173	157	137	111	88	65
	kW	15.7	15.6	15.8	16.1	16.6	16.9	17.2	15.8	15.8	15.9	16.2	16.6	17.0	17.3
105	TC	162	162	167	179	194	208	223	168	167	171	181	197	211	225
	SHC	162	162	147	127	104	83	61	168	167	152	133	108	85	62
	kW	17.3	17.3	17.4	17.8	18.2	18.5	18.9	17.4	17.4	17.5	17.9	18.3	18.6	18.9
115	TC	156	156	160	171	186	199	213	160	160	165	173	188	201	215
	SHC	156	156	143	124	101	80	59	160	160	145	130	104	82	59
	kW	19.1	19.1	19.1	19.6	20.0	20.4	20.7	19.2	19.2	19.3	19.6	20.1	20.5	20.8
117	TC	154	155	159	169	184	197	211	159	159	163	171	186	199	-
	SHC	154	155	142	124	100	79	58	159	159	144	129	104	82	-
	kW	19.4	19.4	19.5	19.9	20.4	20.8	21.1	19.6	19.6	19.7	20.0	20.4	20.8	-
120	TC	153	153	157	167	181	-	-	157	157	161	169	-	-	-
	SHC	153	153	140	122	99	-	-	157	157	142	128	-	-	-
	kW	19.9	19.9	20.0	20.4	20.9	-	-	20.1	20.1	20.2	20.5	-	-	-

EXPANDED PERFORMANCE DATA (COOLING) 15 TON (GROSS CAPACITY) Cont.

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm						
		7500						
		Evaporator Air - Ewb (F)/BF						
		54/0.65	58/0.52	62/0.41	67/0.30	72/0.28	76/0.27	80/0.03
75	TC	188	183	193	206	223	239	256
	SHC	188	183	170	2148	120	95	70
	kW	12.9	12.8	13.0	13.2	13.6	13.9	14.2
85	TC	183	183	187	199	215	233	249
	SHC	183	183	167	145	117	94	68
	kW	14.4	14.4	14.4	14.7	15.1	15.9	16.3
95	TC	177	177	181	191	207	222	237
	SHC	177	177	161	142	114	90	65
	kW	15.9	15.9	16.0	16.3	16.7	17.0	17.3
105	TC	171	171	175	183	199	213	228
	SHC	171	171	154	138	111	87	62
	kW	17.6	17.6	17.7	18.0	18.4	18.7	19.0
115	TC	164	164	169	175	190	203	217
	SHC	164	164	146	135	108	84	59
	kW	19.4	19.4	19.5	19.7	20.2	20.5	20.9
117	TC	163	163	167	173	188	201	-
	SHC	163	163	145	134	107	84	-
	kW	19.7	19.7	19.9	20.0	20.5	20.9	-
120	TC	161	161	165	170	-	-	-
	SHC	161	161	143	133	-	-	-
	kW	20.2	20.3	20.4	20.6	-	-	-

FORMULAS AND NOTES FOR USING EXPANDED PERFORMANCE DATA
LEGEND

- BF - Bypass Factor
 Edb - Entering Dry-Bulb
 Ewb - Entering Wet-Bulb
 kW - Compressor Motor Power Input
 ldb - Leaving Dry-Bulb
 lwb - Leaving Wet-Bulb
 SHC - Sensible Heat capacity (1000 Btuh) Gross
 TC - Total Capacity (1000 Btuh) Gross

- Direct interpolation is permissible. Do not extrapolate.
- The following formulas may be used:
 - $t / ldb = t \text{ edb} - \text{sensible capacity (Btuh)} / (1.10 \times \text{cfm})$
 - $t / wb = \text{Wet bulb temp. corresponding to enthalpy of air leaving evaporator coil (h/wb)}.$
 - $h / wb = h \text{ web} - \text{total capacity Btuh} / (4.5 \times \text{cfm})$
 where h ewb = Enthalpy of air entering evap. coil.

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

Bypass Factor (BF)	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
Correction Factor						
0.05	1.04	2.07	3.11	4.14	5.18	Use Formula Below
0.10	0.98	1.96	2.94	3.92	4.91	
0.20	0.87	1.74	2.62	3.49	4.36	
0.30	0.76	1.53	2.29	3.05	3.82	
0.40	0.65	1.31	1.96	2.62	3.27	
0.50	0.55	1.09	1.64	2.18	2.73	
0.60	0.44	0.87	1.31	1.74	2.18	
0.70	0.33	0.65	0.98	1.31	1.64	

- Interpolation is permissible.
 Correction factor = $1.10 \times (1 - BF) \times (edb - 80).$

EXPANDED PERFORMANCE DATA (COOLING) 17- 1/2 TON (GROSS CAPACITY)

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm													
		5400							6000						
		Evaporator Air - Ewb (F)/BF													
		54/0.49	58/0.31	62/0.20	67/0.18	72/0.16	76/0.19	80/0.05	54/0.53	58/0.35	62/0.23	67/0.19	72/0.17	76/0.19	80/0.05
75	TC	194	198	206	223	243	260	277	200	203	210	227	246	263	-
	SHC	194	178	169	146	121	99	79	200	191	177	152	125	102	-
	kW	13.6	13.7	13.9	14.2	14.6	15.0	15.2	13.7	13.8	14.0	14.4	14.7	15.1	-
85	TC	189	192	200	217	235	252	269	195	195	204	220	239	255	-
	SHC	189	176	166	143	118	97	76	195	195	174	149	123	100	-
	kW	15.1	15.2	15.4	15.9	16.3	16.6	16.9	15.3	15.3	15.7	16.0	16.4	16.8	-
95	TC	183	184	193	209	227	243	-	189	190	196	212	230	246	-
	SHC	183	181	162	140	115	94	-	189	190	170	146	120	97	-
	kW	16.8	16.8	17.1	17.6	18.0	18.4	-	17.0	17.0	17.2	17.6	18.1	18.5	-
105	TC	177	178	185	201	218	234	-	183	185	189	204	221	237	-
	SHC	177	178	159	137	112	91	-	183	185	166	143	116	94	-
	kW	18.6	18.6	18.8	19.3	19.8	20.2	-	18.8	18.6	18.9	19.4	19.9	20.3	-
115	TC	171	171	177	192	209	224	-	176	177	181	195	212	226	-
	SHC	171	171	154	133	109	88	-	176	177	161	139	113	90	-
	kW	20.5	20.5	20.7	21.2	21.8	22.1	-	20.7	20.7	20.8	21.3	21.8	22.2	-
117	TC	170	170	176	191	207	222	-	175	175	180	193	210	224	-
	SHC	170	170	154	132	108	87	-	175	175	160	138	112	90	-
	kW	20.9	20.9	21.1	21.6	22.1	22.5	-	21.1	21.1	21.2	21.7	22.2	22.6	-
120	TC	168	168	173	188	204	-	-	173	173	177	191	207	-	-
	SHC	168	168	152	131	107	-	-	173	173	159	137	111	-	-
	kW	21.5	21.5	21.7	22.2	22.7	-	-	21.7	21.7	21.8	22.3	22.8	-	-

EXPANDED PERFORMANCE DATA (COOLING) 17- 1/2 TON (GROSS CAPACITY) Cont.

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm													
		7000							8000						
		Evaporator Air - Ewb (F)/BF													
		54/0.58	58/0.42	62/0.29	67/0.21	72/0.20	76/0.20	80/0.05	54/0.62	58/0.48	62/0.36	67/0.23	72/0.22	76/0.21	80/0.04
75	TC	209	209	215	232	251	268	-	216	217	221	236	255	272	-
	SHC	209	209	189	162	132	106	-	216	217	198	171	138	109	-
	kW	13.9	13.9	14.1	14.5	14.9	15.2	-	14.1	14.1	14.2	14.5	15.0	15.3	-
85	TC	203	204	209	224	243	260	-	211	211	215	228	247	263	-
	SHC	203	204	185	159	129	103	-	211	211	192	168	135	107	-
	kW	15.5	15.5	15.7	16.1	16.5	16.9	-	15.7	15.7	15.8	16.2	16.6	17.0	-
95	TC	197	197	202	216	235	251	-	204	204	209	220	238	254	-
	SHC	197	197	180	156	126	100	-	204	204	185	165	132	104	-
	kW	17.2	17.2	17.4	17.8	18.2	18.7	-	17.4	17.4	17.6	17.9	18.3	18.7	-
105	TC	191	191	195	208	225	241	-	197	197	202	211	228	244	-
	SHC	191	191	175	152	123	97	-	197	197	177	161	128	100	-
	kW	19.0	19.0	19.2	19.5	20.0	20.5	-	19.2	19.2	19.3	19.6	20.1	20.6	-
115	TC	184	184	188	199	215	230	-	190	190	194	202	218	-	-
	SHC	184	184	168	149	119	94	-	190	190	170	158	125	-	-
	kW	21.0	21.0	21.1	21.5	22.0	22.4	-	21.1	21.1	21.2	21.6	22.1	-	-
117	TC	183	183	187	197	214	228	-	188	188	192	200	216	-	-
	SHC	183	183	166	148	118	93	-	188	188	171	157	124	-	-
	kW	21.3	21.4	21.5	21.8	22.4	22.7	-	21.5	21.5	21.7	22.0	22.5	-	-
120	TC	180	180	185	194	210	-	-	186	186	190	197	-	-	-
	SHC	180	180	163	147	117	-	-	186	186	172	156	-	-	-
	kW	21.9	22.0	22.1	22.4	23.0	-	-	22.1	22.1	22.2	22.5	-	-	-

EXPANDED PERFORMANCE DATA (COOLING) 17- 1/2 TON (GROSS CAPACITY) Cont.

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm						
		9000						
		Evaporator Air - Ewb (F)/BF						
		54/0.65	58/0.53	62/0.40	67/0.25	72/0.23	76/0.23	80/0.05
75	TC	223	223	228	239	258	275	-
	SHC	223	223	202	181	144	113	-
	kW	14.3	14.3	14.4	14.6	15.0	15.4	-
85	TC	216	217	222	231	250	266	-
	SHC	216	217	194	177	141	110	-
	kW	15.8	15.9	16.0	16.3	16.7	17.1	-
95	TC	210	210	215	223	241	257	-
	SHC	210	210	187	174	138	107	-
	kW	17.6	17.6	17.7	18.0	18.4	18.8	-
105	TC	202	202	207	214	231	-	-
	SHC	202	202	184	170	134	-	-
	kW	19.4	19.4	19.5	19.7	20.2	-	-
115	TC	195	195	196	204	221	-	-
	SHC	195	195	192	166	131	-	-
	kW	21.3	21.3	21.4	21.7	22.2	-	-
117	TC	193	193	194	202	219	-	-
	SHC	193	193	192	166	130	-	-
	kW	21.7	21.7	21.7	22.0	22.6	-	-
120	TC	191	191	191	199	-	-	-
	SHC	191	191	191	164	-	-	-
	kW	22.3	22.3	22.3	22.6	-	-	-

FORMULAS AND NOTES FOR USING EXPANDED PERFORMANCE DATA
LEGEND

BF - Bypass Factor
 Edb - Entering Dry-Bulb
 Ewb - Entering Wet-Bulb
 kW - Compressor Motor Power Input
 ldb - Leaving Dry-Bulb
 lwb - Leaving Wet-Bulb
 SHC - Sensible Heat capacity (1000 Btuh) Gross
 TC - Total Capacity (1000 Btuh) Gross

- Direct interpolation is permissible. Do not extrapolate.
- The following formulas may be used:
 - $t_{ldb} = t_{edb} - \text{sensible capacity (Btuh)} / (1.10 \times \text{cfm})$
 - $t_{wb} = \text{Wet bulb temp. corresponding to enthalpy of air leaving evaporator coil (h/wb)}.$
 - $h_{wb} = h_{web} - \text{total capacity Btuh} / (4.5 \times \text{cfm})$
 where $h_{web} = \text{Enthalpy of air entering evap. coil}.$

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

Bypass Factor (BF)	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
	Correction Factor					
0.05	1.04	2.07	3.11	4.14	5.18	Use Formula Below
0.10	0.98	1.96	2.94	3.92	4.91	
0.20	0.87	1.74	2.62	3.49	4.36	
0.30	0.76	1.53	2.29	3.05	3.82	
0.40	0.65	1.31	1.96	2.62	3.27	
0.50	0.55	1.09	1.64	2.18	2.73	
0.60	0.44	0.87	1.31	1.74	2.18	
0.70	0.33	0.65	0.98	1.31	1.64	

Interpolation is permissible.
 Correction factor = $1.10 \times (1 - BF) \times (edb - 80).$

EXPANDED PERFORMANCE DATA (COOLING) 20 TON (GROSS CAPACITY)

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm													
		6,000							7,000						
		Evaporator Air - Ewb (F)/BF													
		54/0.48	58/0.31	62/0.21	67/0.19	72/0.17	76/0.22	80/0.05	54/0.54	58/0.37	62/0.25	67/0.21	72/0.19	76/0.21	80/0.04
75	TC	217	222	232	252	274	294	316	227	231	238	254	281	297	322
	SHC	217	199	189	163	136	112	90	227	217	202	172	143	115	91
	KW	15.1	15.2	15.4	15.8	16.2	16.6	17.0	15.3	15.4	15.5	15.9	16.4	16.5	17.2
85	TC	212	217	226	244	266	285	306	222	225	231	250	272	291	312
	SHC	212	194	185	159	133	109	87	222	211	198	170	140	113	88
	KW	16.9	17.2	17.3	17.6	18.0	18.4	18.8	17.1	17.3	17.3	17.7	18.2	18.6	19.0
95	TC	206	208	217	236	257	276	295	215	216	223	241	262	281	301
	SHC	206	197	181	156	129	106	84	215	213	194	166	136	110	84
	KW	18.9	18.8	19.0	19.5	20.0	20.4	20.8	19.0	19.0	19.2	19.6	20.1	20.5	21.0
105	TC	199	202	209	227	247	265	285	208	209	215	232	252	270	-
	SHC	199	190	177	152	126	103	80	208	209	189	163	132	107	-
	KW	20.8	20.9	21.1	21.6	22.0	22.5	22.9	21.0	21.0	21.2	21.7	22.2	22.6	-
115	TC	192	194	200	218	237	254	-	202	202	207	222	242	259	-
	SHC	192	192	173	149	122	99	-	202	202	183	159	129	103	-
	KW	23.0	22.9	23.3	23.8	24.3	24.8	-	23.2	23.2	23.5	23.9	24.5	24.9	-
117	TC	191	191	199	216	235	252	-	200	200	205	220	240	257	-
	SHC	191	191	172	148	121	99	-	200	200	182	158	128	102	-
	KW	23.5	23.5	23.7	24.2	24.8	25.2	-	23.8	23.8	23.9	24.4	24.9	25.3	-
120	TC	189	189	196	213	232	249	-	197	198	203	217	236	-	-
	SHC	189	189	170	147	120	98	-	197	198	181	156	127	-	-
	KW	24.2	24.2	24.4	25.0	25.5	25.9	-	24.5	24.5	24.6	25.1	25.6	-	-

EXPANDED PERFORMANCE DATA (COOLING) 20 TON (GROSS CAPACITY) Cont.

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm													
		8,000							9,000						
		Evaporator Air - Ewb (F)/BF													
		54/0.58	58/0.43	62/0.30	67/0.23	72/0.21	76/0.22	80/0.04	54/0.62	58/0.48	62/0.35	67/0.24	72/0.23	76/0.23	80/0.04
75	TC	236	238	241	259	286	302	328	244	244	250	267	290	307	-
	SHC	236	232	211	181	149	119	91	244	244	222	192	155	123	-
	KW	15.5	15.5	15.6	15.9	16.5	16.6	17.3	15.7	15.7	15.8	16.1	16.6	16.7	-
85	TC	231	230	237	254	276	296	-	237	238	243	258	281	300	-
	SHC	231	230	209	179	146	117	-	237	238	216	189	152	121	-
	KW	17.5	17.3	17.4	17.8	18.3	18.7	-	17.5	17.6	17.6	18.0	18.4	18.8	-
95	TC	223	223	229	245	267	285	-	231	230	235	249	270	289	-
	SHC	223	223	203	176	142	114	-	231	230	209	185	148	117	-
	KW	19.2	19.2	19.3	19.8	20.2	20.6	-	19.5	19.4	19.5	19.8	20.3	20.8	-
105	TC	216	216	221	236	256	274	-	222	223	228	239	260	278	-
	SHC	216	216	197	172	139	110	-	222	223	202	181	145	114	-
	KW	21.3	21.3	21.4	21.8	22.3	22.7	-	21.4	21.5	21.6	21.9	22.4	22.8	-
115	TC	208	209	213	226	246	263	-	214	214	220	229	249	266	-
	SHC	208	209	190	168	135	107	-	214	214	193	177	141	110	-
	KW	23.5	23.5	23.7	24.0	24.6	25.0	-	23.7	23.7	23.9	24.2	24.7	25.1	-
117	TC	207	207	212	224	243	260	-	213	213	219	227	246	263	-
	SHC	207	207	188	167	134	106	-	213	213	191	176	140	109	-
	KW	24.0	24.0	24.1	24.5	25.0	25.5	-	24.2	24.2	24.2	24.6	25.1	25.6	-
120	TC	204	205	209	221	240	-	-	210	210	215	224	243	-	-
	SHC	204	205	185	166	133	-	-	210	210	193	175	139	-	-
	KW	24.7	24.7	24.8	25.2	25.7	-	-	24.9	24.9	25.0	25.3	25.8	-	-

EXPANDED PERFORMANCE DATA (COOLING) 20 TON (GROSS CAPACITY) Cont.

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm						
		10,000						
		Evaporator Air - Ewb (F)/BF						
		54/0.65	58/0.52	62/0.40	67/0.26	72/0.24	76/0.24	80/0.04
75	TC	250	250	256	267	294	314	-
	SHC	250	250	227	200	161	127	-
	kW	15.8	15.8	15.9	16.1	16.7	17.1	-
85	TC	243	244	249	262	284	303	-
	SHC	243	244	220	198	158	124	-
	kW	17.6	17.8	17.7	18.0	18.5	18.9	-
95	TC	236	236	241	252	274	292	-
	SHC	236	236	212	194	154	121	-
	kW	19.5	19.5	19.7	19.9	20.4	20.9	-
105	TC	228	228	234	242	263	281	-
	SHC	228	228	203	190	151	117	-
	kW	21.6	21.6	21.8	22.0	22.5	22.9	-
115	TC	220	220	223	232	251	268	-
	SHC	220	220	207	186	147	113	-
	kW	23.9	23.9	23.9	24.2	24.7	25.2	-
117	TC	218	218	221	230	249	266	-
	SHC	218	218	205	185	146	112	-
	kW	24.3	24.3	24.4	24.7	25.2	25.6	-
120	TC	215	215	218	226	245	-	-
	SHC	215	215	203	183	145	-	-
	kW	25.1	25.1	25.1	25.4	25.9	-	-

FORMULAS AND NOTES FOR USING EXPANDED PERFORMANCE DATA
LEGEND

BF - Bypass Factor
 Edb - Entering Dry-Bulb
 Ewb - Entering Wet-Bulb
 kW - Compressor Motor Power Input
 ldb - Leaving Dry-Bulb
 lwb - Leaving Wet-Bulb
 SHC - Sensible Heat capacity (1000 Btuh) Gross
 TC - Total Capacity (1000 Btuh) Gross

- Direct interpolation is permissible. Do not extrapolate.
- The following formulas may be used:
 - $t / ldb = t \text{ edb} - \text{sensible capacity (Btuh)} / (1.10 \times \text{cfm})$
 - $t / wb = \text{Wet bulb temp. corresponding to enthalpy of air leaving evaporator coil (h/wb)}.$
 - $h / wb = h \text{ web} - \text{total capacity Btuh} / (4.5 \times \text{cfm})$
 where h ewb = Enthalpy of air entering evap. coil.

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

Bypass Factor (BF)	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
Correction Factor						
0.05	1.04	2.07	3.11	4.14	5.18	Use Formula Below
0.10	0.98	1.96	2.94	3.92	4.91	
0.20	0.87	1.74	2.62	3.49	4.36	
0.30	0.76	1.53	2.29	3.05	3.82	
0.40	0.65	1.31	1.96	2.62	3.27	
0.50	0.55	1.09	1.64	2.18	2.73	
0.60	0.44	0.87	1.31	1.74	2.18	
0.70	0.33	0.65	0.98	1.31	1.64	

Interpolation is permissible.
 Correction factor = $1.10 \times (1 - BF) \times (edb - 80)$.

EXPANDED PERFORMANCE DATA (COOLING) 25 TON (GROSS CAPACITY)

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - CFM													
		8,000							9,000						
		Evaporator Air - Ewb (F)/BF													
		54/0.49	58/0.32	62/0.15	67/0.14	72/0.13	76/0.17	80/0.00	54/0.53	58/0.37	62/0.18	67/0.15	72/0.14	76/0.17	80/0.00
75	TC	266	268	280	304	324	352	379	277	276	286	310	336	361	385
	SHC	266	251	246	209	168	137	107	277	269	261	221	178	142	108
	kW	19.5	19.6	19.9	20.5	20.9	21.8	22.4	19.8	19.5	20.0	20.6	21.3	22.0	22.6
85	TC	260	262	272	294	321	344	367	271	272	277	300	326	349	373
	SHC	260	254	243	205	167	135	104	271	264	257	217	175	139	104
	kW	21.6	21.6	22.0	22.5	23.3	23.9	24.6	22.2	21.9	22.1	22.7	23.4	24.1	24.8
95	TC	254	256	262	284	310	332	355	263	263	268	289	316	337	360
	SHC	254	249	238	201	163	131	100	263	263	251	213	171	135	100
	kW	23.8	23.9	24.1	24.8	25.5	26.2	26.9	24.1	24.1	24.3	24.9	25.9	26.4	27.1
105	TC	246	247	253	274	298	319	343	255	255	258	278	302	326	346
	SHC	246	245	233	197	159	127	96	255	255	246	208	166	132	96
	kW	26.3	26.3	26.5	27.2	28.0	28.7	29.5	26.5	26.5	26.6	27.3	28.1	29.0	29.6
115	TC	238	239	243	264	286	306	328	247	246	249	267	290	311	-
	SHC	238	239	228	193	155	123	91	247	246	239	204	162	127	-
	kW	28.9	28.9	29.1	29.7	30.6	31.4	32.1	29.1	29.2	29.3	30.0	30.8	31.5	-

EXPANDED PERFORMANCE DATA (COOLING) 25 TON (GROSS CAPACITY) Cont.

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - CFM													
		10,000							11,250						
		Evaporator Air - Ewb (F)/BF													
		54/0.57	58/0.41	62/0.23	67/0.16	72/0.15	76/0.17	80/0.00	54/0.61	58/0.47	62/0.30	67/0.16	72/0.17	76/0.17	80/0.00
75	TC	286	284	291	314	341	365	390	295	295	298	319	342	367	392
	SHC	286	284	274	232	186	147	108	295	295	285	245	193	151	108
	kW	20.0	20.2	20.2	20.8	21.5	22.1	22.7	20.3	20.3	20.4	20.9	21.2	21.5	21.9
85	TC	278	278	282	304	330	354	378	288	287	289	310	334	359	384
	SHC	278	278	269	228	182	143	105	288	287	278	241	190	148	106
	kW	22.1	22.1	22.2	22.8	23.6	24.2	24.9	22.5	22.4	22.4	23.1	23.7	24.4	25.3
95	TC	270	270	273	293	319	341	364	278	278	280	318	323	346	-
	SHC	270	270	262	223	177	139	101	278	278	269	150	186	144	-
	kW	24.4	24.4	24.4	25.1	25.8	26.5	27.2	24.6	24.6	24.7	30.0	26.0	26.7	-
105	TC	261	262	264	282	306	328	352	269	269	272	285	310	332	-
	SHC	261	262	254	219	173	135	97	269	269	259	232	182	140	-
	kW	26.8	26.8	26.9	27.5	28.3	29.0	29.8	27.0	27.0	27.1	27.6	28.4	29.1	-
115	TC	253	253	255	270	293	315	-	259	260	262	273	297	318	-
	SHC	253	253	245	214	168	131	-	259	260	247	227	177	136	-
	kW	29.3	29.3	29.6	30.1	30.9	31.7	-	29.7	29.6	29.8	30.2	31.1	31.8	-

EXPANDED PERFORMANCE DATA (COOLING) 25 TON (GROSS CAPACITY) Cont.

Temp (F) Air Entering Condenser (Edb)		Evaporator Air Quantity - Cfm						
		11,250						
		Evaporator Air - Ewb (F)/BF						
		54/0.61	58/0.47	62/0.30	67/0.16	72/0.17	76/0.17	80/0.00
75	TC	295	295	298	319	342	367	392
	SHC	295	295	285	245	193	151	108
	kW	20.3	20.3	20.4	20.9	21.2	21.5	21.9
85	TC	288	287	289	310	334	359	384
	SHC	288	287	278	241	190	148	106
	kW	22.5	22.4	22.4	23.1	23.7	24.4	25.3
95	TC	278	278	280	318	323	346	-
	SHC	278	278	269	150	186	144	-
	kW	24.6	24.6	24.7	30.0	26.0	26.7	-
105	TC	269	269	272	285	310	332	-
	SHC	269	269	259	232	182	140	-
	kW	27.0	27.0	27.1	27.6	28.4	29.1	-
115	TC	259	260	262	273	297	318	-
	SHC	259	260	247	227	177	136	-
	kW	29.7	29.6	29.8	30.2	31.1	31.8	-
117	TC	257	257	261	271	294	-	-
	SHC	257	257	245	226	176	-	-
	kW	30.3	30.3	30.3	30.7	31.6	-	-
120	TC	254	254	257	267	-	-	-
	SHC	254	254	242	224	-	-	-
	kW	31.1	31.1	31.3	31.6	-	-	-

FORMULAS AND NOTES FOR USING EXPANDED PERFORMANCE DATA
LEGEND

BF - Bypass Factor
 Edb - Entering Dry-Bulb
 Ewb - Entering Wet-Bulb
 kW - Compressor Motor Power Input
 ldb - Leaving Dry-Bulb
 lwb - Leaving Wet-Bulb
 SHC - Sensible Heat capacity (1000 Btuh) Gross
 TC - Total Capacity (1000 Btuh) Gross

- Direct interpolation is permissible. Do not extrapolate.
- The following formulas may be used:
 - $t / ldb = t \text{ edb} - \text{sensible capacity (Btuh)} / (1.10 \times \text{cfm})$
 - $t / wb = \text{Wet bulb temp. corresponding to enthalpy of air leaving evaporator coil (h/wb)}.$
 - $h / wb = h \text{ web} - \text{total capacity Btuh} / (4.5 \times \text{cfm})$
 where h ewb = Enthalpy of air entering evap. coil.

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

Bypass Factor (BF)	ENTERING AIR DRY-BULB TEMP (F)					
	79	78	77	76	75	under 75
	81	82	83	84	85	over 85
Correction Factor						
0.05	1.04	2.07	3.11	4.14	5.18	Use Formula Below
0.10	0.98	1.96	2.94	3.92	4.91	
0.20	0.87	1.74	2.62	3.49	4.36	
0.30	0.76	1.53	2.29	3.05	3.82	
0.40	0.65	1.31	1.96	2.62	3.27	
0.50	0.55	1.09	1.64	2.18	2.73	
0.60	0.44	0.87	1.31	1.74	2.18	
0.70	0.33	0.65	0.98	1.31	1.64	

Interpolation is permissible.
 Correction factor = $1.10 \times (1 - \text{BF}) \times (\text{edb} - 80).$

PAS SERIES EVAPORATOR FAN PERFORMANCE

CIRCULATING BLOWER PERFORMANCE - PAS180 - Standard Motor (Belt Drive)*																				
Airflow CFM	EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts
4500	684	1102	791	1283	887	1466	977	1652	1061	1841	1139	2034	1214	2230	1285	2430	1353	2633	1418	2839
4800	715	1265	817	1451	910	1638	997	1828	1078	2021	1155	2217	1228	2417	1297	2619	1364	2825	1428	3033
5100	747	1442	844	1633	934	1825	1018	2019	1097	2216	1171	2416	1243	2618	1311	2823	1376	3031	1439	3242
5400	779	1635	872	1831	959	2027	1040	2226	1117	2426	1189	2629	1259	2835	1326	3043	1390	3254	1452	3467
5700	812	1844	901	2044	985	2245	1063	2448	1138	2652	1209	2858	1277	3067	1342	3278	1405	3492	1466	3708
6000	845	2068	931	2273	1011	2478	1087	2685	1160	2893	1229	3103	1295	3316	1359	3530	1421	3746	-	-
6300	878	2309	961	2518	1039	2728	1112	2939	1183	3151	1250	3365	1215	3580	-	-	-	-	-	-
6600	912	2566	992	2780	1067	2994	1138	3209	1207	3425	1273	3642	-	-	-	-	-	-	-	-
6900	946	2841	1023	3059	1096	3277	1165	3496	1232	3716	-	-	-	-	-	-	-	-	-	-
7200	981	3133	1055	3355	1125	3578	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7500	1016	3443	1087	3669	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEGEND

Watts = Input Watts to motor. Airflow based on dry coil with filters.

Airflow based on dry coil with filters. Standard low-medium static drive range is 891 to 1179 rpm (for 208/230, 380 and 460v units. Alternate high-static drive range is 1227 to 1559 (for 208/230, 380, and 460v units).

CIRCULATING BLOWER PERFORMANCE - PAS210/240 - Standard Motor (Belt Drive)*																				
Airflow CFM	EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts
5500	682	1675	760	1922	832	2177	901	2441	965	2712	1027	2990	1086	3275	1142	3567	1197	3864	1249	4167
6000	730	2005	802	2257	871	2516	935	2783	997	3057	1056	3337	1112	3623	1167	3915	1219	4213	1270	4516
6500	778	2373	846	2630	911	2893	972	3164	1031	3440	1087	3722	1142	4010	1194	4304	1245	4602	1294	4906
7000	828	2780	892	3042	953	3310	1011	3583	1067	3863	1121	4148	1173	4438	1224	4733	1273	5033	1320	5337
7500	878	3227	938	3494	996	3766	1051	4043	1105	4326	1156	4613	1207	4906	1255	5203	1302	5504	1348	5810
8000	928	3715	985	3986	1040	4263	1093	4544	1144	4830	1194	5120	1242	5415	1289	5714	1334	6018	1379	6325
8500	979	4245	1033	4521	1085	4801	1136	5086	1185	5375	1232	5669	1279	5966	1324	6268	1368	6573	1411	6883
9000	1030	4817	1082	5098	1131	5382	1180	5671	1227	5964	1272	6260	1317	6561	1360	6865	1403	7173	1445	7484
9500	1082	5433	1131	5718	1178	6007	1225	6299	1270	6595	1313	6895	1356	7198	138	7505	1440	7815	1480	8129
10,000	1134	6093	1180	6382	1226	6675	1270	6971	1313	7271	1356	7574	1397	7881	1438	8190	1477	8503	-	-

LEGEND

Watts = Input Watts to motor.

Airflow based on dry coil with filters. Standard low-medium static drive range for the PAS210 is 910 to 1095 rpm. Standard low-medium static drive range for the PAS240 size is 1002 to 1225 rpm. Alternate high-static drive range for the PAS210 size is 1069 to 1287. Alternate high-static drive range for the PAS240 size is 1193 to 1458 rpm. Other rpms require a field-supplied drive.

CIRCULATING BLOWER PERFORMANCE - PAS300 (10.0 HP Standard Motor)																		
CFM	External Static Pressure in Inches Water Column - Dry coil With Filter																	
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
7000	845	2693	909	2979	969	3272	1028	3574	1083	3883	1137	4200	1169	4524	1239	4854	1288	5191
7500	896	3156	956	3450	1014	3752	1069	4060	1123	4375	1174	4698	1224	5026	1272	5362	1320	5703
8000	948	3667	1005	3969	1060	4278	1112	4593	1163	4915	1213	5243	1261	5577	1307	5917	1353	6263
8500	1001	4226	1054	4537	1106	4853	1156	5175	1205	5504	1253	5838	1299	6177	1344	6523	1388	6873
9000	1053	4836	1104	5155	1154	5478	1202	5808	1248	6142	1294	6483	1338	6828	1382	7179	1424	7534
9500	1106	5498	1155	5824	1202	6155	1248	6492	1293	6833	1336	7179	1379	7530	1421	7887	1462	8247
10000	1159	6214	1206	6547	1251	6886	1295	7229	1338	7577	1380	7929	1421	8286	1461	8648	1501	9014
10500	1213	6984	1257	7325	1300	7671	1342	8020	1384	8375	1424	8733	1464	9096	1503	9464	1541	9835
11000	1266	7810	1309	8159	1350	8511	1391	8868	1431	9229	1470	9594	1508	9963	1546	10336	-	-
11250	1293	8245	1334	8597	1375	8953	1415	9313	1454	9677	1493	10045	1530	10417	-	-	-	-

W = Watts

NOTES:

1. Maximum continuous bhp is 10.20 (208/230) or 11.80 (460 v) and the maximum continuous watts are 9510 (208/230v) or 11,000 (460 v). Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

EVAPORATOR FAN DATA FOR PAS180, 210, 240

EVAPORATOR FAN MOTOR DATA FOR PAS180, 210, 240

UNIT	Unit Voltage	Maximum Acceptable Continuous BHP	Maximum Acceptable Operating Watts	Maximum Amp Draw
PAS180	208/230	4.25	3,775	10.5
	460	4.25	3,775	4.8
PAS210	208/230	5.90	5,180	15.8
	460	5.90	5,180	7.9
PAS240	208/230	8.70	7,915	22.0
	460	9.50	8,640	13.0
PAS300	208/230	10.20	9,510	28.0
	460	11.80	11,000	14.6

FAN RPM AT MOTOR PULLEY SETTINGS FOR PAS180, 210, 240

UNIT	MOTOR PULLEY TURNS OPEN*										
	1	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5	5-1/2	6
PAS180H,L	1179	1150	1121	1093	1064	1035	1006	978	949	920	891
PAS210H,L	1095	1077	1058	1040	1021	1002	984	965	947	928	910
PAS240H,L	1225	1209	1187	1165	1143	1120	1098	1076	1053	1031	1002
PAS300H,L	1283	1269	1247	1225	1203	1182	1160	1138	1116	1095	1066

* Due to belt and pulley size, pulley cannot be set to 0 or 1/2.

AIR QUANTITY LIMITS FOR PAS180, 210, 240

UNIT	Minimum Airflow (Cfm)	Maximum Airflow (Cfm)
PAS180	4500	7500
PAS210	5400	9000
PAS240	7000	10,000
PAS300	7500	12,500

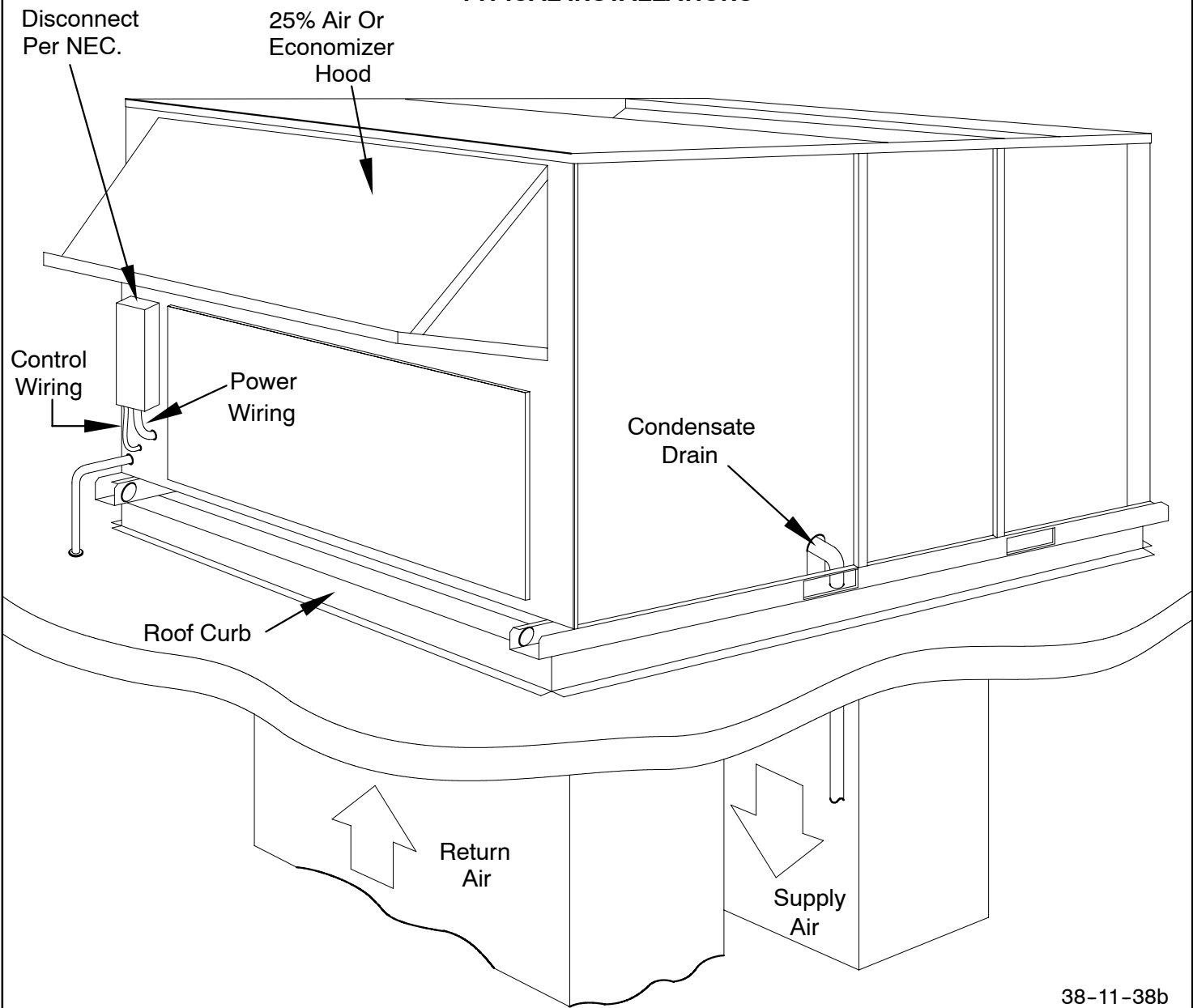
EVAPORATOR FAN MOTOR EFFICIENCY

UNIT PAS	Motor Efficiency %
180	85.8
210	87.5
240	88.5
300	88.5

OUTDOOR SOUND POWER

UNIT	SOUND RATING (dB)	OCTAVE BANDS							
		63	125	250	500	1000	2000	4000	8000
PAS180	88 dB	90.8	88.7	86.4	84.3	83.5	78.4	75.6	66.8
PAS210	88 dB	90.8	88.7	86.4	84.3	83.5	78.4	75.6	66.8
PAS240	94 dB	98.7	92.3	93.8	90.9	89.6	85.9	80.3	74.3
PAS300	94 dB	98.7	92.3	93.8	90.9	89.6	85.9	80.3	74.3

TYPICAL INSTALLATIONS



PAS Series ELECTRICAL DATA - ELECTRIC HEAT ACCESSORY

Unit Voltage	Heater Model Number	Evap. Fan Motor		Electric Heater *		Power Supply	
		HP	FLA	kW	FLA	MCA	MOCP **
PAS180 208-3-60	AES034EHA	3.7	10.5	26.0	71	102	110
	AES056EHA			42.0	117	159	175
	AES075EHA			56.0	156	169	200
PAS180 240-3-60	AES034EHA		11.0	34.0	82	116	125
	AES056EHA			56.0	135	149	175
	AES075EHA			75.0	180	194	225
PAS180 480-3-60	AES132ELA		4.8	32.0	39	55	60
	AES055ELA			55.0	66	72	80
	AES080ELA			80.0	96	102	110
PAS210 208-3-60	AES034EHA	5.0	15.8	26.0	71	110	110
	AES056EHA			42.0	117	166	175
	AES075EHA			56.0	156	176	200
PAS210 240-3-60	AES034EHA		15.8	34.0	82	122	125
	AES056EHA			56.0	135	155	175
	AES075EHA			75.0	180	200	225
PAS210 480-3-60	AES132ELA		7.9	32.0	39	59	60
	AES055ELA			55.0	66	76	80
	AES080ELA			80.0	96	106	110
PAS240 208-3-60	AES034EHA	7.5	25.0	26.0	71	120	150
	AES056EHA			42.0	117	178	200
	AES075EHA			56.0	156	187	200
PAS240 240-3-60	AES034EHA		25.0	34.0	82	134	150
	AES056EHA			56.0	135	166	175
	AES075EHA			75.0	180	211	225
PAS240 480-3-60	AES132ELA		13.0	32.0	39	65	70
	AES055ELA			55.0	66	82	90
	AES080ELA			80.0	96	112	125

Unit Voltage	Heater Model Number	Electric Heat		Power Supply	
		FLA	KW	MCA	MOCP
PAS300 208/240	AES034EHA	72 / 82	26 / 34	137 / 138	175 / 175
	AES056EHA	117 / 135	42 / 56	181 / 170	200 / 175
	AES075EHA	156 / 180	56 / 75	191 / 215	200 / 225
PAS300 380	AES132ELA	32	21.6	80	100
	AES055ELA	54	36	93	100
PAS300 480	AES132ELA	39	32	70	90
	AES055ELA	66	55	84	90
	AES080ELA	96	80	114	125

* Heater capacity (kW) is based on heater voltage of 208 v, 240 v, 480 v, and 600 v. Heaters are rated at 240 v, 480 v, or 600 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, and 600v capacity by multipliers found at bottom of page.

** Fuse or HACR circuit breaker.

MULTIPLICATION FACTORS

Heater Rating Voltage	ACTUAL HEATER VOLTAGE									
	208	230	240	380	440	460	480	550	575	600
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.

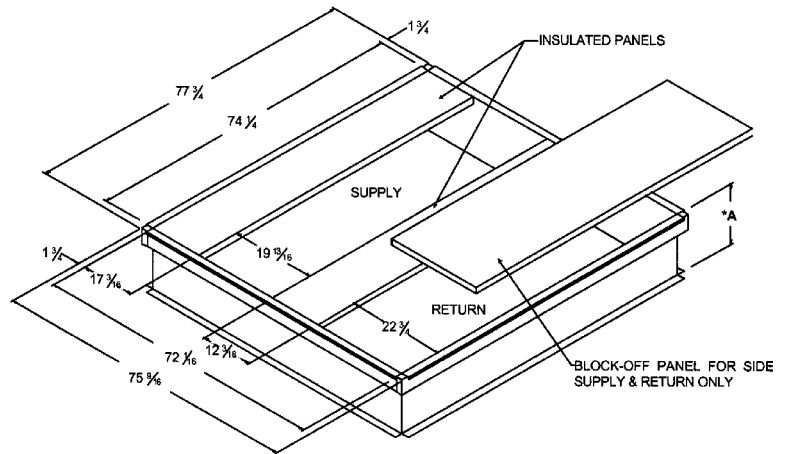
% Voltage Imbalance = $100 \times (\text{max voltage deviation from average voltage} / \text{average voltage})$

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

ACCESSORIES

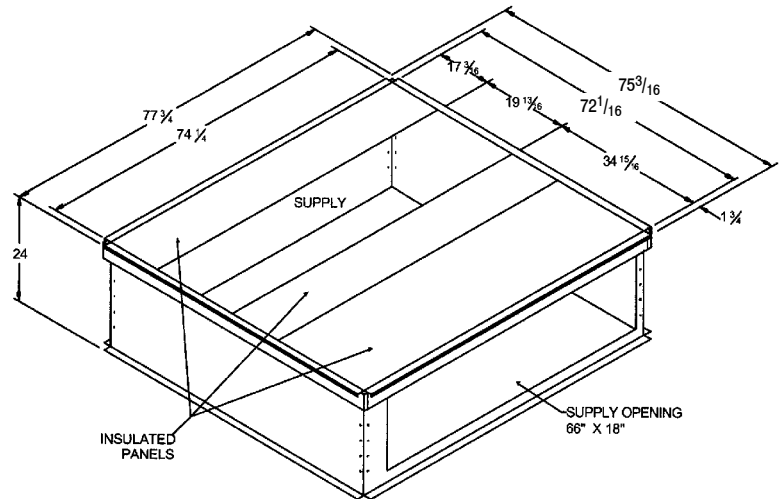
VERTICAL DISCHARGE ROOF CURBS

Description	Model Number	Where Used
14" High	AXB060CMA	ALL
24" High	AXB060CHA	ALL



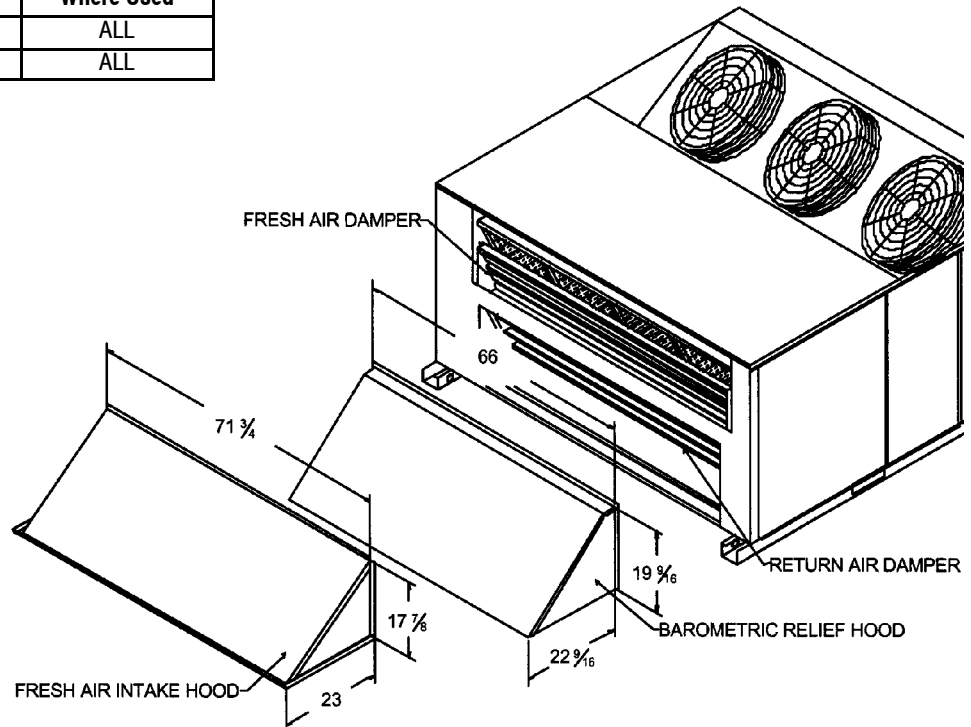
HORIZONTAL DISCHARGE ROOF CURBS

Description	Model Number	Where Used
24" High	AXB065CHA	ALL
24" High w/ Duct	AXB165CHA	ALL



ECONOMIZER - HORIZONTAL / DOWNFLOW

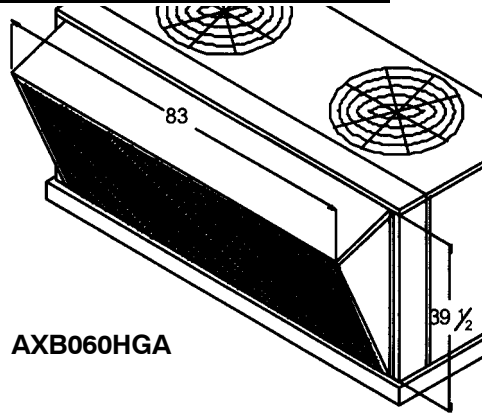
Description	Model Number	Where Used
Fully Modulating	AXB060EMA	ALL
Three Position	AXB060EPA	ALL



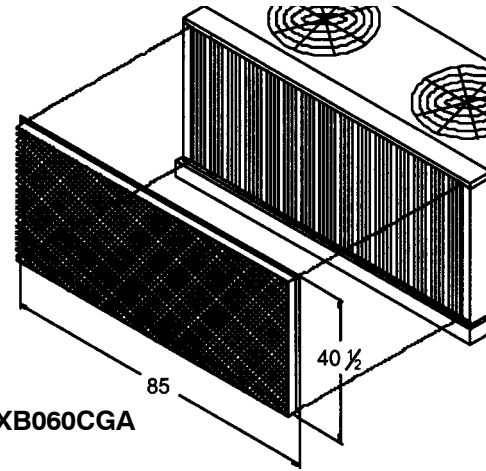
ACCESSORIES (CONT.)

COIL PROTECTION

Description	Model Number	Where Used
Coil Guard	AXB060CGA	ALL
Hail Guard	AXB060HGA	ALL



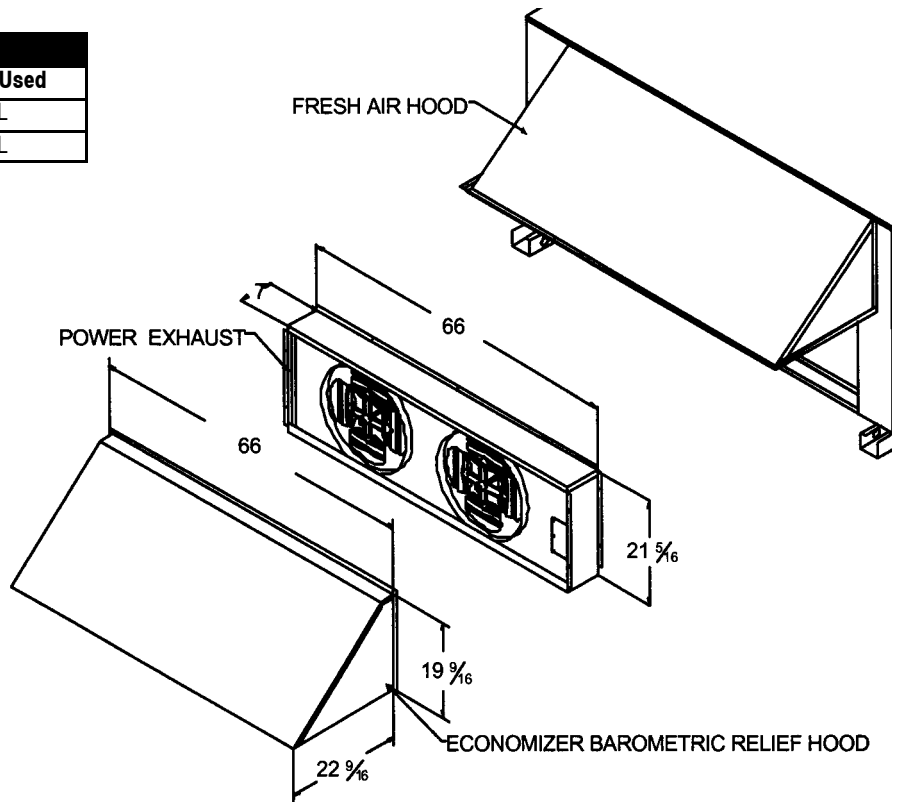
AXB060HGA



AXB060CGA

POWER EXHAUST

Description	Model Number	Where Used
208/230 Volt	AXB060PEH	ALL
460 Volt	AXB060PEL	ALL



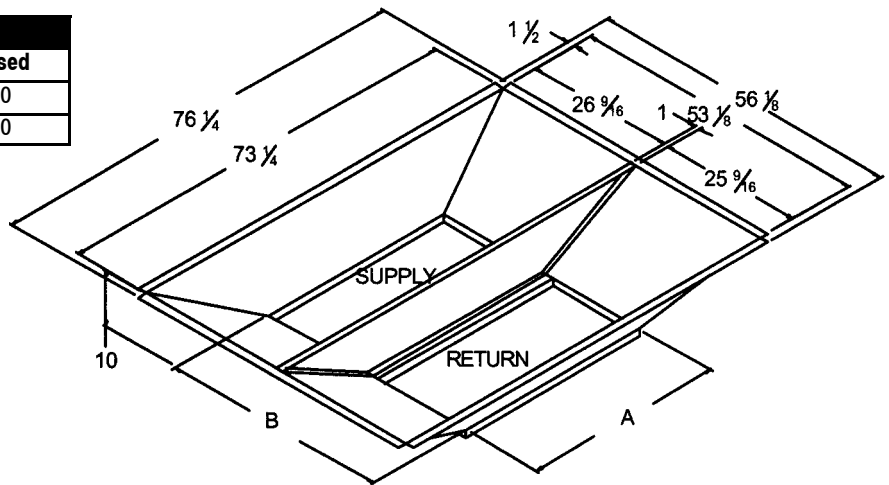
POWER EXHAUST PERFORMANCE DATA

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

ACCESSORIES (CONT.)

CONCENTRIC DUCT KIT

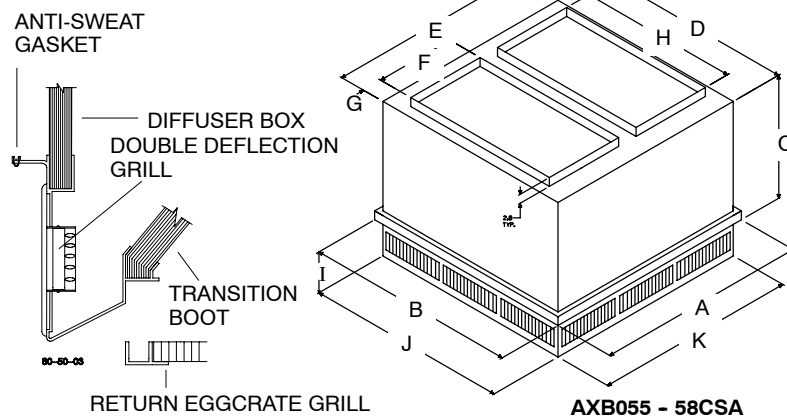
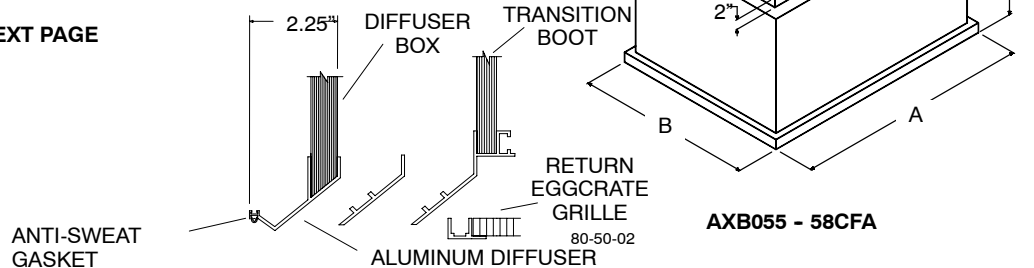
Description	Model Number	Where Used
18" x 36"	AXB160CTA	180, 210
24" x 48"	AXB260CTA	240, 300



CONCENTRIC DIFFUSER

Description	Model Number	Used With
Flush Mount	AXB055CFA	180, 210
Flush Mount	AXB058CFA	240, 300
Step Down	AXB055CSA	180, 210
Step Down	AXB058CSA	240, 300

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	ALL

LOW AMBIENT KIT

Model Number	Used With
AXB160LAA	180, 210
AXB260LAA	240, 300

PART NUMBERS FOR APPROVED HIGH STATIC CONVERSIONS*

Unit Size (Tons)	Voltage	Motor	Motor Pulley	Blower Pulley	Belt	Circuit Breaker	Circuit Breaker Bracket
15 & 17-1/2	208/230 & 460	No Change	1170553	1171427	No Change	N/A	N/A
20	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 180-300 units.
7. **MINIMUM AIRFLOW** — The minimum airflow for cooling is 300 cfm/nominal ton on size 180-300 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: PAS180 - 300

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.