



PAS

Product Specifications

COMMERCIAL STANDARD EFFICIENCY PACKAGE AIR CONDITIONER UNIT R-22 SINGLE PACKAGE ROOFTOP 6 – 12.5 TONS (3-Phase)

REFRIGERATION CIRCUIT

- Scroll compressors on most models.
- High and low pressure switches and evaporator evaporator freeze thermostat.
- PAS090-150 have two stages of cooling, PAS072 is single stage.
- Anti-cycle timer built into the electronic board.

BUILT TO LAST

- Pre-painted galvanized steel cabinet for long life and quality appearance.
- Integral Commercial strength base rails. Holes provided for lifting lugs makes rooftop installation easier.
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62.

EASY TO INSTALL AND SERVICE

- Electric cooling, self contained for year-round comfort. Systems installed on rooftop or ground level. The unit is shipped in the horizontal position and can easily be converted to downflow.
- Thru-the-bottom utility connection capability allow power and control wiring to be routed through unit base pan, minimizing roof penetrations.
- Factory wired to accept economizer.
- Refrigerant filter drier.

WARRANTY

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



PAS090-150 Shown



UNIT PERFORMANCE DATA

Model Number *	COOLING			Unit Dimensions H X W X L	Unit Weight
	Rated Capacity BTUH	E.E.R	IPLV		
PAS072H000A	72,000	9.0	n/a	33-5/16" x 45" x 73-11/16"	470
PAS072L000A	72,000	9.0	n/a	33-5/16" x 45" x 73-11/16"	470
PAS090H000A	84,000	8.9	9.3	41-5/16" x 57-3/4" x 87-3/8"	755
PAS090L000A	84,000	8.9	9.3	41-5/16" x 57-3/4" x 87-3/8"	755
PAS120H000A	115,000	8.9	9.3	49-15/16" x 57-3/4" x 87-3/8"	915
PAS120L000A	115,000	8.9	9.3	49-15/16" x 57-3/4" x 87-3/8"	915
PAS150H000A	142,000	8.8	9.1	49-15/16" x 57-3/4" x 87-3/8"	930
PAS150L000A	142,000	8.8	9.1	49-15/16" x 57-3/4" x 87-3/8"	930

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

Table of Contents

Features/Benefits	1
Model Number Nomenclature	2
Unit Specifications	3-5
Dimensions	6-7
Performance Data	8-14
Typical Installation	15
Accessories	16-26
Controls	27
Guide Specs	27

MODEL NUMBER IDENTIFICATION GUIDE							
MODEL NUMBER	P	A	S	090	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	
						COOLING CAPACITY (NOMINAL BTUH) 072 = 6 Ton 090 = 7-1/2 120 = 10 Ton 150 = 12-1/2 Ton	

UNIT SPECIFICATIONS (Legend on Next Page)		MODELS			
COOLING	PAS072H	PAS072L	PAS090H	PAS090L	
ARI Rated Capacity Btuh (Net)	72,000		84,000		
Nominal Tons	6		7-1/2		
Standard CFM	2100		2800		
EER	9.0		8.7		
IPLV	N/A		9.3		
Sound Rating (Bels)	8.1		8.7		
Unit Weight (lbs. / kg)	565 / 256		870 / 395		
ELECTRICAL	PAS072H	PAS072L	PAS090H	PAS090L	
Volts/ 3 Phase/ 60Hertz	208/230	460	208/230	460	
Voltage Range Min/Max	187 / 254	414 / 508	187 / 254	414 / 508	
Power Supply MCA	32.4 / 32.4	15.4	40.1 / 40.1	18.4	
Power Supply Circuit Breaker	40 / 40	20	45 / 45	25	
COMPRESSOR - QTY.	SCROLL - 1		RECIPROCATING - 2		
Compressor Model	SR(Y,H,J)752AE*		CR42K6		
Oil (Oz.)	54		42 ea		
RLA / LRA	20.6 / 146.0	9.5 / 73.0	14.0 / 91.0	6.4 / 42.0	
REFRIGERANT TYPE	REFRIGERANT TYPE				
Expansion Device	Fixed Orifice Metering Device		Fixed Orifice Metering Device		
Operating Charge....lb. oz....Circuit 1	9 - 0		4 - 13		
...Circuit 2	N/A		4 - 14		
CONDENSER FAN	Propeller Type				
Nominal CFM	4000		6400		
Quantity..Diameter (In.)	1...22		2...22		
Motor Hp...RPM	1/4...1100		1/4...1100		
Watts Input (Total)	325		600		
FLA	1.4	0.9	1.4	0.7	
CONDENSER COIL	Enhanced Copper Tubes, Aluminum Lanced fins				
Rows...Fin/In.	2...17		1...17		
Total Face Area (Sq. Ft.)	10.42		20.50		
EVAPORATOR COIL	Enhanced Copper Tubes, Aluminum Double Wavy Fins				
Rows...Fins/Inch	4...15		3...15		
Total Face Aea (sq. ft.)	5.5		8.0		
EVAPORATOR FAN	PAS072H,L	PAS090H,L			
	Centrifugal Type	Centrifugal Type			
Quantity...Size (in.)	1...10 x 10	1...15 x 15			
Type Drive	Belt	Belt			
Nominal CFM	2100	3000			
Max. Continuous Bhp	2.4	2.4			
FLA-208-230/460/575V	5.2/2.6/2.6	5.8/2.6/2.6			
Motor Frame Size	56	56			
Fan RPM Range	1070-1460	590-840			
Motor Bearing	Ball	Ball			
Maximum Allowable RPM	2100	2100			
Motor Pulley Pitch / Diameter Min/Max. (in.)	2.8 / 3.8	2.4 / 3.4			
Motor Shaft Diameter (in.)	5/8	5/8			
Fan Pulley Pitch Diam (in)	4.5	7.0			
Belt, Quantitiy...Type... Length (in.)	1...A...40	1...A...49			
Pulley Center Line Distance (in)	14.7-15.5	16.75-19.25			
Speed Change per Full Turn of Movable Pulley Flange (RPM)	80	50			
Pulley Max. full Turns From Closed Postion	5	5			
Factory Setting	3	5			
Factory Speed Setting RPM	1225	590			
Fan Shaft Diam. at Pulley	5/8	1			

* Y = 208/230V, H = 460V, J = 575V.

UNIT SPECIFICATIONS (Legend on Next Page)		MODELS			
COOLING	PAS120H	PAS120L	PAS150H	PAS150L	
ARI Rated Capacity Btuh (Net)	115,000		142,000		
Nominal Tons	10		12-1/2		
Standard CFM	4000		4500		
EER	8.8		8.8		
IPLV	9.3		9.1		
Sound Rating (Bels)	8.8		8.7		
Unit Weight (lbs. / kg)	1035 / 469		1050 / 476		
ELECTRICAL	PAS120H	PAS120L	PAS150H	PAS150L	
Volts/ 3 Phase/ 60Hertz	208/230	460	208/230	460	
Voltage Range Min/Max	187 / 254	414 / 508	187 / 254	414 / 508	
Power Supply MCA	44.2 / 44.2	21.8	65.2 / 65.2	29.6	
Power Supply MOCP*	50 / 50	25	80 / 80 **	40	
COMPRESSOR - QTY.	RECIPROCATING - 2		SCROLL - 2		
Compressor Model	GB20K		SR(Y,H,J)752AE*		
Oil (Oz.)	54 ea		54 ea		
RLA / LRA	15.8 / 130	7.9 / 64.0	23 / 146.0	10.4 / 73.0	
REFRIGERANT TYPE	R-22				
Expansion Device	Fixed Orifice Metering Device				
Operating Charge....lb. oz....Circuit 1	7 - 3		8 - 10		
...Circuit 2	7 - 13		8 - 6		
CONDENSER FAN	Propeller Type				
Nominal CFM	7000		7000		
Quantity..Diameter (In.)	2...22		2...22		
Motor Hp...RPM	1/4...1100		1/4...1100		
Watts Input (Total)	600		600		
FLA	1.4	0.7	1.4	0.7	
CONDENSER COIL	Enhanced Copper Tubes, Aluminum Lanced fins				
Rows...Fin/In.	2...17		2...17		
Total Face Area (Sq. Ft.)	20.47		25.0		
EVAPORATOR COIL	Enhanced Copper Tubes, Aluminum Double Wavy Fins				
Rows...Fins/Inch	3...15		4...15		
Total Face Aea (sq. ft.)	10.0		11.1		
EVAPORATOR FAN	Centrifugal Type				
Quantity...Size (in.)	1...15 x 15		1...15 x 15		
Type Drive	Belt		Belt		
Nominal CFM	4000		5000		
Max. Continuous Bhp	2.4		5.25		
FLA-208-230/460/575V	5.8/2.6/2.6		15.0/7.4/7.4		
Motor Frame Size	56		56		
Fan RPM Range	685-935		900-1260		
Motor Bearing	Ball		Ball		
Maximum Allowable RPM	2100		2100		
Motor Pulley Pitch / Diameter Min/Max. (in.)	2.8 / 3.8		3.1 / 4.1		
Motor Shaft Diameter (in.)	5/8		7/8		
Fan Pulley Pitch Diam (in)	7.0		5.9		
Belt, Quantity...Type... Length (in.)	1...A...49		1...BX...46		
Pulley Center Line Distance (in)	15.85-17.50		15.85-17.50		
Speed Change per Full Turn of Movable Pulley Flange (RPM)	50		44		
Pulley Max. full Turns From Closed Postion	5		5		
Factory Setting	5		6		
Factory Speed Setting RPM	685		960		
Fan Shaft Diam. at Pulley	1		1		

* Y = 208/230V, H = 460V, J = 575V.

UNIT SPECIFICATIONS (CONT)	MODELS			
	PAS072	PAS090	PAS120	PAS150
HIGH-PRESSURE SWITCH (psig)				
Standard Compressor	450 +/- 50	450 +/- 50	450 +/- 50	500 +/- 50
Internal Relief (Differential) Cutout	428	428	428	428
Reset (Auto.)	320	320	320	320
LOSS-OF-CHARGE SWITCH (psig) (LOW-PRESS.)				
Cutout	7 +/- 3	7 +/- 3	7 +/- 3	7 +/- 3
Reset (Auto.)	22 +/- 7	22 +/- 7	22 +/- 7	22 +/- 7
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 (THROWAWAY)				
Quantity...Size (in.)	2...16 x 25 x 2	4...16 x 20 x 2	4...20 x 20 x 2	4...20 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

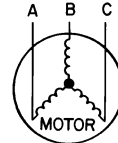
NOTES:

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.



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

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 voltage imbalance.

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

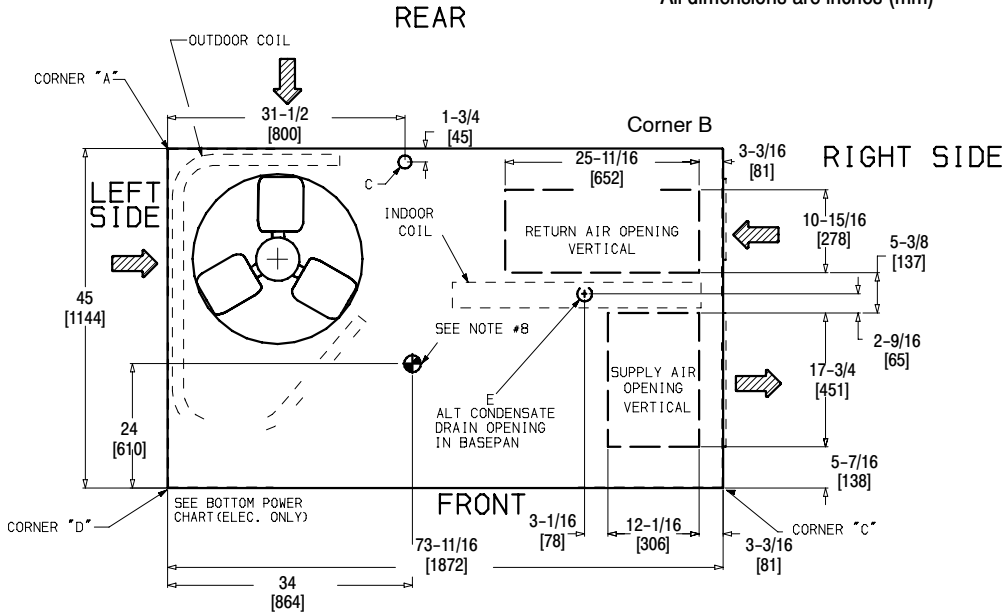
This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

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

BASE UNIT WEIGHT AND DIMENSIONS – PAS072

Unit	Total Weight		Corner A		Corner B		Corner C		Corner D		Panel A	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	in	mm
PAS072	470	213	148	67	103	47	155	70	64	29	12-3/8	315

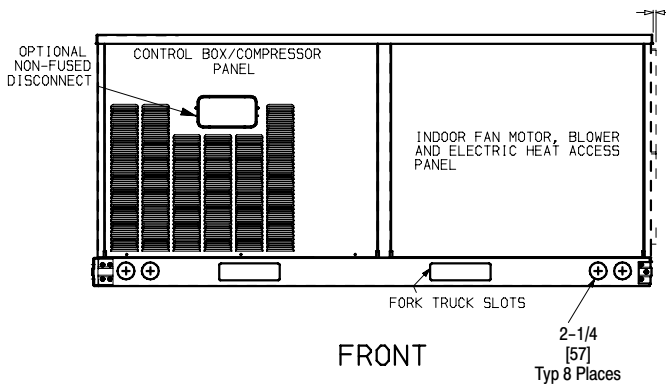
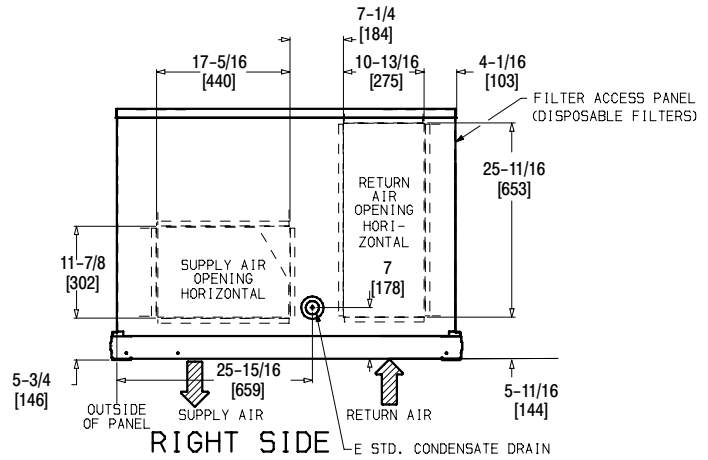
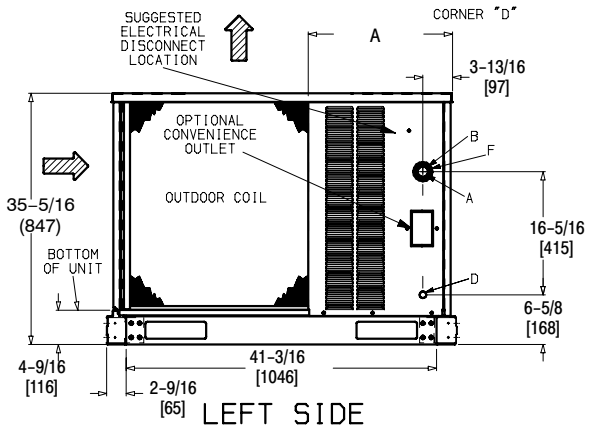
All dimensions are inches (mm)



THREADED CONDUIT SIZE	WIRE USE	REQUIRED HOLE SIZES (MAX.)
1/2"	ACC	7/8" [22]
1/2"	24	7/8" [22]
3/4"	Power*	1-1/8" [28.4]
1-1/4" FPT	Power*	1-3/4" [44.4]

* Select either 3/4" or 1-1/4" for power, depending on wire size.

Connection Sizes – PAS072	
A	1-3/8" Dia (35) Field Power Supply Hole
B	2" Dia (51) Power Supply Knockout
C	2-1/2" Dia (44) Charging Port Hole
D	7/8" Dia (22) Field Control Wiring Hole
E	3/4"-14 NPT Condensate Drain



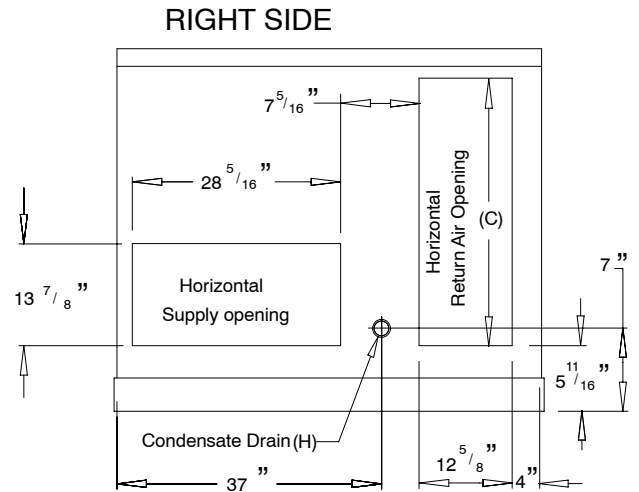
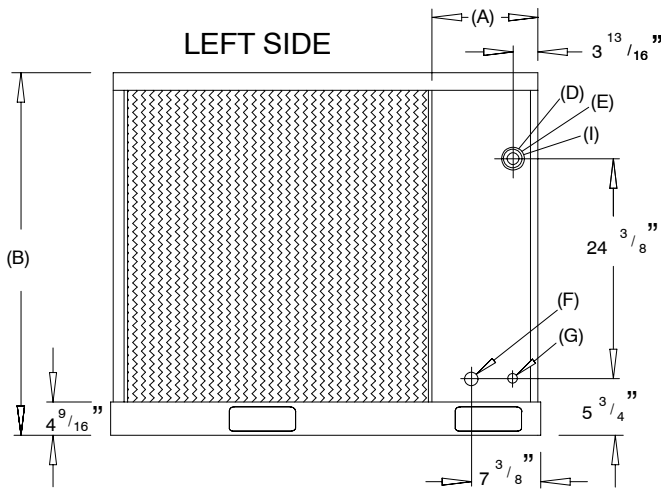
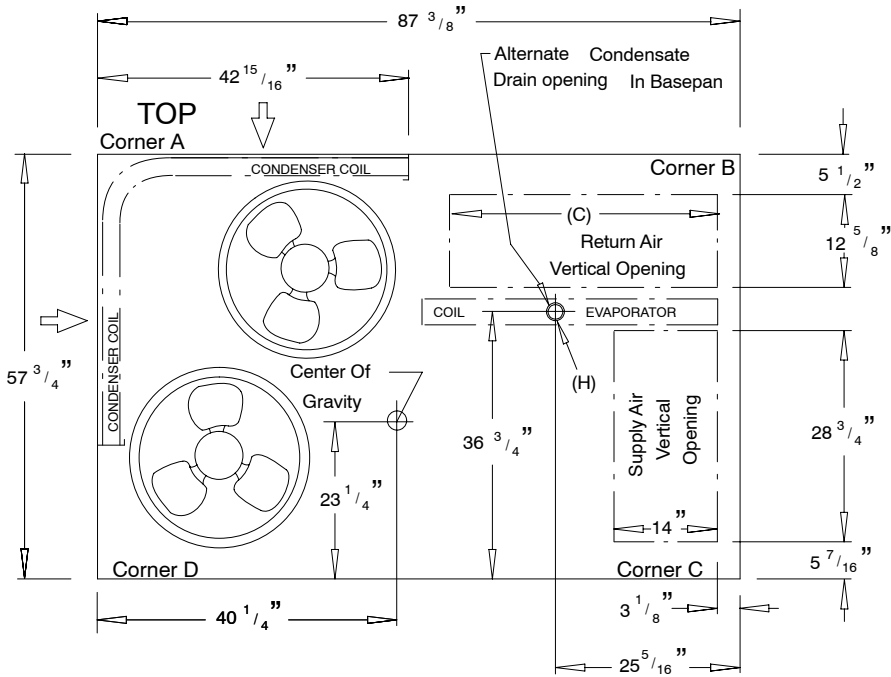
BASE UNIT DIMENSIONS PAS090-150

Unit	Total		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
PAS090	755	342	164	74	140	64	208	94	243	110	1-2 ⁷ / ₈	378	3-5 ⁵ / ₁₆	1050	2-9 ¹¹ / ₁₆	856
PAS120	915	415	199	90	170	77	252	114	294	134	2-5 ⁷ / ₈	759	4-1 ¹⁵ / ₁₆	1253	3-0 ³ / ₈	924
PAS150	930	422	202	92	172	78	256	116	300	136	1-2 ⁷ / ₈	378	4-1 ¹⁵ / ₁₆	1253	3-0 ³ / ₈	924

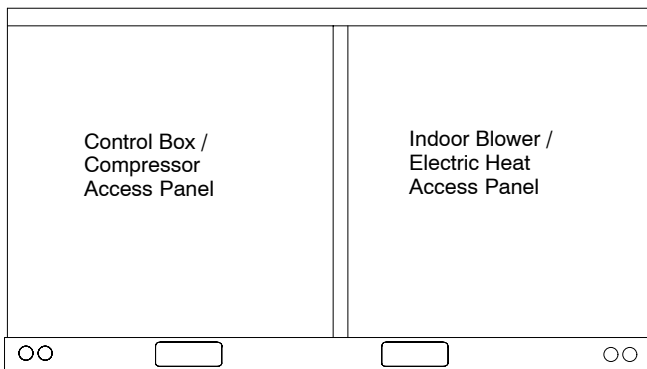
THREADED CONDUIT SIZE	WIRE USE	REQUIRED HOLE SIZES (MAX.)
1/2"	24	7/8" [22]
3/4"	Power*	1-1/8" [28.4]
1-1/4" FPT	Power*	1-3/4" [44.4]

* Select either 3/4" or 1-1/4" for power, depending on wire size.

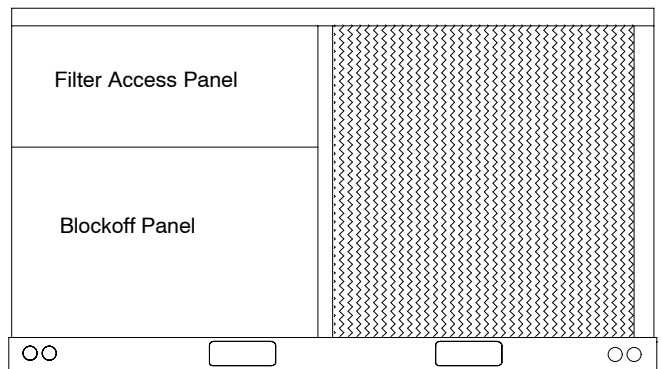
Connection Sizes	
D	1-3/8" Dia (35) Field Power Supply Hole
E	2-1/2" Dia (64) Power Supply Knockout
F	1-3/4" Dia (44) Charging Port Hole
G	7/8" Dia (22) Field Control Wiring Hole
H	3/4"-14 NPT Condensate Drain
I	2" Dia (51) Power Supply Knockout



FRONT



BACK



EXPANDED PERFORMANCE DATA (COOLING) 6 TON – GROSS DATA

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		1800/0.06			2100/0.08			2400/0.09			3000/0.11		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	86.6	80.0	73.6	87.8	80.3	73.2	90.8	84.1	77.2	93.2	86.6	79.7
	SHC	42.2	52.3	62.2	43.0	53.9	65.5	46.5	59.6	71.6	50.1	66.4	78.7
	KW	5.48	5.33	5.21	5.69	5.50	5.32	5.59	5.44	5.29	5.66	5.51	5.35
85	TC	84.1	77.4	71.0	84.0	77.2	69.5	87.8	81.2	74.5	90.1	83.5	77.3
	SHC	41.4	51.3	61.1	41.7	53.1	64.0	45.5	58.6	70.3	49.4	65.4	76.7
	KW	6.17	6.00	5.85	6.21	6.04	5.83	6.27	6.11	5.94	6.35	6.19	6.02
95	TC	81.6	74.7	68.5	81.0	73.5	66.3	84.8	78.2	71.8	87.0	80.4	74.8
	SHC	40.6	50.3	60.0	40.8	51.8	62.8	44.6	57.6	69.1	48.7	64.5	74.7
	KW	6.86	6.67	6.49	6.78	6.54	6.33	6.95	6.77	6.59	7.03	6.86	6.69
105	TC	78.4	71.8	65.6	76.8	69.7	62.5	81.6	74.9	68.9	83.3	76.9	72.1
	SHC	39.4	49.2	58.7	39.4	50.3	61.1	43.5	56.4	67.4	47.4	63.1	72.0
	KW	7.60	7.39	7.20	7.30	7.05	6.80	7.72	7.50	7.31	7.77	7.59	7.41
115	TC	75.1	68.7	62.5	72.5	65.5	58.75	78.0	71.5	66.1	79.5	73.3	69.3
	SHC	38.1	47.9	57.2	37.9	48.7	8.7	42.3	55.1	65.5	46.3	61.6	69.2
	KW	8.36	8.14	7.93	7.81	7.53	7.27	8.49	8.25	8.06	8.55	8.33	8.18

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
BF	= Bypass Factor

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) 7-1/2 TON – GROSS DATA

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		2250/0.10			2800/0.11			3000/0.11			3750/0.14		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	105.8	97.6	88.7	108.9	101.1	92.6	109.5	101.9	93.5	112.4	104.6	96.4
	SHC	50.9	63.6	75.4	54.1	69.8	84.0	55.2	71.9	86.5	59.9	79.7	94.9
	KW	6.34	6.05	5.77	6.46	6.19	5.93	6.50	6.25	5.96	6.62	6.37	6.09
85	TC	101.1	92.9	84.0	104.8	96.4	87.7	105.6	97.2	88.5	107.7	99.6	92.2
	SHC	49.4	62.0	73.3	53.1	68.4	81.9	54.4	70.6	84.4	58.5	78.2	92.0
	KW	6.80	6.51	6.21	6.94	6.66	6.37	6.98	6.69	6.41	7.08	6.82	6.57
95	TC	96.6	87.7	78.9	99.9	91.0	82.4	100.5	91.6	83.6	102.3	93.9	87.7
	SHC	47.8	59.9	70.8	51.7	66.5	79.5	52.9	68.8	81.3	57.2	76.6	87.7
	KW	7.26	6.96	6.64	7.42	7.10	6.78	7.46	7.14	6.83	7.54	7.24	7.03
105	TC	91.0	82.1	72.96	93.7	85.2	76.8	94.3	85.9	78.2	96.6	87.9	83.0
	SHC	45.9	57.9	7.9	49.6	64.4	76.4	50.9	66.7	77.8	55.8	74.5	83.0
	KW	7.70	7.37	7.08	7.81	7.51	7.22	7.86	7.54	7.28	7.97	7.67	7.47
115	TC	85.2	76.0	67.9	47.8	62.2	71.6	88.1	79.7	73.1	90.2	81.7	78.2
	SHC	43.9	55.4	65.1	8.25	7.92	71.6	49.2	64.4	73.1	54.4	72.5	78.0
	KW	8.13	7.79	7.47	87.7	79.1	7.67	8.29	7.95	7.74	8.41	8.08	7.93

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.

- Direct interpolation is permissible. Do not extrapolate.
- 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
- 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	

Correction Factor = 1.10 x (1-BF) x (edb-80).

EXPANDED PERFORMANCE (COOLING) 10 TON (GROSS CAPACITY)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF								
		3000/0.095			4000/0.125			5000/0.15		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	135.8	124.8	112.0	142.4	130.6	119.8	146.5	134.2	123.7
	SHC	66.8	82.6	97.4	73.2	93.4	112.7	79.7	104.4	123.1
	KW	9.76	9.41	9.10	10.00	9.61	9.27	10.17	9.75	9.41
85	TC	130.0	119.6	104.0	136.0	125.0	114.5	140.0	127.9	118.8
	SHC	64.3	80.5	93.8	71.1	91.7	110.2	77.5	101.8	118.7
	KW	10.41	10.07	9.74	10.67	10.28	9.94	10.84	10.41	10.09
95	TC	124.1	113.7	96.7	129.5	118.9	106.9	132.8	122.0	114.1
	SHC	62.2	78.4	90.0	69.1	89.8	105.9	74.9	100.1	114.0
	KW	11.13	10.78	10.40	11.38	10.99	10.63	11.52	11.14	10.83
105	TC	118.1	104.6	87.9	122.7	111.8	98.5	126.0	115.1	108.0
	SHC	60.4	74.9	85.2	66.9	87.7	98.5	73.1	98.3	108.0
	KW	11.93	11.52	11.10	12.13	11.74	11.41	12.27	11.89	11.65
115	TC	115.0	98.0	84.2	120.0	103.8	93.4	122.6	109.8	102.8
	SHC	59.4	72.4	83.4	66.4	84.8	93.4	72.8	96.9	102.8
	KW	12.26	11.82	11.40	12.48	12.06	11.78	12.60	12.20	12.00

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) 12-1/2 TON – GROSS DATA

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF											
		3750/0.08			4500/0.09			5000/0.10			6250/0.12		
		Air Entering Evaporator — Ewb (F)											
		72	67	62	72	67	62	72	67	62	72	67	62
75	TC	175.6	162.2	149.2	181.0	167.5	154.2	182.9	170.2	156.4	187.2	174.7	161.8
	SHC	85.7	107.3	128.0	91.4	116.2	140.3	94.2	122.2	146.5	102.1	135.3	160.7
	KW	11.16	10.85	10.57	11.32	11.00	10.69	11.37	11.07	10.73	11.49	11.19	10.87
85	TC	169.3	155.7	140.6	174.2	160.7	147.0	176.9	163.0	149.7	181.5	167.3	155.8
	SHC	83.9	104.8	124.0	89.6	113.9	137.0	92.7	119.7	143.6	100.9	133.4	155.6
	KW	12.15	11.78	11.42	12.31	11.94	11.58	12.39	12.01	11.63	12.53	12.14	11.82
95	TC	161.9	148.9	132.0	166.8	153.5	139.1	169.5	155.7	142.8	173.2	159.5	149.6
	SHC	81.4	102.0	119.8	87.0	111.1	133.2	90.7	117.3	140.2	98.3	130.8	149.6
	KW	13.12	12.72	12.28	13.30	12.89	12.46	13.40	12.97	12.56	13.54	13.11	12.78
105	TC	154.9	141.3	123.0	158.8	145.4	130.2	160.9	147.6	135.0	165.3	151.2	143.2
	SHC	79.0	99.2	115.5	84.5	108.2	128.1	87.8	114.3	134.9	96.6	127.8	143.1
	KW	14.16	13.66	13.17	14.31	13.82	13.35	14.38	13.91	13.48	14.58	14.07	13.77
115	TC	146.2	132.2	113.1	150.5	137.0	122.4	152.3	139.4	127.8	155.2	142.7	136.0
	SHC	76.1	95.7	110.3	81.7	105.2	122.3	85.0	111.6	127.7	92.9	125.0	135.8
	KW	15.09	14.57	14.07	15.30	14.76	14.25	15.37	14.87	14.43	15.49	15.02	14.73

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.

- Direct interpolation is permissible. Do not extrapolate.
- 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
- 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	

Correction Factor = 1.10 x (1-BF) x (edb-80).

CIRCULATING BLOWER PERFORMANCE – PAS072 – Standard Motor (Belt Drive)* (Horizontal Discharge)

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
1800	823	458	924	579	1015	712	1099	857	1177	1013	1250	1181	1319	1360	1385	1549	1448	1748	1508	1957
1900	857	525	955	650	1043	787	1125	936	1201	1096	1273	1266	1341	1447	1405	1638	1467	1839	1527	2050
2000	892	599	986	729	1072	870	1151	1022	1226	1185	1296	1359	1363	1542	1427	1736	1488	1939	-	-
2100	927	680	1017	815	1101	960	1178	1116	1251	1283	1320	1459	1386	1646	1448	1842	1508	2047	-	-
2200	962	769	1050	909	1131	1059	1206	1218	1277	1389	1345	1568	1409	1758	1471	1956	-	-	-	-
2300	997	865	1082	1010	1161	1165	1235	1329	1304	1503	1371	1686	1434	1878	1494	2080	-	-	-	-
2400	1033	970	1115	1120	1192	1279	1264	1448	1332	1625	1397	1812	1459	2008	-	-	-	-	-	-
2500	1069	1084	1149	1239	1223	1403	1293	1576	1360	1757	1424	1948	-	-	-	-	-	-	-	-
2600	1106	1206	1183	1367	1255	1535	1323	1713	1389	1898	1451	2093	-	-	-	-	-	-	-	-
2700	1142	1338	1217	1503	1287	1677	1354	1859	1418	2049	-	-	-	-	-	-	-	-	-	-
2800	1179	1480	1251	1650	1320	1829	1385	2015	-	-	-	-	-	-	-	-	-	-	-	-
2900	1216	1632	1286	1807	1353	1991	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3000	1253	1794	1321	1975	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEGEND

Watts = Input Watts to motor.

* Motor drive range: 1070 to 1460 rpm. All other rpms require a field-supplied drive.

Maximum continuous bhp is 2.40.

CIRCULATING BLOWER PERFORMANCE – PAS090 – Standard Motor (Belt Drive)* (Horizontal Discharge)

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
2250	465	459	555	621	629	786	694	959	752	1138	806	1326	855	1521	902	1723	946	1932	988	2148
2300	471	483	560	648	634	817	698	992	757	1174	81	1363	859	1561	906	1765	950	1976	991	2194
2400	483	534	570	705	644	880	708	1061	765	1248	818	1443	868	1644	914	1853	958	2068	-	-
2500	495	588	581	767	653	948	717	1134	774	1327	827	1527	876	1733	922	1946	966	2165	-	-
2550	501	617	586	799	658	983	722	1173	779	1368	832	1570	880	1779	926	1994	970	2215	-	-
2600	507	647	592	832	663	1020	727	1212	784	1410	836	1615	885	1826	931	2043	-	-	-	-
2700	519	709	603	902	674	1096	736	1294	793	1498	845	1708	893	1923	939	2146	-	-	-	-
2800	532	775	614	976	684	1176	746	1381	802	1590	854	1805	902	2026	-	-	-	-	-	-
2900	544	846	625	1054	694	1261	756	1472	812	1687	863	1907	911	2134	-	-	-	-	-	-
3000	557	922	637	1137	705	1351	766	1568	821	1789	872	2015	-	-	-	-	-	-	-	-
3100	570	1002	648	1224	716	1445	776	1669	831	1896	882	2127	-	-	-	-	-	-	-	-
3200	582	1087	660	1317	727	1545	786	1774	841	2008	-	-	-	-	-	-	-	-	-	-
3300	595	1177	671	1414	738	1649	797	1885	851	2125	-	-	-	-	-	-	-	-	-	-
3400	608	1271	683	1517	749	1759	807	2002	-	-	-	-	-	-	-	-	-	-	-	-
3500	622	1372	695	1625	760	1874	818	2124	-	-	-	-	-	-	-	-	-	-	-	-
3600	635	1477	707	1738	771	1995	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3700	648	1588	720	1857	783	2121	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3750	655	1646	726	1918	788	2187	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEGEND

Watts = Input Watts to motor.

* Motor drive range: 590 to 840 rpm. All other rpms require a field-supplied drive.

Maximum continuous bhp is 2.40.

CIRCULATING BLOWER PERFORMANCE - PAS120 - Standard Motor (Belt Drive) (Horizontal Discharge)

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
3000	484	506	562	625	630	752	691	888	747	1035	798	1191	846	1357	892	1534	935	1719	976	1915
3100	494	550	571	672	638	802	699	941	754	1089	805	1247	853	1415	898	1592	941	1779	982	1974
3200	505	597	581	723	647	855	706	996	761	1146	812	1306	859	1476	904	1654	947	1842	987	2038
3300	516	647	590	776	655	911	714	1055	768	1207	819	1369	866	1539	911	1719	953	1908	994	2106
3400	526	699	600	832	664	970	722	1116	776	1271	826	1434	873	1606	917	1788	959	1978	-	-
3500	537	755	609	891	673	1032	731	1181	784	1338	833	1503	880	1677	924	1860	966	2051	-	-
3600	548	813	619	953	682	1097	739	1249	792	1408	841	1576	887	1751	931	1936	-	-	-	-
3700	559	875	629	1018	691	1166	747	1320	799	1482	848	1651	894	1829	938	2015	-	-	-	-
3800	571	940	639	1087	700	1237	756	1395	808	1559	856	1731	901	1911	945	2098	-	-	-	-
3900	582	1008	649	1158	709	1313	765	1473	816	1640	864	1814	909	1995	-	-	-	-	-	-
4000	593	1080	659	1234	719	1391	773	1554	824	1724	872	1900	916	2084	-	-	-	-	-	-
4100	604	1155	669	1312	728	1473	782	1639	832	1811	880	1991	-	-	-	-	-	-	-	-
4200	616	1233	680	1395	738	1559	791	1728	841	1903	888	2085	-	-	-	-	-	-	-	-
4300	627	1316	690	1481	747	1648	800	1821	850	1999	-	-	-	-	-	-	-	-	-	-
4400	639	1402	701	1570	757	1741	809	1917	858	2098	-	-	-	-	-	-	-	-	-	-
4500	650	1492	711	1664	767	1839	819	2017	-	-	-	-	-	-	-	-	-	-	-	-
4600	662	1585	722	1762	777	1940	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4700	674	1683	733	1863	787	2045	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4800	685	1785	744	1969	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4900	697	1891	754	2078	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5000	709	2001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEGEND

Watts = Input Watts to motor.

* Motor drive range: 685 to 935 rpm. All other rpms require a field-supplied drive.

Maximum continuous bhp is 2.40.

CIRCULATING BLOWER PERFORMANCE - PAS150 - Standard Motor (Belt Drive) (Horizontal Discharge)

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
3700	614	929	673	1095	728	1267	781	1445	832	1629	881	1816	928	2010	974	2207	1019	2409	1062	2615
3800	628	997	685	1167	739	1343	791	1525	841	1712	889	1904	936	2100	981	2302	1025	2507	1068	2716
3900	641	1069	697	1243	750	1423	801	1608	850	1799	898	1995	944	2195	988	2399	1032	2608	1074	2821
4000	655	1144	709	1322	761	1506	812	1695	860	1890	907	2089	952	2293	996	2501	1038	2713	1080	2930
4100	668	1223	722	1405	773	1593	822	1786	870	1984	916	2187	960	2395	1004	2607	1046	2822	1087	3042
4200	682	1305	734	1492	784	1683	833	1880	880	2082	925	2289	969	2500	1011	2716	1053	2935	1094	3159
4300	696	1392	747	1582	796	1777	844	1979	890	2184	934	2395	978	2610	1020	2828	1061	3052	1101	3279
4400	710	1482	760	1677	808	1876	855	2081	900	2290	944	2504	986	2723	1028	2946	1068	3173	1108	3403
4500	723	1577	773	1775	820	1978	866	2187	910	2400	954	2618	996	2840	1037	3067	1076	3297	-	-
4600	737	1675	785	1877	832	2085	877	2297	921	2514	963	2736	1005	2962	1045	3192	1085	3426	-	-
4700	751	1778	798	1984	844	2195	889	2412	932	2633	974	2858	1014	3088	1054	3322	-	-	-	-
4800	765	1885	812	2095	856	2310	900	2531	942	2756	984	2985	1024	3219	-	-	-	-	-	-
4900	779	1996	825	2210	869	2430	912	2654	953	2883	994	3116	1034	3353	-	-	-	-	-	-
5000	793	2112	838	2330	881	2554	923	2782	965	3014	1005	3251	-	-	-	-	-	-	-	-
5100	807	2232	851	2455	894	2682	935	2914	976	3150	1015	3391	-	-	-	-	-	-	-	-
5200	821	2357	864	2584	906	2815	947	3050	987	3292	-	-	-	-	-	-	-	-	-	-
5300	835	2487	878	2718	919	2953	959	3193	999	3437	-	-	-	-	-	-	-	-	-	-
5400	850	2622	891	2856	932	3096	971	339	-	-	-	-	-	-	-	-	-	-	-	-
5500	864	2762	905	3000	945	3242	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5600	878	2906	918	3148	958	3396	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5700	892	3055	932	3302	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5800	907	3211	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5900	921	3370	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

LEGEND

Watts = Input Watts to motor.

* Motor drive range: 860 to 1080 rpm. All other rpms require a field-supplied drive.

Maximum continuous bhp is 3.70.

PAS Series PERFORMANCE DATA (CONT.)

Evaporator-Fan Motor Efficiency	
PAS	Motor Efficiency (%)
072	84
090-150	80

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.

EVAPORATOR-FAN MOTOR PERFORMANCE

Unit PAS	Evaporator-Fan Motor	Unit Voltage	Max. Acceptable Continuous BHP*	Max. Acceptable Operating Watts	Max. AMP Draw
072	Standard	208/230	2.40	2120	6.7
		460			3.0
090	Standard	208/230	2.40	2120	6.7
		460			3.0
120	Standard	208/230	2.40	2120	6.7
		460			3.0
150	Standard	208/230	3.70	3313	12.2
		460			5.5

LEGEND

BHP = Brake Horsepower

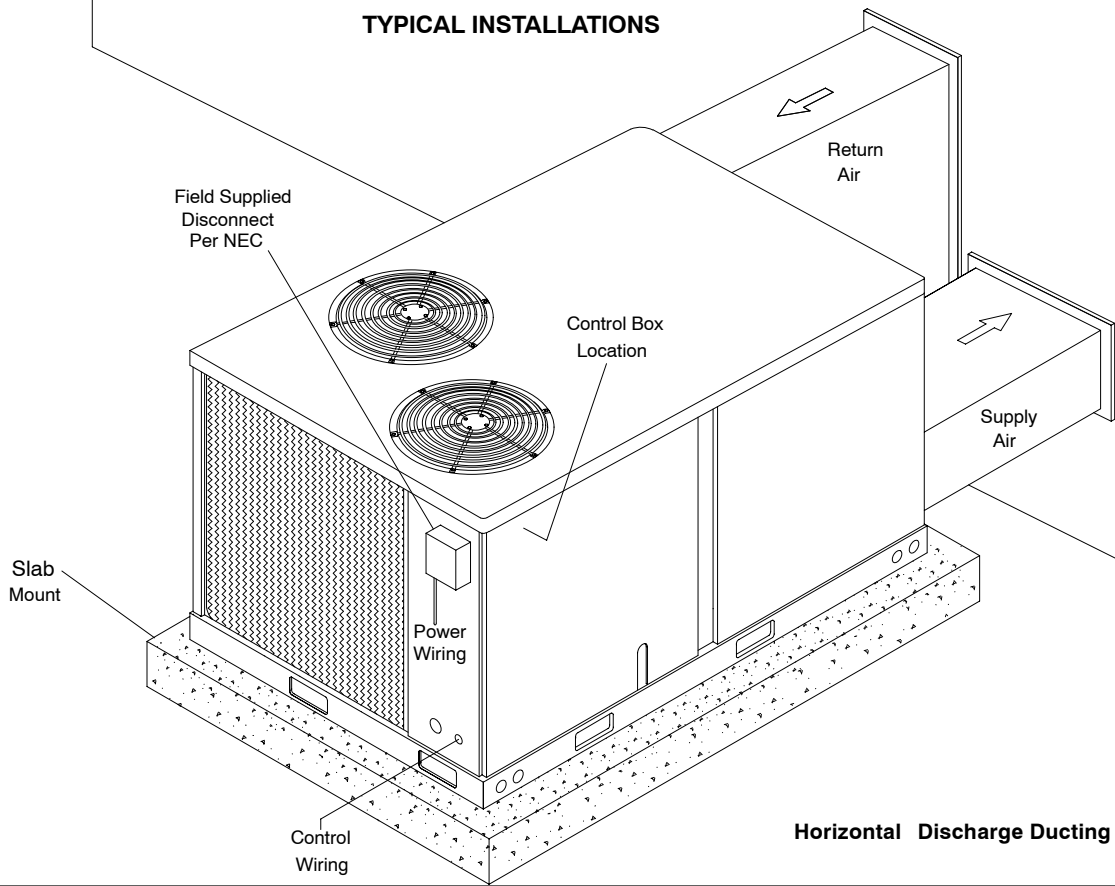
* Extensive motor and electrical testing on these units ensures that the full horsepower range of the motors can be utilized with confidence. Using your

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.

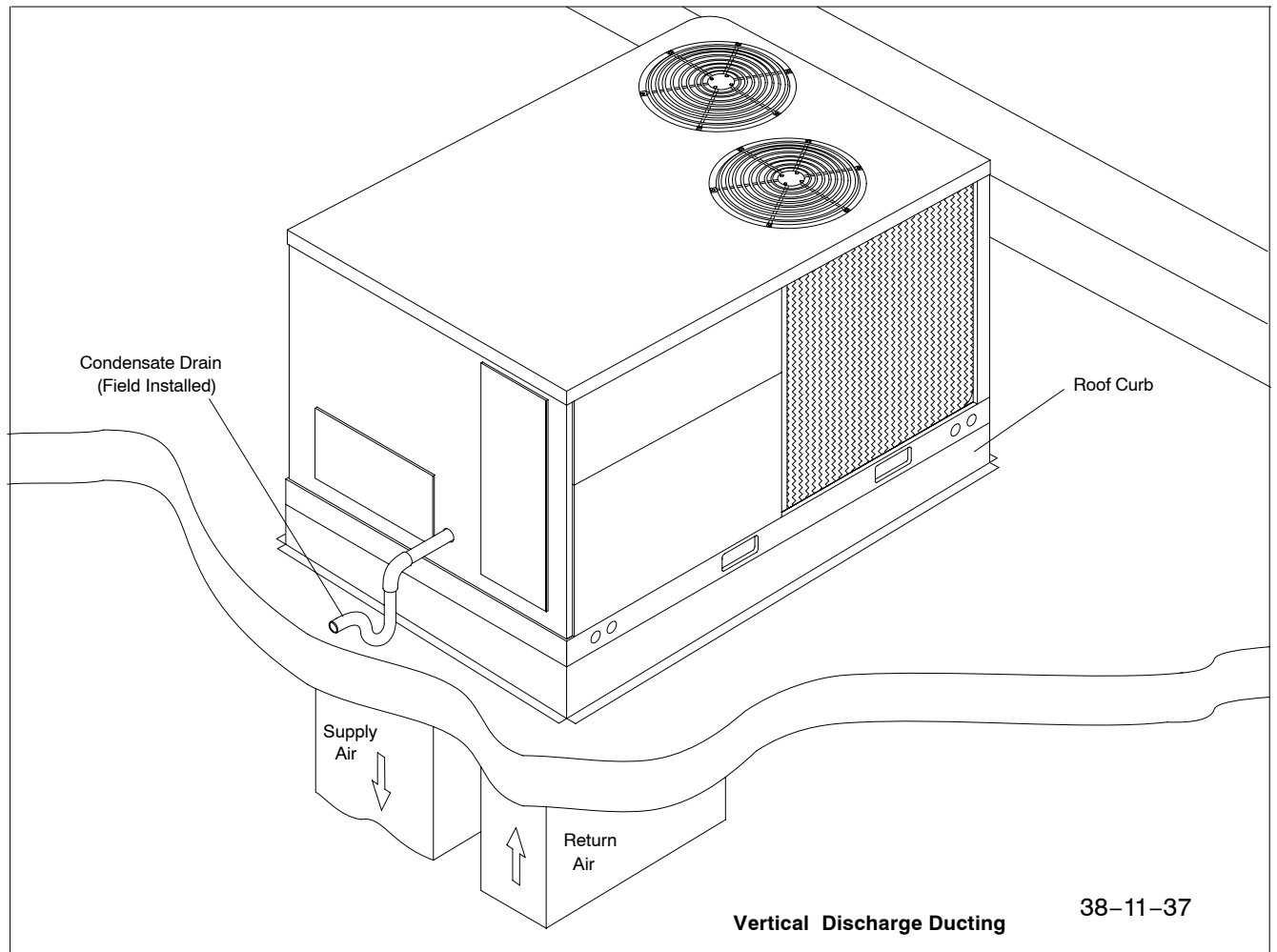
FAN RPM MOTOR PULLEY SETTINGS

Unit PAS	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
072	1460	1421	1382	1343	1304	1265	1226	1187	1148	1109	1070	-	-
090	840	815	790	765	740	715	690	665	635	615	590	-	-
120	935	910	885	860	835	810	785	760	735	710	685	-	-
150	1080	1060	1035	1015	990	970	950	925	905	880	860	-	-

TYPICAL INSTALLATIONS



Horizontal Discharge Ducting



Vertical Discharge Ducting

38-11-37

ACCESSORIES – PAS072

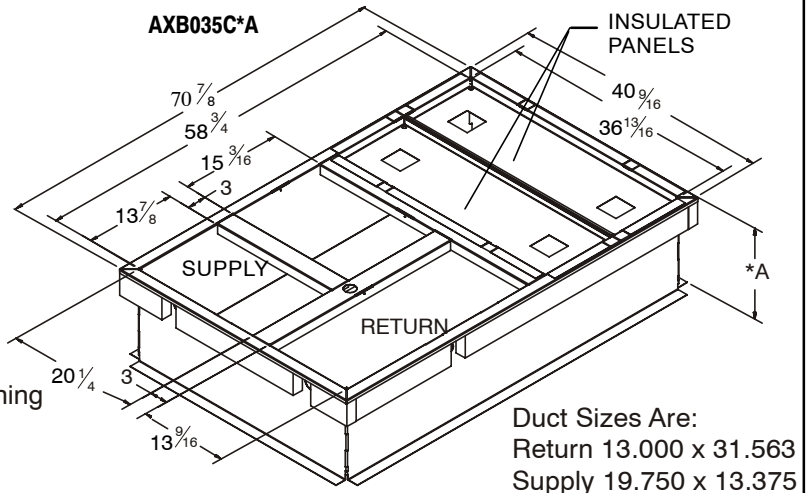
ROOF CURBS

Description	Model Number	Where Used
8" High *	AXB035CLA	072
14" High *	AXB035CMA	072
24" High *	AXB035CHA	072

CURB ADAPTOR

Description	Model Number	Where Used *
Curb Adaptor	AXB035CAA	072
Curb Adaptor With Duct	AXB035CBA	072

* Used with AXB030 curbs.



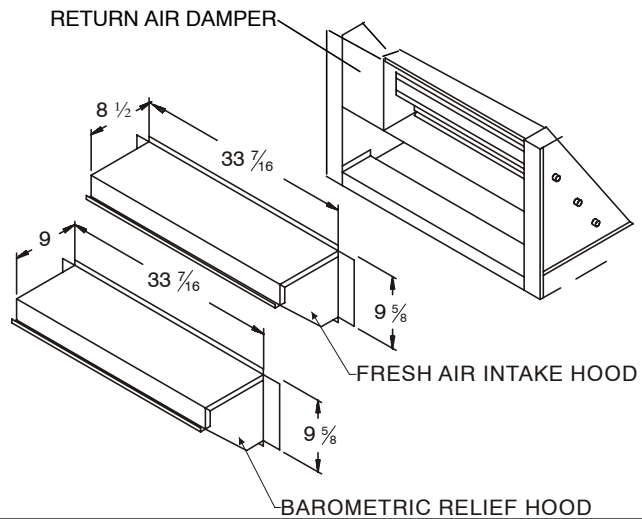
Roof Opening
37" Wide
40" Long

Duct Sizes Are:
Return 13.000 x 31.563
Supply 19.750 x 13.375

ECONOMIZER – DOWNFLOW

Description	Model Number	Where Used
Fully Modulating	AXB035EMA	072
Three Position	AXB035EPA	072

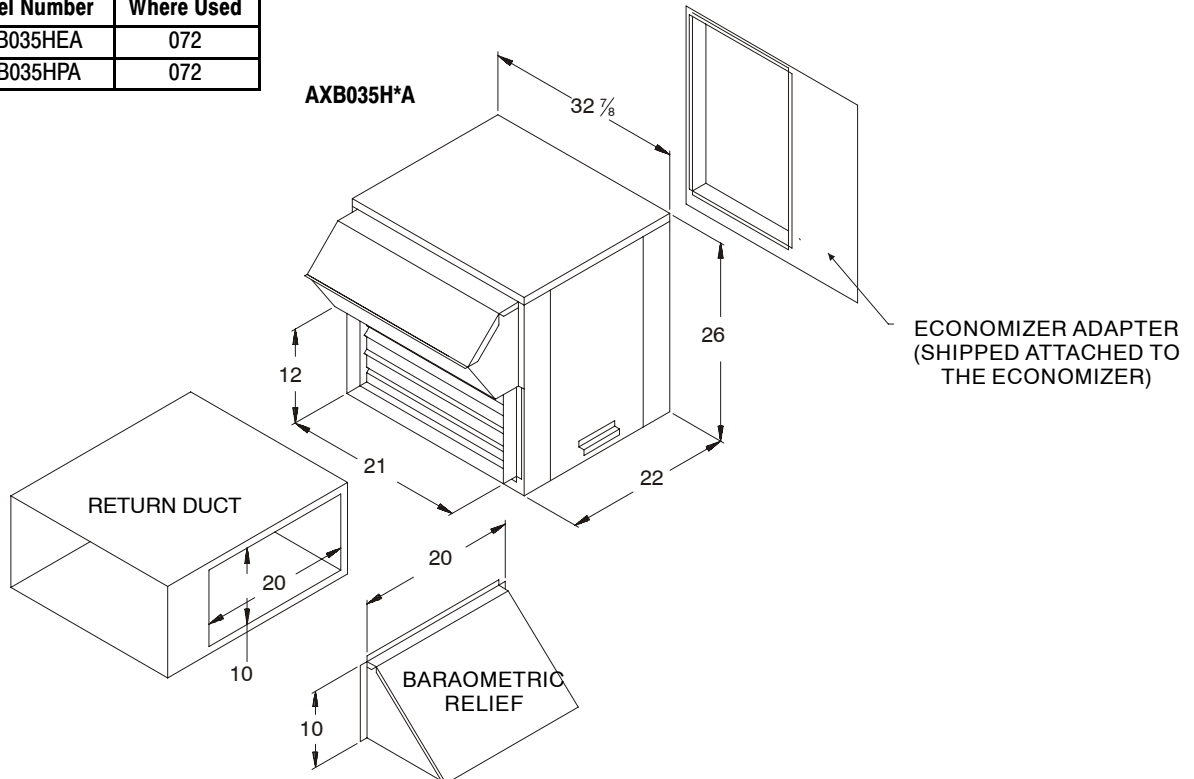
AXB035E*A



ECONOMIZER – HORIZONTAL

Description	Model Number	Where Used
Fully Modulating	AXB035HEA	072
Three Position	AXB035HPA	072

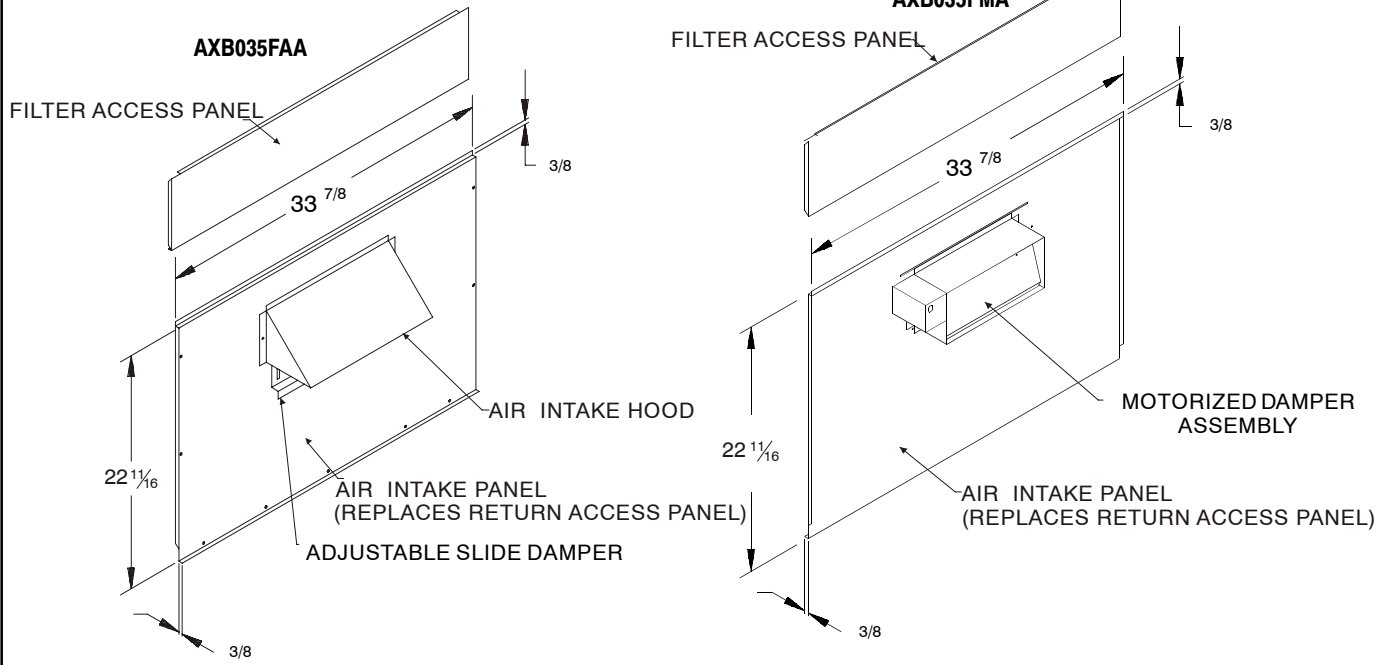
AXB035H*A



ACCESSORIES: PAS072 (CONT.)

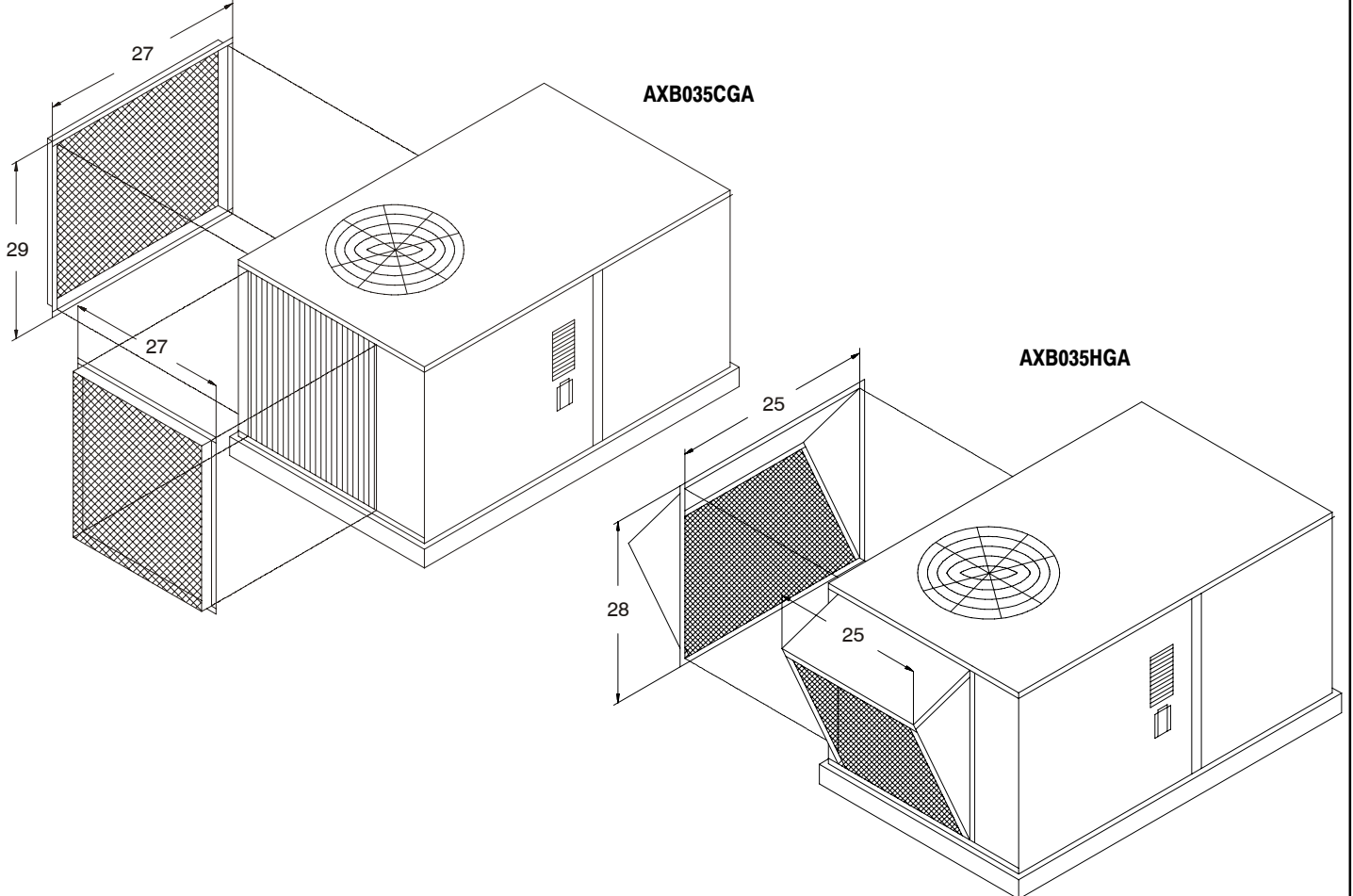
FRESH AIR DAMPER

Description	Model Number	Where Used
Manual	AXB035FAA	072
Motorized	AXB035FMA	072



COIL PROTECTION

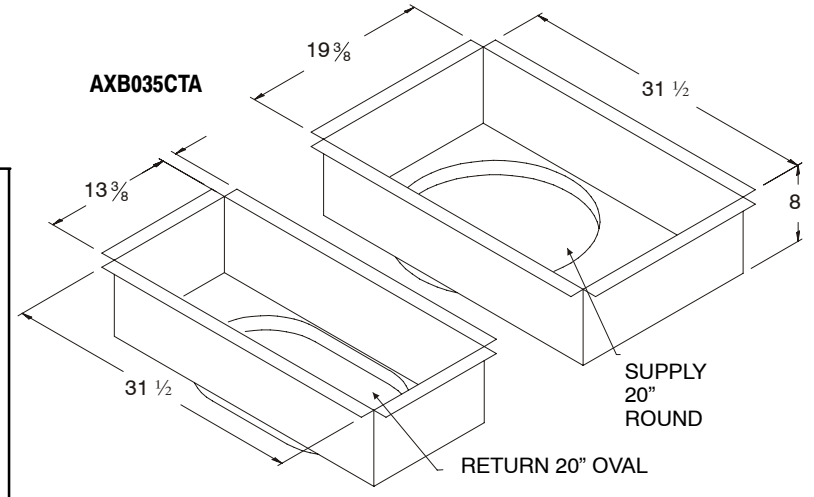
Description	Model Number	Where Used
Coil Guard	AXB035CGA	072
Hail Guard	AXB035HGA	072



ACCESSORIES: PAS072 (CONT.)

CONCENTRIC DUCT KIT

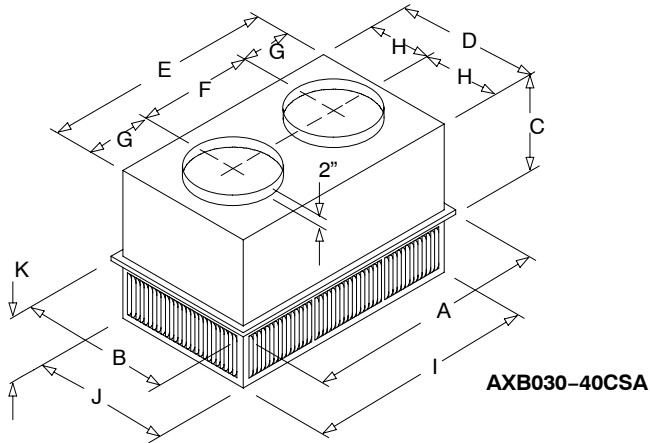
Description	Model Number	Where Used
20" Round.	AXB035CTA	072



PERFORMANCE DATA ON NEXT PAGE

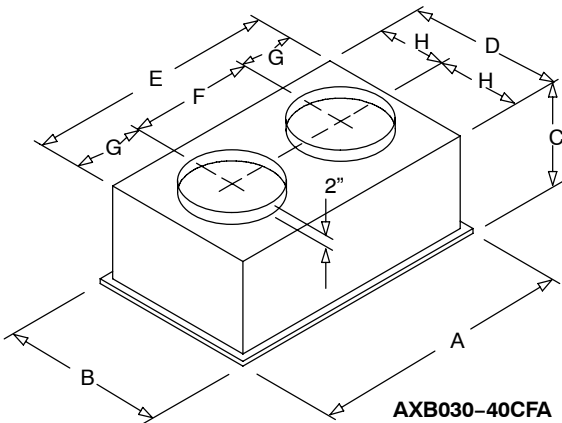
CONCENTRIC DIFFUSER

Description	Model Number	Used With
Flush Mount	AXB030CFA	072
Flush Mount	AXB040CFA	072
Step Down	AXB030CSA	072
Step Down	AXB040CSA	072



CONCENTRIC DIFFUSER (Step Down)

Model Number	A	B	C	D	E	F	G	H	I	J	K	Duct Size
AXB030CSA	47-5/8	23-5/8	11-3/8	21-1/2	45-1/2	22-1/2	11-1/2	10-3/4	45-1/2	21-1/2	7-1/8	18" RD
AXB040CSA	47-5/8	29-5/8	14-3/8	27-1/2	45-1/2	22-1/2	11-1/2	13-3/4	45-1/2	27-1/2	8-1/8	20" RD



CONCENTRIC DIFFUSER (Flush Mount)

Model Number	A	B	C	D	E	F	G	H	Duct Size
AXB030CFA	47-5/8	23-5/8	13-1/2	21	45	22-1/2	11-1/4	10-1/2	18" RD
AXB040CFA	47-5/8	29-5/8	16-5/8	27	45	22-1/2	11-1/4	13-1/2	20" RD

ACCESSORIES: PAS072 (CONT.)

CSA SERIES STEP-DOWN PERFORMANCE

Part No. AXB	CFM	Static Pressure In. WC	Throw Feet	Neck / Jet Velocity FPM	db Sound Levels
030CSA	1200	.17	11-18	421	20
	1400	.20	12-19	491	20
	1600	.24	12-20	561	20
	1800	.30	13-21	632	20
	2000	.36	14-23	702	20
	2200	.40	16-25	772	20
040CSA	2600	.17	24-29	669	20
	2800	.20	25-30	720	25
	3000	.25	27-33	772	25
	3200	.31	28-35	823	25
	3400	.37	30-37	874	30

LOW AMBIENT KIT

Model Number	Used With
AXB035LAA	072

THRU-THE-BASE POWER KIT

Model Number	Used With
AXB035PKA	072

POWER EXHAUST

Description	Model Number	Where Used
208/230 Volt	AXB035PEH	072
460 Volt	AXB035PEL	072

CFA SERIES FLUSH MOUNT PERFORMANCE

Part No. AXB	CFM	Static Pressure In. WC	Throw Feet	Neck Velocity FPM	Jet Velocity FPM	db Sound Level
030CFA	1000	.14	15-20	391	694	20
	1200	.17	16-22	469	833	25
	1400	.20	17-24	547	972	30
	1600	.24	18-25	625	1111	30
	1800	.30	20-28	703	1250	35
	2000	.36	21-29	781	1389	40
	2200	.40	22-30	859	1528	40
040CFA	2600	.17	19-24	663	1294	30
	2800	.20	20-28	714	1393	35
	3000	.25	21-29	765	1492	35
	3200	.31	22-29	816	1592	40
	3400	.37	22-30	867	1692	40

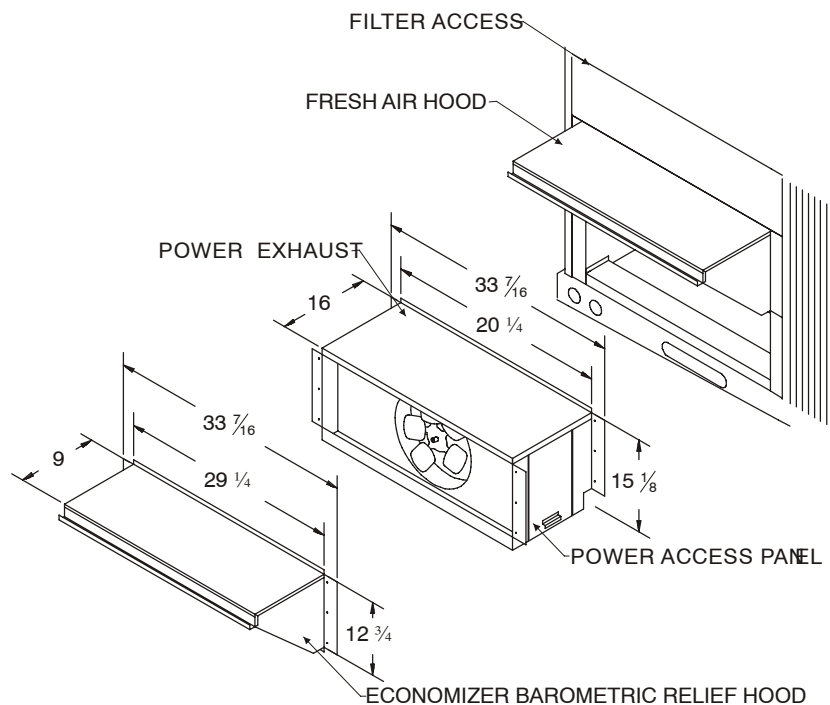
CSA/CFA NOTES:

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.

POWER EXHAUST PERFORMANCE DATA

Model	Volt/Phase/Hertz	Motor			Unit									
		Qty	HP	RPM	Cir. Qty	LRA	FLA	MCA	Fuse Size	@0.0		@0.3		
										CFM	RPM	CFM	RPM	
AXB035PEH	208-230/1/60	1	1	1725	1	10.2	4.3	5.4	10	2400	1725	2100	1725	
AXB035PEL	460/1/60	1	1	1625	1	4.1	1.7	2.2	4	2300	625	2000	1625	
AXB035PES	575/1/60	1	1	1625	1	4.1	1.7	2.2	4	2300	1625	2000	1625	

NOTE: Power exhaust is wired single phase, drop third leg when installing.

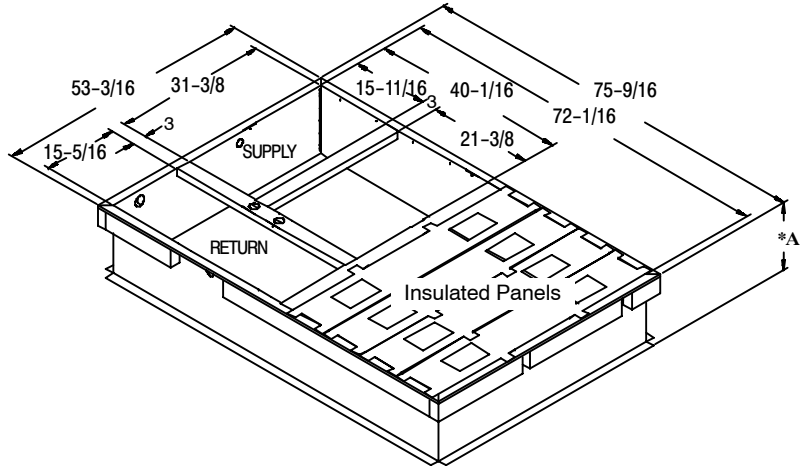


ACCESSORIES – PAS090 – 150

ROOF CURBS

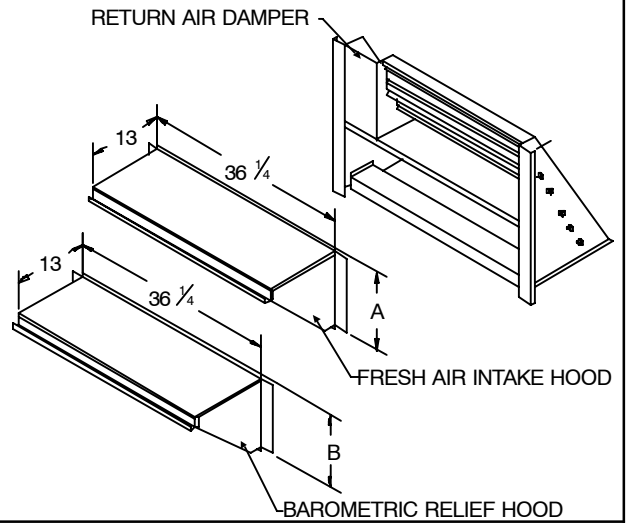
Description	Model Number	Where Used
8" High *	AXB045CLA	090, 120, 150
14" High *	AXB045CMA	090, 120, 150
24" High *	AXB045CHA	090, 120, 150

* A Dimension



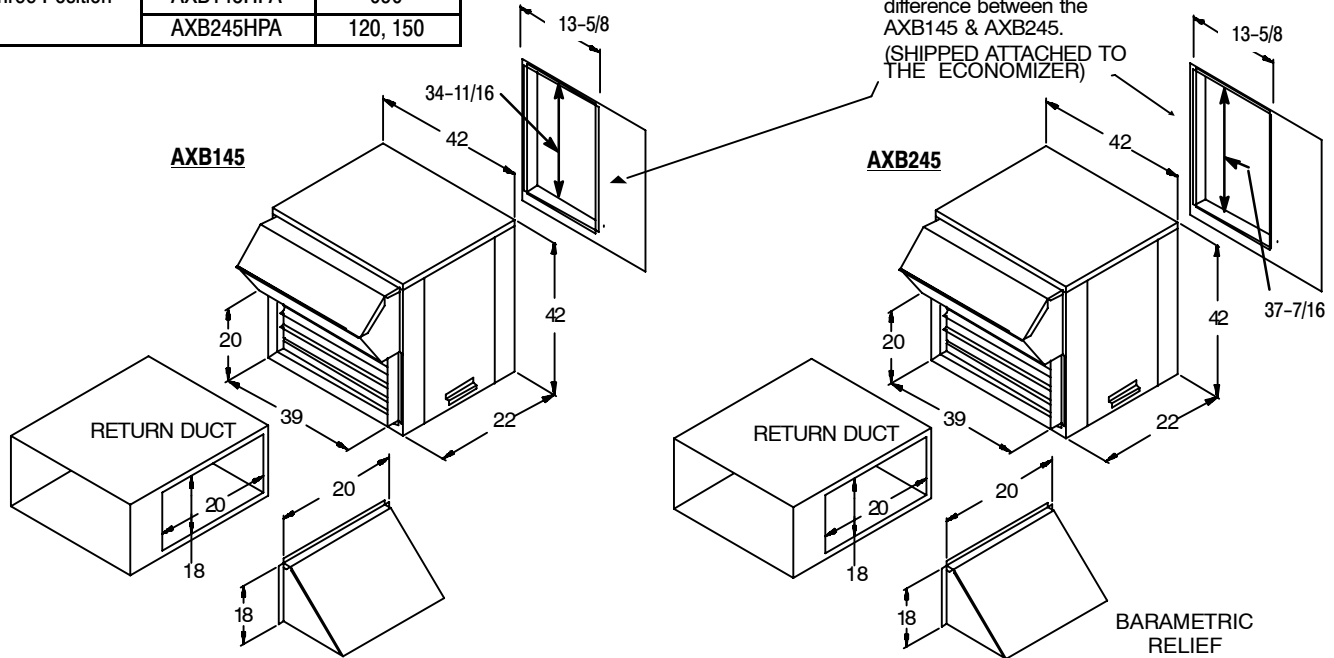
ECONOMIZER – DOWNFLOW

Description	Model Number	A Dimension	B Dimension	Where Used
Fully Modulating	AXB145EMA	13-3/4"	12-3/4"	090
	AXB245EMA	16-1/2"	17-3/4"	120, 150
Three Position	AXB145EPA	13-3/4"	12-3/4"	090
	AXB245EPA	16-1/2"	17-3/4"	120, 150



ECONOMIZER – HORIZONTAL

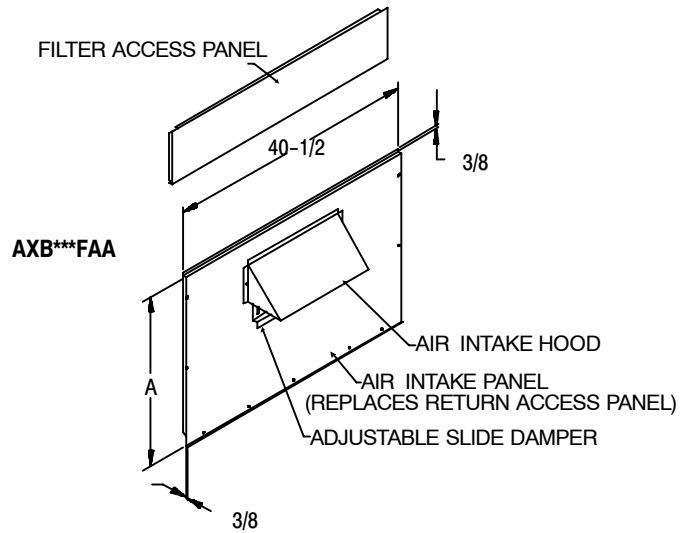
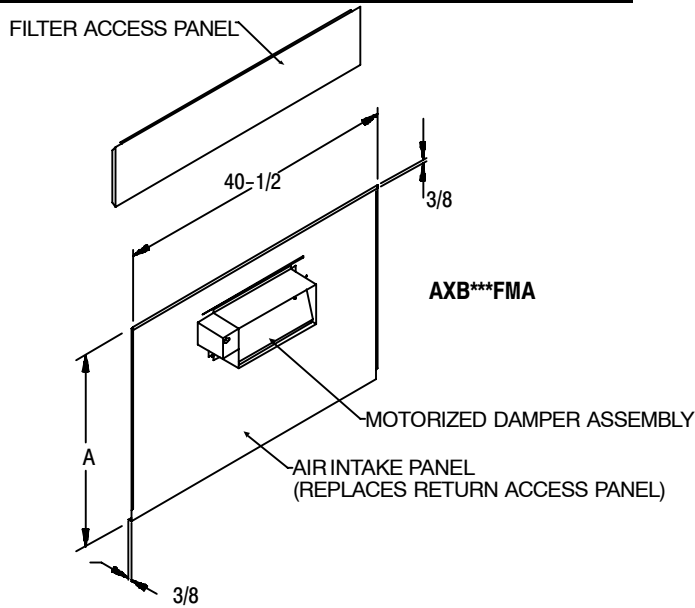
Description	Model Number	Where Used
Fully Modulating	AXB145HEA	090
	AXB245HEA	120, 150
Three Position	AXB145HPA	090
	AXB245HPA	120, 150



ACCESSORIES – PAS090 – 150 (CONT.)

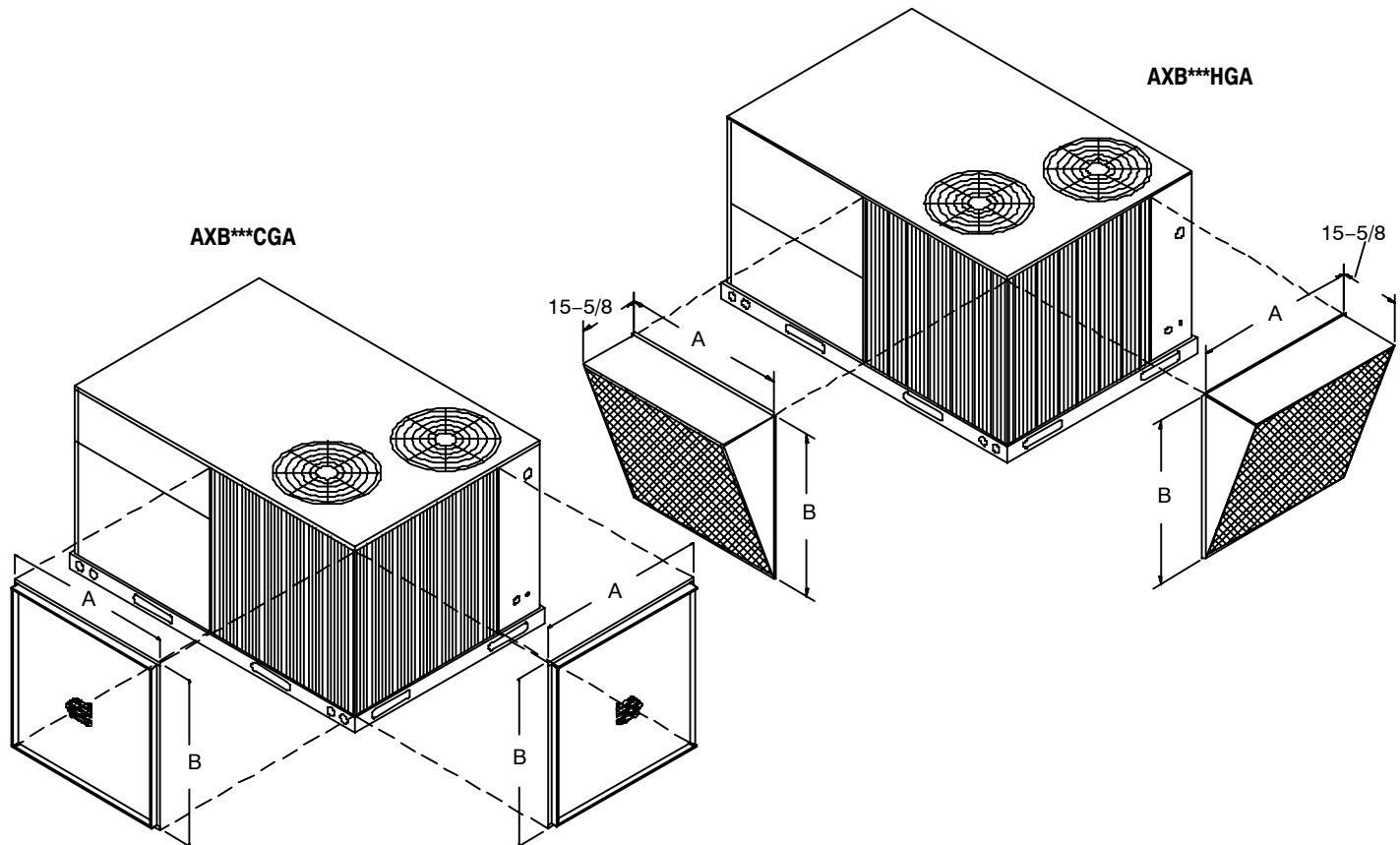
FRESH AIR DAMPER

Description	Model Number	A Dimension	Where Used
Manual	AXB145FAA	27-15/16	090
	AXB245FAA	32-1/2	120, 150
Motorized	AXB145FMA	27-15/16	090
	AXB245FMA	32-1/2	120, 150



COIL PROTECTION

Description	Model Number	Where Used	DIMENSIONS	
			A	B
Coil Guard	AXB145CGA	090	44	37
	AXB245CGA	120, 150	45-3/8	45
Hail Guard	AXB145HGA	090	42	36
	AXB245HGA	120, 150	43-3/8	44

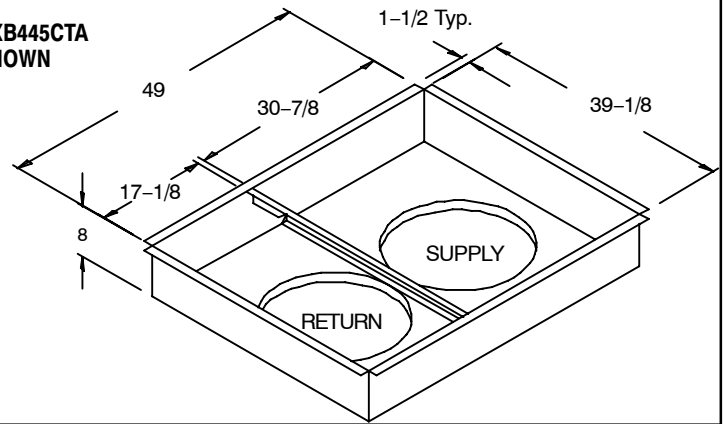


ACCESSORIES – PAS090 – 150 (CONT.)

CONCENTRIC DUCT KIT

Description	Model Number	Where Used
20" Round	AXB445CTA	090
18" x 28" Rect.	AXB545CTA	120
18" x 32" Rect.	AXB645CTA	150

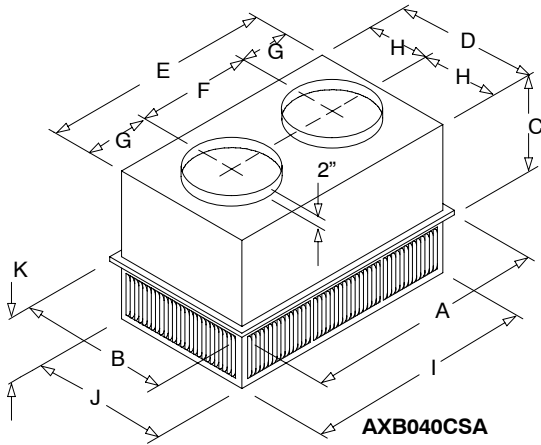
AXB445CTA
SHOWN



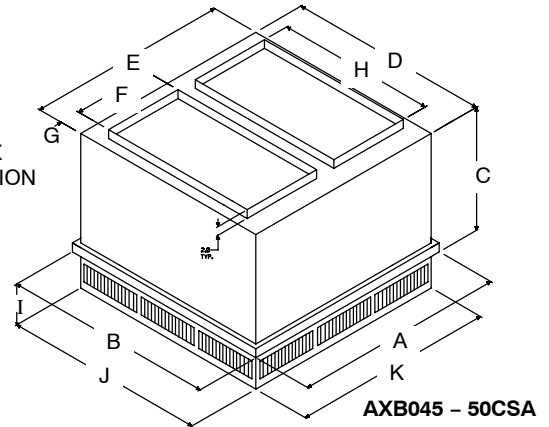
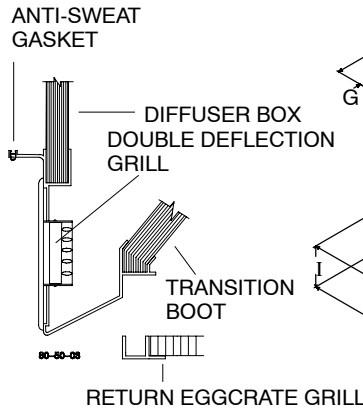
PERFORMANCE DATA ON NEXT PAGE

CONCENTRIC DIFFUSER

Description	Model Number	Used With
Flush Mount	AXB040CFA	AXB445CTA
Flush Mount	AXB045CFA	AXB545CTA
Flush Mount	AXB050CFA	AXB645CTA
Step Down	AXB040CSA	AXB445CTA
Step Down	AXB045CSA	AXB545CTA
Step Down	AXB050CSA	AXB645CTA



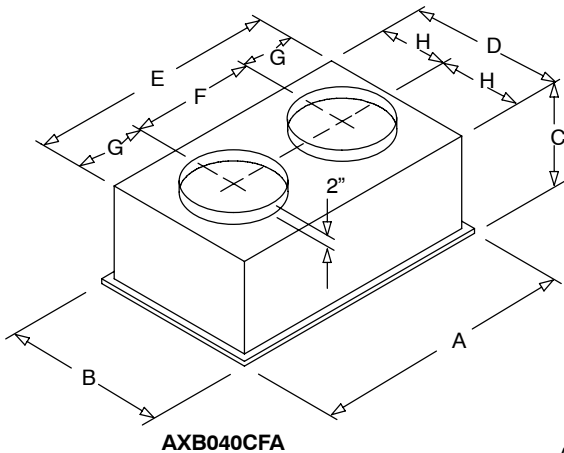
AXB040CSA



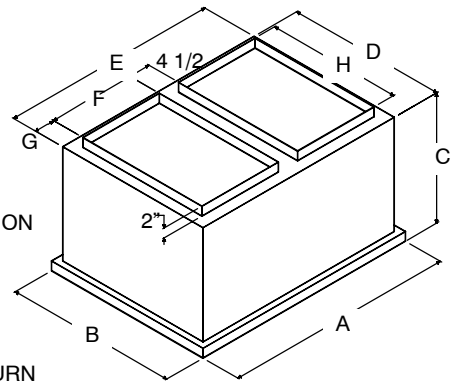
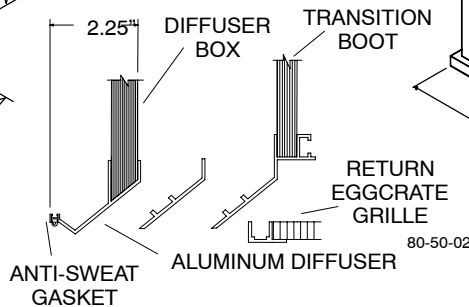
AXB045 - 50CSA

CONCENTRIC DIFFUSER (Step Down)

Model Number	A	B	C	D	E	F	G	H	I	J	K	Duct Size
AXB040CSA	47-5/8	29-3/8	14-3/8	27-1/2	45-1/2	22-1/2	11-1/2	13-3/4	45-1/2	27-1/2	8-1/8	20" RD
AXB045CSA	47-5/8	35-5/8	20-5/8	33-1/2	45-1/2	18	2-1/2	28	9-1/8	33-1/2	45-1/2	18 x 28
AXB050CSA	47-5/8	41-5/8	25-7/8	45-1/2	45-1/2	18	2-1/2	32	9-1/8	39-1/2	45-1/2	18 x 32



AXB040CFA



AXB045 - 50CFA

CONCENTRIC DIFFUSER (Flush Mount)

Model Number	A	B	C	D	E	F	G	H	Duct Size
AXB040CFA	47-5/8	29-5/8	16-5/8	27	45	22-1/2	11-1/4	13-1/2	20" RD
AXB045CFA	47-5/8	35-5/8	21-3/4	33	45	18	2-1/4	28	18 x 28
AXB050CFA	47-5/8	41-5/8	29-1/4	39	45	18	2-1/4	32	18 x 32

ACCESSORIES – PAS090 – 150 (CONT.)

CSA SERIES STEP-DOWN PERFORMANCE

Part No. AXB	CFM	Static Pressure In. WC	Throw Feet	Neck / Jet Velocity FPM	db Sound Levels
040CSA	2600	.17	24-29	669	20
	2800	.20	25-30	720	25
	3000	.25	27-33	772	25
	3200	.31	28-35	823	25
	3400	.37	30-37	874	30
045CSA	3600	.17	25-33	851	30
	3800	.18	27-35	898	30
	4000	.21	29-37	946	30
	4200	.24	32-40	993	30
	4400	.27	34-42	1040	30
050CSA	4400	.29	25-30	733	30
	4600	.31	26-31	767	30
	4800	.32	27-32	800	30
	5000	.34	28-33	833	30
	5200	.36	28-34	867	30
	5400	.39	29-35	900	30

LOW AMBIENT KIT

Model Number	Used With
AXB045LAA	090 - 150

THRU-THE-BASE POWER KIT

Model Number	Used With
AXB045PKA	090 - 150

With 1-1/4" Power and 3/4" Gas Connections.

POWER EXHAUST

Description	Model Number	Where Used
208/230 Volt	AXB145PEH	090
460 Volt	AXB145PEL	090
208/230 Volt	AXB245PEH	120, 150
460 Volt	AXB245PEL	120, 150

POWER EXHAUST PERFORMANCE DATA

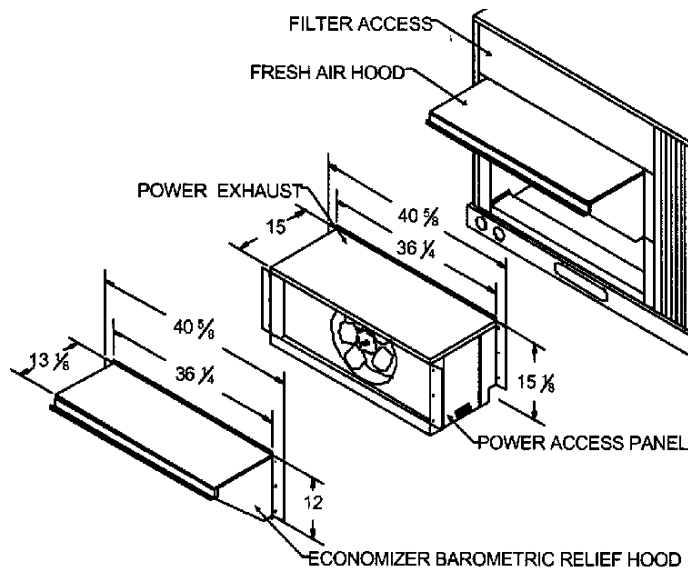
Model	Volt/Phase/Hertz	Motor					Unit											
		Qty	HP	RPM	Cir. Qty	LRA	FLA	MCA	Fuse Size	@0.0			@0.1			@0.3		
										CFM	RPM		CFM	CFM	RPM	CFM	CFM	RPM
AXB145PEH	208-230/1/60	1	1/2	1725	1	10.2	4.3	5.4	8	2400	1725	N/A	2100	1725				
AXB145PEL	460/1/60	1	1/2	1625	1	4.1	1.7	2.2	5	2300	1625	N/A	2000	1625				
AXB245PEH	208-230/1/60	1	3/4	1075	1	24.9	5.0	6.3	10	N/A	N/A	4800	N/A	N/A				
AXB245PEL	460/1/60	1	3/4	1075	1	N/A	2.2	2.8	5	N/A	N/A	4800	N/A	N/A				

CFA SERIES FLUSH MOUNT PERFORMANCE

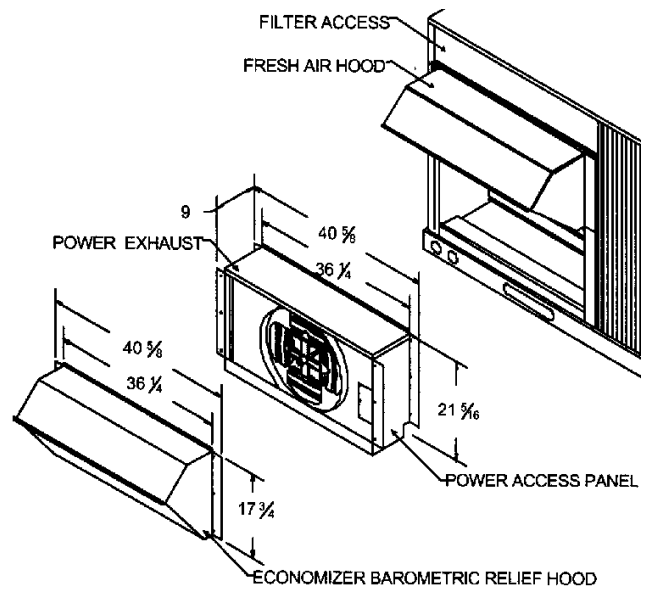
Part No. AXB	CFM	Static Pressure In. WC	Throw Feet	Neck Velocity FPM	Jet Velocity FPM	db Sound Level
040CFA	2600	.17	19-24	663	1294	30
	2800	.20	20-28	714	1393	35
	3000	.25	21-29	765	1492	35
	3200	.31	22-29	816	1592	40
	3400	.37	22-30	867	1692	40
	045CFA	3600	.17	22-29	844	1646
3800		.18	22-30	891	1737	40
4000		.21	24-33	938	1829	40
4200		.24	26-35	985	1920	40
4400		.27	28-37	1032	2011	40
050CFA		4600	.31	25-34	922	1795
	4800	.32	26-35	962	1873	40
	5000	.34	27-36	1002	1951	40
	5200	.36	30-39	1043	2029	45
	5400	.39	32-41	1083	2107	45

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.



POWER EXHAUST DOWNFLOW, MODEL AXB145***



POWER EXHAUST DOWNFLOW, MODEL AXB245***

PAS SERIES ELECTRICAL DATA – ELECTRIC HEAT ACCESSORY

Unit	Voltage	Qty	Model Number	Evap. Fan Motor FLA	Electric Heater *		Power Supply		Disconnect Size **		Single Point Kit Required
					Nominal kW	FLA	MCA	MOCP ***	FLA	LRA	
PAS072	208-3-60	1	AES007EHA	5.2	4.9	13.6	32.4	40	31	180	-
		1	AES009EHA		7.9	21.9	33.9	35	31		-
		1	AES015EHA		12	33.4	48.2	50	44		-
		1 ea.	AES009EHA, AES009EHA		15.8	43.8	61.2	70	56		AXB002SPA
		1 ea.	AES009EHA, AES015EHA		19.9	55.2	75.6	80	70		AXB002SPA
PAS072	230-3-60	1	AES007EHA	5.2	6.5	15.6	32.4	40	31	180	-
		1	AES009EHA		10.5	25.3	38.1	40	35		-
		1	AES015EHA		16	38.4	54.6	60	50		-
		1 ea.	AES009EHA, AES009EHA		21	50.5	69.6	70	64		AXB002SPA
		1 ea.	AES009EHA, AES015EHA		26.5	63.8	86.2	90	79		AXB002SPA
PAS072	460-3-60	1	AES006ELA	2.6	6	7.2	15.4	20	15	90	-
		1	AES011ELA		11.5	13.8	20.5	25	19		-
		1	AES013ELA		14	16.8	24.3	25	22		-
		1 ea.	AES011ELA, AES011ELA		23	27.7	37.8	40	35		-
		1 ea.	AES011ELA, AES013ELA		25.5	30.7	41.6	45	38		-
PAS090	208-3-60	1	AES010EHA	5.8	7.8	21.7	40.1	45	42	229	AXB006SPA
		1	AES016EHA		12.0	33.4	48.9	50	45		AXB006SPA
		1	AES024EHA		18.6	51.7	71.9	80	66		AXB007SPA
		1	AES032EHA		24.0	66.7	90.6	100	83		AXB007SPA
		1 ea.	AES032EHA, AES010EHA		31.9	88.4	117.7	125	108		AXB009SPA
PAS090	230-3-60	1	AES010EHA	5.8	10.4	25.0	40.1	45	42	229	AXB006SPA
		1	AES016EHA		16.0	38.5	55.4	60	51		AXB006SPA
		1	AES024EHA		24.8	59.7	81.8	90 #	75		AXB007SPA
		1	AES032EHA		32.0	77.0	103.5	110 #	95		AXB007SPA
		1 ea.	AES032EHA, AES010EHA		42.4	102.0	134.8	150 #	124		AXB009SPA
PAS090	460-3-60	1	AES014ELA	2.6	13.9	16.7	24.1	25	22	108	AXB006SPA
		1	AES016ELA		16.5	19.8	28.1	30	26		AXB006SPA
		1	AES027ELA		27.8	33.4	45.0	50	41		AXB006SPA
		1	AES033ELA		33.0	39.7	52.9	60	49		AXB006SPA
		1 ea.	AES014ELA, AES027ELA		41.7	50.2	65.9	70 #	61		AXB008SPA
PAS120	208-3-60	1	AES010EHA	5.8	7.8	21.7	43.1	50	45	307	AXB011SPA
		1	AES016EHA		12.0	33.4	48.9	60	45		AXB011SPA
		1	AES032EHA		24.0	66.7	90.6	100	83		AXB012SPA
		1 ea.	AES032EHA, AES010EHA		31.9	88.4	117.7	125	108		AXB015SPA
		1 ea.	AES032EHA, AES016EHA		37.5	104.2	137.5	150	127		AXB015SPA
PAS120	230-3-60	1	AES010EHA	5.8	10.4	25.0	43.1	50	45	307	AXB011SPA
		1	AES016EHA		16.0	38.5	55.4	60	51		AXB011SPA
		1	AES032EHA		32.0	77.0	103.5	110	95		AXB012SPA
		1 ea.	AES032EHA, AES010EHA		42.4	102.0	134.8	150	124		AXB015SPA
		1 ea.	AES032EHA, AES016EHA		50.0	120.3	127.5	150	145		AXB015SPA
PAS120	460-3-60	1	AES016ELA	2.6	16.5	19.8	28.1	30	26	152	AXB011SPA
		1	AES027ELA		27.8	33.4	45.0	50	41		AXB011SPA
		1	AES033ELA		33.0	39.7	52.9	60	49		AXB011SPA
		1 ea.	AES027ELA, AES014ELA		41.7	50.2	65.9	70	61		AXB014SPA
		1 ea.	AES033ELA, AES016ELA		50.0	60.1	63.4	70	72		AXB014SPA
PAS150	208-3-60	1	AES010EHA	10.6	7.8	21.7	65.2	80	68	383	AXB012SPA
		1	AES016EHA		12.0	33.4	65.2	70	68		AXB012SPA
		1	AES032EHA		24.0	66.7	96.6	100	89		AXB012SPA
		1 ea.	AES032EHA, AES010EHA		31.9	88.4	123.7	125	114		AXB015SPA
		1 ea.	AES032EHA, AES016EHA		37.5	104.2	143.5	150	132		AXB015SPA

PAS SERIES ELECTRICAL DATA – ELECTRIC HEAT ACCESSORY (CONT.)

Unit	Voltage	Qty	Model Number	Evap. Fan Motor FLA	Electric Heater *		Power Supply		Disconnect Size **		Single Point Kit Required
					Nominal kW	FLA	MCA	MOCP ***	FLA	LRA	
PAS150	230-3-60	1	AES010EHA	10.6	10.4	25.0	65.2	80	68	383	AXB012SPA
		1	AES016EHA		16.0	38.5	65.2	70	68		AXB012SPA
		1	AES032EHA		32.0	77.0	109.5	110	101		AXB012SPA
		1 ea.	AES032EHA, AES010EHA		42.4	102.0	140.8	150	129		AXB015SPA
		1 ea.	AES032EHA, AES016EHA		50.0	120.3	133.5	150	151		AXB015SPA
PAS150	460-3-60	1	AES016ELA	4.8	16.5	19.8	30.8	40	31	192	AXB011SPA
		1	AES027ELA		27.8	33.4	47.8	50	44		AXB011SPA
		1	AES033ELA		33.0	39.7	55.6	60	51		AXB011SPA
		1 ea.	AES027ELA, AES014ELA		41.7	50.2	68.7	70	63		AXB014SPA
		1 ea.	AES033ELA, AES018ELA		50.0	60.1	66.1	80	75		AXB014SPA

ACCESSORY STATIC PRESSURE (in. wg)

Component	CFM									
	2250	2500	3000	3500	4000	4500	5000	5500	6000	6250
1 Heater Module	0.02	0.03	0.05	0.07	0.08	0.10	0.12	0.14	0.16	0.17
2 Heater Modules	0.03	0.05	0.07	0.09	0.12	0.14	0.16	0.19	0.21	0.20

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	550	575	600
240 Volt	0.751	0.918	1.000							
480 Volt				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

* 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 voltage, multiply 240v, 480v or 600v capacity by multipliers found in table at top of this page

** Used to determine minimum disconnect size per NEC.

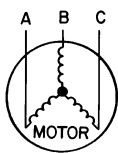
*** Fuse or HACR circuit breaker.

Fusing in the single point kit provides the required branch circuit protection.

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. 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.

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.

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

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

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

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 company immediately.



CONTROLS

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, compressor no. 1 and condenser fans start. The liquid line solenoid valve for compressor no. 1 is deenergized to open. The condenser–fan motor runs continuously while unit is cooling. On 090–150 units, if the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts.

When the thermostat is satisfied, C1 and C1 are deenergized and the compressors and outdoor (condenser) fan motors (OFM) shut off. After a 30–second delay, the indoor (evaporator) fan motor (IFM) shuts off. If the thermostat fan selector switch is in the ON position, the evaporator–fan motor will run continuously.

APPLICATION DATA

- 1. OUTDOOR INSTALLATION** — Units approved for outdoor installation only.
- 2. DUCTWORK** — Secure vertical discharge ductwork to roofcurb. For horizontal discharge applications, either attach ductwork to unit, or use field–supplied flanges attached to the horizontal discharge openings and attach all ductwork to flanges.
- 3. HORIZONTAL DISCHARGE** — To convert from vertical discharge to horizontal discharge
 - Remove economizer or two–position damper to gain access to return duct opening.
 - Move the horizontal–discharge duct opening covers to the vertical discharge openings.
 - Rotate economizer or two–position damper 90 degrees.
 - Rotate the barometric relief damper 90 degrees.
 - Install block–off plate over the opening on the access panel.
- 4. THRU–THE–BOTTOM UTILITY CONNECTIONS** — For applications requiring thru–the–bottom connections, an accessory kit is required.
- 5. THERMOSTAT** — Use of 2–stage heating and cooling thermostats recommended for all units.
- 6. HEATING–TO–COOLING CHANGEOVER** — All units are automatic changeover from heating to cooling when automatic changeover thermostat and subbase are used.
- 7. AIRFLOW** — Units are draw–thru on cooling and blow–thru on heating.
- 8. MAXIMUM AIRFLOW** — To minimize the possibility of condensate blow–off from evaporator, airflow through units should not exceed 500 cfm/ton.

9. MINIMUM AIRFLOW — For cooling, minimum airflow is 300 cfm/ton.

10. MINIMUM AMBIENT COOLING OPERATING TEMPERATURE— The minimum temperature for standard units is 25° F.

11. MAXIMUM OPERATING OUTDOOR–AIR TEMPERATURE— For cooling, this temperature is 115° F.

12. INTERNAL UNIT DESIGN — Due to PAS's 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 note following each Fan Performance table can be utilized with confidence. Using PAS 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: PAS072 – 150

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.