



COMMERCIAL

PGE

Product Specifications

Ashrae 90.1 EFFICIENCY PACKAGE GAS / ELECTRIC UNIT - 178 to 232 MBtuh

REFRIGERATION CIRCUIT

- All models are equipped with high efficiency scroll compressor on each circuit.
- Dual, electrically and mechanically independent circuits.
- Refrigerant filter drier and evaporator freeze thermostat
- High and Low pressure switches for excellent compressor protection.

BUILT TO LAST

- Tubular, dimpled heat exchanger.
- Pre-painted galvanized steel cabinet for long life and quality appearance.
- Commercial strength base rails with built-in rigging capability.
- Non-corrosive, sloped condensate drain pan, meets ASHRAE 62-89.

EASY TO INSTALL AND SERVICE

- Combination gas heating and electric cooling, self contained for year-round comfort. Unit shipped ready for downflow applications with conversion to horizontal airflow accomplished with accessory horizontal discharge roof curb.
- Thru-the-base utility connections.
- Exclusive integrated gas control board with diagnostics.
- 25% Manual outside air damper.
- Direct-spark ignition systems.
- Two inch return air filters.

WARRANTY

- 10 Year limited heat exchanger warranty
- 5 Year compressor limited warranty
- 1 Year parts limited warranty



UNIT PERFORMANCE DATA

Model Number *	COOLING			HEATING		Unit Dimensions H X W X L	Unit Weight
	Rated Capacity BTUH	E.E.R	IPLV	Input (MBTUH) Std. Stage 2 / Stage 1	Efficiency (Steady State) (AFUE) Std.		
PGE180H275A	178,000	9.5	11.0	275,000 / 206,000	81	45" x 86-1/8" x 87-3/8"	1700
PGE180L275A	178,000	9.5	11.0	275,000 / 206,000	81	45" x 86-1/8" x 87-3/8"	1700
PGE180H360A	178,000	9.5	11.0	360,000 / 270,000	81	45" x 86-1/8" x 87-3/8"	1700
PGE180L360A	178,000	9.5	11.0	360,000 / 270,000	81	45" x 86-1/8" x 87-3/8"	1700
PGE180S360A	178,000	9.5	11.0	360,000 / 270,000	81	45" x 86-1/8" x 87-3/8"	1700
PGE210H275A	202,000	9.7	10.2	275,000 / 206,000	81	45" x 86-1/8" x 87-3/8"	1850
PGE210L275A	202,000	9.7	10.2	275,000 / 206,000	81	45" x 86-1/8" x 87-3/8"	1850
PGE210H360A	202,000	9.7	10.2	360,000 / 270,000	81	45" x 86-1/8" x 87-3/8"	1850
PGE210L360A	202,000	9.7	10.2	360,000 / 270,000	81	45" x 86-1/8" x 87-3/8"	1850
PGE210S360A	202,000	9.7	10.2	360,000 / 270,000	81	45" x 86-1/8" x 87-3/8"	1850
PGE240H275A	232,000	9.5	10.9	275,000 / 206,000	81	47-1/4" x 86-1/8" x 87-3/8"	1900
PGE240L275A	232,000	9.5	10.9	275,000 / 206,000	81	47-1/4" x 86-1/8" x 87-3/8"	1900
PGE240H360A	232,000	9.5	10.9	360,000 / 270,000	81	47-1/4" x 86-1/8" x 87-3/8"	1900
PGE240L360A	232,000	9.5	10.9	360,000 / 270,000	81	47-1/4" x 86-1/8" x 87-3/8"	1900
PGE240S360A	232,000	9.5	10.9	360,000 / 270,000	81	47-1/4" x 86-1/8" x 87-3/8"	1900

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

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MODEL NUMBER IDENTIFICATION GUIDE							
MODEL NUMBER	P	G	E	180	H	300	A
PRODUCT FAMILY Package Units							Sales Code
TYPE H= Heat Pump G = Gas/Electric A = Air Conditioner							GAS HEATING OPTIONS (BTUH) 275 = 275,000 360 = 360,000
DESIGN SERIES S = Standard Models E = Ashrae 90.1 Efficiency							VOLTAGE / PHASE / HERTZ H = 208/230-3-60 L = 460-3-60 S = 575-3-60
							COOLING CAPACITY (NOMINAL BTUH) 180 = 15 Ton 210 = 17-1/2 Ton 240 = 20 Ton

UNIT SPECIFICATIONS - MODELS						
COOLING	PGE180H	PGE180L	PGE180S	PGE210H	PGE210L	PGE210S
ARI Rated Capacity Btuh (Net)	178,000			202,000		
Nominal Tons	15			17-1/2		
Standard CFM	5250			6000		
EER	9.5			9.7		
IPLV	11.0			10.1		
Sound Rating (Bels)	8.8			8.8		
Base Unit Operating Weights (lbs)	1700			1850		
ELECTRICAL						
Volts/ 3 Phase/ 60Hertz	208/230	460	575	208/230	460	575
Voltage Range Min/Max	187 / 253	414 / 508	518 / 633	187 / 253	414 / 508	518 / 633
Power Supply MCA	82 / 82	41	31	87 / 87	44	34
Power Supply MOCP*	110 / 110	50	40	110 / 110	50	40
COMPRESSOR						
SCROLL / COPELAND						
Quantity...Model	1...ZR94KC / 1...ZR72KC			1...ZR108KC / 1...ZR94KC		
No. of Circuits	2			2		
RLA / LRA	Circuit #1	32.1 / 195	16.4 / 95	12.0 / 80	30.1 / 225	15.5 / 114
	Circuit #2	20.7 / 156	10.0 / 70	8.2 / 54	28.8 / 195	14.7 / 95
Oil (Oz.) per circuit	85, 60			106, 81		
REFRIGERATION TYPE						
R-22						
Expansion Device	TXV			TXV		
Operating Charge (lb. oz.) **	CKT 1 = 19-8 CKT 2 = 13-8			CKT 1 = 19-8 CKT 2 = 19-2		
CONDENSER FAN						
Propeller Type						
Nominal CFM	10,500			10,500		
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	0.75	1.7	0.8	0.75
CONDENSER COIL						
Cross Hatched 3/8 in. Copper Tubes, Aluminum Lanced						
Rows...Fin/In.	4...15			4...15		
Total Face Area (Sq. Ft..)	21.7			21.7		
EVAPORATOR COIL						
Cross Hatch 3/8 in. Copper Tubes, Aluminum Lanced, Face Split						
Rows...Fins/Inche	4...15			4...15		
Total Face Area (sq. ft.)	17.5			17.5		
EVAPORATOR FAN						
Centrifugal Type						
Quantity...Size (in.)	2...12 x 12			2...12 x 12		
Type Drive	Belt			Belt		
Nominal CFM	6000			7200		
Motor Hp, RPM, Max. Continuous Bhp	5.0, 1745, 6.3	5.0, 1745, 6.3	5.0, 1745, 6.3	5.0, 1745, 5.9	5.0, 1745, 5.9	5.0, 1745, 5.9
FLA (Each)	15.8 / 15.8	7.9	6.0	15.8 / 15.8	7.9	6.0
Motor Frame Size	184T			184T		
Fan RPM Range	873 - 1021			910-1095		
Motor Bearing	Ball			Ball		
Maximum Allowable RPM	1550			1550		
Motor Pulley Pitch / Diameter Min/Max. (in.)	4.9-5.9			4.9-5.9		
Motor Shaft Diameter (in.)	1-1/8			1-1/8		
Fan Pulley Pitch Diam (in)	9.4			9.4		
Belt, Quantity...Type... Length (in.)	1.BX.50			1.BX.50		
Pulley Center Line Distance (in)	13.5-14.8			13.3-14.8		
Speed Change per Full Turn of Movable Pulley Flange (RPM)	37			37		
Pulley Max. full Turns From Closed Postion	4			6		
Factory Setting	3.5			3.5		
Factory Speed Setting RPM	965			1002		
Fan Shaft Diam. at Pulley	1-7/16			1-7/16		
SEE LEGENDS AND NOTES ON FOLLOWING PAGES						

UNIT SPECIFICATIONS - MODELS				
COOLING		PGE240H	PGE240L	PGE240S
ARI Rated Capacity Btuh (Net)		232,000		
Nominal Tons		20		
Standard CFM		6600		
EER		9.5		
IPLV		10.9		
Sound Rating (Bels)		9.5		
Base Unit Operating Weights (lbs)		1850		
ELECTRICAL				
Volts/ 3 Phase/ 60Hertz		208/230	460	575
Voltage Range Min/Max		187 / 253	414 / 508	518 / 633
Power Supply MCA		124 / 124	61	48
Power Supply MOCP*		150 / 150	80	60
COMPRESSOR		SCROLL / COPELAND		
Quantity...Model		1...ZR125KC / 1...ZR108KC		
No. of Circuits		2		
RLA / LRA	Circuit #1	42.0 / 239	19.2 / 125	13.8 / 80
	Circuit #2	33.6 / 225	17.3 / 114	13.5 / 80
Oil (Oz.) per circuit		106, 106		
REFRIGERATION TYPE		R-22		
Expansion Device		TXV		
Operating Charge (lb. oz.) **		CKT 1 = 19-7 CKT 2 = 13-9		
CONDENSER FAN		Propeller Type		
Nominal CFM		14,200		
Quantity..Diameter (in.)		2...30		
Motor Hp...RPM (each)		1...1075		
Watts Input (Total)		3400		
FLA		6.6	3.3	3.4
CONDENSER COIL		Cross Hatched 3/8 in. Copper Tubes, Aluminum Lanced		
Rows...Fin/In.		4...15		
Total Face Area (Sq. Ft..)		21.7		
EVAPORATOR COIL		Cross Hatch 3/8 in. Copper Tubes, Aluminum Lanced, Face Split		
Rows...Fins/Inche		4...15		
Total Face Area (sq. ft.)		17.5		
EVAPORATOR FAN		Centrifugal Type		
Quantity...Size (in.)		2...12 x 12		
Type Drive		Belt		
Nominal CFM		8000		
Motor Hp, RPM, Max. Continuous Bhp		7.5, 1745, 8.7	7.5, 1745, 9.5	7.5, 1745, 8.7
FLA (Each)		25.0 / 25.0	13.0	10.0
Motor Frame Size		213T		
Fan RPM Range		1002-1151		
Motor Bearing		Ball		
Maximum Allowable RPM		1550		
Motor Pulley Pitch / Diameter Min/Max. (in.)		5.4-6.6		
Motor Shaft Diameter (in.)		1-3/8		
Fan Pulley Pitch Diam (in)		9.4		
Belt, Quantity...Type... Length (in.)		1.BX.53		
Pulley Center Line Distance (in)		14.6-15.4		
Speed Change per Full Turn of Movable Pulley Flange (RPM)		37		
Pulley Max. full Turns From Closed Postion		6		
Factory Setting		3.5		
Factory Speed Setting RPM		1120		
Fan Shaft Diam. at Pulley		1-7/16		
SEE LEGENDS AND NOTES ON FOLLOWING PAGES				

UNIT SPECIFICATIONS (CONT)		MODELS			
FURNACE SECTION		PGE180(H,L,S)275A	PGE180(H,L,S)360A	PGE210(H,L,S)275A	PGE210(H,L,S)360A
Rollout Switch Cutout Temp (F) +		190	190	190	190
Burner Orifice Diameter (in. .drill size)					
Natural Gas		0.1285...30	0.136...29	0.1285...30	0.136...29
Thermostat Heat Anticipator Setting (amps)					
208/230 v and 575v	Stage 1	0.98	0.98	0.98	0.98
208/230 v and 575v	Stage 2	0.44	0.44	0.44	0.44
460 v	Stage 1	0.80	0.80	0.80	0.80
460 v	Stage 2	0.44	0.44	0.44	0.44
Gas Input (Btuh)					
Stage 2 / Stage 1		275,000 / 206,000	360,000 / 275,000	275,000 / 206,000	360,000 / 270,000
Output Capacity (Btuh)		223,000	291,600	223,000	291,600
Efficiency (Steady State) (%) AFUE		81	81	81	81
Temperature Rise Range		15-45	20-50	15 - 45	20-50
Manifold Pressure (in. wg)					
Natural Gas		3.3	3.3	3.3	3.3
Liquid Propane		3.3	3.3	3.3	3.3
Gas Valve Quantity		1	1	1	1
Gas Valve Pressure Range	Psig	0.235-0.487	0.235-0.487	0.235-0.487	0.235-0.487
	in. wg	5.5-13.5	5.5-13.5	5.5-13.5	5.5-13.5
Field Gas Connection Size (in.)		3/4	3/4	3/4	3/4
HIGH-PRESSURE SWITCH (psig)					
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 (THROWAWAY)					
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

UNIT SPECIFICATIONS (CONT)		MODELS	
FURNACE SECTION		PGE240(H,L,S)275A	PGE240(H,L,S)360A
Rollout Switch Cutout Temp (F) +		190	190
Burner Orifice Diameter (in. .drill size)			
Natural Gas		0.1285...30	0.136...29
Thermostat Heat Anticipator Setting (amps)			
208/230 v and 575v	Stage 1	0.98	0.98
208/230 v and 575v	Stage 2	0.44	0.44
460 v	Stage 1	0.80	0.80
460 v	Stage 2	0.44	0.44
Gas Input (Btuh)			
Stage 2 / Stage 1		275,000 / 206,000	360,000 / 270,000
Output Capacity (Btuh)		223,000	291,600
Efficiency (Steady State) (%) AFUE		81	81
Temperature Rise Range		15 - 45	20-50
Manifold Pressure (in. wg)			
Natural Gas		3.3	3.3
Liquid Propane		3.3	3.3
Gas Valve Quantity		1	1
Gas Valve Pressure Range	Psig	0.235-0.487	0.235-0.487
	in. wg	5.5-13.5	5.5-13.5
Field Gas Connection Size (in.)		3/4	3/4
HIGH-PRESSURE SWITCH (psig)			
Internal Relief (Differential) Cutout		426	426
Reset (Auto.)		320	320
LOSS-OF-CHARGE SWITCH (psig) (LOW-PRESS.)			
Cutout		27	27
Reset (Auto.)		44	44
FREEZE PROTECTION THERMOSTAT (F)			
Opens		30 +/- 5	30 +/- 5
Closes		45 +/- 5	45 +/- 5
RETURN-AIR FILTERS (THROWAWAY)			
Quantity...Size (in.)		4...20 x 20 x 2	4...20 x 20 x 2
		4...16 x 20 x 2	4...16 x 20 x 2

LEGEND

Bhp = Brake Horsepower

TXV = Thermostatic Expansion Valve

* Fuse or HACR Circuit breaker

**Circuit 1 uses the lower portion of the condenser coil and lower portion of the evaporator coils; and Circuit 2 uses the upper portion of both coils.

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

+Rollout switch is manual reset.

NOTE: The PGE180-240 units have a low-pressure switch (standard) located on the suction side.

NOTE: Minimum allowable temperature of mixed-air entering the heat exchanger during first-stage heating is 45F. There is no minimum mixed-air temperature limitation during second-stage heating. For entering-air temperatures below 45 F both stages of heat must be energized together to minimize condensation issues and ensure proper unit operation.

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

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

LEGENDS AND NOTES

NOTES: 1. Rated in accordance with ARI Standards 210/240, latest revision (for sizes 090 & 120) or 360, latest revision (for size 150).

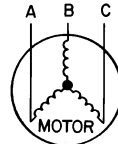
2. ARI ratings are net values, reflecting the effects of circulating fan heat.

3. Ratings are based on:

Cooling Standard: 80F db, 67F wb indoor entering air temperature and 95F db air entering outdoor unit.

IPLV Standard: 80F db, 67F wb indoor entering air temperature and 80F db entering air temperature.

EXAMPLE: Supply voltage is 460-3-60.



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

Determine maximum deviation from average voltage.

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

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

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

Maximum deviation is 7 v.

Determine percent voltage imbalance.

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

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

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

PGE180, 210 BASE UNIT DIMENSIONS

Unit	Unit Weight		Corner A		Corner B		Corner C		Corner D		Dim. A		Dim. B		Dim. C	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	inches	mm	inches	mm	inches	mm
PGE180	1700	771	411	186	381	173	438	199	471	213	39	991	41	1041	22	559
PGE210	1850	839	450	204	433	197	453	210	504	220	40	1016	42	1092	22	559

1. Dimensions in () are in millimeters.

2.  Center of Gravity.

3.  Direction of Airflow

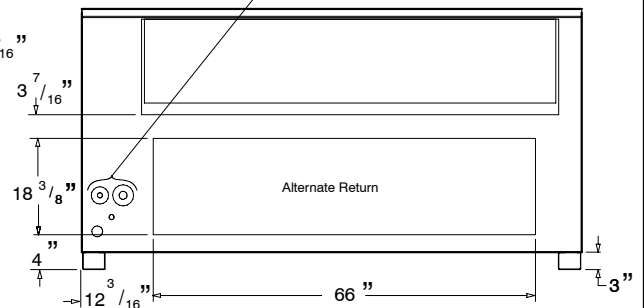
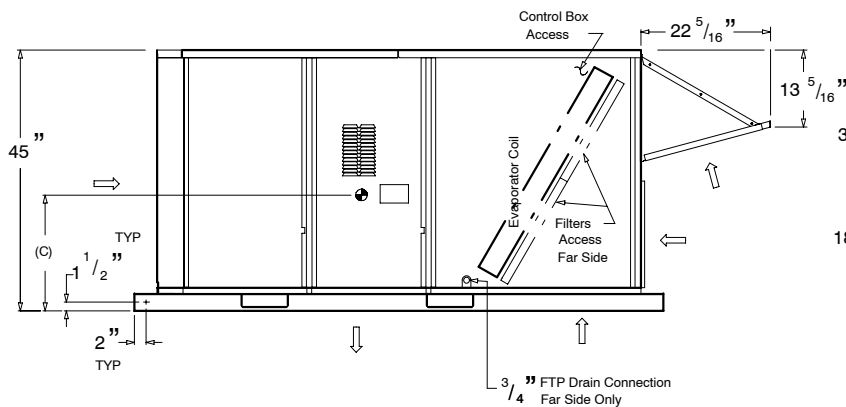
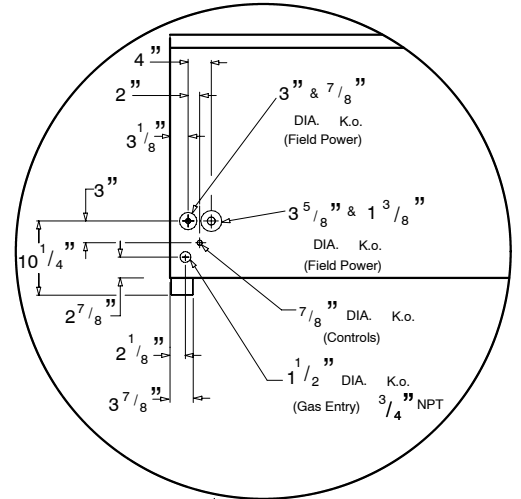
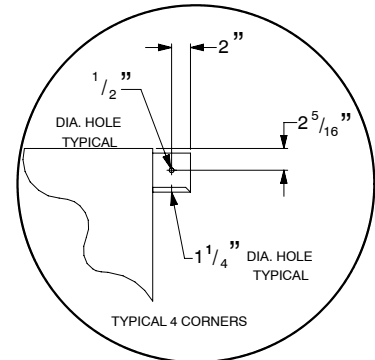
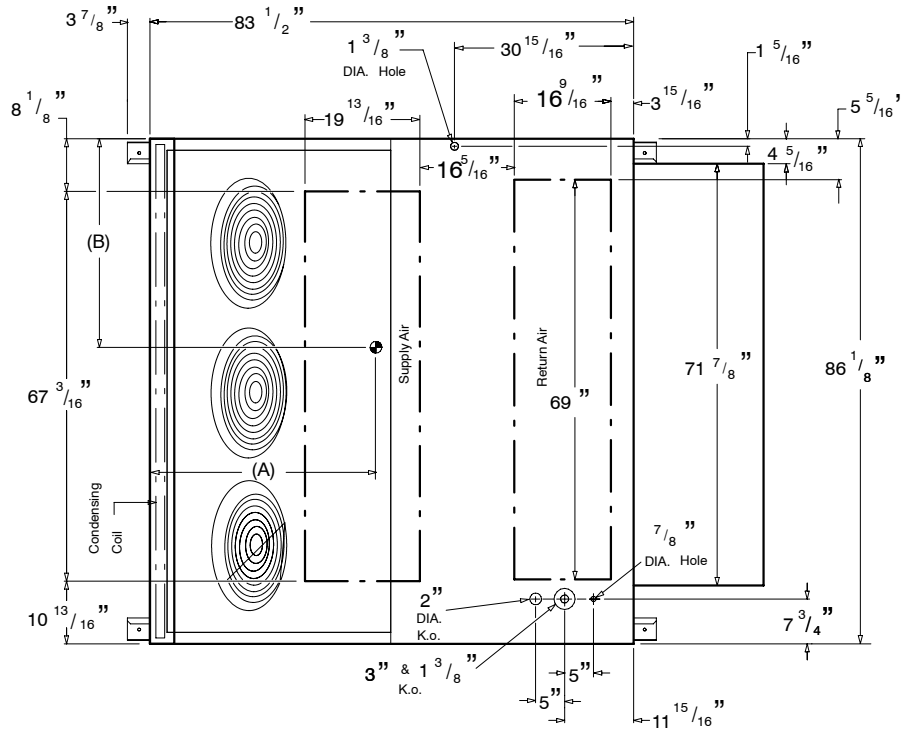
4. Ductwork to be attached to accessory roof curb only.

5. Minimum clearance:

- Rear: 84" (2134) for coil removal. This dimension can be reduced to 48" (1219) if conditions permit coil removal from the top.
- 48" (1219) to combustible surfaces, all four sides (includes between units).
- Left Side: 48" (1219) for proper condenser coil airflow.
- Front: 48" (1219) for control box access.
- Right side: 48" (1219) for proper operations of damper and power exhaust if so equipped.
- Top: 72" (1829) to assure proper condenser fan operation.
- Bottom: 14" (356) to combustible surfaces (when not using curb).
- Control Box side: 36" (914) to ungrounded surfaces, non-combustible
- Control Box Side: 42" (1067) to block or concrete walls, or other grounded surfaces.
- Local codes or jurisdiction may prevail.

6. With the exception of clearance for the condenser coil as stated in Note 5, a removable fence or barricade requires no clearance.

7. Dimensions are from outside of corner post. Allow 0'-5/16" on each side for top cover drip edge.



38-11-38a

PGE240 BASE UNIT DIMENSIONS

Unit	Unit Weight		Corner A		Corner B		Corner C		Corner D		Dim. A		Dim. B		Dim. C	
	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	inches	mm	inches	mm	inches	mm
PGE240	1850	839	441	200	408	185	474	215	526	239	38	965	41	1041	20	508

1. Dimensions in () are in millimeters.

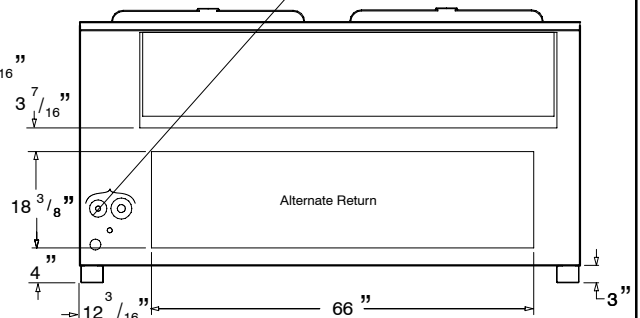
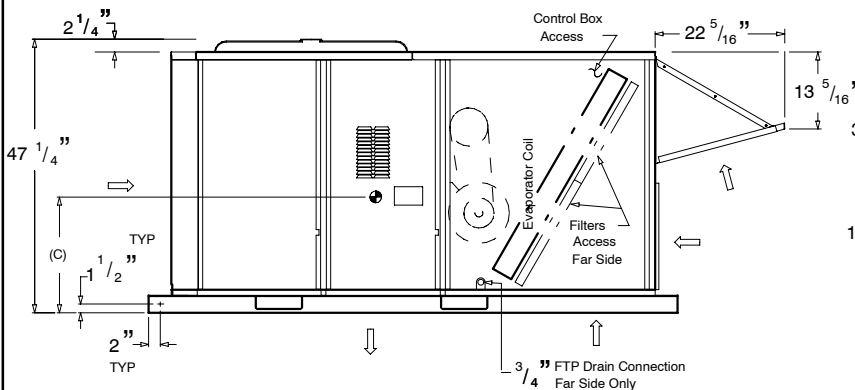
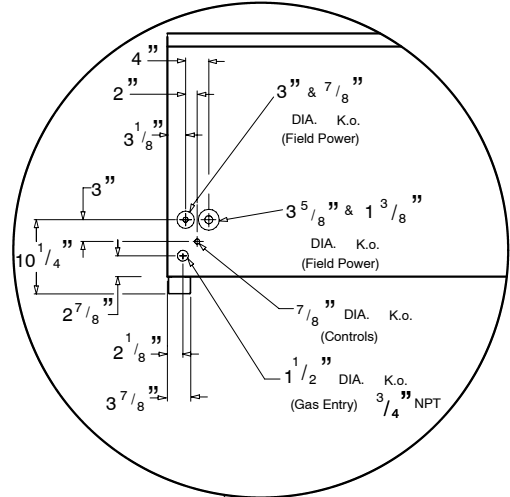
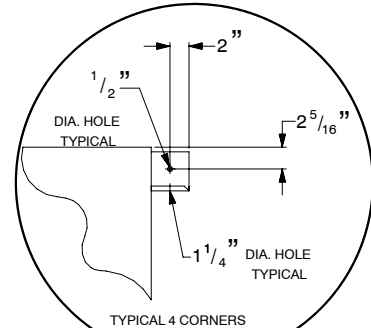
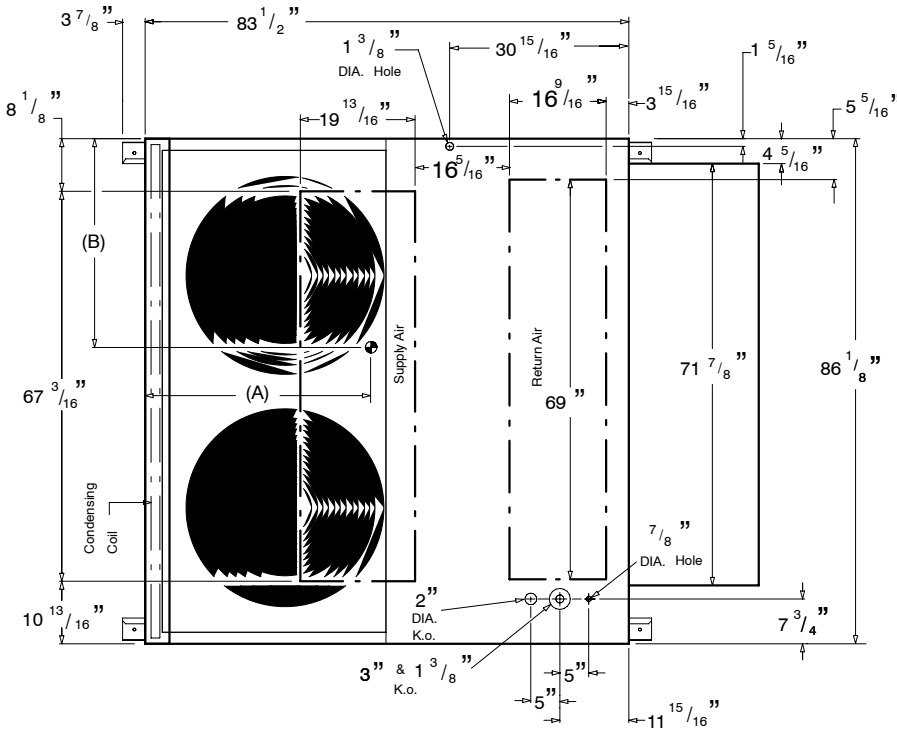
2.  Center of Gravity.

3.  Direction of Airflow

4. Ductwork to be attached to accessory roof curb only.

5. Minimum clearance:

- Rear: 84" (2134) for coil removal. This dimension can be reduced to 48" (1219) if conditions permit coil removal from the top.
 - 48" (1219) to combustible surfaces, all four sides (includes between units).
 - Left Side: 48" (1219) for proper condenser coil airflow.
 - Front: : 48" (1219) for control box access.
 - Right side: 48" (1219) for proper operations of damper and power exhaust if so equipped.
 - Top: 72" (1829) to assure proper condenser fan operation.
 - Bottom: 14" (356) to combustible surfaces (when not using curb).
 - Control Box side: 36" (914) to ungrounded surfaces, non-combustible
 - Control Box Side: 42" (1067) to block or concrete walls, or other grounded surfaces.
 - Local codes or jurisdiction may prevail.
6. With the exception of clearance for the condenser coil as stated in Note 5, a removable fence or barricade requires no clearance.
7. Dimensions are from outside of corner post. Allow 0'-5/16" on each side for top cover drip edge.



38-11-38

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

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

FORMULAS AND NOTES FOR USING EXPANDED PERFORMANCE DATA

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

1. Direct interpolation is permissible. Do not extrapolate.

2. The following formulas may be used:

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

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

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

where h ewb = Enthalpy of air entering evap. coil

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

LEGEND

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

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

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

EXPANDED PERFORMANCE DATA (COOLING) 17-1/2 Ton (Gross Capacity)

Temp (F) Air Entering Condenser (Edb)		Air Entering Evaporator — Cfm/BF														
		5,400/0.095			6,000/0.105			7,000/0.120			8,000/0.140			9,000/0.150		
		Air Entering Evaporator — Ewb (F)														
		62	67	72	62	67	72	62	67	72	62	67	72	62	67	72
75	TC SHC kW	227	247	269	232	251	274	237	255	277	241	258	280	248	261	283
		200	167	134	215	178	141	231	194	152	241	205	160	248	219	167
		15.9	16.5	17.2	16.1	16.7	17.3	16.3	16.8	17.5	16.5	16.9	17.6	16.7	17.0	17.7
85	TC SHC kW	219	238	259	224	242	265	229	247	269	235	250	272	241	252	273
		197	164	131	210	175	137	225	188	145	234	200	153	240	214	163
		17.2	17.8	18.5	17.4	17.9	18.6	17.6	18.1	18.8	17.8	18.3	19.0	18.0	18.3	19.0
95	TC SHC kW	210	229	248	214	233	253	219	237	258	225	239	261	231	242	263
		192	160	126	205	171	133	218	183	141	225	194	148	231	206	156
		18.5	19.2	19.9	18.7	19.3	20.0	19.0	19.5	20.2	19.2	19.6	20.3	19.4	19.7	20.4
105	TC SHC kW	200	218	237	205	222	241	210	225	245	216	228	249	221	230	250
		186	155	123	199	166	129	210	178	136	216	190	143	221	201	150
		19.9	20.5	21.2	20.1	20.7	21.3	20.4	20.8	21.5	20.6	21.0	21.7	20.8	21.0	21.8
115	TC SHC kW	190	207	225	195	210	228	201	213	232	206	216	235	211	217	236
		181	151	118	193	161	124	201	173	132	206	185	139	211	196	146
		21.3	21.9	22.6	21.5	22.1	22.8	21.8	22.2	22.9	22.0	22.4	23.1	22.2	22.4	23.1
120	TC SHC kW	185	200	—	189	205	—	196	207	—	201	—	—	205	—	—
		179	149	—	189	159	—	196	171	—	201	—	—	205	—	—
		22.1	22.6	—	22.3	22.8	—	22.5	22.9	—	22.7	—	—	22.9	—	—

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

NOTES:

- Direct interpolation is permissible. Do not extrapolate.
- The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$$t_{lwb} = \text{Wet-bulb temperature corresponding to enthalpy of air leaving evaporator coil (h}_{lwb}\text{)}$$

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where: h_{ewb} = Enthalpy of air entering evaporator 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					
.05	1.04	2.07	3.11	4.14	5.18	Use formula shown below.
.10	.98	1.96	2.94	3.92	4.90	
.20	.87	1.74	2.62	3.49	4.36	
.30	.76	1.53	2.29	3.05	3.82	

Interpolation is permissible.

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

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

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

FORMULAS AND NOTES FOR USING EXPANDED PERFORMANCE DATA

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

- 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 = $1.10 \times (1-BF) \times (edb-80)$.

CIRCULATING BLOWER PERFORMANCE - PGE180 - Low Heat Model																		
CFM	External Static Pressure in Inces 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
4500	753	1307	761	1330	840	1572	912	1822	980	2080	1044	2345	1105	2619	1163	2899	1218	3187
4800	767	1384	790	1515	866	1765	936	2023	1002	2289	1065	2561	1124	2841	1180	3127	1235	3420
5100	781	1465	820	1718	893	1977	961	2243	1025	2516	1086	2795	1144	3082	1199	3375	1252	3674
5700	810	1911	882	2182	850	2459	1014	2741	1075	3029	1132	3324	1187	3624	1240	3929	1291	4241
6000	844	2164	914	2444	980	2730	1042	3021	1100	3317	1157	3619	1210	3925	1262	4239	1312	4557
6300	879	2439	947	2729	1010	3023	1070	3322	1127	3626	1182	3935	1234	4249	1285	4569	1334	4894
6600	915	2737	980	3035	1041	3338	1099	3645	1155	3957	1208	4274	1259	4595	1309	4922	-	-
6900	950	3057	1013	3364	1072	3675	1129	3991	1183	4311	1235	4636	1285	4964	-	-	-	-
7200	986	3401	1047	3717	1104	4037	1159	4361	1211	4689	1262	5021	-	-	-	-	-	-
7500	1022	3770	1081	4095	1136	4423	1189	4755	1241	5091	-	-	-	-	-	-	-	-

CIRCULATING BLOWER PERFORMANCE - PGE180 Low Heat Model (Cont.)													
CFM	External Static Pressure in Inces Water Column - Dry coil With Filter												
	2.0		2.2		2.4		2.6		2.8		3.0		
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	
4500	1271	3481	1322	3781	1372	4088	1419	4400	1466	4719	1511	5042	
4800	1287	3720	1337	4025	1386	4337	1433	4655	1479	4978	-	-	
5100	1304	3979	1353	4290	1401	4607	1448	4930	-	-	-	-	
5700	1341	4558	1388	4881	-	-	-	-	-	-	-	-	
6000	1361	4880	-	-	-	-	-	-	-	-	-	-	
6300	-	-	-	-	-	-	-	-	-	-	-	-	
6600	-	-	-	-	-	-	-	-	-	-	-	-	
6900	-	-	-	-	-	-	-	-	-	-	-	-	
7200	-	-	-	-	-	-	-	-	-	-	-	-	
7500	-	-	-	-	-	-	-	-	-	-	-	-	

W = Input Watts to Motor.

NOTES for PGE180 - Low Heat Model:

1. Maximum continuous bhp is 6.13. The maximum continuous watts is 5180. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

CIRCULATING BLOWER PERFORMANCE - PGE180 High Heat Model																		
CFM	External Static Pressure in Inces 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
4500	753	1307	786	1404	861	1644	932	1893	997	2150	1060	2414	1119	2685	1175	2964	1230	3250
4800	767	1384	818	1603	890	1852	958	2108	1022	2373	1082	2644	1140	2922	1195	3207	1248	3498
5100	775	1571	850	1822	920	2079	986	2344	1048	2616	1106	2894	1163	3178	1216	3470	1268	3767
5700	849	2054	918	2323	982	2598	1044	2879	1102	3166	1157	3459	1211	3757	1262	4061	1312	4371
6000	886	2329	952	2607	1015	2891	1074	3180	1130	3474	1184	3774	1236	4080	1287	4391	1335	4707
6300	924	2628	987	2915	1047	3207	1105	3504	1160	3807	1212	4114	1263	4427	1312	4745	1359	5067
6600	962	2951	1023	3246	1081	3547	1136	3853	1190	4163	1241	4478	1290	4798	1338	5122	-	-
6900	1000	3298	1059	3603	1115	3912	1168	4225	1220	4543	1270	4866	-	-	-	-	-	-
7200	1038	3672	1095	3986	1149	4303	1201	4625	1251	4950	-	-	-	-	-	-	-	-
7500	1077	4072	1131	4394	1184	4720	1234	5050	-	-	-	-	-	-	-	-	-	-

CIRCULATING BLOWER PERFORMANCE - PGE180 High Heat Model (Cont.)													
CFM	External Static Pressure in Inces Water Column - Dry coil With Filter												
	2.0		2.2		2.4		2.6		2.8		3.0		
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	
4500	1282	3542	1332	3841	1381	4145	1428	4456	1473	4772	1518	5095	
4800	1299	3795	1349	4100	1397	4409	1443	4725	1488	5046	-	-	
5100	1319	4071	1367	4380	1414	4695	1460	5016	-	-	-	-	
5700	1360	4686	1407	5007	-	-	-	-	-	-	-	-	
6000	1382	5029	-	-	-	-	-	-	-	-	-	-	
6300	-	-	-	-	-	-	-	-	-	-	-	-	
6600	-	-	-	-	-	-	-	-	-	-	-	-	
6900	-	-	-	-	-	-	-	-	-	-	-	-	
7200	-	-	-	-	-	-	-	-	-	-	-	-	
7500	-	-	-	-	-	-	-	-	-	-	-	-	

W = Input Watts to Motor.

NOTES for PGE180 - High Heat Model:

1. Maximum continuous bhp is 6.13. The maximum continuous watts is 5180. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

CIRCULATING BLOWER PERFORMANCE - PGE210 - Low Heat Model																				
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	755	1908	831	2171	901	2443	968	2723	1031	3009	1091	3302	1149	3602	1204	3907	1258	4217	1309	4533
6000	810	2287	881	2556	947	2833	1010	3116	1070	3406	1127	3702	1183	4003	1236	4310	1288	4622	1337	4939
6500	866	2710	932	2985	994	3266	1054	3554	1111	3847	1166	4146	1219	4450	1270	4759	1320	5073	1368	5391
7000	923	3177	985	3458	1044	3744	1100	4036	1155	4333	1207	4635	1258	4942	1307	5253	1355	5569	1402	5890
7500	980	3690	1038	3976	1094	4267	1148	4564	1200	4864	1250	5170	1299	5480	1346	5794	1392	6113	1437	6435
8000	1038	4251	1093	4542	1146	4838	1197	5138	1246	5443	1294	5752	1341	6065	1387	6383	1392	6704	1475	7028
8500	1096	4859	1148	5156	1198	5456	1247	5761	1294	6070	1340	6382	1385	6699	1429	7019	1472	7343	1514	7670
9000	1154	5517	1204	5818	1251	6423	1298	6432	1343	6745	1388	7062	1431	7382	1473	7705	1515	8032	-	-
9500	1213	6224	1260	6531	1306	6840	1350	7154	1394	7471	1436	7791	1478	8114	1519	8441	-	-	-	-
10,000	1272	6983	1317	7294	1360	7608	1403	7926	1445	8247	1486	8570	-	-	-	-	-	-	-	-

NOTES for PGE210 - Low Heat Model:

1. Maximum continuous bhp is 5.9. The maximum continuous watts is 5180. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

CIRCULATING BLOWER PERFORMANCE - PGE210 - High Heat Model																				
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	795	2043	866	2306	934	2578	998	2856	1059	3142	1117	3434	1173	3732	1227	4036	1279	4345	1329	4629
6000	854	2452	921	2722	984	3098	1044	3281	1102	3570	1158	3865	1211	4165	1263	4471	1313	4782	1361	5097
6500	914	2909	977	3184	1036	3465	1093	3752	1148	4045	1201	4343	1252	4646	1302	4954	1350	5267	1396	5584
7000	975	3414	1034	3695	1090	3981	1144	4272	1196	4569	1246	4870	1295	5176	1343	5487	1389	5802	1434	6121
7500	1037	3969	1092	4255	1145	4546	1196	4842	1256	5142	1294	5447	1340	5756	1386	6070	1431	6387	1474	6709
8000	1099	4575	1150	4866	1201	5162	1249	5462	1297	5766	1343	6075	1388	6388	1431	6704	1474	7024	1516	7348
8500	1161	5232	1210	5529	1258	5829	1304	6134	1349	6443	1393	6755	1436	7071	1478	7390	1520	7713	-	-
9000	1223	5943	1270	6245	1315	6550	1360	6869	1403	7171	1445	7487	1486	7807	1527	8130	-	-	-	-
9500	1286	6708	1331	7014	1374	7324	1416	7638	1457	7954	1498	8274	1538	8597	-	-	-	-	-	-
10,000	1349	7528	1392	7839	1433	8154	1473	8471	-	-	-	-	-	-	-	-	-	-	-	-

NOTES for PGE210 - High Heat Model:

1. Maximum continuous bhp is 5.9. The maximum continuous watts is 5180. Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

LEGEND

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

CIRCULATING BLOWER PERFORMANCE - PGE240 - Low Heat Model

CFM	External Static Pressure in Inces 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
6000	824	2607	894	2844	961	3085	1023	3330	1083	3578	1141	3829	1196	4082	1249	4337	1301	4596
6500	881	3030	947	3266	1009	3507	1069	3751	1126	3998	1181	4247	1234	4499	1285	4753	1334	5009
7000	939	3488	1001	3725	1060	3965	1116	4208	1170	4454	1223	4702	1274	4953	1323	5205	1371	5460
7500	998	3982	1055	4218	1111	4458	1165	4701	1217	4946	1267	5194	1316	5443	1363	5694	1409	5949
8000	1056	4512	1111	4748	1164	4988	1215	5230	1264	5474	1313	5721	1359	5970	1405	6220	1449	6472
8500	1116	5077	1167	5314	1218	5553	1266	5795	1314	6039	1360	6285	1405	6533	1449	6783	1491	7034
9000	1175	5678	1224	5915	1272	6154	1319	6395	1364	6639	1408	6885	1451	7132	1494	7381	1535	7631
9500	1235	6315	1282	6552	1327	6791	1372	7033	1415	7276	1458	7521	1499	7768	1540	8016	-	-
10,000	1295	6988	1340	7225	1383	7465	1426	7706	1468	7949	1508	8193	1549	8440	-	-	-	-

CIRCULATING BLOWER PERFORMANCE - PGE240 - Low Heat Model (Cont.)

CFM	External Static Pressure in Inces Water Column - Dry coil With Filter											
	2.0		2.2		2.4		2.6		2.8		3.0	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
6000	1351	4856	1399	5118	1446	5381	1492	5647	1537	5914	-	-
6500	1383	5267	1429	5527	1475	5789	1520	6052	-	-	-	-
7000	1417	5716	1462	5974	1507	6234	1550	6495	-	-	-	-
7500	1454	6202	1498	6459	1540	6717	-	-	-	-	-	-
8000	1493	6726	1535	6981	-	-	-	-	-	-	-	-
8500	1533	7286	-	-	-	-	-	-	-	-	-	-
9000	-	-	-	-	-	-	-	-	-	-	-	-
9500	-	-	-	-	-	-	-	-	-	-	-	-
10,000	-	-	-	-	-	-	-	-	-	-	-	-

W = Input Watts to Motor.

NOTES for PGE240 - Low Heat Model:

1. Maximum continuous bhp is 8.7 (for 208/230 and 575-v units) and 9.5 (for 460-v units). The maximum continuous watts is 7915 (for 208/230 and 575-v units) and 8640 (for 460-v units). Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

CIRCULATING BLOWER PERFORMANCE - PGE240 - High Heat Model

CFM	External Static Pressure in Inces 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
6000	868	2752	934	2987	997	3227	1058	3470	1115	3716	1171	3965	1224	4216	1276	4469	1326	4726
6500	929	3201	991	3436	1051	3675	1108	3917	1162	4163	1215	4410	1266	4659	1316	4911	1364	5165
7000	991	3687	1049	3923	1105	4161	1159	4403	1211	4647	1262	4894	1311	5142	1358	5392	1404	5645
7500	1054	4211	1109	4447	1161	4686	1213	4926	1262	5170	1310	5415	1357	5663	1403	5912	1447	6164
8000	1117	4773	1168	5009	1218	5247	1267	5488	1314	5731	1360	5976	1405	6222	1449	6471	1492	6721
8500	1180	5373	1229	5609	1277	5847	1323	6088	1368	6331	1412	6575	1455	6821	1497	7068	1538	7318
9000	1244	6011	1290	6247	1335	6485	1380	6726	1423	6968	1465	7212	1506	7457	1547	7705	-	-
9500	1308	6687	1352	6924	1395	7162	1437	7402	1479	7644	1519	7888	-	-	-	-	-	-
10,000	1372	7401	1414	7638	1455	7876	1496	8117	1535	8358	-	-	-	-	-	-	-	-

CIRCULATING BLOWER PERFORMANCE - PGE240 - High Heat Model (Cont.)

CFM	External Static Pressure in Inces Water Column - Dry coil With Filter											
	2.0		2.2		2.4		2.6		2.8		3.0	
	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W	RPM	W
6000	1374	4983	1422	5243	1468	5505	1513	5768	-	-	-	-
6500	1411	5421	1456	5679	1501	5938	1544	6199	-	-	-	-
7000	1449	5899	1493	6155	1536	6412	-	-	-	-	-	-
7500	1490	6416	1533	6670	-	-	-	-	-	-	-	-
8000	1533	6973	-	-	-	-	-	-	-	-	-	-
8500	-	-	-	-	-	-	-	-	-	-	-	-
9000	-	-	-	-	-	-	-	-	-	-	-	-
9500	-	-	-	-	-	-	-	-	-	-	-	-
10,000	-	-	-	-	-	-	-	-	-	-	-	-

W = Input Watts to Motor.

NOTES for PGE240 - High Heat Model:

1. Maximum continuous bhp is 8.7 (for 208/230 and 575-v units) and 9.5 (for 460-v units). The maximum continuous watts is 7915 (for 208/230 and 575-v units) and 8640 (for 460-v units). Do not adjust motor rpm such that motor maximum bhp and/or watts is exceeded at the maximum operating cfm.

EVAPORATOR FAN DATA FOR PGE180, 210, 240

EVAPORATOR FAN MOTOR DATA FOR PGE180, 210, 240

UNIT	Unit Voltage	Maximum Acceptable Continuous BHP	Maximum Acceptable Operating Watts	Maximum Amp Draw
PGE180	208/230	6.13	5,180	15.8
	460	6.13	5,180	7.9
	575	6.13	5,180	6.0
PGE210	208/230	5.90	5,180	15.8
	460	5.90	5,180	7.9
	575	5.90	5,180	6.0
PGE240	208/230	8.70	7,915	22.0
	460	9.50	8,640	13.0
	575	8.70	7,915	10.0

FAN RPM AT MOTOR PULLEY SETTINGS FOR PGE180, 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
PGE180H,L,S	*	*	1021	1002	984	965	947	928	910	891	873
PGE210H,L,S	1095	1077	1058	1040	1021	1002	984	965	947	928	910
PGE240H,L,S	*	*	1151	1132	1114	1095	1077	1058	1040	1021	1002

* Due to belt and pulley size, pulley cannot be set to 0 or 1/2 or this number of turns open.

AIR QUANTITY LIMITS FOR PGE180, 210, 240

UNIT	Minimum Airflow (Cfm)	Minimum Heating (Cfm)		Maximum Airflow (Cfm)
		Low Heat	High Heat	
PGE180	4500	3800	5450	7500
PGE210	5400	4750	5450	9000
PGE240	6000	4750	5450	10,000

EVAPORATOR FAN MOTOR EFFICIENCY

UNIT PGE	Motor Efficiency %
180	87.5
210	87.5
240	88.5

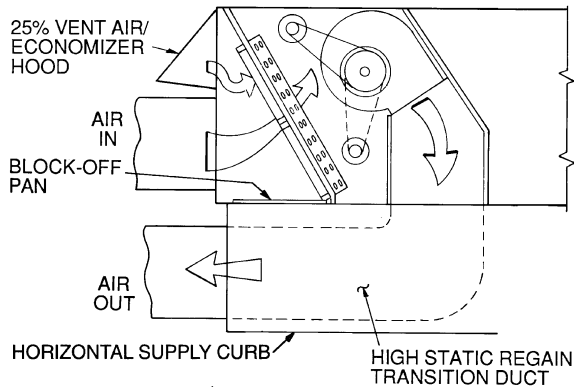
PERFORMANCE DATA (cont.) GAS HEAT FAN PERFORMANCE LOSS

PGE180			PGE210 / PGE240		
Airflow	Low Heat	High Heat	Airflow	Low Heat	High Heat
cfm	in. wg	in. wg	Cfm	in. wg	in. wg
4500	0.16	0.17	5,500	0.23	0.31
4800	0.17	0.19	6,000	0.26	0.37
5100	0.19	0.20	6,500	0.30	0.43
5400	0.20	0.22	7,000	0.33	0.49
5700	0.21	0.24	7,500	0.37	0.56
6000	0.23	0.26	8,000	0.41	0.63
6300	0.24	0.28	8,500	0.46	0.70
6600	0.26	0.30	9,000	0.50	0.78
6900	0.28	0.33	9,500	0.55	0.87
7200	0.29	0.35	10,000	0.60	0.96
7500	0.31	0.37			

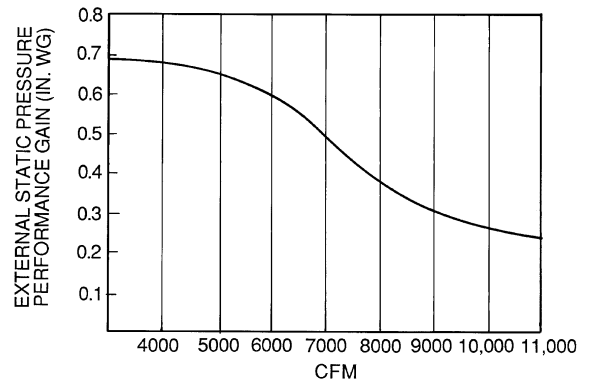
OUTDOOR SOUND POWER

UNIT	SOUND RATING (dB)	OCTAVE BANDS							
		63	125	250	500	1000	2000	4000	8000
PGS180	88 Bels	90.8	88.7	86.4	84.3	83.5	78.4	75.6	66.8
PGS210	88 Bels	90.8	88.7	86.4	84.3	83.5	78.4	75.6	66.8
PGS240	94 Bels	99.7	92.3	93.7	91.8	89.7	85.9	80.7	74.4

HORIZONTAL SUPPLY/RETURN FAN PERFORMANCE WITH HIGH STATIC REGAIN ADAPTER CURB



NOTE: The high static regain adapter accessory may be used to provide horizontal supply//return.



NOTE: The high static supply/return adapter accessory improves fan performance by increasing external static pressure by amount shown above.

Altitude Compensation* - PGE180-240

ELEVATION (ft)	NATURAL GAS ORIFICE Size **	
	Low Heat	High Heat
0-3,000	30	29
3,000- 7,000	31	30
7,000- 9,000	32	31
9,000-10,000	33	31
above 10,000	35	32

*Includes a 4% input reduction per each 1,000 feet.

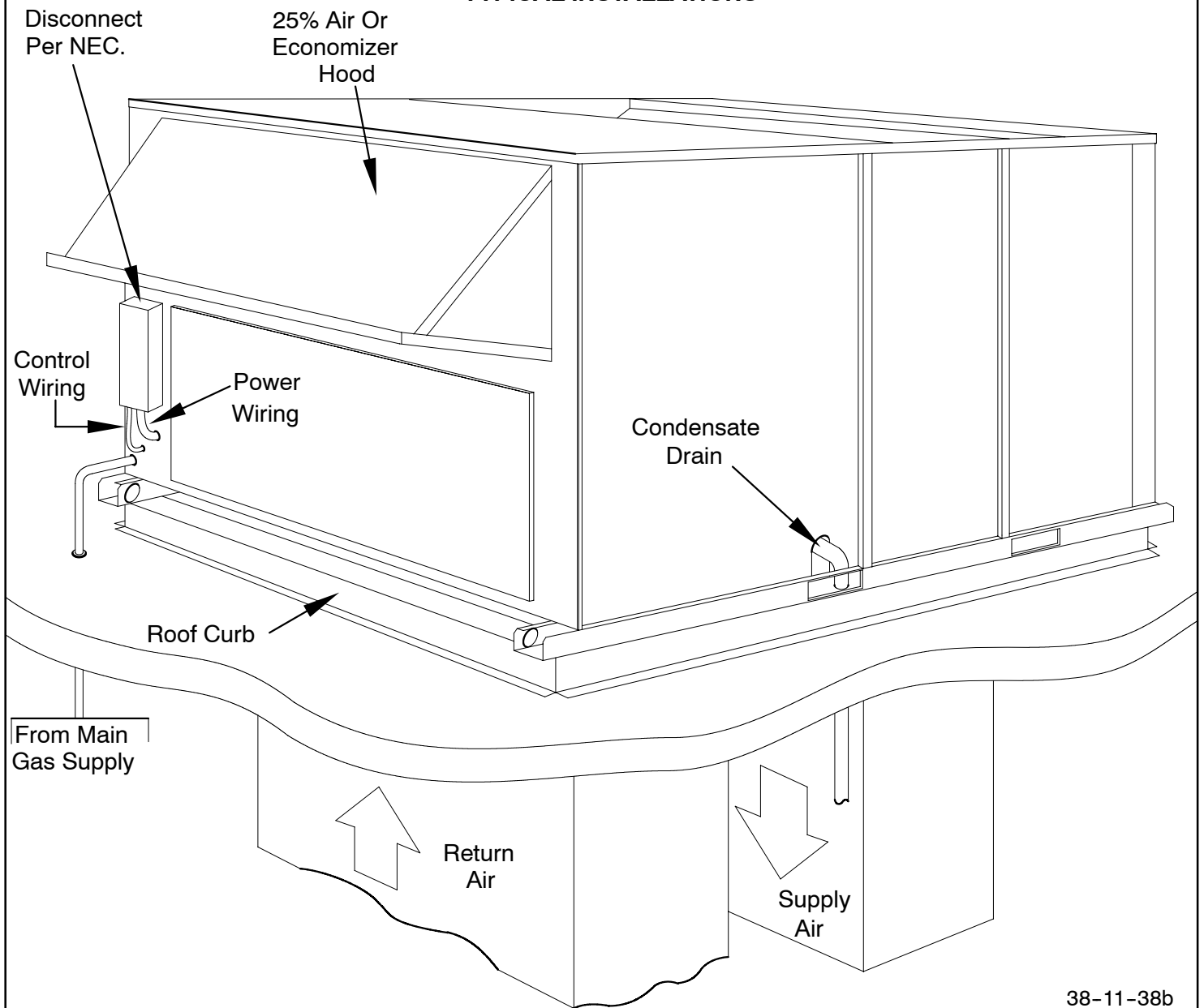
** Orifices available through your local distributor .

Altitude Derating Factor* - All Units

ELEVATION (ft)	MAXIMUM HEATING VALUE (Btu/ft ³)
0-2,000	1,100
2,001-3,000	1,050
3,001-4,000	1,000
4,001-5,000	950
5,001-6,000	900

*Derating of the unit is not required unless the heating value of the gas exceeds the values listed in the table above, or if the elevation exceeds 6000 ft. Derating conditions must be 4% per thousand ft above sea level. For example, at 4000 ft, if the heating value of the gas exceeds 1000 Btu/ft³, the unit will require a 16% derating. For elevations above 6000 ft, the same formula applies. For example, at 7000 ft, the unit will require a 28% derating of the maximum heating value per the National Fuel Gas Code.

TYPICAL INSTALLATIONS

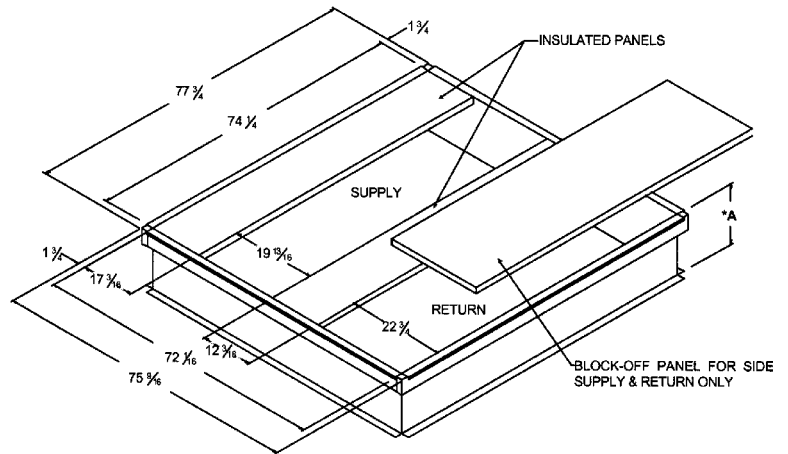


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ACCESSORIES

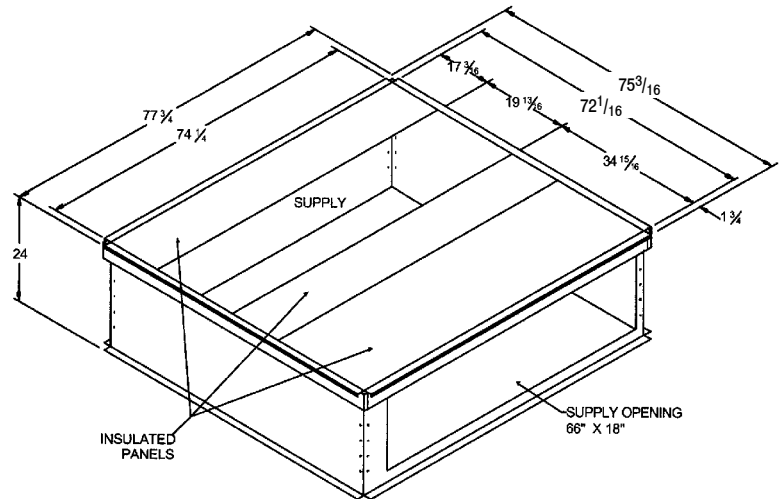
VERTICAL DISCHARGE ROOF CURBS

Description	Model Number	Where Used
14" High	AXB060CMA	180, 210, 240
24" High	AXB060CHA	180, 210, 240



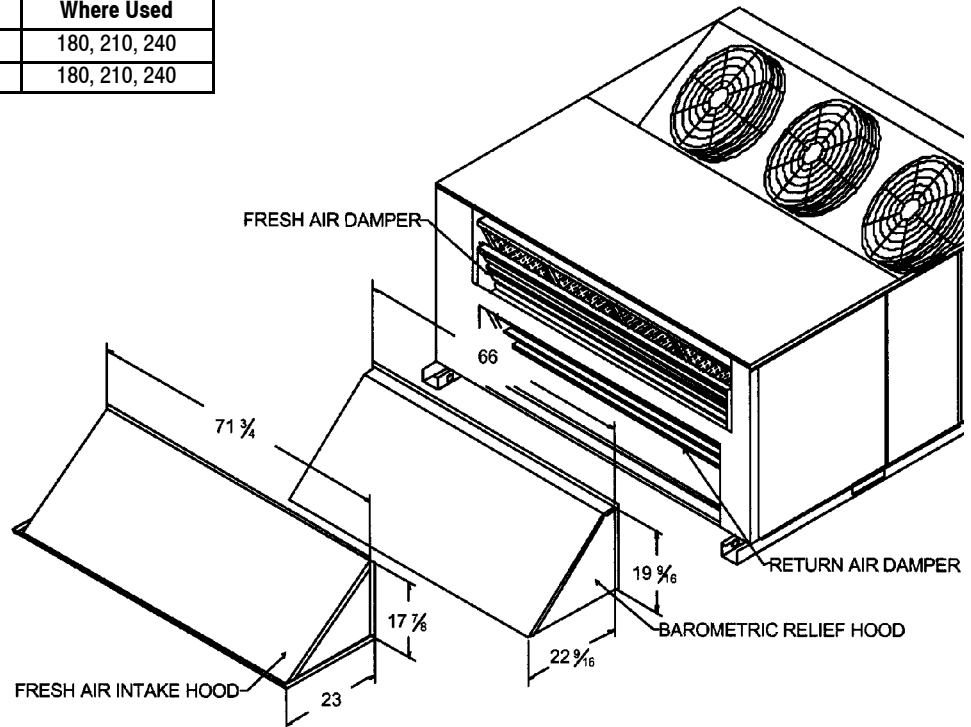
HORIZONTAL DISCHARGE ROOF CURBS

Description	Model Number	Where Used
24" High	AXB065CHA	180, 210, 240
24" High w/ Duct	AXB165CHA	180, 210, 240



ECONOMIZER - HORIZONTAL / DOWNFLOW

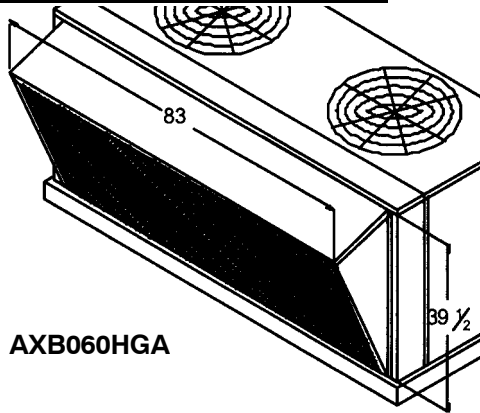
Description	Model Number	Where Used
Fully Modulating	AXB060EMA	180, 210, 240
Three Position	AXB060EPA	180, 210, 240



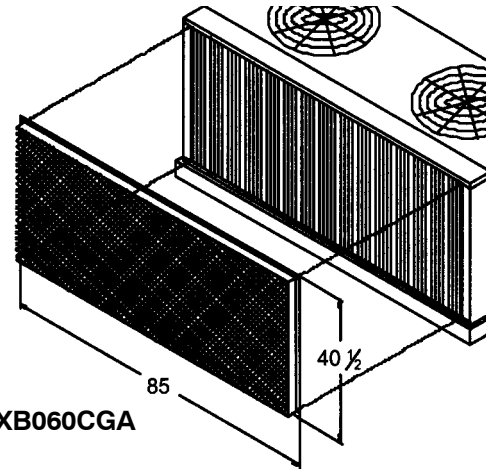
ACCESSORIES (CONT.)

COIL PROTECTION

Description	Model Number	Where Used
Coil Guard	AXB060CGA	180, 210, 240
Hail Guard	AXB060HGA	180, 210, 240



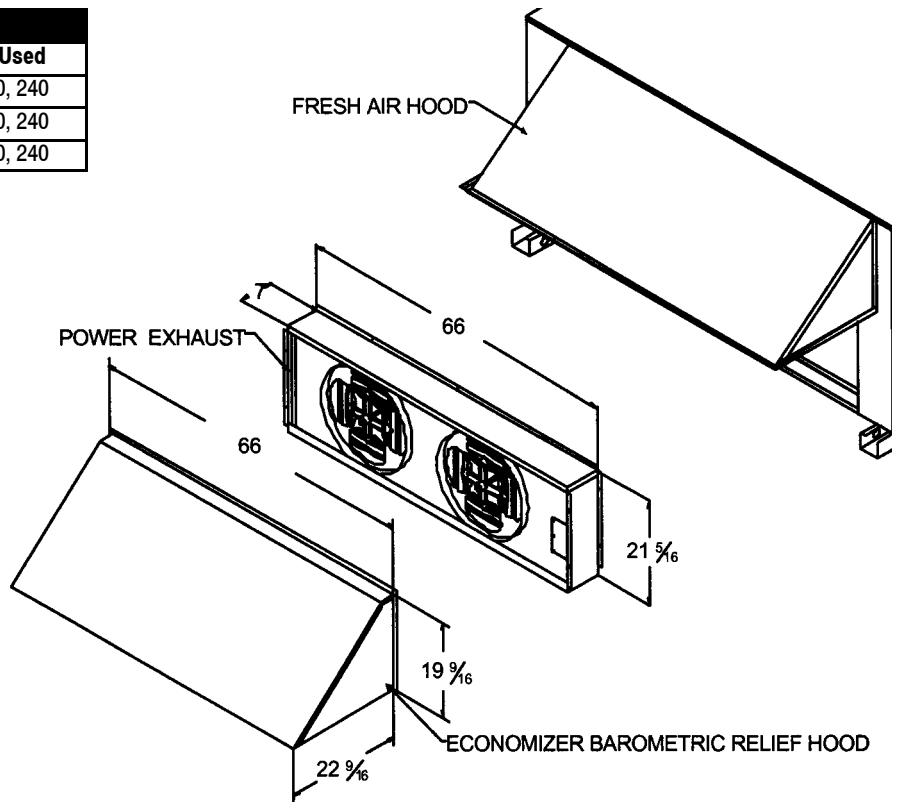
AXB060HGA



AXB060CGA

POWER EXHAUST

Description	Model Number	Where Used
208/230 Volt	AXB060PEH	180, 210, 240
460 Volt	AXB060PEL	180, 210, 240
575 Volt	AXB060PES	180, 210, 240



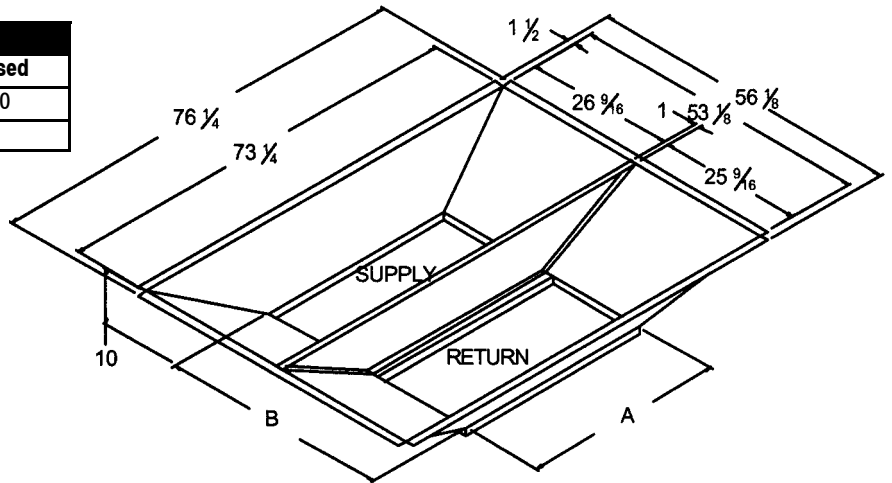
POWER EXHAUST PERFORMANCE DATA

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

ACCESSORIES (CONT.)

CONCENTRIC DUCT KIT

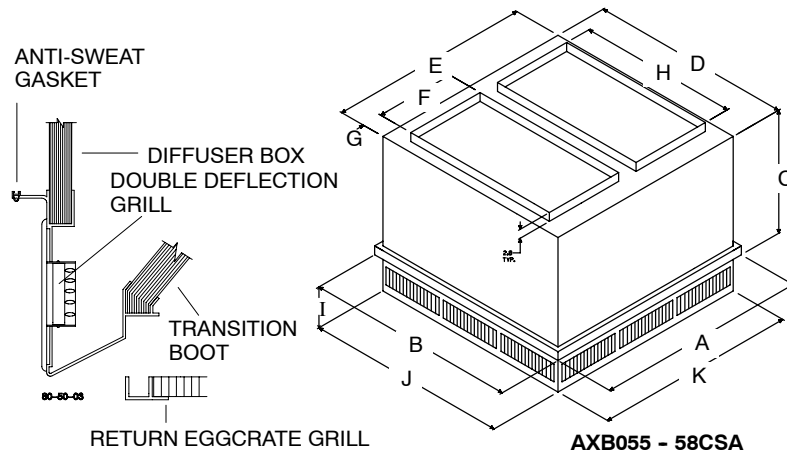
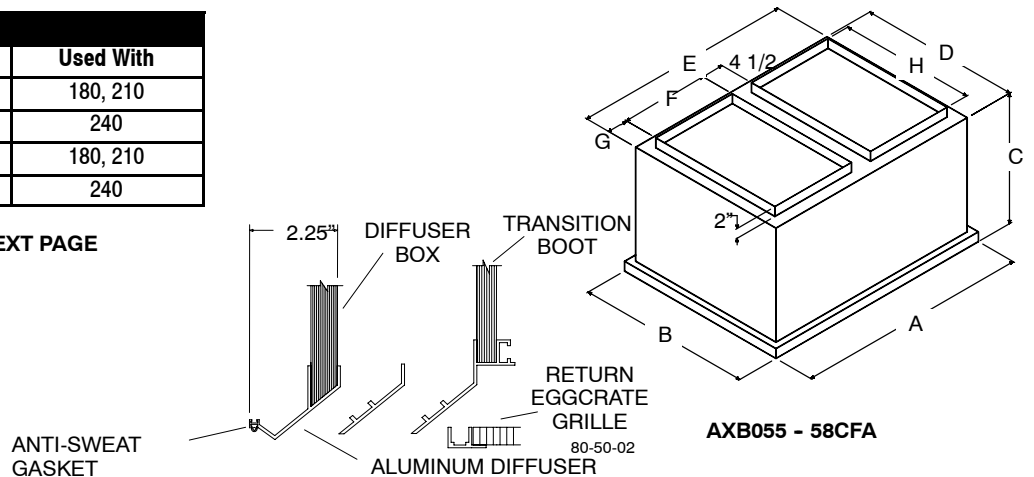
Description	Model Number	Where Used
18" x 36"	AXB160CTA	180, 210
24" x 48"	AXB260CTA	240



CONCENTRIC DIFFUSER

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

SEE PERFORMANCE DATA ON NEXT PAGE



DIMENSIONS

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

ACCESSORIES (CONT.)

CFA SERIES PERFORMANCE DATA

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

CSA/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.

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

7 DAY PROGRAMMABLE COMMERCIAL THERMOSTAT

Model Number	Used With
1170830	180, 210, 240

NATURAL TO LP CONVERSION KIT

Model Number	Used With
AXB265LPA	180, 210, 240

FRESH AIR DAMPERS

Description	Model Number	Used With
35% Motorized	AXB060FMA	180, 210, 240

LOW AMBIENT KIT

Model Number	Used With
AXB160LAA (10°)	180, 210
AXB260LAA (25°)	240

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
15	575	N/A	N/A	N/A	N/A	N/A	N/A
20	All Voltages	No Change	1171414	1170569	1171528	N/A	N/A

* Available thru service parts only.

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 (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

NOTE: The PGE180–240 units have 2 stages of heat. When the thermostat calls for heating, power is sent to W on the IGC (integrated gas unit controller) board. An LED (light-emitting diode) on the IGC board will be on during normal operation. A check is made to ensure that the rollout switch and limit switch are closed. The induced-draft motor is then energized, and when speed is proven with the hall effect sensor on the motor, the ignition activation period begins. The burners will ignite within 5 seconds.

If the burners do not light, there is a 22-second delay before another 5-second attempt. If the burners still do not light, this sequence is repeated for 15 minutes. After the 15 minutes have elapsed, if the burners still have not lighted, heating is locked out. To reset the control, break 24-v power to the thermostat.

When ignition occurs the IGC board will continue to monitor the condition of the rollout and limit switches, the hall effect sensor, as well as the flame sensor. If the unit is controlled through a room thermostat set for fan auto., 45 seconds after ignition occurs, the indoor-fan motor will be energized. If for some reason the overtemperature limit opens prior to the start of the indoor fan blower, on the next attempt, the 45-second delay will be shortened to 5 seconds less than the time from initiation of heat to when the limit tripped. Gas will not be interrupted to the burners and heating will continue. Once modified, the fan on delay will not change back to 45 seconds unless power is reset to the control.

When additional heat is required, W2 closes and initiates power to the second stage of the main gas valve. When the thermostat is satisfied, W1 and W2 open and the gas valve closes, interrupting the flow of gas to the main burners. If the call for W1 lasted less than 1 minute, the heating cycle will not terminate until 1 minute after W1 became active. If the unit is controlled through a room thermostat set for fan auto., the indoor-fan motor will continue to operate for an additional 45 seconds then stop. If the overtemperature limit opens after the indoor motor is stopped within 10 minutes of W1 becoming inactive, on the next cycle the time will be extended by 15 seconds. The maximum delay is 3 minutes. Once modified, the fan off delay will not change back to 45 seconds unless power is reset to the control.

A LED indicator is provided on the IGC to monitor operation. The IGC is located by removing the side panel and viewing the IGC through the view port located in the control box access panel. During normal operation, the LED is continuously on.

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.
2. THRU-THE-CURB SERVICE CONNECTIONS – Roof curb connections allow field power wires, control wires, and gas supply to enter through the roof curb opening.
3. THERMOSTAT – Use of 2-stage cooling thermostat is recommended for all units. A 2-stage cooling thermostat is required on units with accessory economizer to provide integrated cooling.
4. HEATING-TO-COOLING CHANGEOVER – All units are automatic changeover from heating to cooling when automatic changeover thermostat and subbase are used.
5. AIRFLOW – Units are draw-thru on cooling and blow-thru on heating.
6. MAXIMUM AIRFLOW – To minimize the possibility of condensate blow-off from evaporator, airflow through units should not exceed 500 cfm/nominal ton on size 180–240 units.
7. MINIMUM AIRFLOW – The minimum airflow for cooling is 300 cfm/nominal ton on size 180–240 units.
8. MINIMUM AMBIENT COOLING OPERATION TEMPERATURE – Units are designed to operate at outdoor temperatures down to 40 F.
9. MAXIMUM OPERATING OUTDOOR-AIR TEMPERATURE – For cooling, this temperature is 120 F for 180 unit and 125 F for 240 unit. Refer to Cooling Capacities tables.
10. HIGH ALTITUDE – A change to the gas orifice may be required at high altitudes. Refer to Altitude Compensation charts.
11. MINIMUM TEMPERATURE – Air entering the heat exchanger in heating must be a minimum of 50 F continuous and 45 F intermittent. For entering-air temperatures below 45 F both stages of heat must be energized together to minimize condensation issues and ensure proper unit operation.
12. 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.

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.

HEATING SECTION:

The units shall have aluminized steel tubular heat exchangers located on the discharge side of the evaporator blower and equipped with a two-stage gas valve. The units shall have in-shot burners that are ignited by an electronic spark with flame proving feature and protected by both a limit switch and flame roll-out switch.