

# Installation Instructions

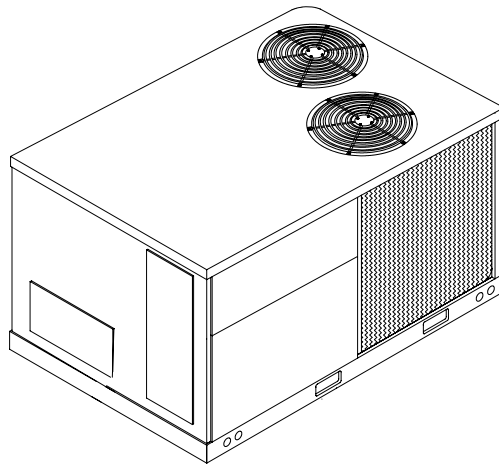
- Safety Labeling & Rules
- Installation Requirements
- Location / Clearances
- Wiring
- Air Distribution
- Ductwork Connections
- Start-Up
- Maintenance
- Hoisting / Rigging

## Models

Three Phase  
208-230, 460, 575 Volt

PAS072-150

PAE072-150



**COMBINATION PACKAGE  
ELECTRIC COOLING UNITS**

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# Safety Labeling and Signal Words

## Danger, Warning and Caution

The signal words **DANGER**, **WARNING** and **CAUTION** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used on product labels to signify an immediate hazard. The signal words **WARNING** and **CAUTION** will be used on product labels and throughout this manual and other manuals that may apply to the product.

## Signal Words

**DANGER** – Immediate hazards which **WILL** result in severe personal injury or death.

**WARNING** – Hazards or unsafe practices which **COULD** result in severe personal injury or death.

**CAUTION** – Hazards or unsafe practices which **COULD** result in minor personal injury or product or property damage.

## Signal Words in Manuals

The signal word **WARNING** is used throughout this manual in the following manner:

**WARNING**

The signal word **CAUTION** is used throughout this manual in the following manner:

**CAUTION**

## Product Labeling

Signal words are used in combination with colors and/or pictures on product labels. Following are examples of product labels with explanations of the colors used.

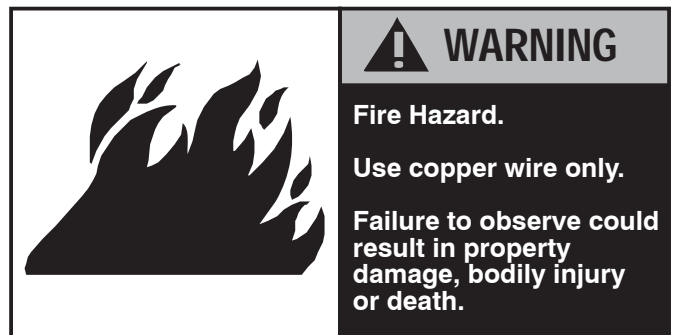
## Danger Label

White lettering on a black background except the word **DANGER** which is white with a red background.



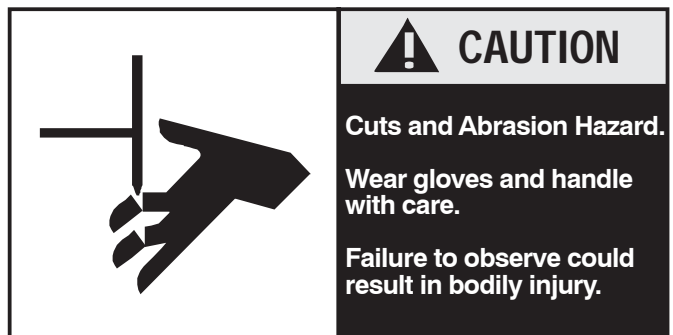
## Warning Label

White lettering on a black background except the word **WARNING** which is black with an orange background.



## Caution Label

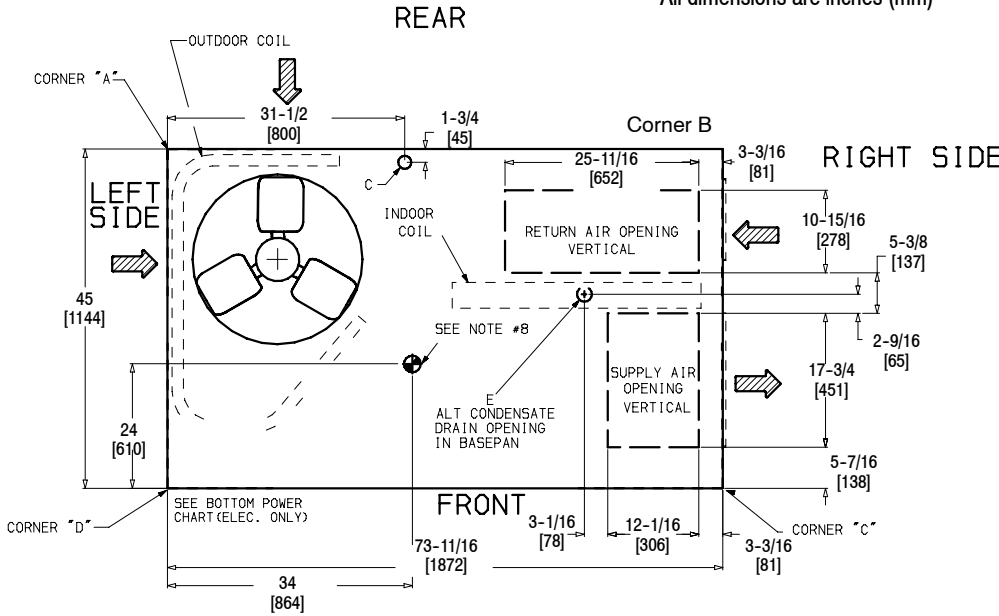
White lettering on a black background except the word **CAUTION** which is black with a yellow background.



**BASE UNIT WEIGHT AND DIMENSIONS - PAS/E072**

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
PAE072	520	236	149	67	127	58	112	51	132	60	19-3/16	362

All dimensions are inches (mm)

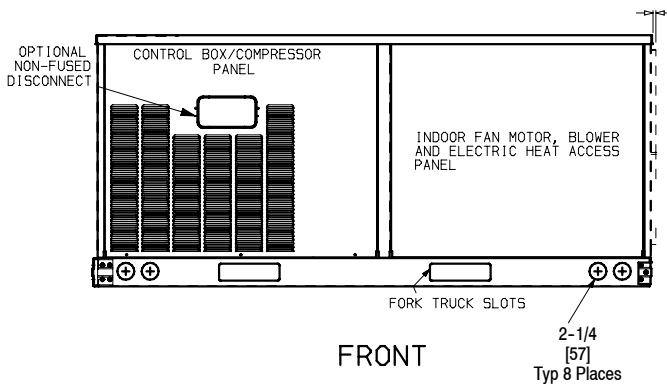
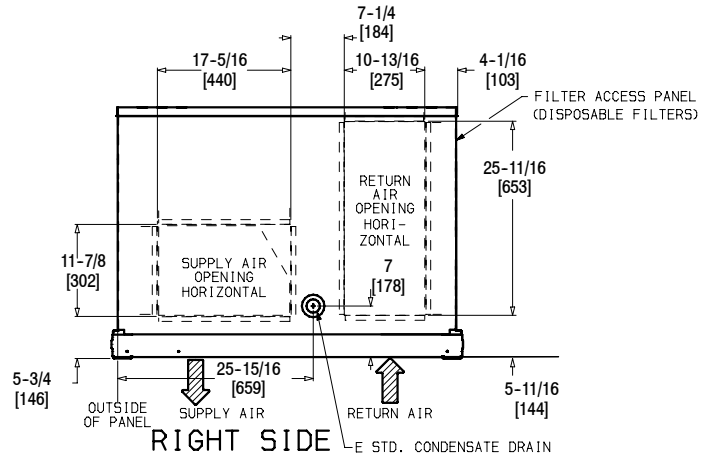
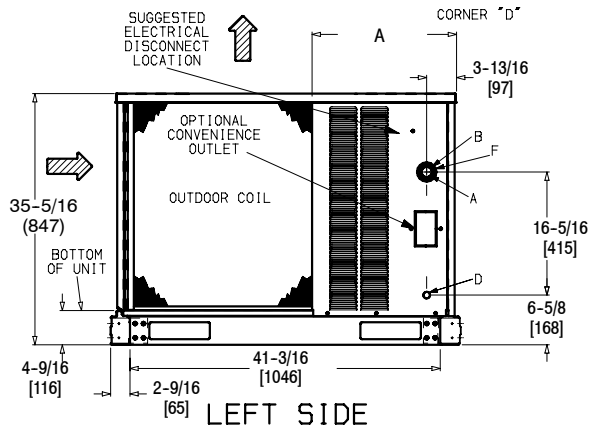


THREADED CONDUIT SIZE	WIRE USE	REQUIRED HOLE SIZES (MAX.)
1/2"	ACC	7/8" [22]
1/2"	24	7/8" [22]
3/4"	Power*	1-1/8" [28.4]
1-1/4" FPT	Power*	1-3/4" [44.4]

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

Connection Sizes - PAE072	
A	1-3/8" Dia (35) Field Power Supply Hole
B	2" Dia (51) Power Supply Knockout
C	1-3/4" Dia (44) Charging Port Hole
D	7/8" Dia (22) Field Control Wiring Hole
E	3/4"-14 NPT Condensate Drain
F	2-1/2" Dia (64) Power Supply Knockout

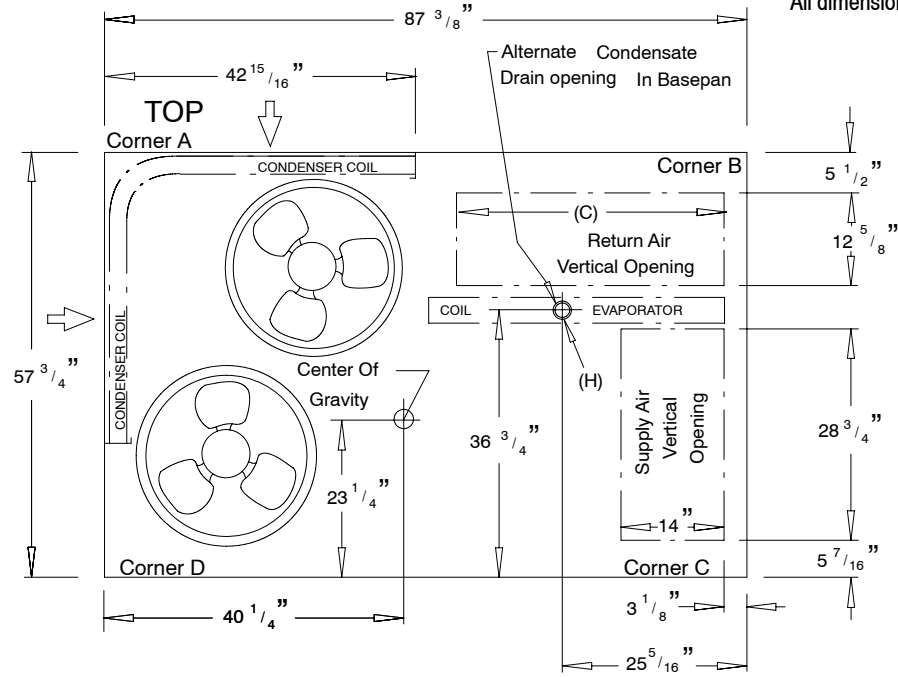
Connection Sizes - PAS072	
A	1-3/8" Dia (35) Field Power Supply Hole
B	2" Dia (51) Power Supply Knockout
C	2-1/2" Dia (44) Charging Port Hole
D	7/8" Dia (22) Field Control Wiring Hole
E	3/4"-14 NPT Condensate Drain



**BASE UNIT DIMENSIONS PAS/PAE090-150**

Unit Size	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
090	755	342	164	74	140	64	208	94	243	110	1-2 <sup>7</sup> / <sub>8</sub>	378	3-5 <sup>5</sup> / <sub>16</sub>	1050	2-9 <sup>11</sup> / <sub>16</sub>	856
102	760	345	165	75	141	64	209	94	245	111	1-2 <sup>7</sup> / <sub>8</sub>	378	3-5 <sup>5</sup> / <sub>16</sub>	1050	2-9 <sup>11</sup> / <sub>16</sub>	856
120	915	415	199	90	170	77	252	114	294	134	2-5 <sup>7</sup> / <sub>8</sub>	759	4-1 <sup>15</sup> / <sub>16</sub>	1253	3-0 <sup>3</sup> / <sub>8</sub>	924
150	930	422	202	92	172	78	256	116	300	136	1-2 <sup>7</sup> / <sub>8</sub>	378	4-1 <sup>15</sup> / <sub>16</sub>	1253	3-0 <sup>3</sup> / <sub>8</sub>	924

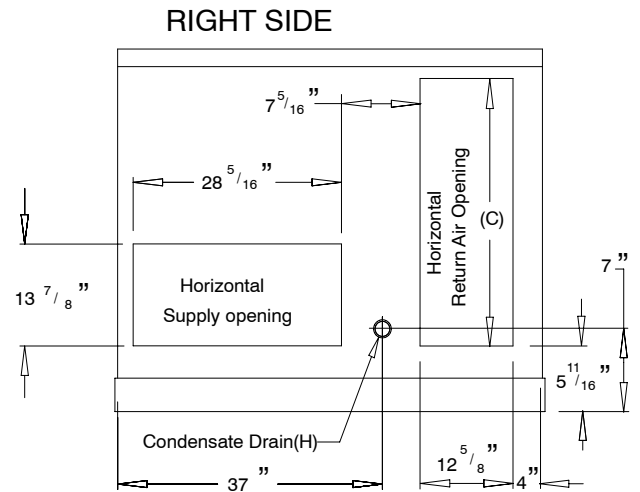
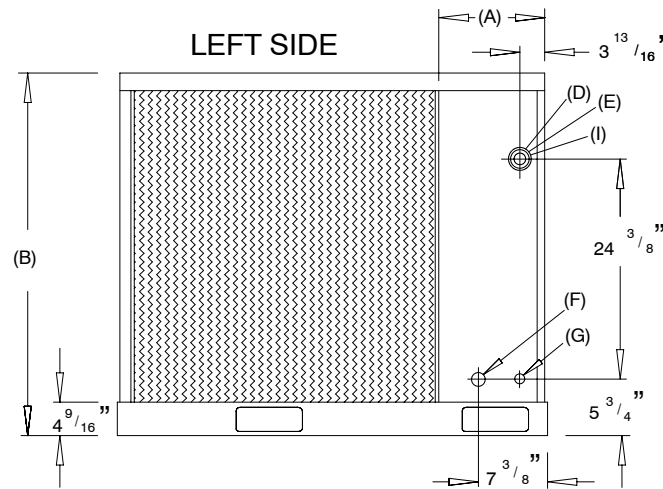
All dimensions are inches (mm)



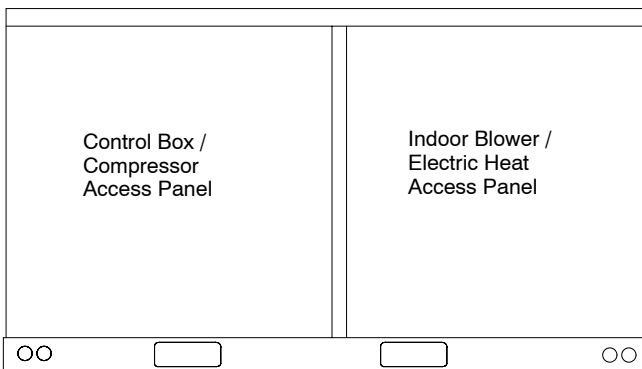
THREADED CONDUIT SIZE	WIRE USE	REQUIRED HOLE SIZES (MAX.)
1/2"	24 Power*	7/8" [22]
3/4"	Power*	1-1/8" [28.4]
1-1/4" FPT	Power*	1-3/4" [44.4]

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

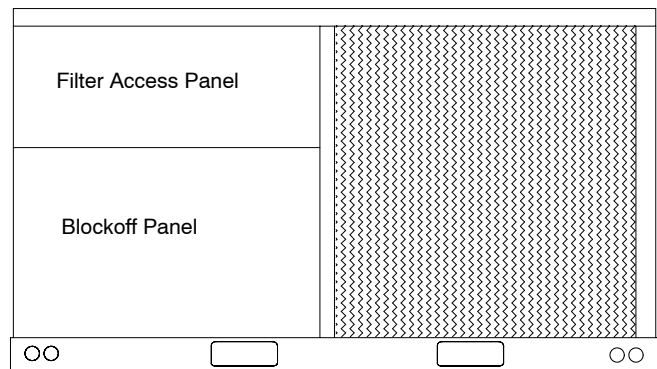
Connection Sizes	
D	1-3/8" Dia (35) Field Power Supply Hole
E	2-1/2" Dia (64) Power Supply Knockout
F	1-3/4" Dia (44) Charging Port Hole
G	7/8" Dia (22) Field Control Wiring Hole
H	3/4"-14 NPT Condensate Drain
I	2" Dia (51) Power Supply Knockout



**FRONT**



**BACK**



# Safe Installation Requirements

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## **WARNING**

Installation or repairs made by unqualified persons can result in hazards to you and others. Installation must conform with local building codes or, in the absence of local codes with National Electrical Code ANSI/NFPA 70-1990 or current edition. In Canada the CSA C.22.1 - Canadian Electrical Code Part 1 or current edition.

The information contained in this manual is intended for use by a qualified service technician familiar with safety procedures, equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual can result in property damage, personal injury and/or death.

- Installation **MUST** conform to the most current version of the following standards or a superseding standard.

In the United States:

- National Electrical Code ANSI/NFPA 70-1990

In Canada:

- CSA C.22.1 - Canadian Electrical Code Part 1.
- Seal supply and return air ducts.

**NOTE:** It is the personal responsibility and obligation of the customer to contact a qualified installer to ensure that the installation is adequate and conforms to governing codes and ordinances.

Do not install unit in an indoor location. Do not locate unit air inlets near exhaust vents or other sources of contaminated air.

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

# Location And Set-up

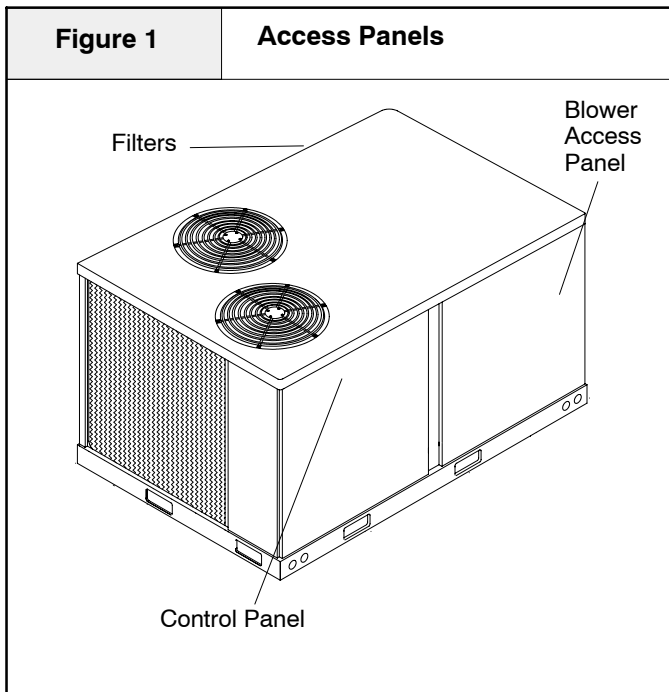
The unit is designed for outdoor installation **ONLY**. The unit may be installed on a level concrete mounting base (or other adequate platform) at ground level or on a flat rooftop with an adequate platform. If using as a downflow model, use a roof curb. Typical installations are shown in **Figures 2**.

## Access Panels

### CAUTION

**Unit will NOT operate properly without all access panels in place. Access panels are shown in Figure 1.**

**Unit MUST NOT be moved unless all access panels are in place.**



## Clearances

The location **MUST** allow for minimum clearances and should not be adjacent to an area where the unit's operating sound level might be objectionable.

Minimum clearances, as specified below, **MUST** be maintained to provide adequate fire protection and room for service personnel. In addition, local codes **MUST** be observed.

Do **NOT** install the unit in a location that will permit discharged air from the condenser to recirculate to the condenser inlet.

### CAUTION

**Do NOT operate unit in a corrosive atmosphere containing chlorine, fluorine, or any other corrosive chemicals.**

### Minimum Clearances to Combustible and non-Combustible Construction (Horizontal & DownFlow)

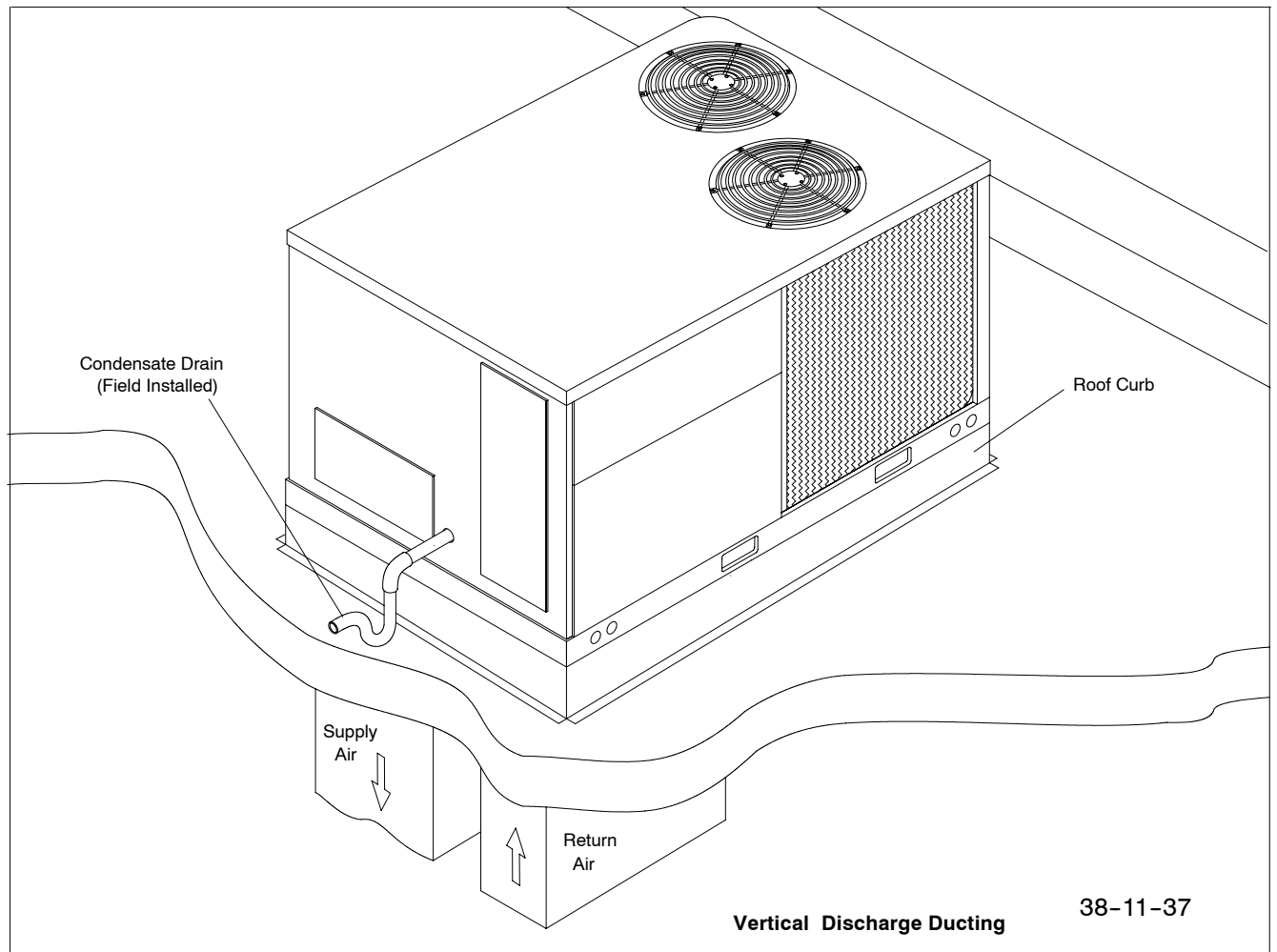
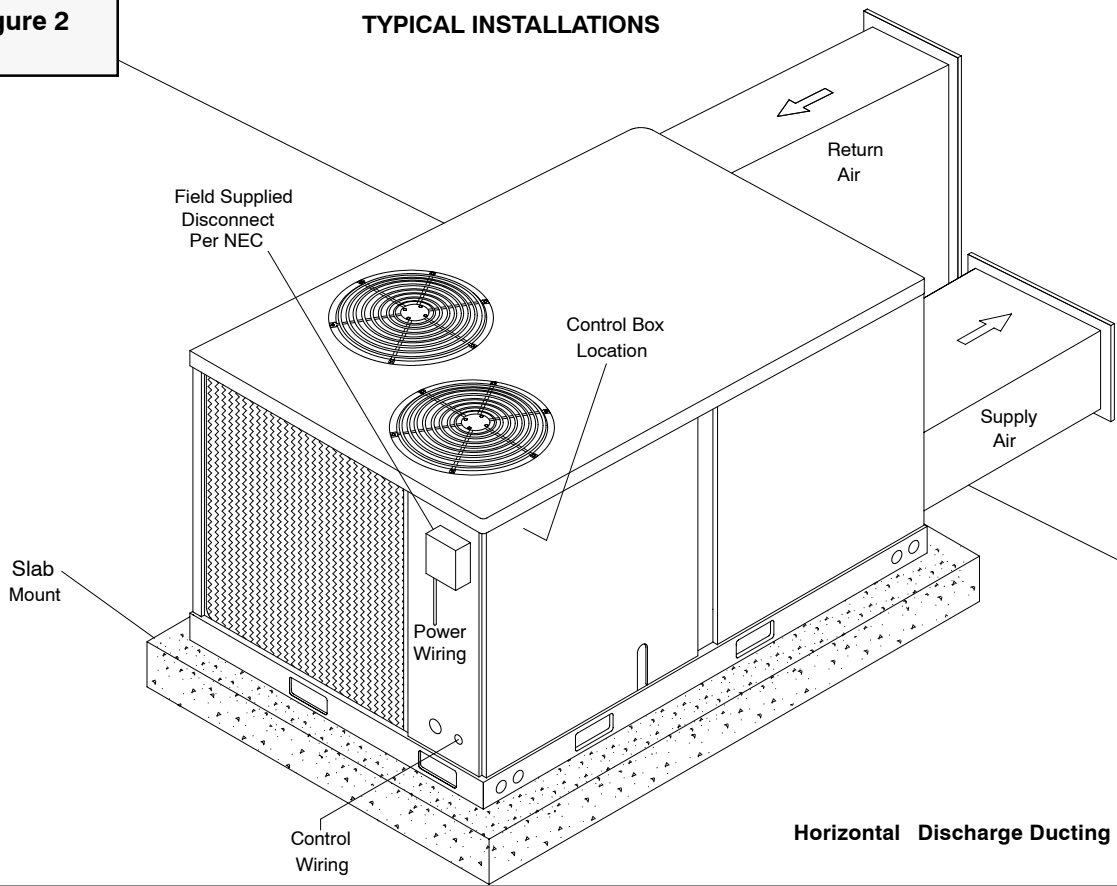
Bottom of unit and combustible surfaces	
with no curb	0"
Condenser Coil, one side	36"
other side (which side is optional)	12"
Overhead clearance	60"
Control Box Side	42"
Horizontal Duct Connections Side	0"

Horizontal Discharge Units with Electric Heat 1 inch clearance to ductwork for one foot.



**Figure 2**

**TYPICAL INSTALLATIONS**



38-11-37

# Installation

## CAUTION

Unit will **NOT** operate properly unless it is installed level front to rear and side to side.

The slope **MUST NOT** be greater than  $\frac{1}{8}$ " per foot (10mm per meter). For side to side leveling, the control box side **MUST** always be lower.

## Ground Level Installation

Ground level platform requirements:

- The unit **MUST** be situated to provide safe access for servicing.
- Platform may be made of either concrete or pressure treated wood and **MUST** be level and strong enough to support unit weight.
- Position platform separate from building foundation.
- Install in well-drained area, with top surface of platform above grade level.
- Platform **MUST** be high enough to allow for proper condensate trap installation and drainage. See **Figure 4** and associated text for more information about condensate drainage.

## Rooftop Installation

Rooftop platform requirements:

- The unit **MUST** be situated to provide safe access for servicing.
- The existing roof structure **MUST** be adequate to support the weight of the unit or the roof **MUST** be reinforced.

Check the weight of the unit in relation to the roof structure and local building codes or ordinances and reinforce roof structure if necessary. See page 3 of this manual for unit weights and corner weights.

- Support for the unit **MUST** be level and strong enough to carry unit weight. The support may consist of a platform or a combination of platform and roof beams or curb.

The platform may be constructed of pressure treated wood and may be covered with Class A, B or C roof covering.

- Platform **MUST** allow for proper condensate trap installation and drainage. See **Figure 4** and associated text for more information about condensate drainage.

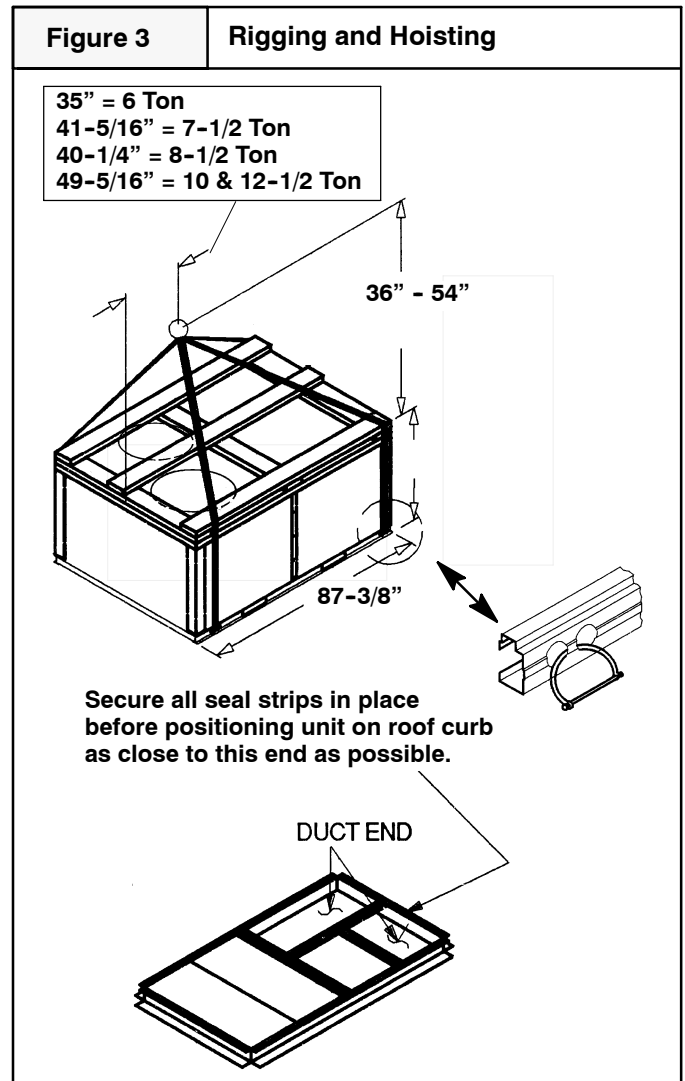
**NOTE: MAKE SURE DOWNFLOW SUPPLY AND RETURN AIR DUCTS ARE FREE OF OBSTRUCTIONS BEFORE INSTALLING UNIT ON ROOF CURB OR ANY DOWNFLOW APPLICATION.** Remove all forklift supports, covers, cardboard, etc., from the downflow return and supply air ducts.

## Hoisting

**NOTE:** All access panels **MUST** be secured in place before hoisting.

The unit should be hoisted with two lifting slings. Attach the slings to rigging shackles that have been hooked through holes in the base rail. See **Figure 3**.

Inspect unit for transportation damage. File any claim with transportation agency. Keep unit upright and do not drop. Spreader bars are not required if top crating is left on unit.



## Converting to Horizontal Operation

These units are shipped ready for downflow operation but are adaptable to horizontal use. To convert to horizontal operation, follow these steps:

Remove screws from side horizontal supply and return panels (see **Figure 4**).

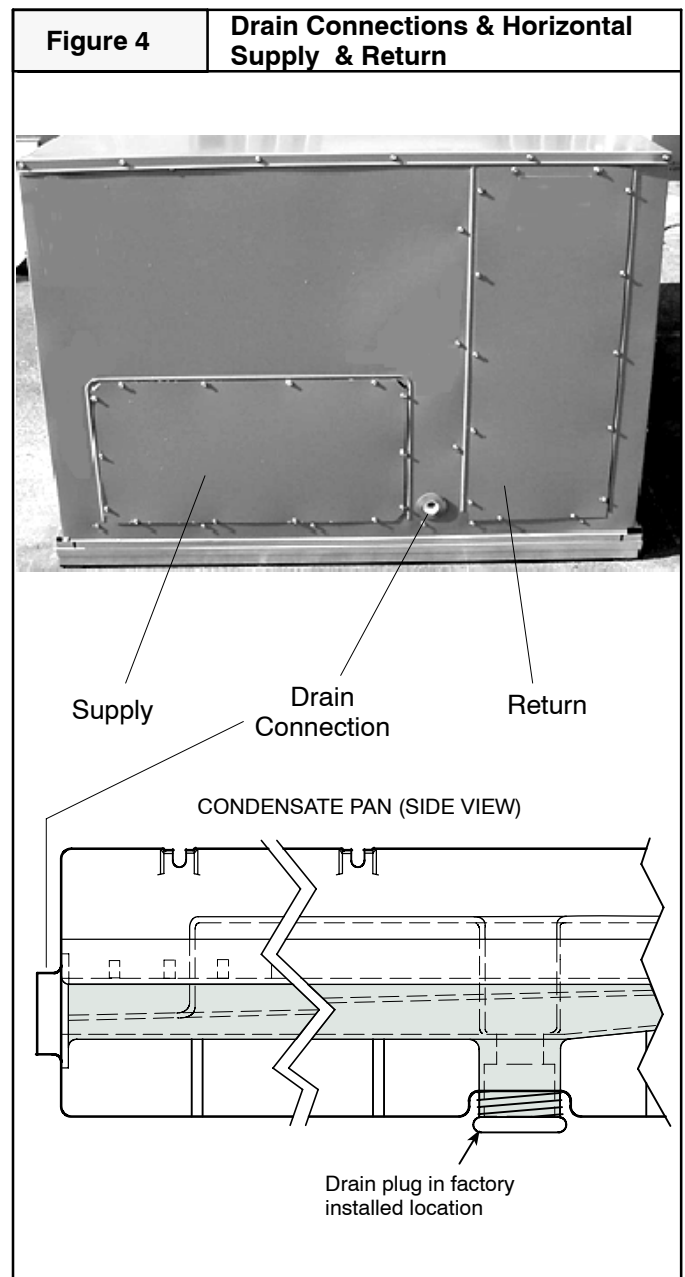
Using the same screws install horizontal supply and return panels on downflow supply and return openings with insulation side down. Install from inside of unit.

## Condensate Drain

The unit's 3/4 -in. condensate drain connections are located on the bottom and side of the unit. Unit discharge connections do not determine the use of drain connections; either drain connection can be used with vertical or horizontal applications.

When using the standard side drain connection, ensure the red plug in the alternate bottom connection is tight before installing the unit.

To use the bottom drain connection for a roof curb installation, relocate the factory-installed plug from the bottom connection to the side connection. **See Fig.4**. The piping for the condensate drain and external trap can be completed after the unit is in place.



All units must have an external trap for condensate drainage. Install a trap at least 4 in. deep and protect against freeze-up. If a drain line is installed downstream from the external trap, pitch the line away from the unit at 1 in. per 10 ft of run. Do not use a pipe size smaller than the unit connection.

The circulating blower and the condenser fan create a negative pressure on the condensate drain line that will prevent the condensate from draining properly without a trap.

# Electrical Wiring

## WARNING

Electrical shock hazard.

Shut off electric power at unit disconnect or service panel before making any electrical connections.

Unit **MUST** be grounded to electrical service panel.

Failure to follow this warning can result in property damage, personal injury, and/or death.

disconnect switch (when required) located within sight of the unit. Supply voltage, amperage, wire, fuse and disconnect switch sizes **MUST** conform with specifications on the unit rating plate.

Wiring **MUST** be protected from possible mechanical damage and **MUST NOT** interfere with removal of access panels, filters, etc.

All exposed wiring or connections **MUST** be made with weatherproof cable or wire unless installed in conduit.

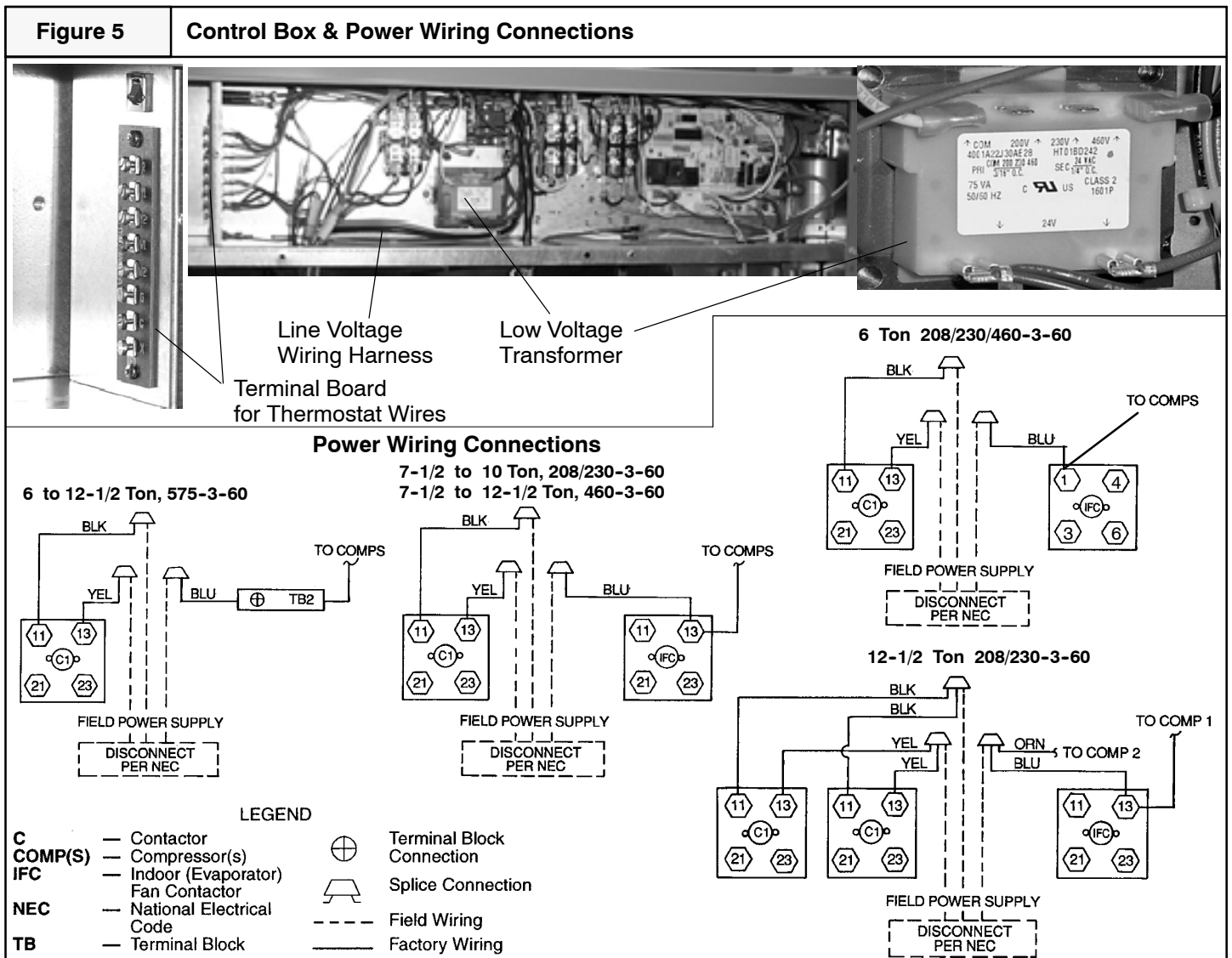
Connections for line voltage are made in the control box section. Low voltage connections are made at the terminal board on the left hand side of the control box (see **Figure 5**).

For access to high and low voltage connections, remove the compressor access panel. (see **Figure**).

### Line Voltage Wiring

Line voltage wires enter the unit through the double knockout on the end of the unit next to the compressors. (see **Figure 1 and page 3**). Do **NOT** complete line voltage connections until unit is permanently grounded. All line voltage connections and the ground connection **MUST** be made with copper wire.

**NOTE:** All electrical work **MUST** conform with the requirements of local codes and ordinances and in the United States the National Electrical Code ANSI/NFPA70-1990 (or current edition) and in Canada CSA C.22.1 - Canadian Electrical Code Part 1 (or current edition). Provide line voltage power supply from a separate protected circuit with a



## Line Connections

Complete the line service connections to the terminal connections in the control box. Refer to applicable wiring diagram. Check all screw terminals to ensure they are tight.

## Converting 230V Units to 208V

To convert 230V units to 208V:

1. Turn electric power **OFF**.
2. Remove control box access panel and open control box. Locate the 24V control transformer.
3. Remove wires from the terminal labeled '230V' on the 24V control transformer and reconnect them to the 200V terminal of the 24V control transformer.
4. Close control box and replace control box access panel.

## Field Installed Equipment

All wiring done in the field between the unit and other devices, or between separate devices that are field installed and located, **MUST** not exceed the temperature limitations for type T wire and **MUST** be installed according to the manufacturer's instructions for the devices.

## Low Voltage Wiring

Low voltage wiring connections for the thermostat are made at the 24V terminal board which is located on the left hand side of the control box. For access, remove the compressor access panel. Refer to the wiring diagram and the instructions included with the thermostat.

## Low Voltage Wiring With Economizer Option

The economizer electrical harness taps into **Y1** and **Y2** on the low voltage terminal board. Low voltage wires from the thermostat are connected to **Y1** and **Y2** with or without an economizer.

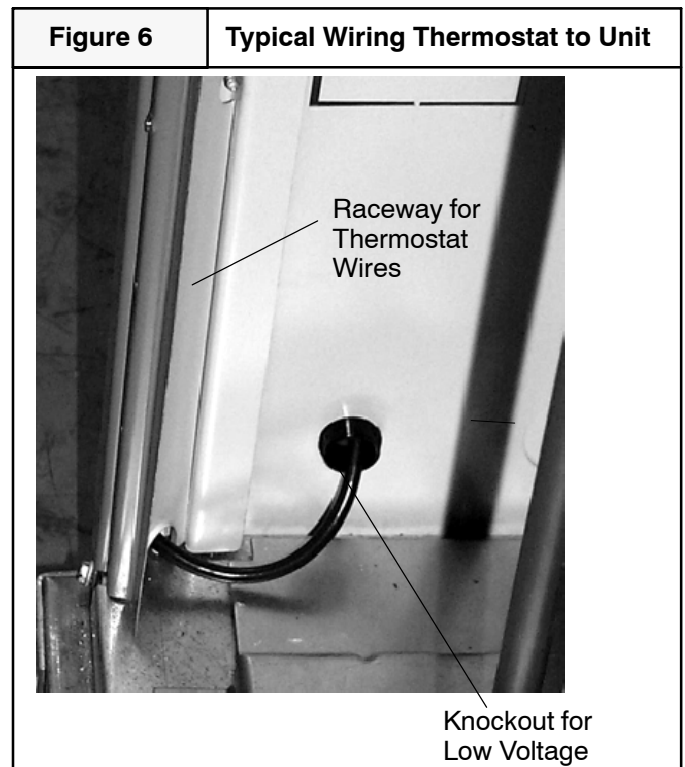
## Thermostat

The thermostat **MUST** be a field supplied 2 stage cooling, 2 stage heating thermostat.

The location of the thermostat has an important effect on the operation of the unit. **FOLLOW THE INSTRUCTIONS INCLUDED WITH THE THERMOSTAT FOR CORRECT LOCATION, MOUNTING AND WIRING.**

Route thermostat cable or equivalent single leads of colored wire from subbase terminals to low-voltage connections on unit, shown on **Figures 5 & 6**, as described in Steps 1-4 below.

1. If unit is mounted on roof curb and accessory thru-the-bottom connection is used, route wire through connector provided in accessory kit through the unit basepan.
2. Pass control wires through the hole provided on unit.
3. Feed wire through the raceway built into the corner post to the 24-v barrier located on the left side of the control box. See **Figure 6**. The raceway provides the UL-required (Underwriters' Laboratories) clearance between the high- and low-voltage wiring.
4. Connect thermostat wires to screw terminals of low-voltage terminal board.
5. If unit is to be equipped with electric heat, ensure that when the thermostat calls for heat, 'W' energizes 'G' output. This allows fan operation when heat is called for.



## Final Check

Make a final wiring check to be sure system is correctly wired. Inspect field installed wiring and the routing to ensure that rubbing or chafing due to vibration will not occur.

# Air Distribution System

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## Ductwork

**NOTE:** The total heat loss from the structure as expressed in total Btu/hr **MUST** be calculated by manufacturer's method or in accordance with "A.S.H.R.A.E. Guide" or "Manual N - Load Calculations" published by the Air Conditioning Contractors of America or in Canada H.R.A.I. "Manual N". The total heat loss calculated should be equal to or less than the heating capacity. Output based on D.O.E. test procedures, steady state efficiency times input.

Ductwork, supply registers, and return air grilles **MUST** be designed and sized to handle the greater of the units heating or cooling air volume requirements. If the unit is connected to an existing system, the ductwork **MUST** be checked to make sure it is adequate. Extra runs or larger duct sizes may have to be installed. **Use only non-combustible type insulation on supply plenum or supply ductwork within 6 feet of unit.**

Maximum recommended velocity in trunk ducts is 1000 feet per minute (5.08 m/s). Velocity in branches should not exceed 800 feet per minute (4.06 m/s).

Ductwork installed outdoors should have a minimum of 2" (50.8mm) of fiberglass insulation and a weatherproof vapor barrier. It should also be protected against damage. Caulk and flashing, or other means adequate to provide a permanent weather seal should be used.

Ductwork installed in attics or other areas exposed to outside temperatures should be installed with a minimum of 2" (50.8mm) fiberglass insulation and have an indoor type vapor barrier.

## Ductwork Connections

The use of flexible, **non-combustible** connectors between main trunk ducts and supply and return air plenums is recommended to minimize vibration transmission .

## Field Fabricate Ductwork

Secure all ducts to roof curb and building structure on vertical units. Do not connect ductwork to unit. For horizontal applications, field supplied flanges should be attached to horizontal discharge openings and all ductwork secured to the flanges. Insulate and weatherproof all external ductwork, joints, and roof openings with counter flashing and mastic in accordance with applicable codes.

Ducts passing through an unconditioned space must be insulated and covered with a vapor barrier.

If a plenum return is used on a vertical unit, the return should be ducted through the roof deck to comply with applicable fire codes.

A minimum clearance is not required around ductwork. Cabinet return-air static shall not exceed -.45 in. wg without an economizer.

The units are designed for a minimum heating operation continuous return-air temperature of 50 F (dry bulb), or an intermittent operation down to 45 F (dry bulb), such as when used with a night set-back thermostat.

## Circulating Blower

### Determining Blower Speed

1. From the system design, determine the external static pressure (ESP) for the supply ducts, return ducts and registers, diffusers, grilles, dampers, heaters and special filters (if any).
2. If unit is to be set up in cooling mode, add .08" W.C. (20 Pa) for wet coil operation to the total ESP determined in Step 1.
3. For static additions due to installation of an economizer or manual air dampers, add .05 inches to ESP.
4. From the system design, determine the desired airflow in CFM (L/s). See **Figure 7** for CFM to L/s conversion table.
5. To determine the blower speed necessary to obtain the desired CFM (L/s), see the Circulating Blower Performance Data for the unit located on the pages that immediately follow.
6. Compare required RPM to unit's factory setting for blower RPM (see Blower Performance Tables). If different from the RPM your installation requires, the blower speed will need to be changed.
7. Following the circulating Blower Performance Data table is a table that shows how many turns open the adjustable blower motor pulley needs to be to obtain the required RPM.
8. To change the blower speed, see pages 16 and 17 .

**Figure 7**

**Metric Conversions: Cubic Feet per Minute (CFM) to Liters per Second (L/s);  
Inches of Water Column (In. W.C.) to Pascals (Pa)**

CFM	L/s	CFM	L/s	CFM	L/s	In. W.C.	Pa	In. W.C.	Pa	In. W.C.	Pa	In. W.C.	Pa	In. W.C.	Pa
50	24	2550	1203	5050	2383	0.01	2	0.51	127	1.01	251	1.51	376	2.01	501
100	47	2600	1227	5100	2407	0.02	5	0.52	130	1.02	254	1.52	379	2.02	503
150	71	2650	1251	5150	2430	0.03	7	0.53	132	1.03	257	1.53	381	2.03	506
200	94	2700	1274	5200	2454	0.04	10	0.54	135	1.04	259	1.54	384	2.04	508
250	118	2750	1298	5250	2477	0.05	12	0.55	137	1.05	262	1.55	386	2.05	511
300	142	2800	1321	5300	2501	0.06	15	0.56	139	1.06	264	1.56	389	2.06	513
350	165	2850	1345	5350	2525	0.07	17	0.57	142	1.07	267	1.57	391	2.07	516
400	189	2900	1369	5400	2548	0.08	20	0.58	144	1.08	269	1.58	394	2.08	518
450	212	2950	1392	5450	2572	0.09	22	0.59	147	1.09	271	1.59	396	2.09	521
500	236	3000	1416	5500	2595	0.10	25	0.60	149	1.10	274	1.60	399	2.10	523
550	260	3050	1439	5550	2619	0.11	27	0.61	152	1.11	276	1.61	401	2.11	526
600	283	3100	1463	5600	2643	0.12	30	0.62	154	1.12	279	1.62	404	2.12	528
650	307	3150	1486	5650	2666	0.13	32	0.63	157	1.13	281	1.63	406	2.13	531
700	330	3200	1510	5700	2690	0.14	35	0.64	159	1.14	284	1.64	408	2.14	533
750	354	3250	1534	5750	2713	0.15	37	0.65	162	1.15	286	1.65	411	2.15	536
800	378	3300	1557	5800	2737	0.16	40	0.66	164	1.16	289	1.66	413	2.16	538
850	401	3350	1581	5850	2761	0.17	42	0.67	167	1.17	291	1.67	416	2.17	541
900	425	3400	1604	5900	2784	0.18	45	0.68	169	1.18	294	1.68	418	2.18	543
950	448	3450	1628	5950	2808	0.19	47	0.69	172	1.19	296	1.69	421	2.19	545
1000	472	3500	1652	6000	2831	0.20	50	0.70	174	1.20	299	1.70	423	2.20	548
1050	495	3550	1675	6050	2855	0.21	52	0.71	177	1.21	301	1.71	426	2.21	550
1100	519	3600	1699	6100	2879	0.22	55	0.72	179	1.22	304	1.72	428	2.22	553
1150	543	3650	1722	6150	2902	0.23	57	0.73	182	1.23	306	1.73	431	2.23	555
1200	566	3700	1746	6200	2926	0.24	60	0.74	184	1.24	309	1.74	433	2.24	558
1250	590	3750	1770	6250	2949	0.25	62	0.75	187	1.25	311	1.75	436	2.25	560
1300	613	3800	1793	6300	2973	0.26	65	0.76	189	1.26	314	1.76	438	2.26	563
1350	637	3850	1817	6350	2997	0.27	67	0.77	192	1.27	316	1.77	441	2.27	565
1400	661	3900	1840	6400	3020	0.28	70	0.78	194	1.28	319	1.78	443	2.28	568
1450	684	3950	1864	6450	3044	0.29	72	0.79	197	1.29	321	1.79	446	2.29	570
1500	708	4000	1888	6500	3067	0.30	75	0.80	199	1.30	324	1.80	448	2.30	573
1550	731	4050	1911	6550	3091	0.31	77	0.81	202	1.31	326	1.81	451	2.31	575
1600	755	4100	1935	6600	3115	0.32	80	0.82	204	1.32	329	1.82	453	2.32	578
1650	779	4150	1958	6650	3138	0.33	82	0.83	207	1.33	331	1.83	456	2.33	580
1700	802	4200	1982	6700	3162	0.34	85	0.84	209	1.34	334	1.84	458	2.34	583
1750	826	4250	2006	6750	3185	0.35	87	0.85	212	1.35	336	1.85	461	2.35	585
1800	849	4300	2029	6800	3209	0.36	90	0.86	214	1.36	339	1.86	463	2.36	588
1850	873	4350	2053	6850	3233	0.37	92	0.87	217	1.37	341	1.87	466	2.37	590
1900	897	4400	2076	6900	3256	0.38	95	0.88	219	1.38	344	1.88	468	2.38	593
1950	920	4450	2100	6950	3280	0.39	97	0.89	222	1.39	346	1.89	471	2.39	595
2000	944	4500	2124	7000	3303	0.40	100	0.90	224	1.40	349	1.90	473	2.40	598
2050	967	4550	2147	7050	3327	0.41	102	0.91	227	1.41	351	1.91	476	2.41	600
2100	991	4600	2171	7100	3350	0.42	105	0.92	229	1.42	354	1.92	478	2.42	603
2150	1015	4650	2194	7150	3374	0.43	107	0.93	232	1.43	356	1.93	481	2.43	605
2200	1038	4700	2218	7200	3398	0.44	110	0.94	234	1.44	359	1.94	483	2.44	608
2250	1062	4750	2242	7250	3421	0.45	112	0.95	237	1.45	361	1.95	486	2.45	610
2300	1085	4800	2265	7300	3445	0.46	115	0.96	239	1.46	364	1.96	488	2.46	613
2350	1109	4850	2289	7350	3468	0.47	117	0.97	242	1.47	366	1.97	491	2.47	615
2400	1133	4900	2312	7400	3492	0.48	120	0.98	244	1.48	369	1.98	493	2.48	618
2450	1156	4950	2336	7450	3516	0.49	122	0.99	247	1.49	371	1.99	496	2.49	620
2500	1180	5000	2360	7500	3539	0.50	125	1.00	249	1.50	374	2.00	498	2.50	623

**CIRCULATING BLOWER PERFORMANCE - PAS/E072 - 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 - PAS/E072 - High Static 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	1546	2151
2100	927	680	1017	815	1101	960	1178	1116	1251	1283	1320	1459	1386	1646	1448	1842	1508	2047	1566	2262
2200	962	769	1050	909	1131	1059	1206	1218	1277	1389	1345	1568	1409	1758	1471	1956	1530	2164	1587	2380
2300	997	865	1082	1010	1161	1165	1235	1329	1304	1503	1371	1686	1434	1878	1494	2080	1553	2290	1609	2509
2400	1033	970	1115	1120	1192	1279	1264	1448	1332	1625	1397	1812	1459	2008	1518	2213	1576	2425	-	-
2500	1069	1084	1149	1239	1223	1403	1293	1576	1360	1757	1424	1948	1484	2147	1543	2355	1599	2571	-	-
2600	1106	1206	1183	1367	1255	1535	1323	1713	1389	1898	1451	2093	1511	2295	1568	2507	-	-	-	-
2700	1142	1338	1217	1503	1287	1677	1354	1859	1418	2049	1479	2248	1537	2454	-	-	-	-	-	-
2800	1179	1480	1251	1650	1320	1829	1385	2015	1447	2210	1507	2412	-	-	-	-	-	-	-	-
2900	1216	1632	1286	1807	1353	1991	1416	2182	1477	2381	-	-	-	-	-	-	-	-	-	-
3000	1253	1794	1321	1975	1386	2163	1448	2359	1508	2563	-	-	-	-	-	-	-	-	-	-

**LEGEND**

Watts = Input Watts to motor.

\* Motor drive range: 1300 to 1685 rpm. All other rpms require a field-supplied drive.

Maximum continuous bhp is 2.90.



**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 - PAS090 - High Static 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	999	2290
2500	495	588	581	767	653	948	717	1134	774	1327	827	1527	876	1733	922	1946	966	2165	1007	2391
2550	501	617	586	799	658	983	722	1173	779	1368	832	1570	880	1779	926	1994	970	2215	1011	2444
2600	507	647	592	832	663	1020	727	1212	784	1410	836	1615	885	1826	931	2043	974	2267	1015	2497
2700	519	709	603	902	674	1096	736	1294	793	1498	845	1708	893	1923	939	2146	982	2374	1023	2609
2800	532	775	614	976	684	1176	746	1381	802	1590	854	1805	902	2026	948	2253	991	2486	1031	2725
2900	544	846	625	1054	694	1261	756	1472	812	1687	863	1907	911	2134	956	2366	999	2603	1040	2847
3000	557	922	637	1137	705	1351	766	1568	821	1789	872	2015	920	2246	965	2483	1008	2726	1048	2974
3100	570	1002	648	1224	716	1445	776	1669	831	1896	882	2127	929	2365	974	2607	1016	2854	1057	3107
3200	582	1087	660	1317	727	1545	786	1774	841	2008	891	2245	938	2488	983	2735	1025	2988	1065	3246
3300	595	1177	671	1414	738	1649	797	1885	851	2125	901	2369	948	2617	992	2869	1034	3127	1074	3390
3400	608	1271	683	1517	749	1759	807	2002	861	2248	911	2497	957	2751	1001	3010	1043	3273	-	-
3500	622	1372	695	1625	760	1874	818	2124	871	2376	921	2632	967	2891	1011	3155	1052	3424	-	-
3600	635	1477	707	1738	771	1995	829	2252	881	2510	930	2772	977	3038	1020	3307	-	-	-	-
3700	648	1588	720	1857	783	2121	839	2385	892	2650	941	2918	986	3190	-	-	-	-	-	-
3750	655	1646	726	1918	788	2187	845	2454	897	2722	946	2994	991	3268	-	-	-	-	-	-

**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.

**CIRCULATING BLOWER PERFORMANCE - PAE090 - 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	402	555	596	629	802	694	1021	752	1252	806	1494	856	1747	903	2009	-	-	-	-
2300	471	421	560	618	634	828	698	1050	757	1283	81	1528	860	1784	907	2048	-	-	-	-
2400	483	461	570	665	644	881	708	1109	765	1348	818	1599	868	1859	915	2129	-	-	-	-
2500	495	503	581	715	653	937	717	1171	774	1416	827	1672	877	1938	923	2214	-	-	-	-
2550	501	526	586	740	658	967	722	1204	779	1452	832	1710	881	1979	-	-	-	-	-	-
2600	507	549	592	767	663	996	727	1237	784	1488	836	1749	885	2021	-	-	-	-	-	-
2700	519	597	603	823	674	1059	736	1306	793	1563	845	1830	894	2107	-	-	-	-	-	-
2800	532	649	614	882	684	1125	746	1378	802	1641	854	1914	903	2197	-	-	-	-	-	-
2900	544	703	625	944	694	1194	756	1453	812	1723	863	2002	-	-	-	-	-	-	-	-
3000	557	761	637	1009	705	1266	766	1533	821	1808	872	2093	-	-	-	-	-	-	-	-
3100	570	823	648	1079	716	1342	776	1615	831	1897	882	2189	-	-	-	-	-	-	-	-
3200	582	888	660	1151	727	1422	786	1702	841	1991	-	-	-	-	-	-	-	-	-	-
3300	595	857	671	1228	738	1506	797	1792	851	2088	-	-	-	-	-	-	-	-	-	-
3400	608	1030	683	1308	749	1593	807	1887	861	2188	-	-	-	-	-	-	-	-	-	-
3500	622	1106	695	1392	760	1685	818	1985	-	-	-	-	-	-	-	-	-	-	-	-
3600	635	1187	707	1481	771	1781	829	2088	-	-	-	-	-	-	-	-	-	-	-	-
3700	648	1272	720	1573	783	1881	840	2195	-	-	-	-	-	-	-	-	-	-	-	-
3750	655	1316	726	1621	788	1932	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**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 - PAE090 - High Static 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	402	555	596	629	802	694	1021	752	1252	806	1494	856	1747	903	2009	947	2282	988	2564
2300	471	421	560	618	634	828	698	1050	757	1283	81	1528	860	1784	907	2048	950	2323	992	2607
2400	483	461	570	665	644	881	708	1109	765	1348	818	1599	868	1859	915	2129	958	2410	1000	2698
2500	495	503	581	715	653	937	717	1171	774	1416	827	1672	877	1938	923	2214	966	2499	1008	2793
2550	501	526	586	740	658	967	722	1204	779	1452	832	1710	881	1979	927	2258	971	2545	1012	2842
2600	507	549	592	767	663	996	727	1237	784	1488	836	1749	885	2021	931	2302	975	2592	1016	2891
2700	519	597	603	823	674	1059	736	1306	793	1563	845	1830	894	2107	940	2394	983	2689	1024	2993
2800	532	649	614	882	684	1125	746	1378	802	1641	854	1914	903	2197	948	2488	991	2790	1032	3099
2900	544	703	625	944	694	1194	756	1453	812	1723	863	2002	912	2290	957	2587	1000	2894	1041	3209
3000	557	761	637	1009	705	1266	766	1533	821	1808	872	2093	921	2368	966	2691	1008	3003	1049	3323
3100	570	823	648	1079	716	1342	776	1615	831	1897	882	2189	930	2489	975	2798	1017	3115	1057	3441
3200	582	888	660	1151	727	1422	786	1702	841	1991	892	2288	939	2595	984	2909	1026	3233	-	-
3300	595	857	671	1228	738	1506	797	1792	851	2088	901	2391	948	2704	993	3024	1035	3353	-	-
3400	608	1030	683	1308	749	1593	807	1887	861	2188	911	2499	958	2817	1002	3144	-	-	-	-
3500	622	1106	695	1392	760	1685	818	1985	872	2294	921	2610	967	2935	1011	3268	-	-	-	-
3600	635	1187	707	1481	771	1781	829	2088	882	2403	931	2726	977	3057	1021	3396	-	-	-	-
3700	648	1272	720	1573	783	1881	840	2195	892	2517	941	2847	987	3184	-	-	-	-	-	-
3750	655	1316	726	1621	788	1932	845	2250	897	2575	946	2908	992	3249	-	-	-	-	-	-

**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.

<b>CIRCULATING BLOWER PERFORMANCE - PAS102 - Standard Motor (Belt Drive) (Horizontal Discharge)</b>																				
<b>Airflow CFM</b>	<b>EXTERNAL STATIC PRESSURE (in. wg)</b>																			
	<b>0.2</b>		<b>0.4</b>		<b>0.6</b>		<b>0.8</b>		<b>1.0</b>		<b>1.2</b>		<b>1.4</b>		<b>1.6</b>		<b>1.8</b>		<b>2.0</b>	
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts
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	394	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3800	662	1705	732	1982	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3900	675	1828	744	2112	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4000	689	1957	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4100	702	2092	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4200	716	2234	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**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.

<b>CIRCULATING BLOWER PERFORMANCE - PAS102 - High Static Motor (Belt Drive) (Horizontal Discharge)</b>																				
<b>Airflow CFM</b>	<b>EXTERNAL STATIC PRESSURE (in. wg)</b>																			
	<b>0.2</b>		<b>0.4</b>		<b>0.6</b>		<b>0.8</b>		<b>1.0</b>		<b>1.2</b>		<b>1.4</b>		<b>1.6</b>		<b>1.8</b>		<b>2.0</b>	
	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts	RPM	Watts
2550	501	617	586	799	658	983	722	1173	779	1368	832	1570	880	1779	926	1994	970	2215	1011	2444
2600	507	647	592	832	663	1020	727	1212	784	1410	836	1615	885	1826	931	2043	974	2267	1015	2497
2700	519	709	603	902	674	1096	736	1294	793	1498	845	1708	893	1923	939	2146	982	2374	1023	2609
2800	532	775	614	976	684	1176	746	1381	802	1590	854	1805	902	2026	948	2253	991	2486	1031	2725
2900	544	846	625	1054	394	1261	756	1472	812	1687	863	1907	911	2134	956	2366	999	2603	1040	2847
3000	557	922	637	1137	705	1351	766	1568	821	1789	872	2015	920	2246	965	2483	1008	2726	1048	2974
3100	570	1002	648	1224	716	1445	776	1669	831	1896	882	2127	929	2365	974	2607	1016	2854	1057	3107
3200	582	1087	660	1317	727	1545	786	1774	841	2008	891	2245	938	2488	983	2735	1025	2988	1065	3246
3300	595	1177	671	1414	738	1649	797	1885	851	2125	901	2369	948	2617	992	2869	1034	3127	1074	3390
3400	608	1271	683	1517	749	1759	807	2002	861	2248	911	2497	957	2751	1001	3010	1043	3273	-	-
3500	622	1372	695	1625	760	1874	818	2124	871	2376	921	2632	967	2891	1011	3155	1052	3424	-	-
3600	635	1477	707	1738	771	1995	829	2252	881	2510	930	2772	977	3038	1020	3307	-	-	-	-
3700	648	1588	720	1857	783	2121	839	2385	892	2650	941	2918	986	3190	-	-	-	-	-	-
3750	655	1646	726	1918	788	2187	845	2454	897	2722	946	2994	991	3268	-	-	-	-	-	-
3800	662	1705	732	1982	794	2253	850	2524	902	2796	951	3071	996	3348	-	-	-	-	-	-
3900	675	1828	744	2112	806	2392	861	2669	913	2948	961	3229	-	-	-	-	-	-	-	-
4000	689	1957	757	2249	817	2536	873	2820	924	3106	971	3393	-	-	-	-	-	-	-	-
4100	702	2092	769	2392	829	2686	884	2978	935	3271	-	-	-	-	-	-	-	-	-	-
4200	716	2234	782	2541	841	2843	895	3143	945	3442	-	-	-	-	-	-	-	-	-	-
4250	723	2307	788	2619	847	2924	901	3227	-	-	-	-	-	-	-	-	-	-	-	-

**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.

**CIRCULATING BLOWER PERFORMANCE - PAE102 - 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
2200	459	384	550	575	625	778	690	994	748	1221	802	1461	852	1711	899	1971	943	2241	-	-
2250	465	402	402	596	629	802	694	1021	753	1252	806	1494	856	1747	903	2009	-	-	-	-
2300	471	421	421	618	634	828	699	1050	757	1283	811	1528	860	1784	907	2048	-	-	-	-
2400	483	461	461	665	644	881	708	1109	766	1348	819	1599	868	1859	915	2129	-	-	-	-
2500	495	503	503	715	654	937	717	1171	775	1416	828	1672	877	1938	923	2214	-	-	-	-
2550	501	526	526	740	659	967	722	1204	779	1452	932	1410	881	1979	-	-	-	-	-	-
2600	507	549	549	767	664	996	727	1237	784	1488	836	1749	885	2021	-	-	-	-	-	-
2700	519	597	597	823	674	1059	737	1306	793	1563	845	1830	894	2107	-	-	-	-	-	-
2800	532	649	649	882	684	1125	746	1378	803	1641	854	1914	903	2197	-	-	-	-	-	-
2900	544	703	703	944	695	1194	756	1453	812	1723	864	2002	-	-	-	-	-	-	-	-
3000	557	761	761	1009	705	1266	766	1533	822	1808	873	2093	-	-	-	-	-	-	-	-
3100	570	823	823	1079	716	1342	776	1615	831	1897	882	2189	-	-	-	-	-	-	-	-
3200	583	888	888	1151	727	1422	787	1702	841	1991	-	-	-	-	-	-	-	-	-	-
3300	596	957	957	1228	738	1506	797	1792	851	2088	-	-	-	-	-	-	-	-	-	-
3400	609	1030	1030	1308	749	1593	808	1887	861	2188	-	-	-	-	-	-	-	-	-	-
3500	622	1106	1106	1392	760	1685	818	1985	-	-	-	-	-	-	-	-	-	-	-	-
3600	635	1187	1187	1481	771	1781	829	2088	-	-	-	-	-	-	-	-	-	-	-	-
3700	649	1272	1272	1573	783	1881	840	2195	-	-	-	-	-	-	-	-	-	-	-	-
3750	655	1316	1316	1621	789	1932	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3800	662	1361	1361	1670	794	1985	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3900	675	1454	1454	1771	806	2093	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4000	689	1553	1553	1877	818	2207	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4100	703	1655	1655	1988	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4200	716	1762	1762	2103	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4250	723	1818	1818	2162	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**LEGEND**

Watts = Input Watts to motor.

\* Motor drive range: 840 to 1085 rpm. All other rpms require a field-supplied drive. Maximum continuous bhp is 2.90.

**CIRCULATING BLOWER PERFORMANCE - PAE102 - High Static 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
2200	459	384	550	575	625	778	690	994	748	1221	802	1461	852	1711	899	1971	943	2241	985	2521
2250	465	402	402	596	629	802	694	1021	753	1252	806	1494	856	1747	903	2009	947	2282	988	2564
2300	471	421	421	618	634	828	699	1050	757	1283	811	1528	860	1784	907	2048	950	2323	992	2607
2400	483	461	461	665	644	881	708	1109	766	1348	819	1599	868	1859	915	2129	958	2410	1000	2698
2500	495	503	503	715	654	937	717	1171	775	1416	828	1672	877	1938	923	2214	966	2499	1008	2793
2550	501	526	526	740	659	967	722	1204	779	1452	932	1410	881	1979	927	2258	971	2545	1012	2842
2600	507	549	549	767	664	996	727	1237	784	1488	836	1749	885	2021	931	2302	975	2592	1016	2891
2700	519	597	597	823	674	1059	737	1306	793	1563	845	1830	894	2107	940	2394	983	2689	1024	2993
2800	532	649	649	882	684	1125	746	1378	803	1641	854	1914	903	2197	948	2488	991	2790	1032	3099
2900	544	703	703	944	695	1194	756	1453	812	1723	864	2002	912	2290	957	2587	1000	2894	1041	3209
3000	557	761	761	1009	705	1266	766	1533	822	1808	873	2093	921	2388	966	2691	1008	3003	1049	3323
3100	570	823	823	1079	716	1342	776	1615	831	1897	882	2189	930	2489	975	2798	1017	3115	1057	3441
3200	583	888	888	1151	727	1422	787	1702	841	1991	892	2288	939	2595	984	2909	1026	3233	-	-
3300	596	957	957	1228	738	1506	797	1792	851	2088	901	2391	948	2704	993	3024	1035	3353	-	-
3400	609	1030	1030	1308	749	1593	808	1887	861	2188	911	2499	958	2817	1002	3144	-	-	-	-
3500	622	1106	1106	1392	760	1685	818	1985	872	2294	921	2610	967	2935	1011	3268	-	-	-	-
3600	635	1187	1187	1481	771	1781	829	2088	882	2403	931	2726	977	3057	1021	3396	-	-	-	-
3700	649	1272	1272	1573	783	1881	840	2195	892	2517	941	2847	987	3184	-	-	-	-	-	-
3750	655	1316	1316	1621	789	1932	845	2250	897	2575	946	2908	992	3249	-	-	-	-	-	-
3800	662	1361	1361	1670	794	1985	851	2307	903	2635	951	2971	997	3316	-	-	-	-	-	-
3900	675	1454	1454	1771	806	2093	862	2422	913	2758	961	3101	1007	3451	-	-	-	-	-	-
4000	689	1553	1553	1877	818	2207	873	2543	924	2886	972	3235	-	-	-	-	-	-	-	-
4100	703	1655	1655	1988	830	2325	884	2668	935	3018	982	3375	-	-	-	-	-	-	-	-
4200	716	1762	1762	2103	842	2447	896	2798	946	3155	-	-	-	-	-	-	-	-	-	-
4250	723	1818	1818	2162	848	2511	901	2865	951	3226	-	-	-	-	-	-	-	-	-	-

**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.

**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 - PAS120 - High Static 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	1000	2176
3500	537	755	609	891	673	1032	731	1181	784	1338	833	1503	880	1677	924	1860	966	2051	1006	2251
3600	548	813	619	953	682	1097	739	1249	792	1408	841	1576	887	1751	931	1936	972	2128	1012	2329
3700	559	875	629	1018	691	1166	747	1320	799	1482	848	1651	894	1829	938	2015	979	2209	1019	2411
3800	571	940	639	1087	700	1237	756	1395	808	1559	856	1731	901	1911	945	2098	986	2294	1025	2498
3900	582	1008	649	1158	709	1313	765	1473	816	1640	864	1814	909	1995	952	2185	993	2382	1032	2587
4000	593	1080	659	1234	719	1391	773	1554	824	1724	872	1900	916	2084	959	2276	1000	2475	1039	2681
4100	604	1155	669	1312	728	1473	782	1639	832	1811	880	1991	924	2177	966	2370	1007	2571	1046	2779
4200	616	1233	680	1395	738	1559	791	1728	841	1903	888	2085	932	2273	974	2469	1014	2672	1053	2881
4300	627	1316	690	1481	747	1648	800	1821	850	1999	896	2183	940	2374	981	2571	1021	2776	1060	2987
4400	639	1402	701	1570	757	1741	809	1917	858	2098	904	2285	948	2478	989	2678	1029	2884	1067	3098
4500	650	1492	711	1664	767	1839	819	2017	867	2201	913	2391	956	2586	997	2788	1036	2997	1074	3212
4600	662	1585	722	1762	777	1940	828	2122	876	2308	921	2501	964	2699	1005	2904	1044	3115	1082	3332
4700	674	1683	733	1863	787	2045	838	2230	885	2420	930	2615	972	2816	1013	3023	1052	3236	1089	3455
4800	685	1785	744	1969	797	2154	847	2343	894	2536	938	2733	981	2937	1021	3146	1060	3362	1097	3583
4900	697	1891	754	2078	807	2268	857	2459	903	2656	947	2856	989	3063	1029	3275	1067	3492	1104	3716
5000	709	2001	765	2193	818	2385	866	2580	912	2780	956	2984	998	3193	1037	3407	1075	3627	1112	3853

**LEGEND**

Watts = Input Watts to motor.

\* Motor drive range: 835 to 1085 rpm. All other rpms require a field-supplied drive.

Maximum continuous bhp is 2.90.

**CIRCULATING BLOWER PERFORMANCE - PAE120 - 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 - PAE120 - High Static 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	1000	2176
3500	537	755	609	891	673	1032	731	1181	784	1338	833	1503	880	1677	924	1860	966	2051	1006	2251
3600	548	813	619	953	682	1097	739	1249	792	1408	841	1576	887	1751	931	1936	972	2128	1012	2329
3700	559	875	629	1018	691	1166	747	1320	799	1482	848	1651	894	1829	938	2015	979	2209	1019	2411
3800	571	940	639	1087	700	1237	756	1395	808	1559	856	1731	901	1911	945	2098	986	2294	1025	2498
3900	582	1008	649	1158	709	1313	765	1473	816	1640	864	1814	909	1995	952	2185	993	2382	1032	2587
4000	593	1080	659	1234	719	1391	773	1554	824	1724	872	1900	916	2084	959	2276	1000	2475	1039	2681
4100	604	1155	669	1312	728	1473	782	1639	832	1811	880	1991	924	2177	966	2370	1007	2571	1046	2779
4200	616	1233	680	1395	738	1559	791	1728	841	1903	888	2085	932	2273	974	2469	1014	2672	1053	2881
4300	627	1316	690	1481	747	1648	800	1821	850	1999	896	2183	940	2374	981	2571	1021	2776	1060	2987
4400	639	1402	701	1570	757	1741	809	1917	858	2098	904	2285	948	2478	989	2678	1029	2884	1067	3098
4500	650	1492	711	1664	767	1839	819	2017	867	2201	913	2391	956	2586	997	2788	1036	2997	1074	3212
4600	662	1585	722	1762	777	1940	828	2122	876	2308	921	2501	964	2699	1005	2904	1044	3115	1082	3332
4700	674	1683	733	1863	787	2045	838	2230	885	2420	930	2615	972	2816	1013	3023	1052	3236	1089	3455
4800	685	1785	744	1969	797	2154	847	2343	894	2536	938	2733	981	2937	1021	3146	1060	3362	1097	3583
4900	697	1891	754	2078	807	2268	857	2459	903	2656	947	2856	989	3063	1029	3275	1067	3492	1104	3716
5000	709	2001	765	2193	818	2385	866	2580	912	2780	956	2984	998	3193	1037	3407	1075	3627	1112	3853

**LEGEND**

Watts = Input Watts to motor.

\* Motor drive range: 835 to 1085 rpm. All other rpms require a field-supplied drive.

Maximum continuous bhp is 2.90.

**CIRCULATING BLOWER PERFORMANCE - PAS/E150 - 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.

**CIRCULATING BLOWER PERFORMANCE - PASE150 - 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.)**

<b>Evaporator-Fan Motor Efficiency</b>	
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
		575			3.0
	High Static	208/230	2.90	2562	8.6
		460			3.9
		575			3.9
090	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	3.70	3313	12.2
		460			5.5
		575			5.5
102	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	3.70	3313	12.2
		460			5.5
		575			5.5
120	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	5.25	4400	17.3
		460			8.5
		575			8.5
150	Standard	208/230	3.70	3313	12.2
		460			5.5
		575			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 premaure 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 <sup>1</sup>	1460	1421	1382	1343	1304	1265	1226	1187	1148	1109	1070	-	-
072 <sup>2</sup>	1685	1647	1608	1570	1531	1493	1454	1416	1377	1339	1300	-	-
090 <sup>1</sup>	840	815	790	765	740	715	690	665	635	615	590	-	-
090 <sup>2</sup>	1080	1025	1007	988	970	952	933	915	897	878	860	-	-
102 <sup>1</sup>	935	910	885	860	835	810	785	760	735	710	685	-	-
102 <sup>2</sup>	1080	1025	1007	988	970	952	933	915	897	878	860	-	-
120 <sup>1</sup>	935	910	885	860	835	810	785	760	735	710	685	-	-
120 <sup>2</sup>	1130	1112	1087	1062	1067	1012	987	962	937	912	887	862	830

\* Approximate fan rpm shown.



**PAE Series PERFORMANCE DATA (CONT.)**

<b>Evaporator-Fan Motor Efficiency</b>	
Unit PAE	Motor Efficiency (%)
072	84
090	80
102	80
120/150	85

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 PAE	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
		575			3.0
	High Static	208/230	2.90	2562	8.6
		460			3.9
		575			3.9
090	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	3.70	3313	12.2
		460			5.5
		575			5.5
102	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	3.70	3313	12.2
		460			5.5
		575			5.5
120	Standard	208/230	2.40	2120	6.7
		460			3.0
		575			3.0
	High Static	208/230	5.25	4400	17.3
		460			8.5
		575			8.5
150	Standard	208/230	3.70	3313	12.2
		460			5.5
		575			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 premaure motor failure. Unit Warranty will not be affected.

**FAN RPM MOTOR PULLEY SETTINGS**

Unit PAE	MOTOR PULLEY TURNS OPEN										
	0	1/2	1	1-1/2	2	2-1/2	3	3-1/2	4	4-1/2	5
072	1480	1421	1382	1343	1304	1265	1226	1187	1148	1109	1070
072	1685	1647	1608	1570	1531	1493	1454	1416	1377	1339	1300
090	840	815	790	765	835	715	690	665	635	615	590
090	1080	1025	1007	988	970	952	933	915	897	878	860
102	935	910	885	860	835	810	785	760	735	710	685
102	1080	1025	1007	988	970	952	933	915	897	878	860
120	935	910	85	860	835	81	785	760	735	710	685
120	1130	112	1087	1062	1037	1012	987	962	937	912	887
120	1080	1060	1035	1015	990	970	950	925	905	880	860

1 - Standard, 2 - High Static

\* Approximate fan rpm shown.

# Adjustable Belt Drive Blower

## WARNING

Personal injury hazard.

Use extreme care during the following procedures and obey Safety Information.

Failure to do so may result in personal injury.

The following safety rules **MUST** always be followed when working near belt drive.

### Always Turn The Power Off

Turn electric power to the unit **OFF** before you begin working on it.

### Always Wear Protective Clothing

**NEVER** wear loose or bulky clothes, such as neckties, exposed shirttails, loose sleeves, or lab coats around belt drives. Wear gloves while inspecting sheaves to avoid nicks, burrs, or sharply worn pulley edges.

The blower speed is changed by adjusting the variable speed pulley mounted on the blower motor.

If the blower speed needed is different than the speed of the blower as shipped, follow the steps below to change the blower speed. Before changing the blower speed, read the above safety rules first.

1. Turn electric power **OFF**.
2. Remove the side blower access panel (see **Figure 1**).
3. Loosen belt by loosening fan motor mounting plate nuts. Loosen movable pulley flange setscrew.
4. Remove the belt. Do **NOT** attempt to pry off belt with tools or fingers.
5. Loosen set screw on the outer half of the adjustable pulley.
6. To set the blower for a desired CFM (L/s), first turn the outer half of the adjustable pulley clockwise until it meets the inner half of the pulley.
7. Turn the outer half of the adjustable pulley counterclockwise the correct number of turns to obtain the desired CFM (L/s).

**NOTE:** To increase the blower speed, turn the outer half of the adjustable pulley clockwise. To decrease the blower speed, turn the outer half of the adjustable pulley counterclockwise.

Figure 8

Motor Mount Assembly

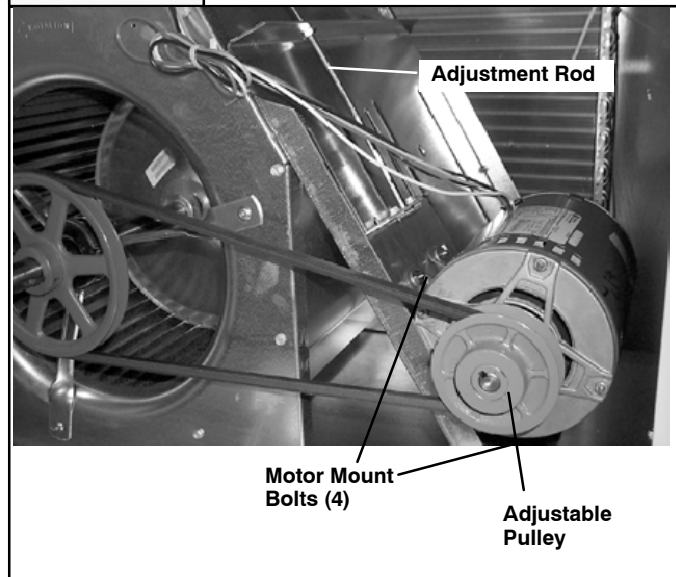
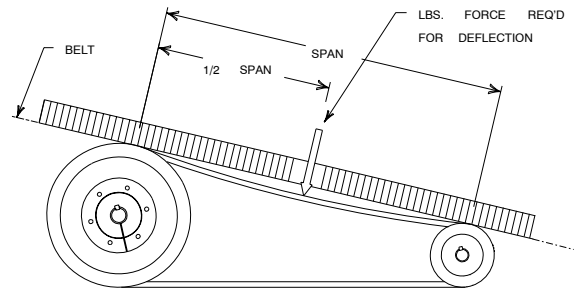


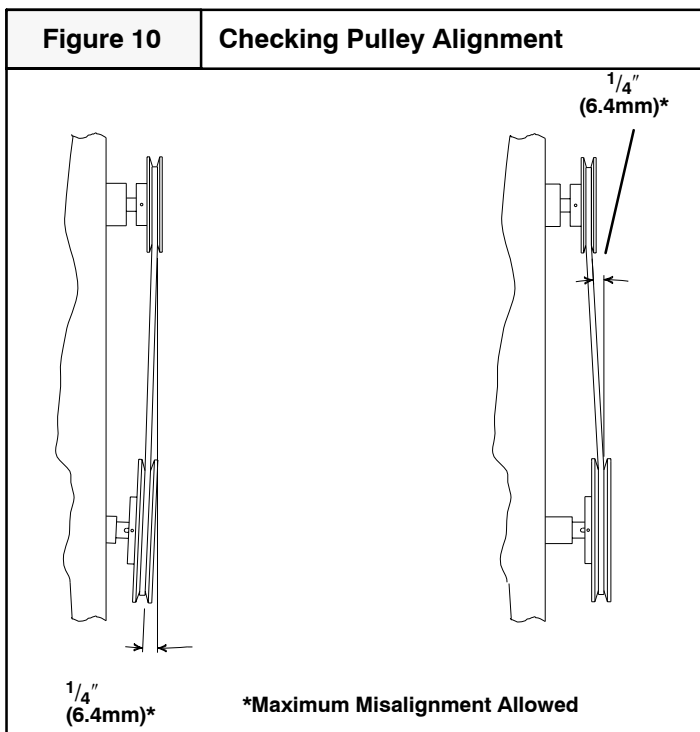
Figure 9

Checking Tension and Deflection

PA(S/E)072 - 1/2" deflection with 8-10 lbs. of force.  
PA(S/E)090 - 1/2" deflection with 8-10 lbs. of force.  
PA(S/E)102 - 1/2" deflection with 8-10 lbs. of force.  
PA(S/E)120 - 1/2" deflection with 5-10 lbs. of force.  
PA(S/E)150 - 1/2" deflection with 5-10 lbs. of force.



8. Tighten set screw(s).
9. Put on belt.
10. Slide motor mounting plate until the belt has enough tension at the proper deflection. Use one of the commercially available belt tension gauges to set the correct tension at the proper deflection (see **Figure 8 & 9**).



- Use a straight-edge (angle iron, straight piece of board or anything with a good straight surface or edge) to check the alignment of the blower pulley with blower motor pulley (see **Figure 10**).

It may be necessary to back the tension off the belt temporarily and tighten one of the motor mount bolts before it is possible to adjust the angle of the blower motor.

- Adjust bolt and nut on mounting plate to secure motor in fixed position.
- Ensure that all bolts, nuts and screws are tightened and ensure that all tools, gloves, etc. are removed from unit.
- Replace side blower access panel before Start-up.
- During Start-up, listen for any unusual noises or vibrations.
- Shut down the unit after it runs for a while and check the bearings and motor. If they feel hot, the belt tension may be too tight, bearings may be misaligned or not lubricated correctly, etc.
- It is a good idea to retension a new belt after a run-in period of about 24 hours. A run-in period of overnight or during a lunch break is better than no run-in period at all.

## Start-up Procedure

### WARNING

Electrical shock, fire and/or explosion hazard.

Use extreme care during all of the following checks and procedures.

Make sure Electric Power is turned OFF as instructed in appropriate steps.

Failure to follow this warning can result in property damage, personal injury, and/or death.

### WARNING

Moving parts hazard.

Do NOT put hands or any other object in, on or around the motor, belt or blower wheel. Ensure that there are no objects in, on or around the motor, belt or blower wheel before turning electric power on.

Failure to follow this warning can result in property damage, personal injury, and/or death.

Check the unit's operation as outlined in the following instructions.

### Blower and Phasing Check

- Shut **OFF** electric power at unit disconnect.
- Check to see that clean, properly sized air filters are installed.
- Check to see that everything inside the unit is clear and ready to operate safely. Ensure that there are no objects in, on or around the motor, belt or blower wheel.
- Set thermostat Heat-Cool selector to **OFF**.
- Set thermostat fan switch to **AUTO**.

- Turn **ON** electric power. Nothing should start running. If any unusual arcing, odors or noises are encountered, shut **OFF** electric power immediately and check for wiring errors.

**NOTE:** The circulation blower motor and compressor(s) are three phase and are factory synchronized for proper rotation. *Even if the circulation blower motor comes on and air seems to be circulating, it is possible that the blower motor rotation is incorrect due to improper phasing.* The scroll compressor(s) (if equipped) will run backwards under this condition and be damaged. It is therefore necessary to check for proper rotation.

### CAUTION

**Do NOT operate the unit with the compressor(s) running until proper blower rotation has been confirmed by running the following test.**

- Set thermostat fan switch to **ON**. The circulating air blower should come **ON**.

8. Shut **OFF** electric power at unit disconnect and visually observe the direction of the blower rotation as it slows down. Do **NOT** put hands or any other object in, on or around the belt, motor or blower wheel.

### CAUTION

**If blower rotation is incorrect, shut electric power OFF at unit disconnect and reverse any two supply wires at field connections ONLY. Do NOT reverse the blower and/or compressor leads or rewire any internal wiring. After re-wiring is done, repeat blower rotation check to ensure that blower rotation is now correct.**

9. If blower rotation is correct, reset thermostat fan switch to **AUTO**. The circulating air blower should go **OFF**. Nothing should be running.
10. Shut **OFF** electric power at unit disconnect.

## Cooling Checks

### CAUTION

**Do NOT operate the unit with the compressor(s) running until proper blower rotation has been confirmed during the Blower and Phasing Check in the previous section. If the phasing is incorrect, the scroll compressor(s) (if equipped) will run backwards and they will be damaged.**

1. Be sure that electric power is **OFF**.
2. To check cooling Stage 1, place jumper wires across low voltage terminal board terminals **R** to **G**, **R** to **Y1**.
3. Turn electric power **ON**. Check to see that the following occurs:
  - a. Compressor 1 - **ON**
  - b. Condenser fan motor(s) - **ON**
  - c. Circulation air blower - **ON** with correct rotation and adequate airflow from ductwork.
4. Shut **OFF** electric power at unit disconnect.
5. To check cooling Stage 2, remove jumper wires from **Y1** and place it on **Y2**.

**NOTE:** Allow 5 minutes between Steps 4 and 6.

6. Turn **ON** electric power. Check to see that the following occurs:
  - a. Compressor(s) - **ON**
  - b. Condenser fan motor(s) - **ON**
  - c. Circulation air blower - **ON**
7. Shut **OFF** electric power at unit disconnect.
8. Remove jumpers from low voltage terminal board.
9. Replace all service access panels.

## Heating Checks When Accessory Electric Heater is installed

1. To start unit, turn on main power supply.
2. Set thermostat at **HEAT** position and a setting above room temperature, and set fan at **AUTO** position. Upon a call for heating through terminal **W1**, **IFC** and heater contactor no. 1 (**HC1**) are energized. On units equipped for 2 stages of heat, when additional heat is needed **HC2** is energized through **W2**.
3. If unit does not energize, reset limit switch (located on evaporator-fan scroll) by pressing button located between terminals on the switch.

## Turning Off the Unit

### Heating

1. Set system selector switch at **OFF** position. Resetting heating selector lever below room temperature will shut unit off temporarily until space temperature falls below thermostat setting.

### Cooling

1. Set thermostat selector to **OFF** and fan switch to **AUTO**.
2. To shut the unit down completely, shut **OFF** electric power supply at disconnect switch or service panel.

# Operation And Maintenance Instructions

## WARNING

Electrical shock hazard.

Turn off electric power supply at disconnect switch or service panel before removing any access or service panel from unit.

Failure to follow this warning can result in property damage, personal injury, and/or death.

## Starting the Unit After Shutdown

### Cooling

#### CAUTION

To prevent possible damage to the compressor(s), do NOT operate on cooling when outdoor temperature is below 35°F (2°C).

**NOTE:** An optional low ambient kit is available that allows the unit to operate at temperatures down to 0°F (-18°C).

1. Turn **ON** electric power.
2. Set thermostat to desired temperature and set system switch to **COOL**. The unit will come on and operate automatically under control of the thermostat.

Close all doors and windows. The unit may run continuously for several hours or longer on the initial run because of residual heat and moisture in the building. This is normal for any air conditioning system.

## Thermostat Fan Switch Operation

The circulating air blower will run continuously with the fan selector switch in the **ON** position. When the fan selector switch is in the **AUTO** position, the blower will run during each heating or cooling cycle.

If lockout occurs, unit may be adjusted by interrupting power supply to unit for at least 5 seconds.

## Monthly Maintenance and Inspection Checks

### Air Filters (Factory Installed)

#### CAUTION

Do NOT operate unit without all air filters installed in the unit.

Dirty filters are the most common cause of compressor failures and inadequate heating and cooling performance. Inspect filters at least monthly and replace or clean as required.

Washable filters may be cleaned by soaking in mild detergent and rinsing with cold water. Install filters so that the arrows on the side point in the direction of air flow.

Filter racks are accessible through the filter access panel.

## Disposable Replacement Filters

For 6 ton units: 2 filters 16" x 25" x 2"

For 7-1/2 ton units: 4 filters 16" x 20" x 2"

For 8-1/2 ton units: 4 filters 16" x 20" x 2"

For 10 & 12-1/2 ton units: 4 filters 20" x 20" x 2"

To replace disposable filters: (see **Figure 20**).

1. Remove filter access panel by pulling out on bottom edge.
2. Remove the top filters by pushing up on top rail of filter rack.
3. Remove the bottom filters by pushing up on middle rail of filter rack. See **Figure 20**.
4. Replace bottom filters and then top filters.
5. Replace filter access panel.

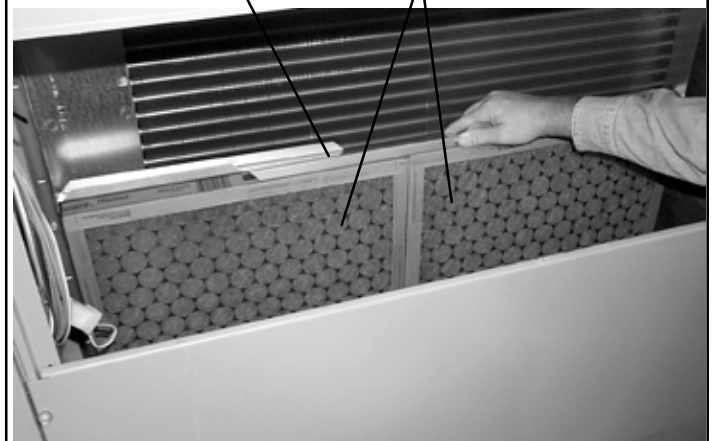
Figure 11

Replacing Filters



Middle rail

Bottom Filters



## Condenser Coil

Keep the condenser inlet and outlet area clean and free of leaves, grass clippings and other debris. Grass should be kept short in front of the condenser inlet. Shrubbery **MUST** be trimmed back so it is no closer than 30 inches (762 mm) to condenser coil.

## Condensate Drain

Check for condensate drainage. Clean as required.

## Annual Maintenance and Inspection

The annual inspection should include cleaning as required to ensure efficient operation of the unit.

**NOTE:** All bearings are sealed and no lubrication is required.

# WARNING

**Electrical Shock, Fire and Explosion Hazards.**

**Turn off electric power supply at disconnect switch or service panel and gas supply at manual shutoff valve before removing any access or service panel from unit.**

**Failure to follow this warning can result in property damage, personal injury, and/or death.**

## TROUBLESHOOTING - Cooling Service

PROBLEM	CAUSE	REMEDY
<b>Compressor and condenser fans will not start.</b>	Power failure	Call power company.
	Fuse blown or circuit breaker tripped.	Replace fuse or reset circuit breaker.
	Defective thermostat, contactor, transformer, or control relay.	Replace component.
	Insufficient line voltage.	Determine cause and correct.
	Incorrect or faulty wiring.	Check wiring diagram and rewire correctly.
	Thermostat setting too high.	Lower thermostat setting below room temperature.
<b>Compressor will not start but condenser fans run.</b>	Faulty wiring or loose connections in compressor circuit.	Check wiring and repair or replace.
	Compressor motor burned out, seized, or internal overload open.	Determine cause. Replace compressor.
	Defective run/start capacitor, overload, or start relay.	Determine cause and replace.
	One leg of 3-phase power dead.	Replace fuse or reset circuit breaker.
<b>Compressor cycles (other than normally satisfying thermostat).</b>	Refrigerant overcharge or undercharge.	Recover refrigerant, evacuate system, and recharge to nameplate.
	Defective compressor	Replace and determine cause.
	Insufficient line voltage.	Determine cause and correct.
	Blocked condenser.	Determine cause and correct.
	Defective run/start capacitor, overload, or start relay.	Determine cause and replace.
	Defective thermostat.	Replace thermostat.
	Faulty condenser-fan motor or capacitor	Replace.
	Restriction in refrigerant system.	Locate restriction and remove.
<b>Compressor makes excessive noise (Scroll only)</b>	Compressor rotating in wrong direction	Reverse the 3-phase power leads as described in Start-Up section
<b>Compressor operates continuously.</b>	Dirty air filter	Replace filter.
	Unit undersized for load	Decrease load or increase unit size
	Thermostat set too low.	Reset thermostat.
	Low refrigerant charge.	Locate leak, repair, and recharge.
	Leaking valves in compressor.	Replace compressor.
	Air in system	Recover refrigerant, evacuate system, and recharge.
	Condenser coil dirty or restricted.	Clean coil or remove restriction.
<b>Excessive head pressure.</b>	Dirty air filter	Replace filter.
	Dirty condenser coil.	Clean coil.
	Refrigerant overcharged.	Remove excess refrigerant.
	Air in system.	Recover refrigerant, evacuate system, and recharge.
	Condenser air restricted or air short-cycling.	Determine cause and correct.
<b>Head pressure too low.</b>	Low refrigerant charge	Check for leaks, repair, and recharge.
	Compressor valves leaking.	Replace compressor.
	Restriction in liquid tube.	Remove restriction.
<b>Excessive suction pressure.</b>	High heat load.	Check for source and eliminate.
	Compressor valves leaking.	Replace compressor.
	Refrigerant overcharged.	Recover excess refrigerant.
<b>Suction pressure too low.</b>	Dirty air filter.	Replace filter.
	Low refrigerant charge.	Check for leaks, repair, and recharge.
	Metering device or low side restricted.	Remove source of restriction.
	Insufficient evaporator airflow	Increase air quantity. Check filter and replace if necessary.
	Temperature too low in conditioned area.	Reset thermostat.
	Field-installed filter drier restricted.	Replace.
<b>Compressor no. 2 will not run.</b>	Unit in economizer mode.	Proper operation; no remedy necessary.

<b>I. START-UP CHECKLIST</b> (Remove and store in job file)			
	Model No:	Serial No:	
	Date:	Technician:	
	Unit No:	Job Location:	
		Job Name:	
<b>II. PRE-START-UP</b> (Insert Checkmark in box as each item is completed)			
		Verify that all packing materials have been removed from unit.	
		Remove shipping instructions and brackets from compressors, on select models.	
		Verify that condensate connection is installed per installation instructions.	
		Check all electrical connections and terminals for tightness.	
		Check that indoor-air filters are clean and in place.	
		Verify that unit installation is level.	
		Check fan wheels and propellers for location in housing/orifice and setscrew tightness.	
		Ensure belt tension is correct and blower pulleys are properly aligned.	
<b>III. START-UP</b>			
<b>ELECTRICAL</b>			
	Supply Voltage	L1-L2	L2-L3
	Compressor AMPS	L1	L2
	Compressor AMPS	L1	L2
	Indoor-Fan AMPS	L1	L2
			L3-L1
			L3
			L3
			L3
<b>TEMPERATURES and PRESSURES</b>			
	Outdoor-Air Temperature		°DB
	Return-Air Temperature		°WB
	Cooling Supply air		°WB
	Refrigerant Suction Pressure	PSIG-Circuit # 1	PSIG-Circuit # 2
	Refrigerant Temp. (Suction) Pressure	Circuit # 1	Circuit # 2
	Refrigerant Discharge	PSIG-Circuit # 1	PSIG-Circuit # 2
	Discharge Temperature	°F/C-Circuit # 1	°F/C-Circuit # 2
	Verify that 3-phase scroll compressor rotating in correct direction on select models.		