

PRPHP16

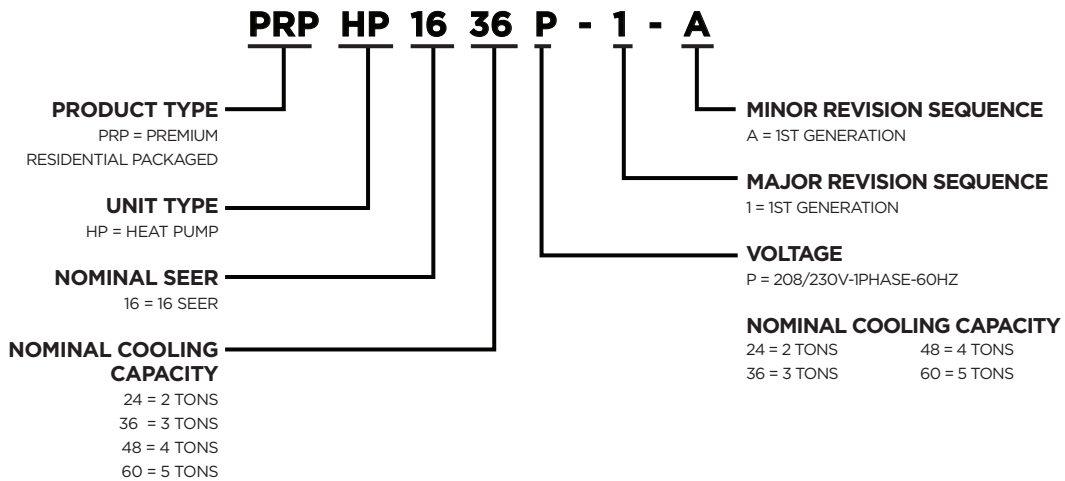
PRODUCT SPECIFICATIONS

TWO STAGE COMPRESSOR
VARIABLE SPEED BLOWER

FORM NO. PRPHP16-100 (11/2016)



MODEL NUMBER



FEATURES AND BENEFITS

WARRANTY

10 year limited parts and compressor warranty available. See limited warranty document for details.

APPLICATIONS

Designed for outdoor installations at ground level or rooftop for residential and light commercial applications.

APPROVALS

AHRI Certified to AHRI Standard 210/240-2008.

Units are design certified by ETL Intertek.

Heating ratings are according to Department of Energy (DOE) test procedures and Federal Trade Commission (FTC) labeling regulations and are Certified by AHRI.

Cooling system rated according to DOE test procedures.

Units are ETL certified for the U.S. and Canada.

Packaged unit and components within bonded for grounding to meet safety standards required by UL.

Each unit test operated at the factory before shipment ensuring dependable operation at start-up.

REFRIGERATION SYSTEM

R-410A Refrigerant

Non-chlorine, ozone friendly, R-410A.

Unit pre-charged with refrigerant.

See Specification table.

Anti-Microbial Indoor Coil Drain Pan

Microban® Anti-Microbial additive resists growth of mold and mildew on drain pan which improves indoor air quality and reduces drain line blockage.

Includes drain pan overflow switch. Monitors condensate level in drain pan, shuts down unit if drain becomes clogged.

Outdoor Coil Fan

Weather protected heavy duty condenser fan motor with coated steel swept wing fan blades for long life.

Internally mounted.

Totally enclosed motor.

Fan guard constructed of corrosion-resistant coated steel.

Reversing Valve

4-way interchange reversing valve effects a rapid change in direction of refrigerant flow resulting in quick changeover from cooling to heating and vice versa.

High Pressure Switch

Shuts off unit if abnormal operating conditions cause the discharge pressure to rise above setting.

Loss of Charge Switch

Provides loss of charge protection by shutting off unit if liquid pressure falls below setting.

SCROLL COMPRESSOR

Two-Stage Compressor

Compressor features high efficiency with uniform suction flow, constant discharge flow, high volumetric efficiency and quiet operation.

Compressor consists of two involute spiral scrolls matched together to generate a series of crescent shaped gas pockets between them.

During compression, one scroll remains stationary while the other scroll orbits around it.

Gas is drawn into the outer pocket, the pocket is sealed as the scroll rotates.

As the spiral movement continues, gas pockets are pushed to the center of the scrolls. Volume between the pockets is simultaneously reduced.

When the pocket reaches the center, gas is now at high pressure and is forced out of a port located in the center of the fixed scrolls. During compression, several pockets are compressed

simultaneously resulting in a smooth continuous compression cycle.

Continuous flank contact, maintained by centrifugal force, minimizes gas leakage and maximizes efficiency.

Scroll compressor is tolerant to the effects of slugging and contaminants. If this occurs, scrolls separate, allowing liquid or contaminants to be worked toward the center and discharged.

During the compression process, there are several pockets in the scroll that are compressing gas. Modulation is achieved by venting a portion of the gas in the first suction pocket back to the low side of the compressor thereby reducing the effective displacement of the compressor.

A 24-volt DC solenoid valve inside the compressor controls staging. When the 3-way solenoid is energized it moves the lift ring assembly to block the ports and the compressor operates at full-load or 100% capacity. When the solenoid is de-energized the lift ring assembly moves to unblock the compressor ports and the compressor operates at part-load or approximately 67% of its full-load capacity.

The "loading" and "unloading" of the two stage scroll is done "on the fly" without shutting off the single-speed compressor motor between stages.

Low gas pulses during compression reduces operational sound levels.

Compressor motor is internally protected from excessive current and temperature.

Compressor is installed in the unit on specially formulated, resilient rubber mounts for better sound dampening and vibration free operation.

Heavy Duty Compressor Blanket

Durable PVC outer cover with sound insulating inner polyester fiber

SUPPLY AIR BLOWER

Variable Speed Direct Drive Blower

Each blower wheel statically and dynamically balanced.

Multi-speed operation is achieved by the use of an ECM (Electronically Commutated Motor) variable speed motor.

See Blower Performance tables.

Blower assembly easily removed for servicing.

ECM Variable Speed Blower Motor

Variable speed motor maintains specified air volume from 0 through 0.80 in. w.g. static range.

Motor is controlled by the blower control.

Change in blower speed is easily accomplished by simple jumper pin change on blower control.

Motor is resiliently mounted.

INDOOR AIR QUALITY

PCO Accessory

PCO Accessory uses photocatalytic oxidation (PCO) technology to significantly reduce levels of airborne volatile organic compounds, cooking odors, common household odors, airborne dust particles, mold spores and pollen.

The PCO Accessory is mounted internally to the unit cabinet for superior indoor air quality.

Kit contains PCO cartridge, UVA lamp, UVA lampholder assembly, ballast box, wiring harness and all necessary hardware. Units are pre-wired with mounting brackets for kit.

Internal Filter Rack Kits

Available for 1 in. thick filters. Kit contains filter rails for mounting filters internal to unit. Filters are not furnished and must be field provided.

NOTE - The Internal Filter Rack Kit cannot be used with the PCO Accessory.

NOTE - Maximum acceptable filter efficiency is MERV 11

ELECTRIC HEAT (5-20 KW)

Field install internal to unit cabinet.

Available in several voltages and kw sizes.

Helix wound nichrome heating elements exposed directly in air stream resulting in instant heat transfer, low element temperatures and long service life.

Cutoff limit control provides positive protection in case of excessive temperatures.

Factory assembled with controls installed and wired.

OPTIONAL ACCESSORIES

Single Point Power Kits

Control Box used with optional electric heat when single power supply is connected to multi-circuit electric heat.

CONTROLS

Electronic Blower Control

Two stages - HEAT and COOL (with four different air volume selections for each) are made by simple jumper pins.

ADJUST jumper pin allows approximately 10% higher, normal or 10% lower motor speed selection within (COOL) speeds selected for fine tuning air volume. See Blower Data tables.

NOTE - HEAT speeds are not affected by jumper change.

Cooling Airflow Ramp Up - At the beginning of a call for cooling, the blower will run at 82% of full airflow for 7.5 minutes. This improves the system's moisture removal and saves blower power during cooling start.

Reduced Airflow Operation - For situations where humidity control is an issue, the variable speed motor can be connected to operate at a 25% reduction in the normal airflow rate. The variable speed motor interface provides for connection of a thermostat with humidity control or a humidistat on the HUM terminal. When connected, the dehumidifier resistor on the interface must be cut. The control should be wired to open during high humidity, which will reduce blower airflow.

Defrost Control

Defrost control furnished as standard equipment.

Gives a defrost cycle for every 30, 60 or 90 minutes (adjustable) of compressor "on" time at outdoor coil temperatures below freezing.

Units are quiet-shift enabled. The compressor is de-energized entering and exiting the defrost cycle, reducing system sounds.

Sensor mounted on liquid line determines when defrost cycle is required and also when to terminate cycle.

Anti-short cycle, timed-off control incorporated into the board.

24 Volt Transformer

40VA transformer furnished and factory installed in control area.

Equipment Interface Module (EIM)

Allows the Comfort Sync® Thermostat to be used with residential packaged units.

Contains all necessary relays and controls to operate the system and communicate with the Comfort Sync® Thermostat.

Comfort Sync® Wi-Fi Thermostat

The Comfort Sync® Wi-Fi® Thermostat recognizes and connects conventional heating/cooling products to automatically configure and control the system (based on user-specified settings) for the highest level of comfort, performance and efficiency.

Wi-Fi remote temperature monitoring and adjustment through a home wireless network for desktop PCs, laptops and apps for smartphones or tablets. Also displays service alerts and reminders.

A simple easy-to-use touchscreen allows complete system configuration. Scheduled maintenance alerts, system warnings and troubleshooting are also displayed on thermostat screen.

One-Touch Away Mode - A quick and easy way to set the cooling and heating setpoints while away.

Weather-On-Demand - Live up-to-date weather data and five-day forecasts.

Easy to read 7-inch color screen (measured diagonally).

See the iComfort Wi-Fi® Thermostat Product Specifications bulletin in the Controls section for more information.

CABINET

Conditioned areas insulated with foil faced insulation to minimize heat loss and reduce operating sound levels.

Pre-Painted galvanized steel for maximum durability.

Easy service access.

Steel louvered panels provides complete coil protection.

Airflow Choice

Units are shipped in horizontal configuration and can be field converted to downflow (vertical) airflow with optional Downflow Conversion Kit.

Electrical Inlets and Service Valves

Field wiring inlets are located in one central area of the cabinet. See dimension drawing.

Gauge ports located inside compressor service compartment of the cabinet.

OPTIONAL ACCESSORIES

Downflow Conversion Kit

Required for field conversion to downflow (vertical) air. Kit consists of 2 duct covers to block off horizontal air openings on side of unit. Required for field conversion to downflow (vertical) air. Kit consists of 2 duct covers to block off horizontal air openings on side of unit.

Lifting Brackets

Available to facilitate rigging of the unit.

Clip Curb (Full Perimeter)

Mates to unit.

Roof curb can be assembled using interlocking tabs to fasten corners together. No tools required.

Available in 8 and 14 inch heights.

Shipped knocked down.

SPECIFICATIONS

GENERAL DATA	MODEL NO.		PRPHP1624	PRPHP1636	PRPHP1648	PRPHP1660
	NOMINAL TONNAGE		2	3	4	5
COOLING / HEATING PERFORMANCE	Cooling	Total capacity - Btuh	23,000	35,000	47,000	57,000
		Total unit watts	1910	2910	3910	4950
		¹ SEER (Btuh/Watt)	16.00	16.00	16.00	15.50
		EER (Btuh/Watt)	12.0	12.0	12.0	11.5
	High Temp. Heat	Total capacity - Btuh	22,000	34,000	46,000	56,000
		Total unit watts	1791	2770	3740	4440
		COP	3.60	3.60	3.60	3.70
	HSPF Region IV		8.20	8.20	8.20	8.20
	Low Temp. Heat	Total capacity - Btuh	11,900	19,700	26,600	37,200
		Total unit watts	1480	2530	3500	4250
COP		2.36	2.28	2.23	2.57	
² Sound Rating Number (dB)		71	71	74	74	
REFRIGERANT	Type		R-410A	R-410A	R-410A	R-410A
	Charge		5 lbs. 5 oz.	8 lbs. 0 oz.	10 lbs. 8 oz.	10 lbs. 8 oz.
CONDENSATE DRAIN SIZE (FPT) - IN.			3/4	3/4	3/4	3/4
OUTDOOR COIL	Net Face Area - sq. ft.		16.3	15.5	18.6	18.6
	Tube diameter - in.		5/16	5/16	5/16	5/16
	Number of Rows		1	2	2	2
	Fins per in.		22	22	22	22
OUTDOOR COIL FAN	Motor horsepower		1/2	1/2	1/2	1/2
	Diameter - in.		22	22	24	24
	Number of blades		3	3	3	3
INDOOR COIL	Net Face Area - sq. ft.		4.4	4.4	6.8	6.8
	Tube Diameter - in.		5/16	3/8	3/8	3/8
	Number of Rows		3	3	3	3
	Fins per Inch		15	15	15	15
INDOOR BLOWER	Blower wheel size dia. x width - in.		10 x 6	10 x 8	10 x 10	12 x 9
	Motor horsepower		1/2	1/2	3/4	1
NET WEIGHT OF BASIC UNIT - LBS.			375	410	490	505
SHIPPING WEIGHT OF BASIC UNIT (1 PKG.) - LBS.			438	473	563	578
ELECTRICAL CHARACTERISTICS (60 HZ)			208/230V-1ph-60hz			
<p>¹ AHRI Certified to AHRI Standard 210/240: Cooling Ratings - 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air. High Temperature Heating Ratings - 47°F db/43°F wb outdoor air temperature and 70°F entering indoor coil air. Low Temperature Heating Ratings - 17°F db/15°F wb outdoor air temperature and 70°F entering indoor coil air. ² Sound Rating Number rated in accordance with test conditions included in AHRI Standard 270.</p>						

OPTIONAL ACCESSORIES - ORDER SEPARATELY						
MODEL NO.			PRPHP1624	PRPHP1636	PRPHP1648	PRPHP1660
COMPRESSOR CRANKCASE HEATER		11X27	•	•	•	•
COMPRESSOR HARD START KIT		10J42	•	•		
		12J90			•	•
DOWNFLOW CONVERSION KIT		11U80	•	•		
		11U81			•	•
HORIZONTAL DISCHARGE RECT. TO 14" ROUNDS DUCT ADAPTER (QTY 25 SETS)		R104617-01	•	•		
		R104618-01			•	•
ELECTRIC HEAT SIZE - 208/240V-1PH	5 kW - PHK05BP		10W47	•	•	•
	7.5 kW - PHK07BP		10W48	•	•	•
	10 kW - PHK10BP		10W49	•	•	•
	15 kW - PHK15BP		10W50		•	•
	20 kW - PHK20BP		10W51			•
1" INTERNAL FILTER RACK KIT (FILTERS NOT FURNISHED)		(1) 20 x 20 + (1) 14 X 20	11U73	•	•	
		(2) 20 x 20	11U74			•
LIFTING BRACKETS			11U76	•	•	•
CLIP CURBS	8 in. Height		14W71	•	•	
			14W72			•
	14 in. Height		14V68	•	•	
			14V69			•
ADJUSTABLE PITCH ROOF CURB AVAILABLE 3RD PARTY ONLY			N/A	•	•	
			N/A			•
SINGLE POINT POWER KITS	FOR 5 KW ELECTRIC HEAT ASPWR813-10		13W88	•	•	•
	FOR 7.5 KW ELECTRIC HEAT ASPWR814-10		13W89	•	•	•
	FOR 10 KW ELECTRIC HEAT ASPWR815-10		13W90	•	•	•
	FOR 15-20 KW ELECTRIC HEAT ASPWR816-10		13W91		•	•
PCO ACCESSORY			Y7960	•	•	•
MAINTENANCE SUPPLIES - ORDER SEPARATELY						
PCO ACCESSORY MAINTENANCE KIT (INCLUDES MEDIA CARTRIDGE AND UVA LAMP)			Y7972	•	•	•
CONTROLS - ORDER SEPARATELY						
COMFORT SYNC® THERMOSTAT			10F81	•	•	•
EQUIPMENT INTERFACE MODULE (EIM) - REQUIRED WITH COMFORT SYNC® THERMOSTAT			10T50	•	•	•
³ OUTDOOR AIR TEMPERATURE SENSOR			X2658	•	•	•
⁴ DISCHARGE AIR TEMPERATURE SENSOR			88K38	•	•	•

1 Filters are not furnished and must be field provided. Maximum acceptable filter efficiency is MERV 11. 1" Thick
 2 Filter Rack Kit cannot be used with the Healthy Climate® PCO Accessory.
 3 Remote Outdoor Temperature Sensor is recommended for heat pump balance point control and to lock out some of the the electric heating elements where two-stage control is applicable. Also allows the thermostat to display outdoor temperature.
 4 Used with the iComfort® S30 and iComfort Wi-Fi® Thermostats for optional service diagnostics.

ELECTRIC HEAT CAPACITIES

INPUT VOLTAGE	5 KW			7.5 KW			10 KW			15 KW			20 KW		
	NO OF STEPS	KW INPUT	KBTUH OUTPUT	NO OF STEPS	KW INPUT	KBTUH OUTPUT	NO OF STEPS	KW INPUT	KBTUH OUTPUT	NO OF STEPS	KW INPUT	KBTUH OUTPUT	NO OF STEPS	KW INPUT	KBTUH OUTPUT
208	1	3.8	12.8	1	5.6	19.2	1	7.5	25.6	1	11.2	38.2	1	15	51.2
220	1	4.2	14.3	1	6.3	21.5	1	8.4	28.7	1	12.6	43	1	16.8	57.3
230	1	4.6	15.7	1	6.9	23.5	1	9.2	31.3	1	13.8	47	1	18.4	62.7
240	1	5	17.1	1	7.5	25.6	1	10	34.1	1	15	51.2	1	20	68.2

ELECTRICAL/ELECTRICAL HEAT DATA

MODEL NO.			PRPHP1624		PRPHP1636		PRPHP1648		LRPHP60	
LINE VOLTAGE DATA - 60HZ - 1 PHASE			208/230V		208/230V		208/230V		208/230V	
COMPRESSOR	Rated Load Amps		11.7		16.1		21.2		27.1	
	Locked Rotor Amps		58.3		83.0		104.0		152.9	
OUTDOOR FAN MOTOR	Full Load Amps		1.2		1.4		2.3		2.4	
INDOOR BLOWER MOTOR	Full Load Amps		1.7		3.6		4.5		5.5	
¹ MAXIMUM OVERCURRENT PROTECTION	VOLTAGE		208V	240V	208V	240V	208V	240V	208V	240V
	UNIT ONLY	Circuit 1	25	25	40	40	50	50	60	60
		5 KW	Circuit 1	25	30	30	35	30	35	35
	7.5 KW	Circuit 1	40	45	40	45	40	45	45	50
	³ 15 KW	Circuit 1	---	---	50	60	60	60	60	60
		Circuit 2	---	---	25	30	25	30	25	30
	³ 20 KW	Circuit 1	---	---	---	---	60	60	60	60
		Circuit 2	---	---	---	---	50	60	50	60
¹ MAXIMUM OVERCURRENT PROTECTION WITH OPTIONAL SINGLE POINT POWER SUPPLY	5 KW		45	50	50	60	70	70	80	90
	7.5 KW		60	60	60	70	80	80	90	100
	10 KW		70	80	80	80	90	90	100	110
	15 KW		---	---	100	110	110	125	110	125
	20 KW		---	---	---	---	125	150	150	150
² MINIMUM CIRCUIT AMPACITY	UNIT ONLY	Circuit 1	18.0	18.0	25.6	25.6	33.8	33.8	42.3	42.3
		5 KW	Circuit 1	24.7	28.2	27.1	30.5	28.2	31.7	29.5
	7.5 KW	Circuit 1	36.0	41.2	38.3	43.6	39.5	44.7	40.7	45.9
	10 KW	Circuit 1	47.3	54.2	49.6	56.6	50.8	57.7	52.0	59.0
	³ 15 KW	Circuit 1	---	---	49.6	56.6	50.8	57.7	52.0	59.0
		Circuit 2	---	---	22.6	26.0	22.6	26	22.6	26.0
	³ 20 KW	Circuit 1	---	---	---	---	50.8	57.7	52.0	59.0
		Circuit 2	---	---	---	---	45.1	52.1	45.1	52.1
² MINIMUM CIRCUIT AMPACITY WITH OPTIONAL SINGLE POINT POWER SUPPLY	5 KW		40.6	44.0	48.2	51.6	56.4	59.8	64.9	68.3
	7.5 KW		51.8	57.1	59.4	64.7	67.6	72.8	76.1	81.3
	10 KW		63.1	70.1	70.7	77.7	78.9	85.9	87.4	94.3
	15 KW		---	---	93.3	103.7	101.5	111.9	110.0	120.4
	20 KW		---	---	---	---	124.1	137.9	132.5	146.4

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

NOTE - Circuit 1 Minimum Circuit Ampacity includes the Blower Motor Full Load Amps.

NOTE- Extremes of operating range are plus and minus 10% of line voltage.

¹ HACR type breaker or fuse.

² Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

³ A separate compressor circuit is required.

BLOWER DATA

PRPHP1624 BLOWER PERFORMANCE 0 THROUGH 0.80 IN. W.G. EXTERNAL STATIC PRESSURE RANGE												
"ADJUST" JUMPER SETTING	BLOWER CONTROL JUMPER SPEED POSITIONS											
	"COOL" SPEED - CFM				"HEAT" SPEED - CFM				"CONTINUOUS FAN" SPEED - CFM			
	A	1B	C	D	A	1B	C	D	A	B	C	D
+	1100	880	660	440	1150	1035	690	690	550	440	330	220
NORM	1000	800	600	400	1000	900	600	600	500	400	300	200
-	900	720	540	360	1000	900	600	600	450	360	270	180

Factory Settings.
 NOTE - All air data is measured external to unit without air filters.
 NOTE - 1st Stage airflow is 70% of 2nd Stage airflow (full capacity) in cooling mode.

PRPHP1636 BLOWER PERFORMANCE 0 THROUGH 0.80 IN. W.G. EXTERNAL STATIC PRESSURE RANGE												
"ADJUST" JUMPER SETTING	BLOWER CONTROL JUMPER SPEED POSITIONS											
	"COOL" SPEED - CFM				"HEAT" SPEED - CFM				"CONTINUOUS FAN" SPEED - CFM			
	A	1B	C	D	A	1B	C	D	A	B	C	D
+	1430	1320	1100	880	1495	1380	1150	1150	715	660	550	440
NORM	1300	1200	1000	800	1300	1250	1000	1000	650	600	500	400
-	1170	1080	900	720	1300	1200	1000	1000	585	540	450	360

Factory Settings.
 NOTE - All air data is measured external to unit without air filters.
 NOTE - 1st Stage airflow is 70% of 2nd Stage airflow (full capacity) in cooling mode.

PRPHP1648 BLOWER PERFORMANCE 0 THROUGH 0.80 IN. W.G. EXTERNAL STATIC PRESSURE RANGE												
"ADJUST" JUMPER SETTING	BLOWER CONTROL JUMPER SPEED POSITIONS											
	"COOL" SPEED - CFM				"HEAT" SPEED - CFM				"CONTINUOUS FAN" SPEED - CFM			
	A	1B	C	D	A	1B	C	D	A	B	C	D
+	1980	1760	1540	1320	2070	1840	1610	1610	990	880	770	660
NORM	1800	1600	1400	1200	1800	1600	1400	1400	900	800	700	600
-	1620	1440	1260	1080	1800	1600	1400	1400	810	720	630	540

Factory Settings.
 NOTE - All air data is measured external to unit without air filters.
 NOTE - 1st Stage airflow is 70% of 2nd Stage airflow (full capacity) in cooling mode.

PRPHP1660 BLOWER PERFORMANCE 0 THROUGH 0.80 IN. W.G. EXTERNAL STATIC PRESSURE RANGE												
"ADJUST" JUMPER SETTING	BLOWER CONTROL JUMPER SPEED POSITIONS											
	"COOL" SPEED - CFM				"HEAT" SPEED - CFM				"CONTINUOUS FAN" SPEED - CFM			
	A	1B	C	D	A	1B	C	D	A	B	C	D
+	2200	1980	1760	1540	2300	2070	1840	1840	1100	990	880	770
NORM	2000	1800	1600	1400	2000	1800	1600	1600	1000	900	800	700
-	1800	1620	1440	1260	2000	1800	1600	1600	900	810	720	630

Factory Settings.
 NOTE - All air data is measured external to unit without air filters.
 NOTE - 1st Stage airflow is 70% of 2nd Stage airflow (full capacity) in cooling mode.

COOLING RATINGS

2 TON - PRPHP1624 (1ST STAGE)																					
ENTERING WET BULB TEMP.	TOTAL AIR VOLUME	OUTDOOR AIR TEMPERATURE ENTERING OUTDOOR COIL																			
		65°F					75°F					85°F					95°F				
		TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)		
				DRY BULB					DRY BULB					DRY BULB					DRY BULB		
CFM	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	
63°F	500	20.1	.81	0.72	0.86	1.00	19.0	.93	0.74	0.88	1.00	17.9	1.08	0.75	0.91	1.00	16.7	1.23	0.78	0.94	1.00
	560	20.5	.81	0.74	0.89	1.00	19.4	.93	0.76	0.92	1.00	18.2	1.07	0.78	0.95	1.00	17.1	1.23	0.80	0.98	1.00
	610	20.9	.80	0.76	0.93	1.00	19.7	.93	0.79	0.96	1.00	18.6	1.07	0.81	0.99	1.00	17.5	1.23	0.83	1.00	1.00
67°F	500	21.5	.80	0.57	0.69	0.82	20.3	.92	0.58	0.71	0.85	19.1	1.06	0.59	0.73	0.88	17.9	1.22	0.60	0.75	0.91
	560	21.9	.79	0.58	0.72	0.86	20.7	.92	0.59	0.74	0.88	19.4	1.06	0.60	0.76	0.91	18.2	1.22	0.62	0.78	0.95
	610	22.3	.79	0.59	0.75	0.90	21.1	.91	0.61	0.77	0.93	19.7	1.06	0.62	0.79	0.97	18.5	1.22	0.64	0.82	1.00
71°F	500	23.0	.78	0.43	0.55	0.67	21.8	.90	0.43	0.56	0.68	20.5	1.05	0.43	0.57	0.70	19.2	1.21	0.44	0.58	0.73
	560	23.4	.78	0.43	0.56	0.69	22.2	.90	0.43	0.57	0.71	20.8	1.04	0.44	0.59	0.73	19.5	1.21	0.44	0.60	0.76
	610	23.9	.78	0.43	0.58	0.72	22.5	.90	0.44	0.59	0.74	21.1	1.04	0.45	0.61	0.77	19.8	1.20	0.45	0.62	0.80

2 TON - PRPHP1624 (2ND STAGE)																					
ENTERING WET BULB TEMP.	TOTAL AIR VOLUME	OUTDOOR AIR TEMPERATURE ENTERING OUTDOOR COIL																			
		85°F					95°F					105°F					115°F				
		TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)		
				DRY BULB					DRY BULB					DRY BULB					DRY BULB		
CFM	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	
63°F	600	23.8	1.45	0.72	0.86	1.00	22.6	1.61	0.74	0.89	1.00	21.3	1.80	0.75	0.92	1.00	19.9	2.02	0.78	0.95	1.00
	800	25.2	1.46	0.79	0.97	1.00	23.9	1.62	0.82	1.00	1.00	22.6	1.81	0.84	1.00	1.00	21.4	2.03	0.86	1.00	1.00
	1000	26.6	1.47	0.86	1.00	1.00	25.3	1.63	0.88	1.00	1.00	24.0	1.82	0.90	1.00	1.00	22.6	2.03	0.93	1.00	1.00
67°F	600	25.5	1.46	0.56	0.70	0.83	24.1	1.62	0.58	0.72	0.85	22.7	1.81	0.59	0.73	0.88	21.3	2.03	0.60	0.76	0.91
	800	26.8	1.47	0.61	0.78	0.94	25.3	1.63	0.63	0.80	0.97	23.8	1.81	0.64	0.83	1.00	22.3	2.03	0.66	0.86	1.00
	1000	27.6	1.47	0.66	1.00	1.00	26.1	1.63	0.68	0.89	1.00	24.5	1.82	0.70	0.93	1.00	22.9	2.04	0.72	0.97	1.00
71°F	600	27.3	1.47	0.43	0.55	0.67	25.8	1.63	0.43	0.56	0.69	24.4	1.82	0.43	0.57	0.71	22.8	2.04	0.43	0.59	0.73
	800	28.6	1.48	0.44	0.60	0.76	27.0	1.64	0.44	0.61	0.78	25.4	1.83	0.45	0.63	0.81	23.7	2.04	0.46	0.65	0.84
	1000	29.3	1.49	0.46	0.65	0.85	27.7	1.64	0.47	0.67	0.88	26.0	1.83	0.48	0.70	0.91	24.2	2.04	0.49	0.71	0.93

3 TON - PRPHP1636 (1ST STAGE)																					
ENTERING WET BULB TEMP.	TOTAL AIR VOLUME	OUTDOOR AIR TEMPERATURE ENTERING OUTDOOR COIL																			
		65°F					75°F					85°F					95°F				
		TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)		
				DRY BULB					DRY BULB					DRY BULB					DRY BULB		
CFM	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	
63°F	760	28.4	1.16	0.74	0.89	1.00	26.9	1.32	0.76	0.92	1.00	25.3	1.52	0.78	0.95	1.00	23.8	1.75	0.80	0.98	1.00
	840	29.0	1.16	0.76	0.93	1.00	27.4	1.32	0.79	0.95	1.00	25.9	1.52	0.81	0.99	1.00	24.4	1.74	0.83	1.00	1.00
	920	29.4	1.16	0.79	0.97	1.00	27.9	1.32	0.81	1.00	1.00	26.4	1.52	0.83	1.00	1.00	25.1	1.74	0.85	1.00	1.00
67°F	760	30.4	1.15	0.58	0.72	0.85	28.8	1.31	0.59	0.73	0.88	27.1	1.52	0.60	0.75	0.91	25.5	1.74	0.61	0.78	0.95
	840	31.0	1.15	0.59	0.74	0.89	29.2	1.31	0.60	0.76	0.92	27.5	1.51	0.62	0.79	0.96	25.9	1.74	0.63	0.81	1.00
	920	31.4	1.15	0.61	0.77	0.93	29.7	1.31	0.62	0.79	0.97	28.0	1.51	0.64	0.82	1.00	26.3	1.74	0.65	0.85	1.00
71°F	760	32.6	1.14	0.43	0.56	0.69	30.9	1.30	0.43	0.57	0.71	29.1	1.51	0.44	0.58	0.73	27.4	1.73	0.44	0.60	0.75
	840	33.2	1.13	0.44	0.58	0.72	31.4	1.30	0.44	0.59	0.74	29.5	1.50	0.45	0.60	0.76	27.8	1.73	0.45	0.62	0.79
	920	33.6	1.13	0.44	0.59	0.75	31.8	1.30	0.45	0.61	0.77	29.9	1.50	0.45	0.62	0.80	28.1	1.73	0.46	0.64	0.83

3 TON - PRPHP1636 (2ND STAGE)																					
ENTERING WET BULB TEMP.	TOTAL AIR VOLUME	OUTDOOR AIR TEMPERATURE ENTERING OUTDOOR COIL																			
		85°F					95°F					105°F					115°F				
		TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)		
				DRY BULB					DRY BULB					DRY BULB					DRY BULB		
CFM	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	
63°F	1000	35.6	2.18	0.75	0.91	1.00	33.7	2.43	0.77	0.94	1.00	31.7	2.72	0.80	0.97	1.00	29.9	3.05	0.82	1.00	1.00
	1200	36.7	2.19	0.81	0.97	1.00	34.8	2.44	0.83	1.00	1.00	32.9	2.73	0.85	0.73	1.00	31.3	3.07	0.87	1.00	1.00
	1400	37.9	2.21	0.85	1.00	1.00	36.2	2.46	0.87	1.00	1.00	34.4	2.75	0.89	1.00	1.00	32.5	3.08	0.92	1.00	1.00
67°F	1000	37.9	2.21	0.59	0.73	0.88	35.9	2.46	0.60	0.75	0.91	33.8	2.75	0.61	0.77	0.94	31.6	3.07	0.63	0.80	0.98
	1200	39.0	2.22	0.62	0.79	0.96	36.9	2.47	0.63	0.81	0.98	34.6	2.76	0.65	0.84	1.00	32.4	3.08	0.67	0.87	1.00
	1400	39.8	2.23	0.65	0.85	1.00	37.6	2.48	0.67	0.88	1.00	35.3	2.76	0.69	0.91	1.00	33.0	3.09	0.71	0.95	1.00
71°F	1000	40.5	2.24	0.43	0.57	0.71	38.3	2.49	0.44	0.58	0.73	36.1	2.77	0.44	0.60	0.75	33.9	3.10	0.45	0.61	0.78
	1200	41.5	2.25	0.45	0.61	0.77	39.3	2.50	0.45	0.62	0.79	36.9	2.78	0.46	0.64	0.82	34.6	3.11	0.47	0.66	0.85
	1400	42.3	2.26	0.46	0.65	0.83	39.9	2.51	0.47	0.66	0.86	37.5	2.79	0.48	0.69	0.89	35.1	3.11	0.49	0.71	0.90

COOLING RATINGS

4 TON - PRPHP1648 (1ST STAGE)																					
ENTERING WET BULB TEMP.	TOTAL AIR VOLUME	OUTDOOR AIR TEMPERATURE ENTERING OUTDOOR COIL																			
		65°F					75°F					85°F					95°F				
		TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)		
				DRY BULB					DRY BULB					DRY BULB					DRY BULB		
CFM	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	
63°F	1010	38.3	1.45	0.74	0.88	1.00	36.1	1.70	0.75	0.91	1.00	33.8	1.98	0.78	0.94	1.00	31.5	2.27	0.80	0.98	1.00
	1120	39.1	1.45	0.76	0.92	1.00	36.8	1.69	0.78	0.95	1.00	34.4	1.97	0.81	0.99	1.00	32.3	2.27	0.83	1.00	1.00
	1230	39.8	1.44	0.79	0.96	1.00	37.4	1.69	0.81	0.99	1.00	35.2	1.97	0.83	1.00	1.00	33.2	2.26	0.85	1.00	1.00
67°F	1010	41.0	1.43	0.58	0.71	0.85	38.6	1.68	0.58	0.73	0.88	36.2	1.96	0.60	0.75	0.91	33.8	2.26	0.61	0.78	0.94
	1120	41.8	1.42	0.59	0.74	0.89	39.3	1.67	0.60	0.76	0.92	36.7	1.95	0.62	0.79	0.96	34.3	2.25	0.63	0.82	1.00
	1230	42.4	1.42	0.61	0.77	0.93	39.8	1.67	0.62	0.79	0.96	37.3	1.95	0.64	0.82	1.00	34.8	2.25	0.66	0.85	1.00
71°F	1010	43.7	1.41	0.43	0.56	0.69	41.2	1.66	0.43	0.57	0.71	38.7	1.94	0.44	0.58	0.73	36.2	2.24	0.44	0.60	0.75
	1120	44.5	1.40	0.43	0.58	0.72	41.9	1.65	0.44	0.59	0.74	39.3	1.93	0.44	0.60	0.76	36.8	2.23	0.45	0.62	0.79
	1230	45.2	1.40	0.44	0.59	0.75	42.5	1.65	0.45	0.61	0.77	39.9	1.93	0.45	0.63	0.80	37.3	2.23	0.46	0.64	0.83

4 TON - PRPHP1648 (2ND STAGE)																					
ENTERING WET BULB TEMP.	TOTAL AIR VOLUME	OUTDOOR AIR TEMPERATURE ENTERING OUTDOOR COIL																			
		85°F					95°F					105°F					115°F				
		TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)		
				DRY BULB					DRY BULB					DRY BULB					DRY BULB		
CFM	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	
63°F	1400	47.8	2.80	0.77	0.93	1.00	45.2	3.13	0.79	0.96	1.00	42.5	3.52	0.81	0.97	1.00	39.9	3.96	0.84	1.00	1.00
	1600	48.9	2.81	0.81	0.97	1.00	46.3	3.14	0.83	0.99	1.00	44.0	3.53	0.85	1.00	1.00	41.6	3.98	0.87	1.00	1.00
	1800	50.0	2.82	0.84	1.00	1.00	47.8	3.16	0.86	1.00	1.00	45.3	3.55	0.88	1.00	1.00	42.8	4.00	0.88	1.00	1.00
67°F	1400	50.9	2.83	0.59	0.74	0.90	48.2	3.16	0.61	0.77	0.93	45.5	3.55	0.62	0.79	0.94	42.5	4.00	0.63	0.82	0.98
	1600	52.2	2.84	0.62	0.79	0.94	49.2	3.17	0.63	0.81	0.97	46.0	3.56	0.65	0.84	1.00	43.3	4.01	0.67	0.87	1.00
	1800	53.3	2.85	0.64	0.83	0.98	49.9	3.18	0.66	0.86	1.00	46.9	3.57	0.67	0.89	1.00	43.9	4.01	0.70	0.90	1.00
71°F	1400	54.2	2.85	0.44	0.58	0.73	51.3	3.19	0.44	0.59	0.75	48.2	3.58	0.45	0.61	0.77	45.3	4.03	0.45	0.63	0.80
	1600	55.4	2.86	0.44	0.59	0.73	52.2	3.20	0.45	0.62	0.80	49.2	3.59	0.46	0.64	0.83	46.2	4.05	0.46	0.66	0.86
	1800	56.1	2.87	0.46	0.64	0.82	53.0	3.21	0.46	0.65	0.83	49.9	3.60	0.47	0.67	0.84	46.7	4.05	0.47	0.70	0.88

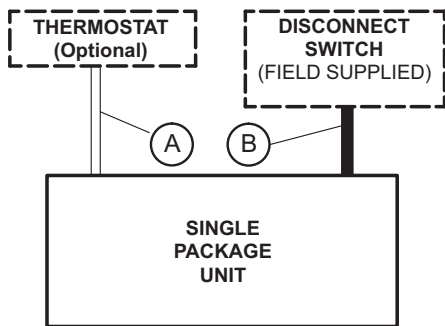
5 TON - PRPHP1660 (1ST STAGE)																					
ENTERING WET BULB TEMP.	TOTAL AIR VOLUME	OUTDOOR AIR TEMPERATURE ENTERING OUTDOOR COIL																			
		65°F					75°F					85°F					95°F				
		TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)		
				DRY BULB					DRY BULB					DRY BULB					DRY BULB		
CFM	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	
63°F	1130	46.9	1.92	0.71	0.85	0.98	38.3	2.20	0.84	1.00	1.00	41.3	2.53	0.75	0.90	1.00	38.6	2.88	0.77	0.93	1.00
	1260	48.0	1.91	0.73	0.88	1.00	45.1	2.20	0.75	0.91	1.00	42.2	2.53	0.78	0.94	1.00	39.3	2.88	0.80	0.98	1.00
	1390	48.9	1.90	0.76	0.92	1.00	46.0	2.19	0.78	0.93	1.00	43.0	2.52	0.80	0.97	1.00	40.2	2.88	0.83	1.00	1.00
67°F	1130	50.1	1.89	0.56	0.69	0.81	47.3	2.18	0.57	0.70	0.84	44.3	2.51	0.58	0.72	0.86	41.4	2.87	0.59	0.75	0.90
	1260	51.2	1.89	0.57	0.71	0.85	48.2	2.18	0.58	0.73	0.88	45.2	2.51	0.60	0.75	0.91	42.1	2.87	0.61	0.78	0.94
	1390	52.1	1.88	0.59	0.74	0.88	49.0	2.17	0.60	0.76	0.92	45.9	2.51	0.62	0.78	0.94	42.8	2.86	0.63	0.81	0.97
71°F	1130	53.4	1.87	0.42	0.54	0.66	50.4	2.16	0.43	0.55	0.68	47.2	2.50	0.43	0.57	0.70	44.3	2.85	0.43	0.58	0.72
	1260	54.5	1.86	0.43	0.56	0.69	51.4	2.16	0.43	0.57	0.71	48.2	2.49	0.44	0.58	0.73	45.1	2.85	0.44	0.60	0.76
	1390	55.4	1.86	0.43	0.58	0.72	52.2	2.15	0.44	0.59	0.74	48.9	2.49	0.44	0.60	0.76	45.7	2.84	0.45	0.62	0.79

5 TON - PRPHP1660 (2ND STAGE)																					
ENTERING WET BULB TEMP.	TOTAL AIR VOLUME	OUTDOOR AIR TEMPERATURE ENTERING OUTDOOR COIL																			
		85°F					95°F					105°F					115°F				
		TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)			TOTAL COOL CAP.	COMP. MOTOR INPUT	SENSIBLE TO TOTAL RATIO (S/T)		
				DRY BULB					DRY BULB					DRY BULB					DRY BULB		
CFM	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	KBTUH	KW	75°F	80°F	85°F	
63°F	1600	57.3	3.63	0.75	0.89	1.00	54.2	4.03	0.77	0.91	1.00	51.1	4.49	0.79	0.94	1.00	48.0	5.00	0.82	0.97	1.00
	1800	58.4	3.64	0.78	0.93	1.00	55.3	4.04	0.80	0.96	1.00	52.3	4.49	0.83	0.99	1.00	49.0	5.02	0.82	1.00	1.00
	2000	59.5	3.66	0.80	0.97	1.00	56.4	4.06	0.82	0.99	1.00	53.3	4.52	0.84	1.00	1.00	50.6	5.04	0.85	1.00	1.00
67°F	1600	60.8	3.68	0.59	0.73	0.86	57.6	4.08	0.60	0.75	0.89	54.3	4.53	0.61	0.77	0.91	51.1	5.05	0.62	0.80	0.94
	1800	62.2	3.70	0.60	0.77	0.90	58.9	4.10	0.62	0.79	0.93	55.6	4.54	0.63	0.81	0.95	51.3	5.06	0.66	0.81	1.00
	2000	63.1	3.71	0.62	0.80	0.94	59.7	4.11	0.64	0.81	0.97	56.0	4.56	0.65	0.83	1.00	52.4	5.07	0.68	0.86	1.00
71°F	1600	64.7	3.73	0.43	0.57	0.71	61.3	4.13	0.44	0.58	0.73	57.7	4.59	0.44	0.60	0.76	54.3	5.10	0.44	0.61	0.78
	1800	65.9	3.75	0.44	0.59	0.75	62.3	4.15	0.44	0.61	0.77	58.5	4.60	0.45	0.62	0.80	55.0	5.12	0.46	0.64	0.78
	2000	66.7	3.76	0.45	0.62	0.79	63.0	4.16	0.45	0.63	0.79	59.4	4.62	0.46	0.65	0.79	55.6	5.13	0.47	0.67	0.84

HEATING RATINGS

MODEL	OUTDOOR TEMP - DB/WB °F									
	0/0		17/15		35/33		47/43		62/56	
	BTUH	KW	BTUH	KW	BTUH	KW	BTUH	KW	BTUH	KW
PRPHP1624	6100	1.30	11,900	1.48	18,100	1.67	22,100	1.80	27,200	1.95
PRPHP1636	11,100	2.36	19,700	2.53	28,700	2.71	34,700	2.83	42,200	2.98
PRPHP1648	14,900	3.33	26,600	3.50	39,100	3.68	47,400	3.81	57,800	3.96
PRPHP1660	24,800	4.06	37,200	4.25	50,300	4.45	59,000	4.59	69,900	4.75

FIELD WIRING



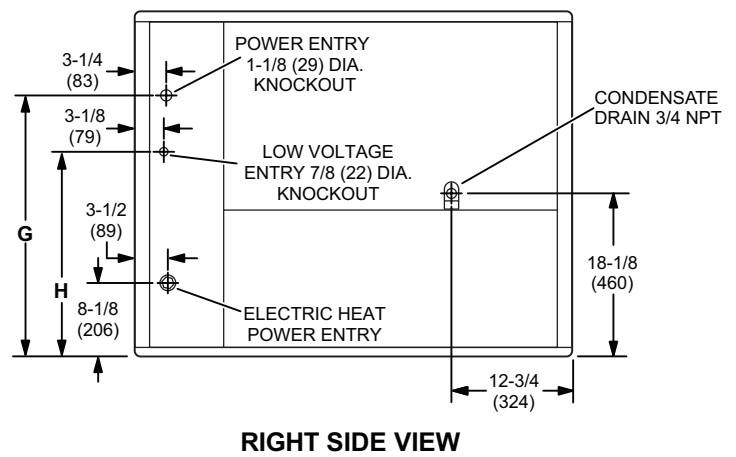
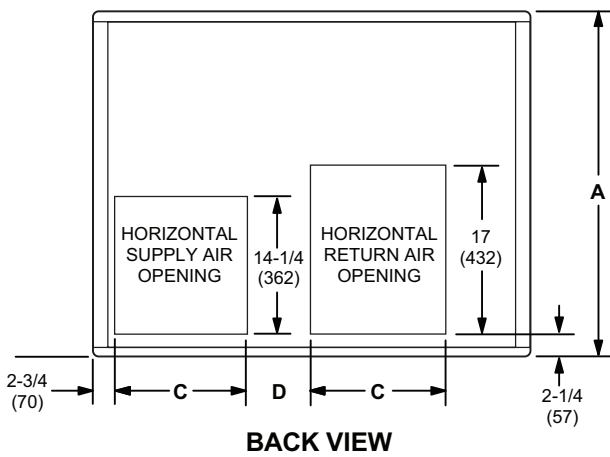
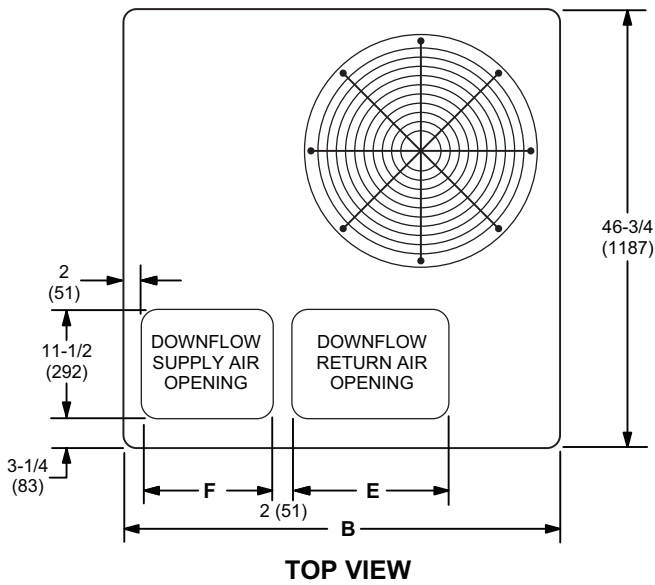
A - Seven Wire Low Voltage (Electronic)
 B - Two Wire Power (See Electrical Data Table)

If multiple disconnects are used on units with electric heat; there must be two-wire power provided for each disconnect

- Field Wiring Not Furnished -

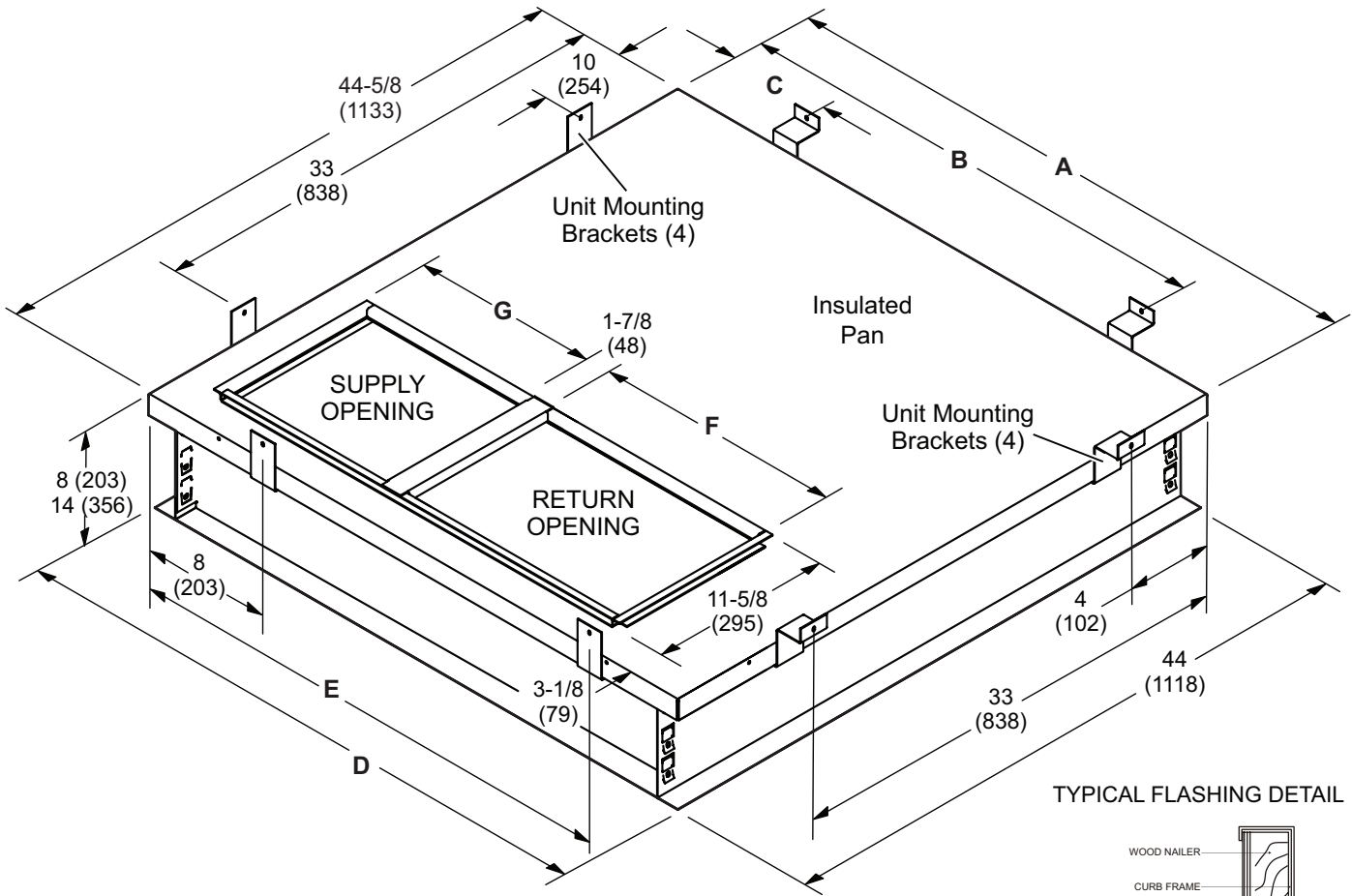
INSTALLATION CLEARANCES		
	IN.	MM
Front	24	610
Right Side (blower access)	24	610
Left Side (evaporator coil access)	24	610
Back	0	0
Top	48	1219

DIMENSIONS - UNIT - INCHES (MM)



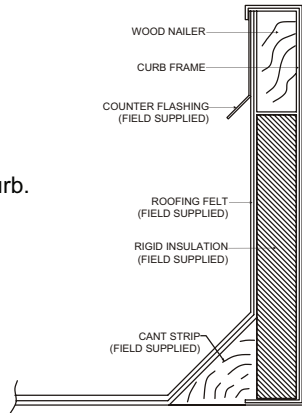
MODEL NO.	A		B		C		D		E	
	IN.	MM	IN.	MM	IN.	MM	IN.	MM	IN.	MM
PRPHP1624, 36	36-7/8	937	46-3/4	1187	13-3/8	340	5-7/8	149	16-3/4	425
PRPHP1648, 60	40-7/8	1038	55-1/4	1403	18-1/8	467	4-5/8	117	19-3/4	502
MODEL NO.	F		G		H					
	IN.	MM	IN.	MM	IN.	MM				
PRPHP1624, 36	14	356	28-1/8	714	22-1/8	562				
PRPHP1648, 60	19-1/2	495	32-1/8	816	26-1/8	664				

CLIP CURB



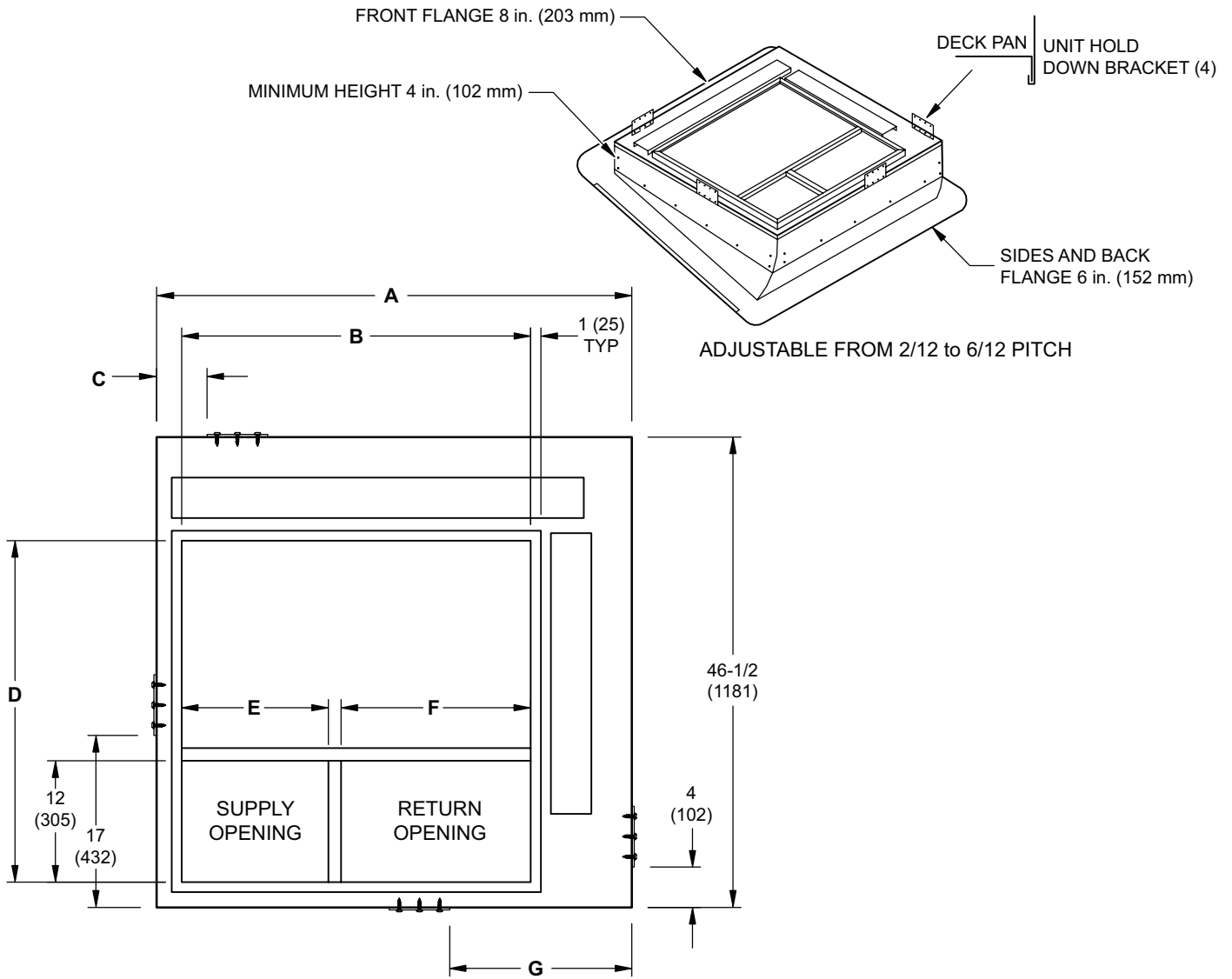
NOTE - Roof deck may be omitted within confines of curb.

TYPICAL FLASHING DETAIL



USAGE	A		B		C		D		E	
	IN.	MM	IN.	MM	IN.	MM	IN.	MM	IN.	MM
24, 36	44-5/8	1133	43	1092	18	457	44	1118	37	940
48, 60	53-1/8	1349	51	1295	24	610	52-1/2	1334	41	1041
USAGE	F		G							
	IN.	MM	IN.	MM						
24, 36	14	356	16-3/4	425						
48, 60	19-1/2	495	19-3/4	502						

ADJUSTABLE PITCH ROOF CURB



USAGE	A		B		C		D	
	IN.	MM	IN.	MM	IN.	MM	IN.	MM
24, 36	47	1194	34-1/2	876	5	127	33-3/4	857
48, 60	55-1/4	1403	42-3/8	1076	10	254	33	838
MODEL NO.	E		F		G			
	IN.	MM	IN.	MM	IN.	MM		
24, 36	14-1/2	368	18-3/4	476	18	457		
48, 60	20	508	21-1/8	537	18-1/4	464		

MUST SOURCE LOCALLY



1-800-448-5872

All specifications and illustrations subject to change without notice and without incurring obligations.