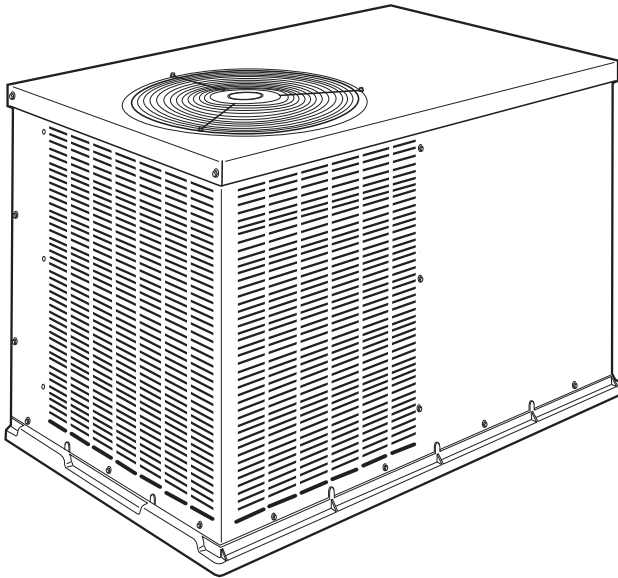




PH3Z
13 SEER SINGLE-PACKAGED HEAT PUMP SYSTEM
WITH R-22 REFRIGERANT
SINGLE AND THREE PHASE
2-5 NOMINAL TONS (024-060)

Product Data



A05194

Fig. 1 - Unit 664B

Single-Packaged Heat Pump Units with:

- easy installation design
- corrosion-proof unit base
- redesigned aerodynamic fan blade for reduced sound
- sloped drain for improved indoor air quality
- scroll compressors
- front and side service access
- louvered panel coil protection

FEATURES/BENEFITS

Compact, horizontal supply and return unit, combining easy installation and maintenance with efficient performance.

EASY TO INSTALL—The PH3Z units are lightweight, compact single package units that are easy to handle. Every PH3Z unit has an identical 32 by 51-in. (813 by 1295 mm) footprint to make job site planning simple. The precise design uses less sheet metal and makes the PH3Z units lighter than other units. The unit can be easily positioned on the job site with the hand-holds built into the unit basepan. Drop-in cartridge-style heaters are utilized to minimize installation time.

REDESIGNED, AERODYNAMIC FAN BLADE DESIGN reduces overall sound by up to 3dBA; now as low as 76dBA.

SERVICE ACCESS—The PH3Z units are designed to be serviced from both front and side. Routine maintenance tasks, such as coil cleaning, are sped up with the new multiple side panels design.

CORROSION PROOF UNIT BASE—The PH3Z unit features a tough, high-tech, single-piece composite material unit base with an integrated drain. The composite material eliminates the potential problem of rust and premature replacement which are common with standard metal pans. Each PH3Z unit base is sloped to eliminate standing water. This feature minimizes the amount of standing water inside the unit, which limits mold and mildew growth.

DURABLE STEEL CABINET—The watertight construction and corrosion-resistant finish of the PH3Z unit will keep it looking like new for years. A specialized paint treatment process ensures quality protection against the elements. A compact, low-profile design utilizes a louvered coil enclosure for maximum protection against hail damage and vandalism.

SCROLL COMPRESSORS—Each PH3Z unit comes standard with a high reliability design scroll compressor. Each scroll compressor is hermetically sealed against contamination to help promote longer life and dependable operation. All scroll compressors have internal high-pressure and overcurrent protection.

COIL EFFICIENCY—Indoor and outdoor coils are computer designed for optimum heat transfer and cooling efficiency.

CHRONOTEMP™ DEFROST SYSTEM—The system provides time/ temperature-based defrost cycles to maintain unit efficiency. This highly reliable system checks for coil icing conditions at preset intervals and initiates a defrost cycle only if it is required. The defrost cycle ends as soon as defrosting is accomplished. Each defrost board is also equipped with 5-minute compressor time-delay protection.

ACCESSORY ELECTRIC HEATERS—A variety of accessory electric heaters are available for the PH3Z units. These heaters are comprised of a separate heater module mounted on the blower inlet and remote mounted controls located in the unit control box. Single point electrical connections are provided for powering both the heater and the unit.

START COLLARS—Start collars are provided with each unit to provide easy connection to the structure ductwork.

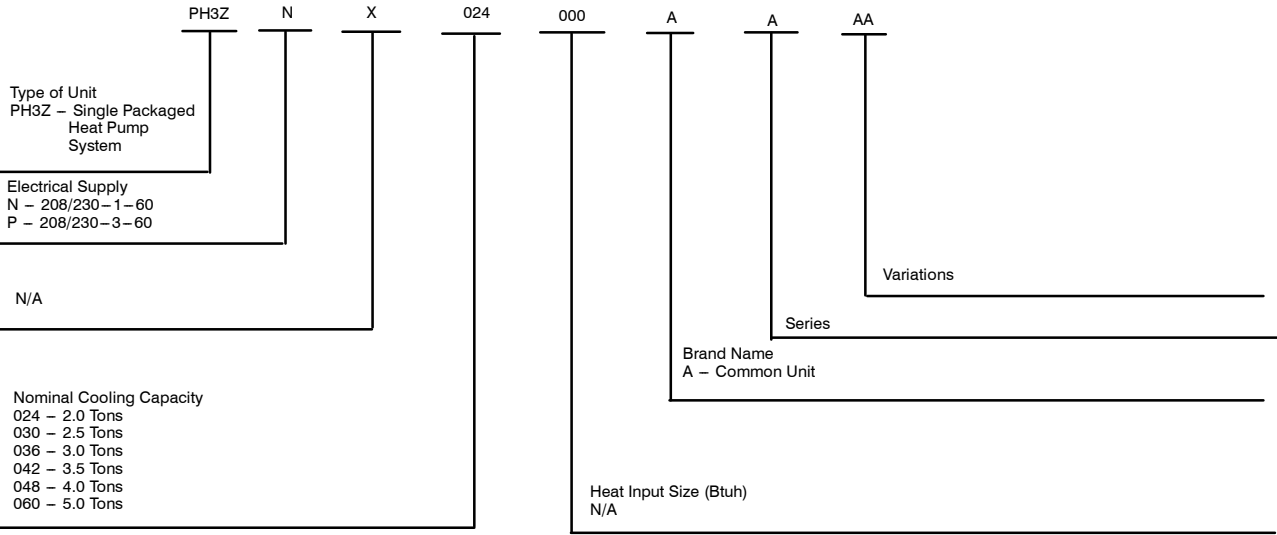
DEPENDABLE COMPONENTS—Direct-drive, multi-speed blower motor is standard on all models.

Direct-drive, PSC outdoor-fan motors are designed to help reduce energy consumption and provide for cooling operation down to 40°F (4.4°C).

Refrigerant system is designed to provide dependability. Liquid refrigerant strainers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge and is fully run tested. Refrigerant service connections make checking operating pressure easier.

LIMITED WARRANTY—Standard 5-year limited warranty on all parts and 5-year limited warranty on compressor.

MODEL NUMBER NOMENCLATURE



PH3Z

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ARI* CAPACITIES

UNIT PH3Z (SERIES)	NOMINAL TONS	STANDARD CFM	NET COOLING CAPACITIES AT 95°F (35°C) (Btuh)†	SEER†	NET HEATING CAPACITIES AT 47°F (8.3°C) (Btuh)†	HSPF†	HIGH HEAT COP AT 47°F (8.3°C)	SOUND RATINGS** (dBA)
024	2.0	800	24,000	13.2	23,000	7.7	3.2	76
030	2.5	1000	29,000	13.2	28,600	7.7	3.6	81
036	3.0	1200	36,000	13.2	35,000	7.7	3.3	78
042	3.5	1400	40,000	13.2	40,000	7.7	3.3	78
048	4.0	1600	45,000	13.2	44,500	7.7	3.4	80
060	5.0	1900	52,000	13.0	52,000	7.7	3.3	84

* Air Conditioning & Refrigeration Institute

† Rated in accordance with U.S. Government DOE (Department of Energy) test procedures and/or ARI Standards 210/240.

** Tested in accordance with ARI Standard 270 (not listed in ARI).

LEGEND

dBA—A-weighted decibels

HSPF—Heating Seasonal Performance Factor

SEER—Seasonal Energy Efficiency Ratio

COP—Coefficient of Performance

ISO 9001:2000



PH3Z

PHYSICAL DATA

UNIT SIZE	024	030	036	042	048	060
NOMINAL CAPACITY (ton)	2	2-1/2	3	3-1/2	4	5
OPERATING WEIGHT (lb)	293	324	377	389	384	433
(kg)	133	147	171	176	174	196
COMPRESSOR	Scroll				Ultra Tech Scroll	
REFRIGERANT (R-22)						
Quantity (lb)	7.5	10.3	10.3	11.9	11.4	13.3
(kg)	3.4	4.7	4.7	5.4	5.2	6.0
REFRIGERANT METERING DEVICE	AccuRater®				TXV	
Orifice ID (in.)	0.067	0.067	0.082	0.086	—	—
Orifice OD (in.)	0.049	0.057	0.059	0.063	0.070	0.073
CONDENSER COIL	Copper Tubes, Aluminum Plate Fins					
Rows...Fins/in.	2...21	2...21	2...21	2...21	2...21	2...21
Face Area (sq. ft.)	11.1	12.7	15.8	15.8	13.3	15.8
CONDENSER FAN	Propeller					
Nominal Cfm	2600	2600	3200	3200	3200	3300
Diameter (in.)	20	20	20	20	20	20
(mm)	508	508	508	508	508	508
Motor HP (RPM)	1/8 (825)	1/8 (825)	1/4 (1100)	1/4 (1100)	1/4 (1100)	1/2 (1100)
EVAPORATOR COIL	Copper Tubes, Aluminum Plate Fins					
Rows...Fins/in.	3...17	3...17	4...17	4...17	4...17	4...17
Face Area (sq. ft.)	4.3	4.9	4.9	6.1	4.9	6.1
EVAPORATOR BLOWER	Direct Drive					
Nominal Airflow (Cfm)	800	1000	1200	1400	1600	1875
Size (in.)	10x8	10x8	11x9	11x9	11x10	11x10
(mm)	254x203	279x203	279x229	279x229	279x254	279x254
Motor HP (RPM)	1/2 (1050)	1/2 (1050)	3/4 (1050)	3/4 (1050)	1 (1050)	1 (1050)
CONNECTING DUCT SIZES	Round					
Supply Air (in.)	14					
(mm)	356					
Return Air (in.)	14					
(mm)	356					
Return-Air Filters Throwaway (in.)*	24 x 24			24 x 30		30 x 30
(mm)	610 x 610			610 x 762		762 x 762

* Required filter sizes shown are based on the ARI (Air conditioning & Refrigeration Institute) rated airflow at a velocity of 300 ft/min for throwaway type or 450 ft/min for high capacity type. Recommended filters are 1-in. (25.4 mm) thick.

ACCESSORIES

ACCESSORY
MotorMaster II® Low Ambient Control allows unit to run at outdoor temperatures down to 0°F (-17.8°C).
Controls Upgrade Kit provides high and low pressure safety protection and protects the unit from operating in unsuitable conditions.
Crankcase Heater provides anti-floodback protection for low load applications.
Outdoor Thermostat
Corporate Thermostat

Refer to Price Pages for available accessories.

Corporate Thermostat provides heating and cooling unit control. The thermostat provides system and fan switching.

Electric Heaters ranging from 5.0 to 20.0 kW provide heat in the unit when required. Each package has a heater module that mounts on the blower inlet; mounting this module requires removal of the blower assembly and attachment of the module to the blower standoffs provided. Each package also includes an associated heater control package that must be mounted in the unit control box. Integral harnesses provided with both the heater module and control package allow connection of the two components via in-line plugs. Heaters are available both with and without circuit breakers and provide the ability to supply power to the entire unit from a single circuit.

Outdoor Thermostat brings second stage of 2-stage electric heater on line when the outdoor-air temperature falls below the set point.

ACCESSORY ELECTRIC HEATER USAGE

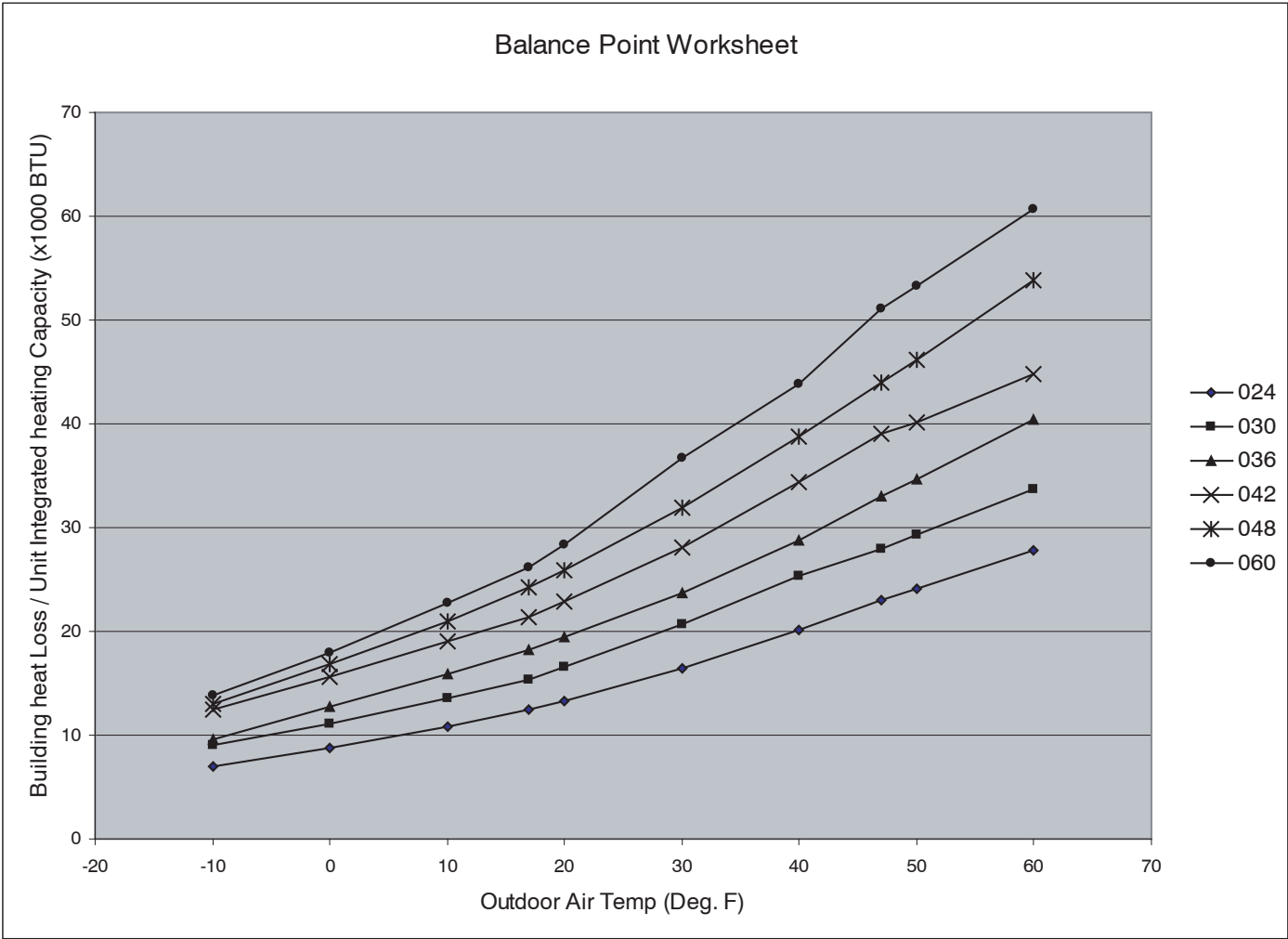
CATALOG ORDERING NO.	NOMINAL CAPACITY (kW)	USED WITH SIZES							
		CIRCUIT BREAKER (YES/NO)	STAGES	024	030	036	042	048	060
ELECTRIC HEATERS (208/230-SINGLE PHASE-60Hz)									
CPHEATER096A00	3.8 / 5.0	No	1	X	X	X	X		
CPHEATER097A00	3.8 / 5.0	Yes	1					X	X
CPHEATER098A00	5.6 / 7.5	No	2	X					
CPHEATER099A00	5.6 / 7.5	Yes	2		X	X	X	X	X
CPHEATER101A00	7.5 / 10.0	Yes	2	X	X	X	X	X	X
CPHEATER102A00	11.3 / 15.0	Yes	2			X	X	X	X
CPHEATER103A00	15.0 / 20.0	Yes	2			X	X	X	X
ELECTRIC HEATERS (208/230-THREE PHASE-60Hz)									
CPHEATER115A00	5.0	No	2		X	X	X	X	X
CPHEATER117A00	10.0	Yes	2		X	X	X	X	X
CPHEATER119A00	15.0	Yes	2			X	X	X	X
CPHEATER120A00	20.0	Yes	2				X	X	X

X = Approved combination

MULTIPLICATION FACTORS

HEATER kW RATING	VOLTAGE DISTRIBUTION	MULTIPLICATION FACTOR
240	200	.69
	208	.75
	230	.92
	240	1.00

Example: 15.0 kW (at 240v) heater on 208v
 = 15.0 (.75 mult factor)
 = 11.25 capacity at 208v



PH3Z

BASE UNIT DIMENSIONS—PH3Z024-060

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT	CENTER OF GRAVITY MM/IN		
		LBS.	KG.		A	X	Y
PH3Z024	208-230-1-60	293	133	30.13 [1.16]	14.0 [356]	19.0 [483]	15.0 [381]
PH3Z030	208-230-1-60	324	147	34.13 [1.34]	14.0 [356]	19.0 [483]	16.0 [406]
PH3Z036	208-230-1-60	377	171	42.13 [1.65]	14.0 [356]	19.0 [483]	19.8 [503]
PH3Z042	208-230-1-60	389	177	42.13 [1.65]	14.0 [356]	19.0 [483]	21.9 [556]
PH3Z048	208-230-1-60	384	175	42.13 [1.65]	14.0 [356]	19.0 [483]	19.8 [503]
PH3Z060	208-230-1-60	433	197	42.13 [1.65]	14.0 [356]	19.0 [483]	21.9 [556]

REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

TOP OF UNIT.....	MILLIMETERS [IN]
BOTTOM OF UNIT.....	0
SIDE OF UNIT WITH DUCT OPENINGS.....	0
SIDE OF UNIT OPPOSITE DUCT OPENINGS.....	0

NEC REQUIRED CLEARANCES.

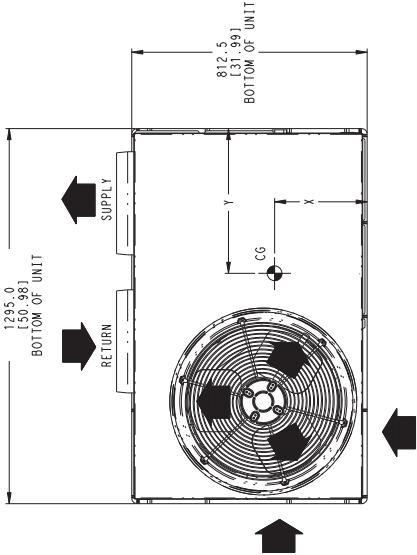
BETWEEN UNITS, POWER ENTRY SIDE.....	MILLIMETERS [IN]
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE.....	1066.8 [42.00]
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE.....	914.0 [36.00]

REQUIRED CLEARANCE FOR SERVICING

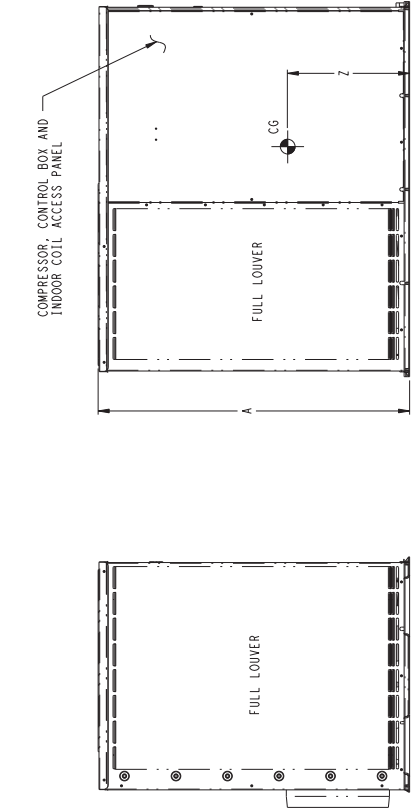
TOP OF UNIT.....	MILLIMETERS [IN]
SIDE OF UNIT OPPOSITE DUCT OPENINGS.....	762.0 [30.00]
SIDE OF UNIT WITH POWER ENTRY (EXCEPT FOR NEC REQUIREMENTS).....	762.0 [30.00]

NOTE: CLEARANCES MUST BE MAINTAINED TO PREVENT RECIRCULATION OF AIR FROM OUTDOOR FAN DISCHARGE. A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.

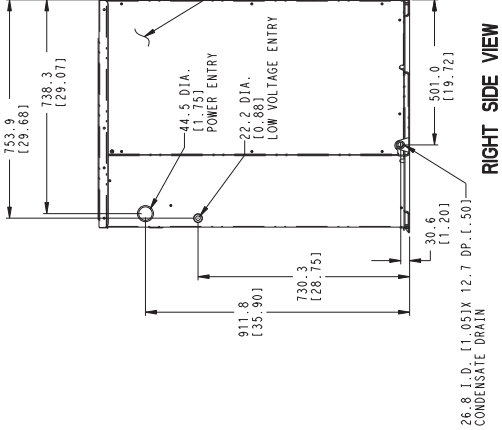
DIMENSIONS IN [] ARE IN INCHES



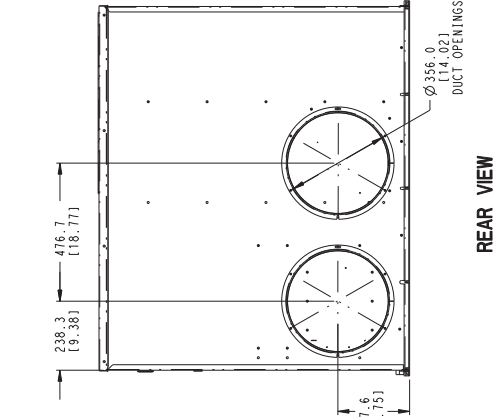
TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW



REAR VIEW

50ZH500442	REV	3.0
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SELECTION PROCEDURE

I. DETERMINE COOLING AND HEATING REQUIREMENTS AT DESIGN CONDITIONS

Given:

REQUIRED COOLING CAPACITY (TC) 28,000 BTUH
 SENSIBLE HEAT CAPACITY (SHC) 20,500 BTUH
 REQUIRED HEATING CAPACITY 28,550 BTUH
 OUTDOOR ENTERING-AIR TEMPERATURE .. 95°F (35°C)
 OUTDOOR-AIR WINTER DESIGN TEMPERATURE .. 20°F (-6.7°C)
 INDOOR-AIR WINTER DESIGN TEMPERATURE 70°F (21.1°C)
 INDOOR ENTERING-AIR TEMPERATURE ... 80°F (26.7°C)
 EDB, 67°F EWB (19.4°C)
 INDOOR-AIR QUANTITY 1125 CFM
 EXTERNAL STATIC PRESSURE 0.20 IN. WC
 ELECTRICAL CHARACTERISTICS (V-PH-HZ) .. 230-1-60
 edb — entering dry bulb
 ewb — entering wet bulb

II. SELECT UNIT BASED ON REQUIRED COOLING CAPACITY

Enter Cooling Capacities table at condenser entering temperature of 95°F (35°C), indoor air entering at 1125 cfm and 67°F (19.4°C) ewb (entering wet bulb). The PH3Z030 unit will provide a total cooling capacity of 28,800 Btuh and a sensible heat capacity of 21,700 Btuh.

For indoor-air temperature other than 80°F (26.7°C) edb (entering dry bulb), calculate sensible heat capacity correction, as required, using the formula found in Note 3 following the cooling capacities tables.

NOTE: Unit ratings are net capacities.

III. SELECT ELECTRIC HEAT

Enter the PH3Z030 Heating Capacities table at 1125 cfm. At 70°F (21.1°C) return indoor air and 20°F (-6.7°C) air entering outdoor coil, the integrated heating capacity is 15,500 Btuh. (Select integrated heating capacity value since deductions for outdoor-coil frost and defrosting have already been made. No correction is required.)

The required heating capacity is 28,550 Btuh. Therefore, 13,050 Btuh (28,550 - 15,500) additional electric heat is required.

Determine additional electric heat capacity in kW.

$$\frac{13,050 \text{ Btuh}}{3414 \text{ Btuh/kW}} = 3.8 \text{ kW of heat required}$$

Enter the Accessory Electric Heater Usage table on page 4 for 208/240v. single-phase, PH3Z030 unit. The 5-kW heater at 240v most closely satisfies the heating required. To calculate kW at 230v, multiply the heater kW by multiplication factor 0.92 found in the Multiplication Factors table on page 4.

$$5 \text{ kW} \times 0.92 = 4.6 \text{ kW}$$

$$4.6 \times 3414 = 15,704 \text{ Btuh}$$

To calculate kW at 208 v, see Multiplication Factors table on page 4.

Total unit heating capacity is 31,204 Btuh (15,500 +15,704).

IV. DETERMINE FAN SPEED AND POWER REQUIREMENTS AT DESIGN CONDITIONS

Before entering the air delivery tables, calculate the total static pressure required. From the given, the Accessory Electric Heat Pressure Drop table, Wet Coil Pressure Drop table, and the Filter Pressure Drop table, find:

External static pressure	0.20 in. wc
Filter	0.09 in. wc
Electric heat	0.11 in. wc
Wet coil	<u>0.07 in. wc</u>
Total static pressure	0.47 in. wc

Enter the table for Dry Coil Air Delivery — Horizontal Discharge at 1125 cfm and 230v high speed. By interpolation, the standard motor will deliver 0.48 in. wc static pressure. This will adequately handle job requirements.

PERFORMANCE DATA

COOLING CAPACITY

PH3Z024

Temp °F (°C) Outdoor Air En- tering Condenser		Evaporator Air – CFM/BF														
		700 / 0.08					800 / 0.10					900 / 0.11				
		Evaporator Air Ewb °F (°C)														
		57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)
75 (24)	TC	22.1	23.0	23.5	25.2	26.5	23.3	23.8	24.1	25.5	26.6	24.3	24.3	24.4	25.8	27.4
	SHC	22.1	21.1	17.1	17.7	13.7	23.3	22.9	18.3	18.8	14.1	24.3	24.1	19.5	19.8	14.6
	kW	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9
85 (29)	TC	21.3	22.0	22.5	24.5	26.3	22.5	22.7	23.1	25.1	26.4	23.5	23.5	23.7	25.5	27.1
	SHC	21.3	20.6	16.6	17.4	13.8	22.5	22.4	17.9	18.7	14.5	23.5	23.3	19.1	19.9	15.1
	kW	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1
95 (35)	TC	20.5	20.9	21.4	23.4	26.0	21.6	21.6	22.0	24.0	26.1	22.6	22.6	22.5	24.5	26.8
	SHC	20.7	20.1	16.1	16.9	13.6	21.6	21.5	17.4	18.2	14.4	22.6	22.5	18.6	19.5	15.1
	kW	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3
105 (41)	TC	19.6	19.8	20.2	22.1	24.9	20.7	20.7	20.8	22.7	25.5	21.6	21.6	21.2	23.2	26.0
	SHC	19.6	19.5	15.6	16.4	13.2	20.7	20.5	16.8	17.7	14.1	21.6	21.5	18.1	19.0	14.9
	kW	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5
115 (46)	TC	18.6	18.7	19.0	20.9	23.6	19.6	19.7	19.5	21.4	24.2	20.5	20.5	19.9	21.9	24.6
	SHC	18.6	18.6	15.0	15.8	12.7	19.6	19.4	16.3	17.2	13.6	20.5	20.4	17.5	18.5	14.4
	kW	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.8
125 (52)	TC	17.5	17.6	17.6	19.4	22.1	18.5	18.6	18.0	20.0	22.7	19.4	19.4	18.4	20.4	23.1
	SHC	17.5	17.4	14.4	15.3	12.1	18.5	18.5	15.7	16.6	13.0	19.4	19.3	16.9	17.9	13.9
	kW	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.0	3.0

See page 16 for cooling notes.

HEATING CAPACITY

PH3Z024

Return Air °F (°C) db	CFM (Standard Air)		Air Temperature Entering Outdoor Coil °F (°C)																			
			-10 (-23)		0 (-18)		10 (-12)		17 (-8)		20 (-7)		30 (-1)		40 (4)		47 (8)		50 (10)		60 (16)	
60 (16)	700	TC	7.2	6.7	9.1	8.4	11.1	10.2	12.7	11.6	13.6	12.3	16.8	14.7	20.4	20.4	23.3	23.3	24.4	24.4	28.2	28.2
		kW	1.36		1.41		1.51		1.57		1.61		1.75		1.89		1.98		2.01		2.09	
	800	TC	7.3	6.7	9.1	8.3	11.2	10.3	12.8	11.7	13.7	12.4	16.9	14.8	20.5	20.5	23.4	23.4	24.5	24.5	28.2	28.2
		kW	1.34		1.41		1.49		1.55		1.60		1.72		1.84		1.92		1.93		2.00	
	900	TC	7.3	6.8	9.1	8.4	11.2	10.3	12.8	11.7	13.7	12.4	16.9	14.8	20.6	20.6	23.5	23.5	24.5	24.5	28.2	28.2
		kW	1.34		1.40		1.48		1.54		1.57		1.69		1.80		1.87		1.88		1.94	
70 (21)	700	TC	7.0	6.4	8.7	8.0	10.7	9.8	12.3	11.2	13.2	12.0	16.4	14.4	20.0	20.0	22.9	22.9	23.9	23.9	27.7	27.7
		kW	1.46		1.51		1.60		1.67		1.73		1.90		2.06		2.17		2.20		2.30	
	800	TC	7.0	6.5	8.7	8.0	10.8	9.9	12.4	11.3	13.3	12.0	16.5	14.4	20.1	20.1	23.0	23.0	24.1	24.1	27.8	27.8
		kW	1.45		1.50		1.58		1.65		1.70		1.86		2.00		2.11		2.13		2.21	
	900	TC	7.1	6.5	8.8	8.1	14.9	13.7	16.4	15.0	17.5	15.9	21.5	18.8	26.2	26.2	24.1	24.1	27.9	27.9	27.9	27.9
		kW	1.44		1.49		1.57		1.64		1.68		1.83		1.96		2.06		2.08		2.14	
80 (27)	700	TC	6.7	6.2	8.5	7.8	10.4	9.5	11.9	10.9	12.8	11.6	16.0	14.0	19.6	19.6	22.4	22.4	23.4	23.4	27.2	27.2
		kW	1.54		1.64		1.71		1.78		1.84		2.04		2.24		2.37		2.41		2.53	
	800	TC	6.8	6.3	8.6	7.9	10.4	9.6	12.0	11.0	12.9	11.7	16.1	14.1	19.7	19.7	22.5	22.5	23.6	23.6	27.4	27.4
		kW	1.52		1.62		1.68		1.76		1.81		2.00		2.18		2.30		2.33		2.43	
	900	TC	6.6	6.1	8.6	7.9	10.5	9.6	12.1	11.0	13.0	11.7	16.2	14.2	19.8	19.8	22.6	22.6	23.7	23.7	27.5	27.5
		kW	1.52		1.61		1.67		1.74		1.79		1.98		2.14		2.25		2.28		2.36	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (Includes Indoor–Fan Motor Heat)
db — Dry Bulb
kW — Total Power Input (Includes Compressor Motor Power Input Outdoor–Fan Motor Input, and Indoor–Fan Motor Input)
rh — Relative Humidity

NOTES:

- indicates integrated ratings
- Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PERFORMANCE DATA (CONT)

COOLING CAPACITY

PH3Z030

Temp °F (°C) Outdoor Air Entering Condenser.		Evaporator Air – CFM/BF														
		875 / 0.08					1000 / 0.09					1125 / 0.10				
		Evaporator Air Ewb °F (°C)														
		57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)
75 (24)	TC	27.0	28.2	28.9	30.7	32.0	28.7	29.1	29.5	31.1	32.9	29.9	29.9	29.9	31.3	33.1
	SHC	26.7	25.6	20.7	21.4	16.2	28.4	27.9	22.2	22.9	16.2	29.5	29.5	23.7	24.3	16.2
	kW	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3
85 (29)	TC	25.7	26.4	27.1	30.0	32.4	27.3	27.4	28.0	30.7	32.7	28.7	28.8	28.8	31.2	32.9
	SHC	25.4	24.8	20.0	21.1	16.7	27.0	27.0	21.6	22.7	17.6	28.4	28.5	23.2	24.3	18.5
	kW	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5
95 (35)	TC	24.5	24.8	25.4	28.1	31.7	25.9	26.0	26.2	29.0	32.3	27.2	27.3	26.9	29.7	32.6
	SHC	24.2	24.0	19.2	20.3	16.5	25.6	25.7	20.8	22.0	17.5	26.9	27.0	22.4	23.7	18.4
	kW	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7
105 (41)	TC	23.2	23.3	23.7	26.3	30.0	24.6	24.7	24.5	27.1	30.9	25.8	25.8	25.0	27.7	31.6
	SHC	23.0	23.0	18.5	19.6	15.8	24.3	24.4	20.1	21.3	17.0	25.5	25.5	21.6	22.9	18.0
	kW	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	3.0	3.0
115 (46)	TC	21.8	21.9	21.9	24.4	28.0	23.2	23.3	22.6	25.1	28.9	24.3	24.4	23.1	25.7	29.5
	SHC	21.6	21.6	17.7	18.8	15.1	22.9	23.0	19.3	20.5	16.2	24.0	24.1	20.8	22.1	17.3
	kW	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.3
125 (52)	TC	20.3	20.4	19.8	22.5	26.0	21.6	21.7	20.4	23.2	26.7	22.8	22.8	20.9	23.7	27.3
	SHC	20.1	20.2	16.9	18.1	14.4	21.4	21.4	18.4	19.8	15.5	22.5	22.6	19.9	21.4	16.6
	kW	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.6

See page 16 for cooling notes.

HEATING CAPACITY

PH3Z030

Return Air °F (°C) db	CFM (Standard Air)		Air Temperature Entering Outdoor Coil °F (°C)													
			-10 (-23)		0 (-18)		10 (-12)		17 (-8)		20 (-7)		30 (-1)		40 (4)	
60 (16)	875	TC	9.2	8.5	11.4	10.5	13.8	12.7	15.6	14.2	16.7	15.2	20.8	18.2	24.5	24.5
		kW	1.60		1.69		1.79		1.84		1.87		1.97		2.06	
	1000	TC	9.3	8.6	11.5	10.6	13.9	12.8	15.7	14.3	16.8	15.3	20.9	18.3	24.7	24.7
		kW	1.58		1.68		1.76		1.80		1.83		1.92		2.00	
	1125	TC	9.3	8.6	11.5	10.6	13.9	12.8	15.7	14.3	16.9	15.3	20.1	17.6	24.8	24.8
		kW	1.57		1.66		1.74		1.77		1.80		1.87		1.96	
70 (21)	875	TC	9.1	8.4	11.1	10.2	13.5	12.4	15.3	14.0	16.4	14.9	20.5	18.0	25.3	25.3
		kW	1.73		1.80		1.92		1.99		2.04		2.16		2.28	
	1000	TC	9.1	8.4	11.1	10.2	13.6	12.4	15.4	14.0	16.5	15.0	20.6	18.1	25.3	25.3
		kW	1.71		1.78		1.89		1.96		1.99		2.10		2.21	
	1125	TC	9.1	8.4	11.2	10.3	14.9	13.7	16.4	15.0	17.5	15.9	21.5	18.8	26.2	26.2
		kW	1.69		1.77		1.87		1.93		1.97		2.06		2.15	
80 (27)	875	TC	8.8	8.2	10.7	9.9	13.1	12.0	14.9	13.6	16.1	14.6	20.2	17.7	24.9	24.9
		kW	1.74		1.94		2.05		2.14		2.19		2.35		2.51	
	1000	TC	9.0	8.4	10.8	9.9	13.2	12.1	15.0	13.7	16.2	14.7	20.3	17.8	25.0	25.0
		kW	1.73		1.91		2.02		2.10		2.16		2.30		2.44	
	1125	TC	9.1	8.4	10.8	10.0	13.2	12.2	15.1	13.8	16.3	14.7	20.4	17.8	25.1	25.1
		kW	1.70		1.89		2.00		2.08		2.14		2.26		2.38	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (Includes Indoor–Fan Motor Heat)
db — Dry Bulb
kW — Total Power Input (Includes Compressor Motor Power Input Outdoor–Fan Motor Input, and Indoor–Fan Motor Input)
rh — Relative Humidity

NOTES:

1. indicates integrated ratings
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PH3Z

PERFORMANCE DATA (CONT)

COOLING CAPACITY

PH3Z036

Temp °F (°C) Outdoor Air Entering Condenser		Evaporator Air – CFM/BF														
		1050 / 0.07					1200 / 0.08					1350 / 0.10				
		Evaporator Air Ewb °F (°C)														
		57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)
75 (24)	TC	33.1	35.1	35.8	38.8	40.9	33.7	36.2	36.8	39.6	41.5	33.7	37.3	37.5	40.0	41.8
	SHC	33.1	31.9	25.8	26.9	22.5	36.3	34.5	27.7	28.7	21.6	36.3	36.7	29.5	30.2	22.3
	kW	2.6	2.6	2.6	2.7	2.6	2.7	2.7	2.7	2.7	2.8	2.7	2.8	2.8	2.8	2.8
85 (29)	TC	32.5	33.3	34.0	37.1	40.5	32.7	34.4	34.9	38.1	40.9	33.4	35.7	35.6	38.9	41.4
	SHC	32.5	31.0	24.9	26.2	21.0	32.7	33.5	26.8	28.2	22.0	33.4	35.1	28.6	30.1	22.9
	kW	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.1
95 (35)	TC	31.2	31.5	32.1	35.1	39.4	31.4	32.7	32.9	36.0	40.3	32.3	34.0	33.5	36.7	40.9
	SHC	31.2	30.1	24.1	25.3	20.4	31.4	32.2	25.9	27.4	21.7	32.3	33.5	27.7	29.3	22.8
	kW	3.2	3.2	3.2	3.2	3.2	3.3	3.2	3.2	3.3	3.3	3.4	3.3	3.3	3.4	3.4
105 (41)	TC	29.4	29.6	30.1	33.0	37.2	30.1	31.1	30.8	33.8	38.1	30.4	32.3	31.4	34.4	38.8
	SHC	29.4	29.1	23.2	24.5	19.6	30.1	30.6	25.1	26.5	20.9	30.4	31.8	26.8	28.3	22.1
	kW	3.5	3.5	3.5	3.5	3.5	3.6	3.5	3.5	3.6	3.6	3.7	3.6	3.6	3.7	3.7
115 (46)	TC	28.4	29.3	29.4	32.4	34.8	28.7	29.4	28.7	31.5	35.6	29.4	30.5	29.3	32.1	36.3
	SHC	28.4	29.1	24.1	25.5	18.7	28.7	28.9	24.2	25.6	20.0	29.4	30.1	25.9	27.4	21.2
	kW	3.9	3.8	3.8	3.9	3.9	4.0	3.9	3.9	3.9	3.9	4.1	4.0	3.9	4.0	4.0
125 (52)	TC	28.0	29.1	28.7	31.8	32.4	28.3	27.4	29.0	30.7	33.1	28.2	28.7	29.2	29.8	33.7
	SHC	28.0	28.6	23.0	24.4	17.8	28.3	26.9	26.8	26.6	19.1	28.2	28.2	28.7	26.5	20.3
	kW	4.3	4.2	4.2	4.2	4.2	4.4	4.2	4.3	4.3	4.3	4.5	4.3	4.3	4.3	4.4

See page 16 for cooling notes.

HEATING CAPACITY

PH3Z036

Return Air °F (°C) db	CFM (Standard Air)	Air Temperature Entering Outdoor Coil °F (°C)																				
		-10 (-23)		0 (-18)		10 (-12)		17 (-8)		20 (-7)		30 (-1)		40 (4)		47 (8)		50 (10)		60 (16)		
60 (16)	1050	TC	10.3	9.5	13.3	12.2	16.3	15.0	18.5	16.9	19.7	17.9	24.2	21.2	29.3	29.3	33.5	33.5	35.1	35.1	41.0	41.0
		kW	1.84		1.95		2.05		2.12		2.17		2.35		2.56		2.72		2.76		2.93	
	1200	TC	10.5	9.7	13.4	12.3	16.4	15.1	18.6	17.0	19.8	18.0	24.3	21.3	29.6	29.6	33.8	33.8	35.4	35.4	41.4	41.4
		kW	1.88		1.99		2.08		2.14		2.18		2.35		2.54		2.68		2.72		2.88	
	1350	TC	11.0	10.2	14.0	12.8	16.9	15.5	19.0	17.4	20.2	18.4	24.8	21.7	30.1	30.1	34.4	34.4	36.2	36.2	40.0	40.0
		kW	1.97		2.08		2.16		2.21		2.25		2.42		2.59		2.70		2.72		2.76	
70 (21)	1050	TC	9.4	8.7	12.6	11.5	15.7	14.4	18.0	16.4	19.2	17.4	23.6	20.6	28.6	28.6	32.7	32.7	34.3	34.3	40.1	40.1
		kW	1.93		2.09		2.22		2.30		2.36		2.57		2.80		2.98		3.03		3.20	
	1200	TC	9.5	8.8	12.7	11.7	15.9	14.6	18.2	16.6	19.4	17.6	23.7	20.8	28.8	28.8	33.0	33.0	34.6	34.6	40.5	40.5
		kW	1.98		2.12		2.24		2.32		2.38		2.56		2.78		2.93		2.97		3.13	
	1350	TC	10.0	9.2	13.2	12.1	16.4	15.0	18.7	17.0	19.8	18.0	24.2	21.2	29.3	29.3	33.5	33.5	35.2	35.2	41.0	41.0
		kW	2.07		2.21		2.32		2.39		2.44		2.62		2.82		2.96		3.00		3.15	
80 (27)	1050	TC	8.3	7.7	11.5	10.5	15.0	13.8	17.4	15.8	18.6	16.9	23.0	20.2	27.8	27.8	31.8	31.8	33.4	33.4	39.2	39.2
		kW	2.00		2.22		2.37		2.48		2.55		2.80		3.04		3.25		3.30		3.49	
	1200	TC	8.7	8.0	11.8	10.9	15.2	13.9	17.6	16.0	18.8	17.1	23.2	20.3	28.1	28.1	32.1	32.1	33.8	33.8	39.6	39.6
		kW	2.03		2.24		2.40		2.50		2.57		2.79		3.02		3.20		3.25		3.41	
	1350	TC	9.3	8.6	12.3	11.3	15.7	14.4	18.1	16.5	19.4	17.6	23.7	20.7	28.6	28.6	32.7	32.7	34.4	34.4	40.1	40.1
		kW	2.10		2.34		2.48		2.57		2.64		2.85		3.07		3.23		3.27		3.42	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (Includes Indoor–Fan Motor Heat)

db — Dry Bulb

kW — Total Power Input (Includes Compressor Motor Power Input Outdoor–Fan Motor Input, and Indoor–Fan Motor Input)

rh — Relative Humidity

NOTES:

1. ■ indicates integrated ratings
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PERFORMANCE DATA (CONT)

COOLING CAPACITY

PH3Z042

Temp °F (°C) Outdoor Air En- tering Condenser		Evaporator Air – CFM/BF														
		1225 / 0.11					1400 / 0.12					1575 / 0.14				
		Evaporator Air Ewb °F (°C)														
		57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)
75 (24)	TC	37.9	38.8	40.2	40.9	43.7	37.7	40.3	39.6	43.6	43.9	37.6	40.1	40.2	42.5	44.7
	SHC	37.9	38.6	28.9	28.9	22.2	45.9	40.1	30.3	32.0	23.4	45.7	38.0	31.5	32.7	24.5
	kW	3.0	3.3	3.3	3.2	3.6	3.1	3.3	3.3	3.3	3.3	3.4	3.4	3.5	3.4	3.4
85 (29)	TC	36.1	36.7	38.5	40.1	42.7	37.2	38.6	39.0	40.6	43.6	37.4	39.8	39.6	42.2	44.6
	SHC	36.1	36.5	28.2	28.6	22.4	37.2	38.3	30.1	30.8	23.8	37.4	39.6	32.1	33.3	25.3
	kW	3.4	3.4	3.4	3.4	3.6	3.4	3.5	3.5	3.6	3.5	3.6	3.6	3.6	3.6	3.6
95 (35)	TC	35.1	35.9	36.7	39.3	42.2	36.6	37.2	37.4	40.0	42.4	37.0	38.1	36.5	40.5	42.8
	SHC	35.1	35.7	27.3	28.3	22.2	36.6	37.1	29.4	30.5	23.4	37.0	37.9	30.5	32.6	24.6
	kW	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.9	3.9
105 (41)	TC	32.8	33.9	34.3	36.8	39.3	34.8	35.2	34.9	37.4	39.7	33.9	34.1	33.4	36.0	39.9
	SHC	32.8	33.7	26.3	27.3	21.1	34.8	35.0	28.3	29.5	22.1	33.9	33.9	28.9	30.3	22.7
	kW	4.1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.1	4.1	4.1	4.1	4.1	4.1	4.2
115 (46)	TC	31.3	32.2	32.3	34.8	36.0	31.3	31.7	31.3	33.7	37.6	32.1	32.7	30.5	32.7	36.6
	SHC	31.3	32.1	25.4	26.5	19.2	31.3	31.5	26.6	27.8	21.6	32.1	32.5	30.7	33.0	22.5
	kW	4.5	4.3	4.3	4.4	4.3	4.6	4.7	4.4	4.4	4.5	4.8	4.8	4.8	4.8	4.9
125 (52)	TC	28.0	28.6	27.4	31.3	33.0	28.2	28.8	27.6	30.0	32.9	29.0	29.7	27.9	30.6	32.8
	SHC	28.0	28.5	24.7	25.1	19.5	28.2	28.6	24.9	26.1	19.4	29.0	29.5	27.2	28.0	18.1
	kW	5.0	4.9	4.9	4.8	5.1	4.7	4.7	4.7	4.8	5.1	4.9	4.9	4.8	4.8	4.9

See page 16 for cooling notes.

HEATING CAPACITY

PH3Z042

Return Air °F (°C) db		CFM (Standard Air)	Air Temperature Entering Outdoor Coil °F (°C)																			
			-10 (-23)		0 (-18)		10 (-12)		17 (-8)		20 (-7)		30 (-1)		40 (4)		47 (8)		50 (10)		60 (16)	
60 (16)	1225	TC	13.0	12.0	16.0	14.7	19.2	17.7	21.7	19.8	23.2	21.1	28.6	25.0	34.8	34.8	37.3	37.3	39.1	39.1	45.3	45.3
		kW	2.24		2.37		2.48		2.56		2.63		2.85		3.06		3.24		3.30		3.52	
	1400	TC	13.0	12.1	16.1	14.8	19.3	17.7	21.9	20.0	23.4	21.2	28.8	25.2	34.9	34.9	37.6	37.6	39.4	39.4	45.3	45.3
		kW	2.22		2.34		2.44		2.52		2.58		2.78		3.00		3.14		3.20		3.40	
	1575	TC	13.1	12.1	16.8	15.5	19.4	17.8	22.0	20.1	23.5	21.3	28.9	25.3	33.2	33.2	37.7	37.7	39.4	39.4	45.2	45.2
		kW	2.21		2.32		2.41		2.49		2.55		2.73		2.91		3.07		3.12		3.31	
70 (21)	1225	TC	12.3	11.4	15.5	14.3	18.9	17.3	21.3	19.4	22.7	20.6	28.0	24.5	34.0	34.0	38.8	38.8	40.6	40.6	44.7	44.7
		kW	2.37		2.54		2.68		2.78		2.85		3.10		3.36		3.57		3.64		3.83	
	1400	TC	12.4	11.5	15.6	14.4	19.0	17.4	21.4	19.5	22.8	20.7	28.1	24.6	34.3	34.3	39.0	39.0	38.6	38.6	44.8	44.8
		kW	2.36		2.51		2.64		2.73		2.80		3.02		3.25		3.46		3.47		3.69	
	1575	TC	12.5	11.5	15.7	14.5	19.0	17.5	21.5	19.6	22.9	20.8	28.3	24.8	34.4	34.4	37.0	37.0	38.8	38.8	44.8	44.8
		kW	2.35		2.49		2.61		2.69		2.75		2.96		3.20		3.34		3.40		3.60	
80 (27)	1225	TC	11.2	10.4	14.8	13.6	18.4	16.9	21.0	19.1	22.3	20.2	27.4	24.0	33.3	33.3	38.1	38.1	39.9	39.9	44.0	44.0
		kW	2.46		2.71		2.89		3.01		3.09		3.36		3.66		3.88		3.95		4.17	
	1400	TC	11.4	10.5	15.0	13.8	19.0	17.4	21.1	19.2	22.4	20.3	27.6	24.2	33.6	33.6	38.3	38.3	40.1	40.1	44.2	44.2
		kW	2.45		2.68		2.85		2.96		3.03		3.29		3.55		3.76		3.83		4.02	
	1575	TC	11.5	10.6	15.1	13.9	18.7	17.1	21.1	19.3	22.5	20.4	27.7	24.3	33.7	33.7	38.9	38.9	40.9	40.9	44.7	44.7
		kW	2.45		2.66		2.82		2.92		2.99		3.23		3.48		3.62		3.65		3.82	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (Includes Indoor–Fan Motor Heat)
db — Dry Bulb
kW — Total Power Input (Includes Compressor Motor Power Input Outdoor–Fan Motor Input, and Indoor–Fan Motor Input)
rh — Relative Humidity

NOTES:

1. indicates integrated ratings
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PH3Z

PERFORMANCE DATA (CONT)

COOLING CAPACITY

PH3Z048 High Capacity

Temp °F (°C) Outdoor Air Entering Condenser		Evaporator Air – CFM/BF														
		1400 / 0.07					1600 / 0.08					1800 / 0.09				
		Evaporator Air Ewb °F (°C)														
		57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)
75 (24)	TC	42.4	43.6	44.3	47.7	52.3	44.4	44.8	45.3	48.7	53.4	46.0	46.0	46.1	49.5	54.3
	SHC	41.4	39.6	32.0	33.2	26.7	43.3	42.7	34.3	35.7	28.3	44.9	44.9	36.5	38.0	29.8
	kW	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.8
85 (29)	TC	41.2	42.0	42.6	45.9	50.5	43.0	43.2	43.6	46.9	51.5	44.5	44.6	44.4	47.7	52.3
	SHC	40.2	38.8	31.3	32.5	26.0	42.0	41.8	33.5	34.9	27.6	43.5	43.5	35.7	37.3	29.1
	kW	3.9	3.9	3.9	4.0	4.0	4.0	4.0	4.0	4.0	4.1	4.1	4.1	4.1	4.1	4.2
95 (35)	TC	39.8	40.4	40.9	44.1	48.5	41.6	41.6	41.8	45.0	49.4	43.0	43.1	42.5	45.7	50.2
	SHC	38.9	38.0	30.5	31.8	25.3	40.6	40.6	32.8	34.2	26.9	42.0	42.1	34.9	36.5	28.3
	kW	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5
105 (41)	TC	38.4	38.7	39.1	42.2	46.4	40.1	40.1	40.0	43.0	47.3	41.4	41.5	40.6	43.7	48.0
	SHC	37.5	37.2	29.7	31.0	24.6	39.1	39.2	32.0	33.4	26.1	40.5	40.5	34.1	35.7	27.6
	kW	4.7	4.7	4.7	4.7	4.8	4.8	4.8	4.8	4.8	4.9	4.9	4.9	4.9	4.9	4.9
115 (46)	TC	36.9	37.0	37.3	40.2	44.3	38.5	38.5	38.1	41.0	45.1	39.8	39.8	38.7	41.6	45.7
	SHC	36.0	36.1	29.0	30.2	23.8	37.6	37.6	31.2	32.6	25.3	38.8	38.9	33.3	34.9	26.8
	kW	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.3	5.4	5.4
125 (52)	TC	35.3	35.4	35.3	38.1	42.0	36.8	36.8	36.0	38.9	42.8	38.0	38.1	36.6	39.4	43.3
	SHC	34.5	34.5	28.1	29.4	23.0	35.9	36.0	30.3	31.8	24.5	37.1	37.2	32.4	34.1	26.0
	kW	5.6	5.6	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.8	5.8	5.8	5.8	5.8	5.9

See page 16 for cooling notes.

HEATING CAPACITY

PH3Z048 High Capacity

Return Air °F (°C) db		CFM (Standard Air)	Air Temperature Entering Outdoor Coil °F (°C)																			
			-10 (-23)		0 (-18)		10 (-12)		17 (-8)		20 (-7)		30 (-1)		40 (4)		47 (8)		50 (10)		60 (16)	
60 (16)	1400	TC	13.7	12.6	17.3	15.9	21.4	19.7	24.6	22.4	26.3	23.8	32.4	28.3	39.1	39.1	44.5	44.5	46.7	46.7	54.5	54.5
		kW	2.54		2.70		2.85		2.95		2.99		3.18		3.36		3.50		3.58		3.87	
	1600	TC	14.1	13.0	17.8	16.3	21.9	20.1	25.1	22.8	26.7	24.2	32.8	28.7	39.7	39.7	45.0	45.0	47.2	47.2	55.0	55.0
		kW	2.60		2.74		2.87		2.97		3.02		3.18		3.34		3.46		3.53		3.82	
	1800	TC	14.4	13.3	18.1	16.6	22.2	20.4	25.4	23.1	27.0	24.5	33.1	29.0	40.0	40.0	45.3	45.3	47.7	47.7	52.5	52.5
		kW	2.63		2.76		2.89		2.98		3.03		3.18		3.31		3.43		3.44		3.59	
70 (21)	1400	TC	12.6	11.7	16.4	15.1	20.5	18.8	23.7	21.6	25.4	23.0	31.5	27.6	38.2	38.2	43.4	43.4	45.6	45.6	53.3	53.3
		kW	2.68		2.89		3.08		3.20		3.25		3.46		3.68		3.84		3.92		4.22	
	1600	TC	13.1	12.1	16.9	15.6	21.0	19.3	24.2	22.1	25.9	23.5	32.0	28.0	38.7	38.7	44.0	44.0	46.2	46.2	53.9	53.9
		kW	2.74		2.94		3.11		3.22		3.27		3.46		3.66		3.79		3.87		4.16	
	1800	TC	13.4	12.4	17.2	15.8	21.3	19.6	24.5	22.4	26.2	23.8	32.3	28.3	39.0	39.0	44.4	44.4	46.5	46.5	54.3	54.3
		kW	2.78		2.96		3.12		3.23		3.28		3.46		3.63		3.75		3.82		4.11	
80 (27)	1400	TC	11.4	10.5	15.4	14.2	19.6	17.9	22.7	20.7	24.3	22.0	30.4	26.6	37.2	37.2	42.4	42.4	44.5	44.5	52.1	52.1
		kW	2.79		3.07		3.30		3.45		3.51		3.73		4.01		4.19		4.28		4.60	
	1600	TC	11.8	10.9	15.8	14.6	20.1	18.4	23.2	21.1	24.8	22.5	30.9	27.1	37.7	37.7	42.9	42.9	45.1	45.1	52.8	52.8
		kW	2.85		3.12		3.34		3.48		3.53		3.74		3.99		4.15		4.23		4.49	
	1800	TC	12.1	11.2	16.2	14.9	20.4	18.7	23.5	21.4	25.2	22.9	31.4	27.5	38.1	38.1	43.3	43.3	45.5	45.5	53.1	53.1
		kW	2.89		3.15		3.36		3.49		3.54		3.74		3.96		4.11		4.18		4.46	

LEGEND

Cap. — Heating Capacity (1000 Btuh) (Includes Indoor–Fan Motor Heat)
db — Dry Bulb
kW — Total Power Input (Includes Compressor Motor Power Input Outdoor–Fan Motor Input, and Indoor–Fan Motor Input)
rh — Relative Humidity

NOTES:

1. indicates integrated ratings
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PERFORMANCE DATA (CONT)

COOLING CAPACITY

PH3Z048 Low Capacity

Temp °F (°C) Outdoor Air En- tering Condenser		Evaporator Air – CFM/BF														
		950 / 0.06					1100 / 0.07					1250 / 0.08				
		Evaporator Air Ewb °F (°C)														
		57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)
75 (24)	TC	29.4	30.3	30.8	33.1	36.3	30.9	31.1	31.5	33.9	37.1	32.1	32.2	32.2	34.5	37.7
	SHC	28.7	27.4	22.2	23.0	18.6	30.2	29.8	23.9	24.9	19.8	31.4	31.4	25.6	26.7	20.9
	kW	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4
85 (29)	TC	28.6	29.3	29.8	32.0	35.1	30.0	30.2	30.5	32.7	35.8	31.2	31.3	31.0	33.3	36.4
	SHC	28.0	26.9	21.7	22.6	18.2	29.3	29.3	23.5	24.4	19.3	30.5	30.5	25.1	26.2	20.5
	kW	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.7
95 (35)	TC	27.8	28.2	28.7	30.8	33.8	29.1	29.2	29.4	31.5	34.5	30.2	30.3	29.9	32.0	35.1
	SHC	27.1	26.4	21.3	22.1	17.7	28.4	28.5	23.0	23.9	18.9	29.5	29.6	24.6	25.7	20.0
	kW	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	3.0	3.0
105 (41)	TC	26.9	27.1	27.5	29.6	32.5	28.2	28.2	28.2	30.2	33.1	29.2	29.3	28.7	30.7	33.6
	SHC	26.3	25.9	20.8	21.6	17.2	27.5	27.5	22.5	23.4	18.4	28.5	28.6	24.1	25.2	19.5
	kW	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.3
115 (46)	TC	25.9	26.0	26.3	28.3	31.1	27.1	27.2	26.9	28.9	31.7	28.1	28.2	27.4	29.4	32.1
	SHC	25.3	25.3	20.3	21.1	16.7	26.5	26.5	22.0	22.9	17.9	27.5	27.5	23.6	24.7	19.0
	kW	3.5	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.7
125 (52)	TC	24.9	24.9	25.0	26.9	29.6	26.0	26.1	25.6	27.5	30.1	26.9	27.0	26.0	27.9	30.5
	SHC	24.3	24.3	19.7	20.6	16.2	25.4	25.4	21.4	22.4	17.3	26.3	26.3	23.0	24.1	18.5
	kW	3.9	3.9	3.9	4.0	4.0	4.0	4.0	4.0	4.0	4.1	4.1	4.1	4.1	4.1	4.2

See page 16 for cooling notes.

HEATING CAPACITY

PH3Z048 Low Capacity

Return Air °F (°C) db	CFM (Standard Air)	Air Temperature Entering Outdoor Coil °F (°C)															
		-10 (-23)		0 (-18)		10 (-12)		17 (-8)		20 (-7)		30 (1)		40 (4)		47 (8)	
60 (16)	950	TC	10.5	9.7	13.0	11.9	15.7	14.4	17.8	16.2	19.0	17.2	23.6	20.6	27.7	27.7	31.8
		kW	2.04		2.16		2.28		2.34		2.37		2.44		2.49		2.56
	1100	TC	10.6	9.8	13.1	12.0	15.8	14.5	17.8	16.2	19.1	17.3	23.6	20.7	27.8	27.8	32.0
		kW	2.02		2.14		2.25		2.30		2.32		2.37		2.42		2.47
	1250	TC	10.6	9.8	13.1	12.1	15.8	14.5	17.9	16.3	19.1	17.4	22.7	19.9	27.9	27.9	32.0
		kW	2.00		2.12		2.22		2.26		2.27		2.31		2.37		2.41
70 (21)	950	TC	10.3	9.5	12.6	11.6	15.3	14.1	17.4	15.9	18.7	16.9	23.2	20.3	28.5	28.5	31.4
		kW	2.21		2.30		2.44		2.54		2.58		2.67		2.76		2.81
	1100	TC	10.3	9.5	12.6	11.6	15.4	14.1	17.5	16.0	18.7	17.0	23.3	20.4	28.6	28.6	31.5
		kW	2.18		2.27		2.41		2.50		2.52		2.60		2.68		2.72
	1250	TC	10.3	9.5	12.7	11.7	14.9	13.7	16.4	15.0	17.5	15.9	21.5	18.8	26.2	26.2	33.0
		kW	2.15		2.25		2.39		2.46		2.49		2.55		2.60		2.65
80 (27)	950	TC	10.0	9.3	12.2	11.2	14.9	13.7	17.0	15.5	18.2	16.5	22.8	20.0	28.1	28.1	32.2
		kW	2.22		2.47		2.61		2.73		2.77		2.91		3.04		3.13
	1100	TC	10.3	9.5	12.3	11.3	15.0	13.7	17.1	15.6	18.3	16.6	22.9	20.1	28.2	28.2	32.7
		kW	2.20		2.43		2.57		2.68		2.73		2.85		2.95		2.98
	1250	TC	10.3	9.5	12.3	11.3	15.0	13.8	17.2	15.6	18.5	16.7	23.0	20.2	28.3	28.3	31.2
		kW	2.17		2.41		2.55		2.66		2.70		2.79		2.88		2.91

LEGEND

Cap. — Heating Capacity (1000 Btuh) (Includes Indoor–Fan Motor Heat)
db — Dry Bulb
kW — Total Power Input (Includes Compressor Motor Power Input Outdoor–Fan Motor Input, and Indoor–Fan Motor Input)
rh — Relative Humidity

NOTES:

1. indicates integrated ratings
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PH3Z

PERFORMANCE DATA (CONT)

COOLING CAPACITY

PH3Z060 High Capacity

Temp °F (°C) Outdoor Air En- tering Condenser		Evaporator Air – CFM/BF														
		1750 / 0.07					1875 / 0.08					2000 / 0.09				
		Evaporator Air Ewb °F (°C)														
		57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (17)	67 (19)	72 (22)
75 (24)	TC	51.5	52.1	52.8	56.7	62.0	52.7	52.8	53.4	57.2	62.6	55.5	55.5	54.8	58.6	64.0
	SHC	48.9	48.1	38.5	40.0	31.6	50.0	49.9	39.9	41.5	32.5	52.7	52.7	44.0	46.0	35.4
	kW	4.3	4.3	4.3	4.4	4.5	4.4	4.4	4.4	4.5	4.6	4.5	4.5	4.5	4.6	4.7
85 (29)	TC	49.7	49.9	50.5	54.1	59.2	50.7	50.8	51.0	54.6	59.7	53.3	53.4	52.2	55.9	60.9
	SHC	47.1	46.9	37.5	39.0	30.6	48.1	48.2	38.9	40.5	31.6	50.6	50.7	43.0	44.9	34.4
	kW	4.7	4.7	4.7	4.8	4.9	4.8	4.8	4.8	4.9	5.0	5.0	5.0	4.9	5.0	5.1
95 (35)	TC	47.8	47.8	48.1	51.5	56.3	48.7	48.8	48.6	52.0	56.8	51.2	51.2	49.7	53.1	57.9
	SHC	45.3	45.4	36.5	38.0	29.6	46.2	46.3	37.9	39.5	30.6	48.5	48.6	42.0	43.9	33.4
	kW	5.2	5.2	5.2	5.3	5.4	5.3	5.3	5.3	5.4	5.5	5.4	5.4	5.4	5.5	5.6
105 (41)	TC	45.8	45.9	45.8	49.0	53.5	46.7	46.8	46.2	49.4	53.9	48.9	49.0	47.2	50.4	54.8
	SHC	43.5	43.5	35.5	37.0	28.6	44.3	44.4	36.9	38.5	29.6	46.4	46.5	40.9	42.9	32.4
	kW	5.7	5.7	5.7	5.8	5.9	5.8	5.8	5.8	5.9	6.0	5.9	5.9	5.9	6.0	6.1
115 (46)	TC	43.8	43.8	43.4	46.3	50.4	44.6	44.7	43.7	46.7	50.6	46.6	46.7	44.7	47.6	51.4
	SHC	41.6	41.6	34.6	36.0	27.6	42.3	42.4	35.9	37.5	28.5	44.3	44.3	39.9	41.8	31.3
	kW	6.3	6.3	6.3	6.3	6.4	6.4	6.4	6.4	6.4	6.5	6.5	6.5	6.5	6.5	6.6
125 (52)	TC	41.6	41.7	40.8	43.6	47.9	42.4	42.4	41.2	44.0	48.1	44.2	44.3	42.0	44.7	48.4
	SHC	39.5	39.6	33.5	35.0	26.8	40.2	40.3	34.9	36.5	27.7	42.0	42.0	38.7	40.6	30.3
	kW	6.9	6.9	6.9	6.9	7.1	7.0	7.0	7.0	7.0	7.1	7.1	7.1	7.1	7.1	7.2

See page 16 for cooling notes.

HEATING CAPACITY

PH3Z060 High Capacity

Return Air °F (°C) db	CFM (Standard Air)	Air Temperature Entering Outdoor Coil °F (°C)															
		-10 (-23)		0 (-18)		10 (-12)		17 (-8)		20 (-7)		30 (1)		40 (4)		47 (8)	
60 (16)	1750	TC	14.9	13.8	19.1	17.6	23.6	21.6	27.1	24.7	29.3	26.6	37.6	33.0	44.7	44.7	51.9
		kW	2.91		3.08		3.24		3.36		3.45		3.72		3.94		4.16
	1875	TC	14.8	13.7	19.0	17.5	23.5	21.6	27.1	24.7	29.3	26.6	37.7	33.0	44.7	44.7	51.5
		kW	2.82		2.98		3.12		3.24		3.32		3.55		3.77		3.97
	2000	TC	15.3	14.1	19.5	18.0	24.0	22.1	27.6	25.2	29.8	27.0	38.3	33.6	45.1	45.1	51.5
		kW	2.92		3.06		3.19		3.31		3.38		3.57		3.80		3.99
70 (21)	1750	TC	14.0	12.9	18.1	16.6	22.7	20.8	26.0	23.7	28.4	25.8	36.7	32.2	46.4	46.4	51.0
		kW	3.11		3.31		3.50		3.63		3.72		4.05		4.34		4.53
	1875	TC	13.9	12.8	18.0	16.6	22.7	20.8	26.1	23.8	28.4	25.8	36.8	32.2	43.8	43.8	51.0
		kW	3.02		3.21		3.39		3.51		3.59		3.89		4.12		4.33
	2000	TC	14.3	13.3	18.5	17.1	23.2	21.3	26.7	24.4	29.0	26.3	37.3	32.7	44.4	44.4	51.4
		kW	3.11		3.29		3.46		3.57		3.66		3.92		4.14		4.34
80 (27)	1750	TC	13.0	12.1	17.0	15.7	21.6	19.9	25.2	22.9	27.3	24.7	35.8	31.3	45.3	45.3	53.0
		kW	3.30		3.53		3.77		3.93		4.02		4.37		4.73		4.98
	1875	TC	12.9	11.9	16.9	15.6	21.6	19.9	25.1	22.9	27.3	24.7	35.9	31.4	45.4	45.4	50.0
		kW	3.22		3.43		3.65		3.80		3.88		4.22		4.53		4.72
	2000	TC	13.4	12.4	17.4	16.0	22.2	20.4	25.7	23.4	28.0	25.4	36.4	31.9	46.2	46.2	50.7
		kW	3.31		3.52		3.73		3.87		3.95		4.26		4.53		4.72

LEGEND

Cap. — Heating Capacity (1000 Btuh) (Includes Indoor–Fan Motor Heat)
db — Dry Bulb
kW — Total Power Input (Includes Compressor Motor Power Input Outdoor–Fan Motor Input, and Indoor–Fan Motor Input)
rh — Relative Humidity

NOTES:

1.  indicates integrated ratings
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PERFORMANCE DATA (CONT)

COOLING CAPACITY

PH3Z060 Low Capacity

Temp °F (°C) Outdoor Air En- tering Condenser		Evaporator Air – CFM/BF														
		1150 / 0.05					1300 / 0.06					1500 / 0.07				
		Evaporator Air Ewb °F (°C)														
		57 (14)	62 (17)	63* (17)	67 (19)	72 (22)	57 (14)	62 (17)	63* (19)	67 (19)	72 (22)	57 (14)	62 (17)	63* (19)	67 (19)	72 (22)
75 (24)	TC	34.1	35.1	35.8	38.7	42.6	35.7	36.1	36.6	39.5	43.4	37.4	37.5	37.5	40.4	44.2
	SHC	33.9	32.3	25.9	27.0	21.6	35.4	34.8	27.7	28.9	22.8	37.1	37.2	30.0	31.4	24.3
	kW	2.7	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8
85 (29)	TC	33.1	33.8	34.4	37.2	41.0	34.5	34.7	35.2	38.0	41.7	36.2	36.2	36.0	38.8	42.5
	SHC	32.8	31.7	25.3	26.4	21.0	34.3	34.1	27.1	28.3	22.2	35.9	36.0	29.4	30.8	23.7
	kW	3.0	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.1
95 (35)	TC	32.0	32.4	33.0	35.7	39.4	33.4	33.4	33.7	36.4	40.1	34.9	35.0	34.5	37.2	40.7
	SHC	31.7	31.0	24.7	25.8	20.4	33.1	33.1	26.5	27.7	21.6	34.6	34.7	28.7	30.1	23.1
	kW	3.3	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4
105 (41)	TC	30.9	31.1	31.6	34.2	37.7	32.2	32.2	32.3	34.8	38.1	33.7	33.7	33.0	35.5	39.1
	SHC	30.6	30.4	24.1	25.2	19.8	31.9	32.0	25.8	27.0	20.9	33.4	33.4	28.1	29.5	22.6
	kW	3.7	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8
115 (46)	TC	29.8	29.8	30.2	32.7	36.2	31.0	31.1	30.8	33.3	36.7	32.4	32.4	31.5	33.9	37.1
	SHC	29.5	29.6	23.5	24.6	19.3	30.8	30.8	25.2	26.4	20.4	32.1	32.2	27.5	28.8	21.8
	kW	4.1	4.0	4.0	4.0	4.0	4.1	4.1	4.1	4.1	4.1	4.1	4.2	4.2	4.2	4.2
125 (52)	TC	28.7	28.7	28.9	31.1	35.1	29.9	29.9	29.4	31.8	35.3	31.0	31.4	30.0	32.1	35.1
	SHC	28.5	28.5	22.9	24.0	18.9	29.6	29.7	24.6	25.8	19.9	30.7	31.2	26.9	28.1	21.2
	kW	4.5	4.5	4.5	4.5	4.5	4.6	4.6	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.7

See page 16 for cooling notes.

HEATING CAPACITY

PH3Z060 Low Capacity

Return Air °F (°C) db	CFM (Standard Air)	Air Temperature Entering Outdoor Coil °F (°C)															
		-10 (-23)		0 (-18)		10 (-12)		17 (-8)		20 (-7)		30 (1)		40 (4)		47 (8)	
60 (16)	1150	TC	13.6	12.6	16.8	15.5	20.2	18.6	22.8	20.8	24.3	22.1	29.7	26.0	35.9	35.9	38.3
		kW	2.58	2.72	2.85	2.95	2.98	3.08	3.15	3.22	3.28	3.51	3.51	3.83	3.83	40.1	40.1
	1300	TC	13.7	12.7	16.9	15.6	20.3	18.6	23.0	21.0	24.5	22.2	29.9	26.2	36.0	36.0	38.5
		kW	2.56	2.69	2.81	2.90	2.93	3.00	3.09	3.13	3.18	3.39	3.39	3.85	3.85	40.4	40.4
	1500	TC	13.8	12.7	16.8	15.5	20.4	18.7	23.1	21.1	24.6	22.3	30.0	26.3	34.2	34.2	38.7
		kW	2.54	2.67	2.77	2.86	2.89	2.94	2.99	3.05	3.10	3.30	3.30	3.87	3.87	40.4	40.4
70 (21)	1150	TC	12.9	11.9	16.3	15.0	19.9	18.2	22.4	20.4	23.8	21.6	29.1	25.5	35.1	35.1	39.8
		kW	2.73	2.92	3.09	3.20	3.23	3.35	3.46	3.55	3.62	3.81	3.81	41.7	41.7	45.8	45.8
	1300	TC	13.0	12.1	16.4	15.1	19.9	18.3	22.5	20.5	23.9	21.7	29.2	25.6	35.4	35.4	40.0
		kW	2.71	2.89	3.04	3.14	3.17	3.27	3.34	3.45	3.46	3.68	3.68	40.9	40.9	45.9	45.9
	1500	TC	13.1	12.1	16.5	15.2	20.0	18.4	22.6	20.6	24.1	21.8	29.4	25.7	35.4	35.4	40.0
		kW	2.70	2.86	3.01	3.10	3.12	3.20	3.29	3.32	3.38	3.58	3.58	40.9	40.9	45.9	45.9
80 (27)	1150	TC	11.8	10.9	15.6	14.3	19.4	17.8	22.1	20.1	23.4	21.2	28.5	25.0	34.4	34.4	39.0
		kW	2.83	3.12	3.33	3.47	3.50	3.63	3.77	3.86	3.93	4.15	4.15	45.9	45.9	49.9	49.9
	1300	TC	12.0	11.1	15.7	14.5	19.0	17.4	22.1	20.2	23.5	21.3	28.7	25.1	34.6	34.6	39.3
		kW	2.82	3.09	3.28	3.41	3.44	3.55	3.66	3.74	3.82	4.00	4.00	45.9	45.9	49.9	49.9
	1500	TC	12.1	11.2	15.8	14.6	19.6	18.0	22.2	20.3	23.5	21.4	28.8	25.2	34.8	34.8	39.9
		kW	2.82	3.06	3.25	3.37	3.39	3.49	3.58	3.61	3.64	3.80	3.80	45.9	45.9	49.9	49.9

LEGEND

Cap. — Heating Capacity (1000 Btuh) (Includes Indoor–Fan Motor Heat)
db — Dry Bulb
kW — Total Power Input (Includes Compressor Motor Power Input Outdoor–Fan Motor Input, and Indoor–Fan Motor Input)
rh — Relative Humidity

NOTES:

1. ■ indicates integrated ratings
2. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

PH3Z

PERFORMANCE DATA (CONT)

LEGEND

BF— Bypass Factor

edb— Entering Dry–Bulb

Ewb — Entering Wet–Bulb

kW — Total Unit Power Input

ldb— Leaving Dry–Bulb

lwb— Leaving Wet–Bulb

SHC — Sensible Heat Capacity (1000 Btuh)

TC — Total Capacity (1000 Btuh) (net)

*At 75°F (23.9°C) entering dry bulb (Tennessee Valley Authority [TVA] rating conditions); all other at 80°F (26.75°C) entering dry bulb.

COOLING NOTES:

1. Ratings are net; they account for the effects of the evaporator–fan motor power and heat.
2. Direct interpolation is permissible. Do not extrapolate.
3. The following formulas may be used:

$t_{lwb} =$ Wet–bulb temperature corresponding to enthalpy
air leaving evaporator coil (h_{lwb})

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

Where: h_{ewb} = Enthalpy of air entering evaporator coil

4. The SHC is based on 80°F (26.75°C) edb temperature of air entering evaporator coil. Below 80°F (26.75°C) edb, subtract (corr factor x cfm) from SHC.

Above 80°F (26.75°C) edb, add (corr factor x cfm) to SHC.

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

Sensible capacity (Btuh)

$$1.10 \times \text{cfm}$$

$$t_{ldb} = t_{edb} -$$

WET COIL PRESSURE DROP (in. wc)

UNIT SIZE	STANDARD CFM (SCFM)														
	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
024	0.027	0.034	0.040	0.047	0.053	—	—	—	—	—	—	—	—	—	—
030	—	0.036	0.042	0.050	0.055	0.063	0.072	0.081	—	—	—	—	—	—	—
036	—	—	—	0.050	0.055	0.063	0.072	0.081	0.090	0.097	—	—	—	—	—
042	—	—	—	—	0.042	0.049	0.052	0.059	0.065	0.071	0.078	0.085	0.091	—	—
048	—	—	—	—	—	—	0.072	0.081	0.090	0.097	0.108	0.120	0.129	0.139	—
060	—	—	—	—	—	—	—	—	—	0.071	0.078	0.085	0.091	0.098	0.114

FILTER PRESSURE DROP (in. wc)

UNIT SIZE	FILTER SIZE in. (mm)	CFM																		
		500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
024—036	24 x 24 (610 x 610)	0.06	0.07	0.08	0.08	0.09	0.09	0.09	0.10	0.11	0.12	0.14	0.15	—	—	—	—	—	—	—
042—060	30 x 30 (762 x 762)	—	—	—	—	—	—	—	—	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18

ACCESSORY ELECTRIC HEAT PRESSURE DROP (in. wc)

HEATER kW	CFM								
	600	800	1000	1200	1400	1600	1800	2000	2200
5–20	0.06	0.08	0.10	0.13	0.15	0.18	0.20	0.23	0.25

PERFORMANCE DATA (CONT)

DRY COIL AIR DELIVERY* — HORIZONTAL DISCHARGE

(Deduct 10 % for 208-Volt Operation)

230 VOLT HORIZONTAL DISCHARGE												
UNIT SIZE	SPEED TAP	AIR DELIVERY	EXTERNAL STATIC PRESSURE (IN. WC)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
024	1	Watts	—	99	100	118	130	142	—	—	—	—
		CFM	—	848	793	757	698	632	—	—	—	—
	2	Watts	—	—	—	—	—	222	233	244	257	260
		CFM	—	—	—	—	—	970	918	861	795	729
030	2	Watts	—	155	146	157	170	—	—	—	—	—
		CFM	—	1108	995	951	884	—	—	—	—	—
	3	Watts	—	—	—	—	—	261	275	286	291	315
		CFM	—	—	—	—	—	1117	1053	1014	980	877
036	1	Watts	180	166	179	191	204	216	—	—	—	—
		CFM	1344	1215	1172	1136	1095	1051	—	—	—	—
	2	Watts	—	—	—	261	276	290	301	316	329	342
		CFM	—	—	—	1343	1304	1272	1234	1190	1148	1100
042	3	Watts	269	283	305	321	336	349	360	—	—	—
		CFM	1440	1404	1369	1333	1301	1273	1239	—	—	—
	4	Watts	—	—	418	432	450	465	480	490	503	518
		CFM	—	—	1572	1543	1504	1475	1441	1418	1380	1332
048	1	Watts	—	204	209	216	229	236	249	—	—	—
		CFM	—	1129	1087	1027	994	932	881	—	—	—
	2	Watts	—	—	233	245	254	266	276	289	—	—
		CFM	—	—	1164	1122	1066	1025	954	906	—	—
	3	Watts	386	398	409	418	425	435	438	441	451	—
		CFM	1680	1652	1625	1583	1555	1515	1477	1444	1403	—
	4	Watts	—	440	448	457	462	469	477	480	485	486
		CFM	—	1745	1717	1684	1651	1612	1573	1537	1508	1470
060	1	Watts	224	235	251	266	277	291	298	—	—	—
		CFM	1334	1288	1259	1224	1181	1157	1117	—	—	—
	2	Watts	—	—	286	301	311	325	333	344	370	—
		CFM	—	—	1333	1296	1261	1232	1199	1170	1062	—
	3	Watts	608	626	643	660	668	685	697	—	—	—
		CFM	1931	1900	1878	1844	1817	1789	1755	—	—	—
	4	Watts	737	755	770	787	799	817	826	812	782	—
		CFM	2093	2061	2028	2001	1971	1934	1899	1850	1757	—

*Air delivery values are based on operating voltage of 230v, wet coil, without filter or electric heater. Deduct filter and electric heater pressure drops to obtain static pressure available for ducting.

NOTES:

1. Do not operate the unit at a cooling airflow that is less than 350 cfm for each 12,000 Btuh of rated cooling capacity. Evaporator coil frosting may occur at airflows below this point.
2. Dashes indicate portions of table that are beyond the blower motor capacity or are not recommended.

PH3Z

ELECTRICAL DATA

PH3Z

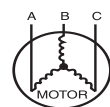
UNIT	NOMINAL V-PH-HZ	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	ELECTRIC HEAT		POWER SUPPLY	
		MIN	MAX	RLA	LRA	FLA	FLA	NOMINAL kW	FLA	MCA	MOCP
PH3Z024	208/230-1-60	187	253	10.9	54.0	0.9	4.1	-/-	-/-	18.6/18.6	25/25
								3.8/5	18.1/20.8	41.2/44.7	45/45
								5.6/7.5	27.1/31.3	52.5/57.7	60/60
								7.5/10	36.1/41.7	63.8/70.7	70/80
PH3Z030	208/230-1-60	187	253	13.5	72.5	0.9	4.1	-/-	-/-	21.8/21.8	30/30
								3.8/5	18.1/20.8	44.4/47.9	45/50
								5.6/7.5	27.1/31.3	55.7/60.9	60/70
								7.5/10	36.1/41.7	67.0/73.9	70/80
	208/230-3-60	187	253	9.0	63.0	0.9	4.1	-/-	-/-	16.3/16.3	25/25
								3.8/5	10.4/12	29.3/31.3	30/35
PH3Z036	208/230-1-60	187	253	17.5	88.0	1.5	6.0	7.5/10	20.8/24.1	42.3/46.3	45/50
								-/-	-/-	29.4/29.4	40/40
								3.8/5	18.1/20.8	52.0/55.4	60/60
								5.6/7.5	27.1/31.3	63.2/68.5	70/70
								7.5/10	36.1/41.7	74.5/81.5	80/90
								11.3/15	54.2/62.5	97.1/107.5	100/110
	208/230-3-60	187	253	11.7	77.0	1.5	6.0	15/20	72.2/83.3	119.7/133.6	125/150
								-/-	-/-	22.1/22.1	30/30
								3.8/5	10.4/12	35.1/37.1	40/40
								7.5/10	20.8/24.1	48.2/52.2	50/60
PH3Z042	208/230-1-60	187	253	19.4	104.0	1.5	6.0	11.3/15	31.3/36.1	61.2/67.2	70/70
								-/-	-/-	31.7/31.7	50/50
								3.8/5	18.1/20.8	54.3/57.8	60/60
								5.6/7.5	27.1/31.3	65.6/70.8	70/80
								7.5/10	36.1/41.7	76.9/83.8	80/90
								11.3/15	54.2/62.5	99.4/109.9	100/110
	208/230-3-60	187	253	12.4	88.0	1.5	6.0	15/20	72.2/83.3	122.0/135.9	125/150
								-/-	-/-	23.1/23.1	30/30
								3.8/5	10.4/12	36.1/38.1	40/40
								7.5/10	20.8/24.1	49.1/53.1	50/60
PH3Z048	208/230-1-60	187	253	24.7	116.0	1.5	7.6	11.3/15	31.3/36.1	62.1/68.2	70/70
								15/20	41.4/47.9	74.7/82.9	80/90
								-/-	-/-	39.9/39.9	60/60
								3.8/5	18.1/20.8	62.5/66.0	70/70
								5.6/7.5	27.1/31.3	73.8/79.0	80/80
								7.5/10	36.1/41.7	85.0/92.0	90/100
	208/230-3-60	187	253	15.3	91.0	1.5	7.6	11.3/15	54.2/62.5	107.6/118.0	110/125
								15/20	72.2/83.3	130.2/144.1	150/150
								-/-	-/-	28.2/28.2	40/40
								3.8/5	10.4/12	41.3/43.3	45/45
PH3Z060	208/230-1-60	187	253	28.0	118.0	3.0	7.6	7.5/10	20.8/24.1	54.3/58.3	60/60
								11.3/15	31.3/36.1	67.3/73.3	70/80
								15/20	41.4/47.9	79.9/88.1	80/90
								-/-	-/-	79.9/88.1	80/90
								3.8/5	18.1/20.8	68.1/71.6	70/80
								5.6/7.5	27.1/31.3	79.4/84.6	80/90
	208/230-3-60	187	253	18.3	123.0	3.0	7.6	7.5/10	36.1/41.7	90.7/97.7	100/100
								11.3/15	54.2/62.5	113.3/123.7	125/125
								15/20	72.2/83.3	135.8/149.8	150/150
								-/-	-/-	33.5/33.5	50/50
								3.8/5	10.4/12	46.5/48.5	50/50
								7.5/10	20.8/24.1	59.5/63.5	60/70
								11.3/15	31.3/36.1	72.6/78.6	80/80
								15/20	41.4/47.9	85.2/93.4	90/100

See Legend below.

LEGEND
 FLA — Full Load Amps
 LRA — Locked Rotor Amps
 MCA — Minimum Circuit Amps
 MOCP — Maximum Overcurrent Protection
 RLA — Rated Load Amps



EXAMPLE: Supply voltage is 230-3-60.



AB = 228 v
 BC = 231 v
 AC = 227 v

$$\text{Average Voltage} = \frac{228 + 231 + 227}{3} = \frac{686}{3} = 229$$

Determine maximum deviation from average voltage.

(AB) 229 - 228 = 1 v
 (BC) 231 - 229 = 2 v
 (AC) 229 - 227 = 2 v

Maximum deviation is 2 v.

Determine percent of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{2}{229} = 0.8\%$$

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

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

NOTES:

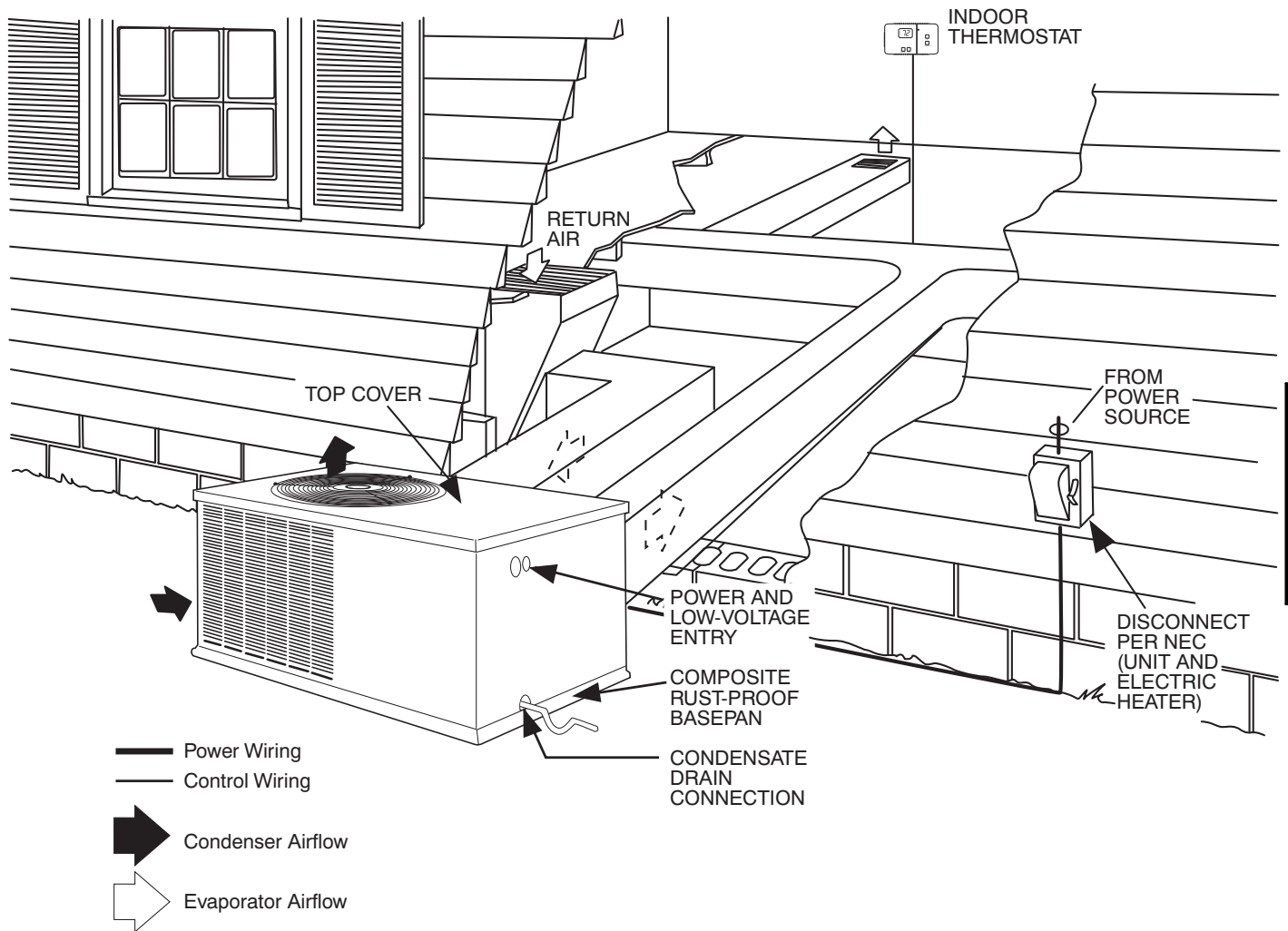
- In compliance with NEC (National Electrical Code) requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be Power Supply fuse. The CGA (Canadian Gas Association) units may be fuse or circuit breaker.
- Minimum wire size is based on 60°C copper wire. If other than 60°C wire is used, or if length exceeds wire length in table, determine size from NEC.
- Unbalanced 3-Phase Supply Voltage
 Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

% Voltage imbalance

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

- * Heater capacity (kW) based on heater voltage of 208v & 240v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly.

TYPICAL INSTALLATION

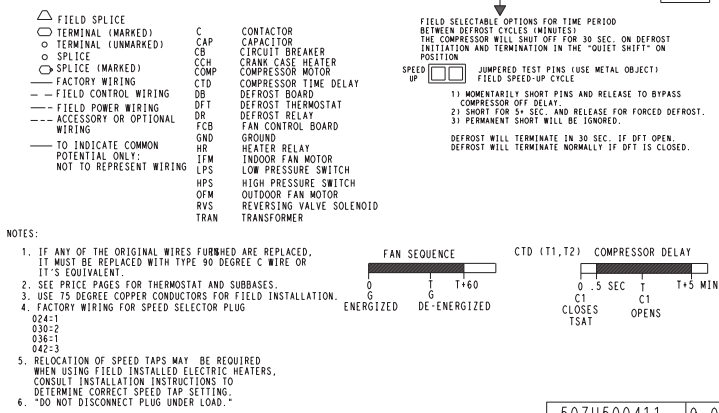
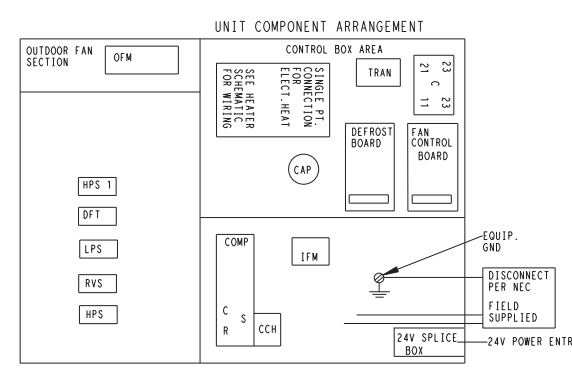
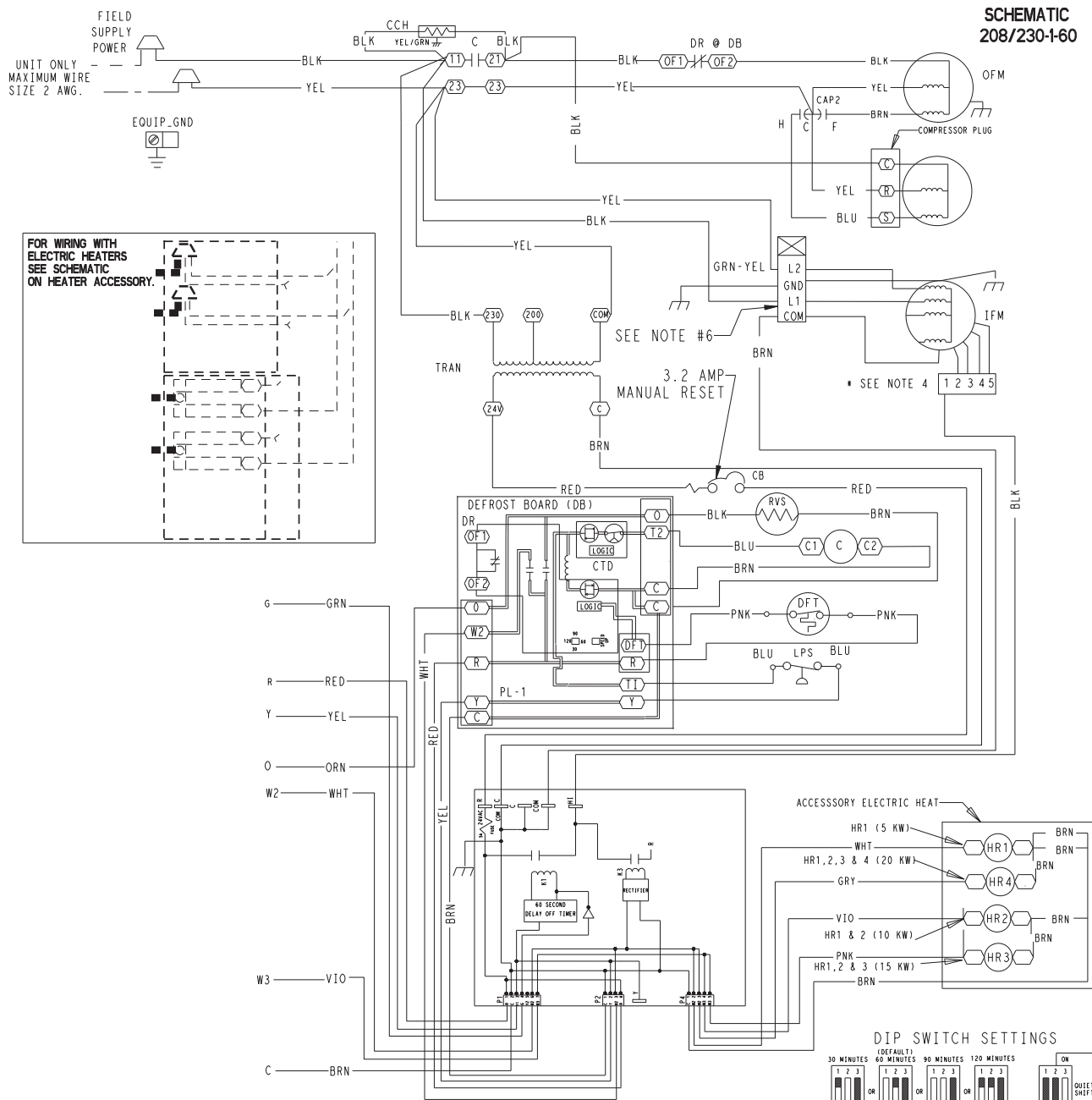


PH3Z

TYPICAL WIRING SCHEMATIC—208/230-1-60 PH3Z024-042

PH3Z

SCHEMATIC
208/230-1-60



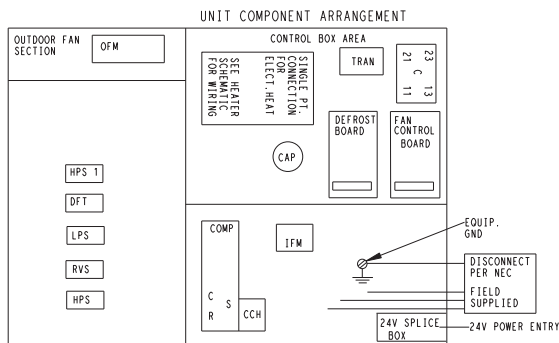
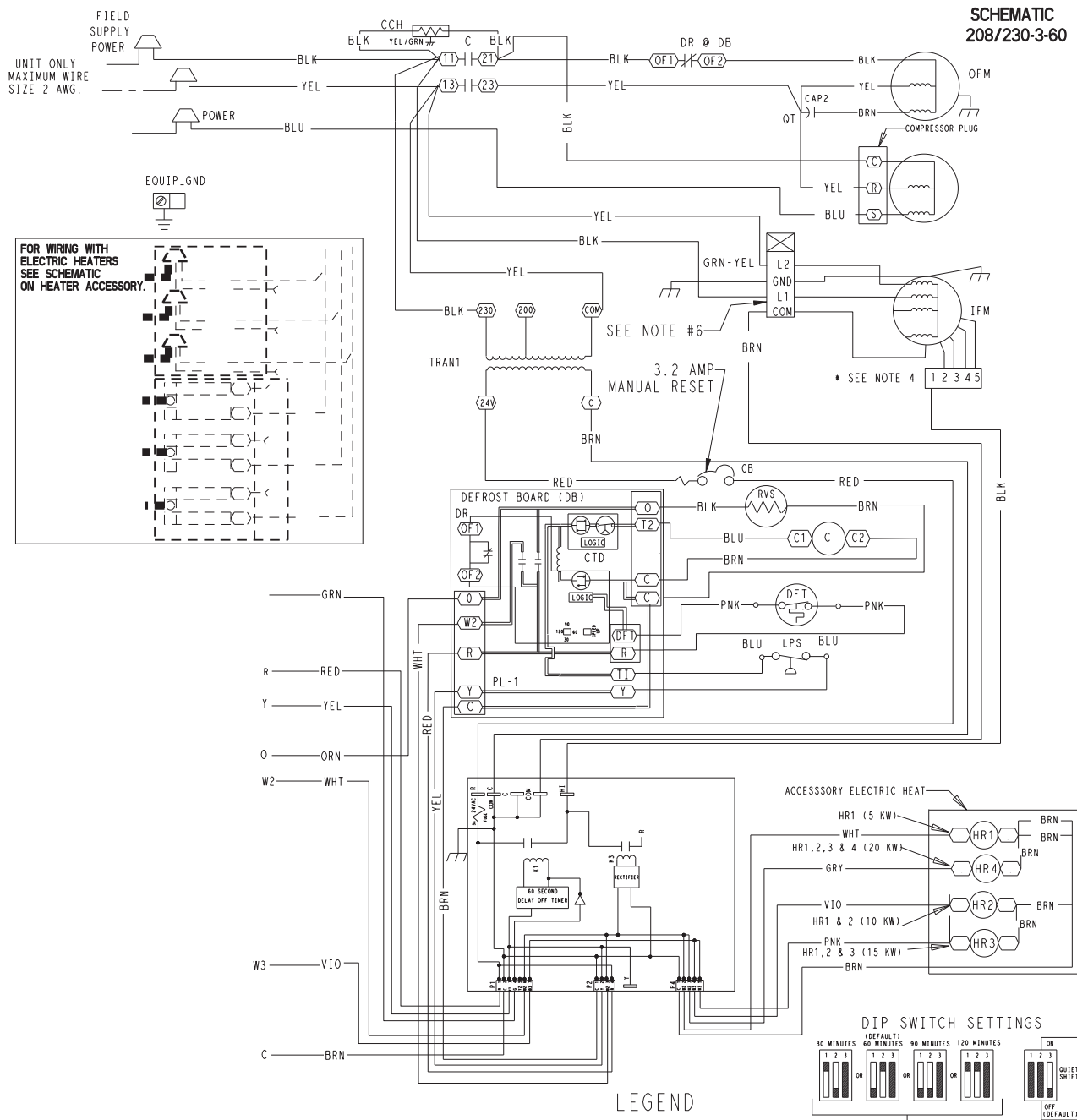
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TYPICAL WIRING SCHEMATIC—208/230-3-60 PH3Z030-042

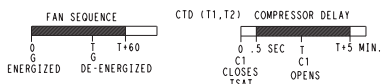
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SCHEMATIC
208/230-3-60



NOTES:

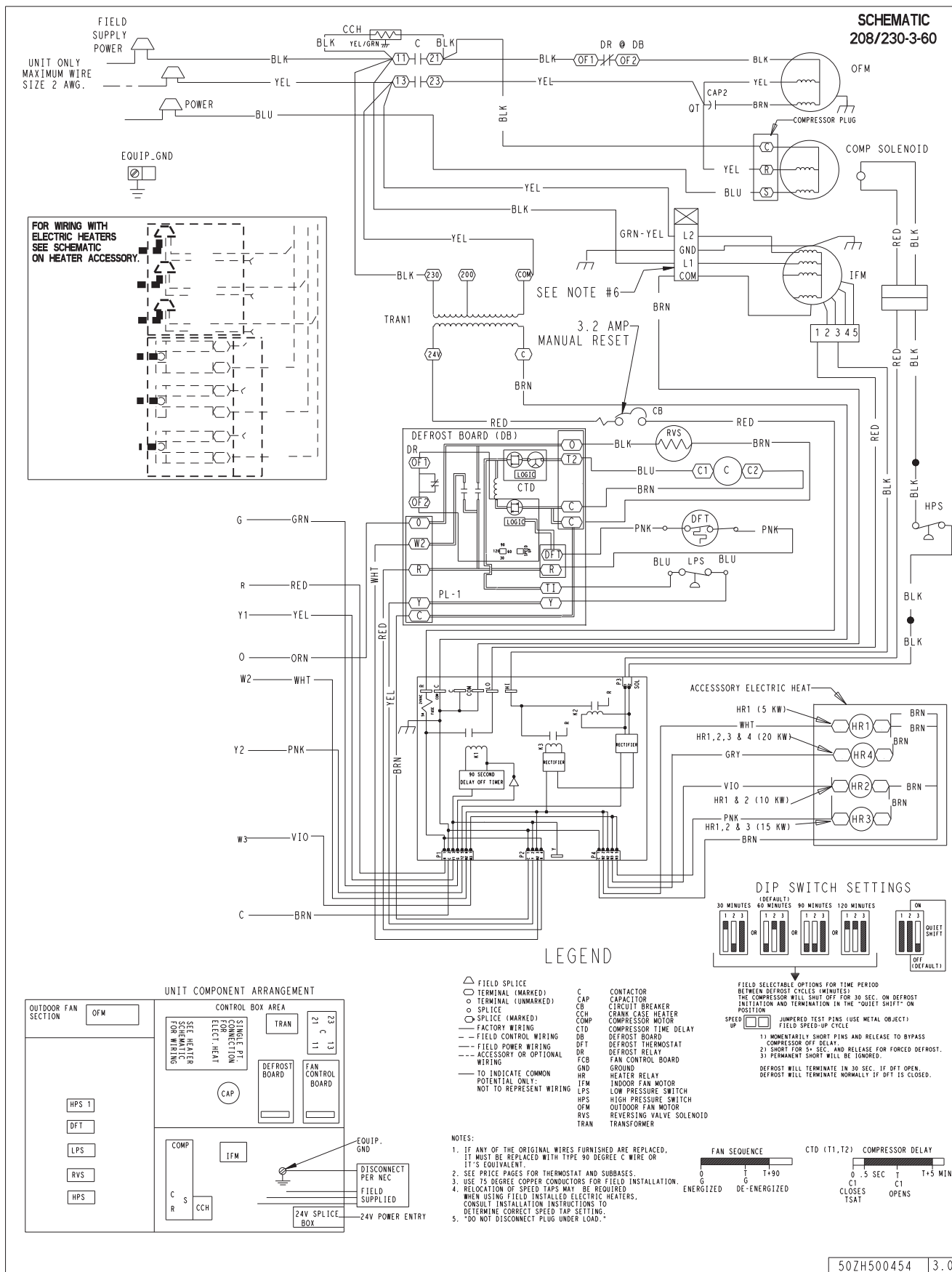
- IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED, IT MUST BE REPLACED WITH TYPE 90 DEGREE C WIRE OR IT'S EQUIVALENT.
- SEE PRICE PAGES FOR THERMOSTAT AND SUBBASES.
- USE 75 DEGREE COPPER CONDUCTORS FOR FIELD INSTALLATION.
- FACTORY WIRING FOR SPEED SELECTOR PLUG
024-1
030-2
036-1
042-3
- RELOCATION OF SPEED TAPS MAY BE REQUIRED WHEN USING FIELD INSTALLED ELECTRIC HEATERS. CONSULT INSTALLATION INSTRUCTIONS TO DETERMINE CORRECT SPEED TAP SETTING.
- DO NOT DISCONNECT PLUG UNDER LOAD.



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TYPICAL WIRING SCHEMATIC—208/230-3-60 PH3Z048-060



PH3Z

TYPICAL WIRING SCHEMATIC (CONT)

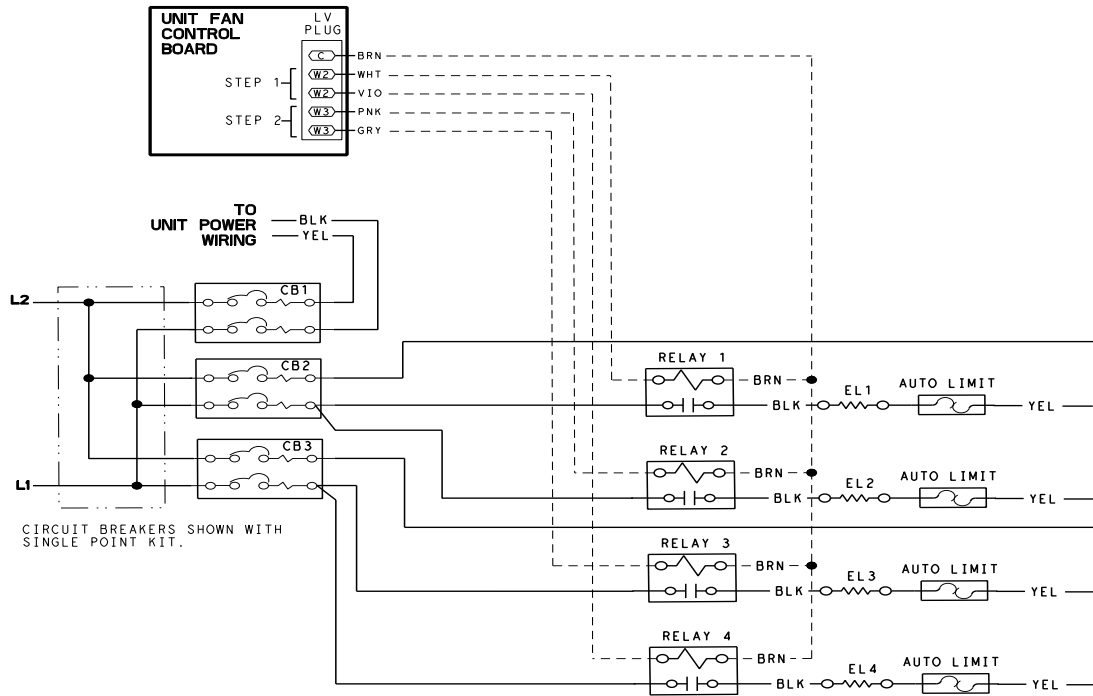


Fig. 2 - Single-Phase Accessory Electric Heater Wiring

A05209

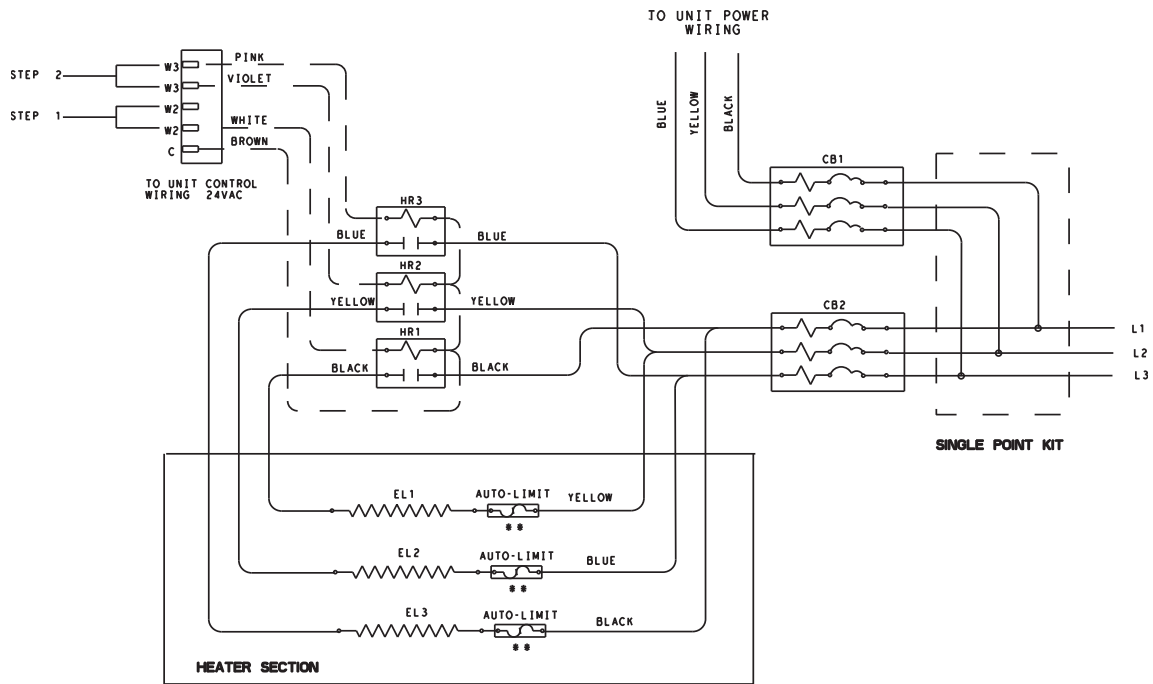


Fig. 3 - Three-Phase Accessory Electric Heater Wiring

A06327

CONTROLS

Sequence of operation

When power is supplied to unit, the transformer (TRAN) is energized.

Cooling Operation (024 - 042) — With a call for cooling (Y/Y2), the indoor fan energizes immediately whereas the contactor energizes after a 5 minute time delay (in case of an initial start up) starting the compressor and the outdoor fan motor. When the cooling demand is met, Y/Y2 de-energizes, shutting the compressor, indoor fan and the outdoor fan.

Cooling Operation (048 and 060) — These units utilize a 2-stage indoor thermostat. With a first stage call for cooling (Y1), the indoor fan (low stage) energizes immediately whereas the contactor energizes after a 5-minute time delay (in case of an initial start up) starting the compressor (low stage) and the outdoor fan motor. If the low stage operation cannot satisfy the cooling demand, the second stage cooling (Y2) energizes switching the compressor into high stage cooling through energizing an internal solenoid valve inside the scroll compressor and switching the indoor fan into high stage. When second stage cooling is satisfied, Y2 de-energizes switching the compressor and the indoor fan into low stage cooling. When the low stage cooling demand is met, Y1 de-energizes shutting the compressor, indoor fan and the outdoor fan.

Heating Operation (024 - 042) — With a call for heating (Y1), the indoor fan (low stage) energizes immediately whereas the contactor energizes after a 5-minute time delay (in case of an initial start up) starting the compressor and the outdoor fan motor. If Y/Y2 cannot satisfy the heating demand, the auxiliary or back up heat (W2) energizes. In case of staged heating, W3 is energized if the demand is not met. The highest airflow selected is run while the electric heat is in operation. When heating demand is met, W3, W2 and Y/ Y2 sequentially de-energize shutting the compressor, indoor fan and the outdoor fan.

Heating Operation (048 and 060) — With a first stage call for heating (Y1), the indoor fan (low stage) energizes immediately whereas the contactor energizes after a 5-minute time delay (in case of an initial start up) starting the compressor (low stage) and the outdoor fan motor. If the low stage operation cannot satisfy the heating demand, the second stage heating (Y2) energizes switching the compressor into high stage heating through energizing an internal solenoid valve inside the scroll compressor and switching the indoor fan into high stage. The auxiliary or backup heat is controlled by a third stage (W2). If the demand is not met, W3 is energized in case of staged heating. When heating demand is satisfied, W3, W2 and Y2 sequentially de-energize switching the compressor and the indoor fan into low stage heating. When the low stage heating demand is met, Y1 de-energizes shutting the compressor, indoor fan and the outdoor fan.

Continuous Fan — With the continuous indoor fan option selected on the thermostat, G is continuously energized. In case of 024-042 units, the selected airflow setting is provided. In case of 048 and 060 units, the system runs low stage (Y1) airflow for continuous fan operation.

Defrost — Defrost board (DB) is a time and temperature control, which includes a field-selectable time period between checks for defrost (30, 60, 90 and 120 minutes). Electronic timer and defrost cycle start only when contactor is energized and defrost thermostat (DFT) is closed.

Defrost mode is identical to cooling mode, except outdoor fan motor stops and a bank of optional electric heat turns on to warm air supplying the conditioned space.

Compressor Rotation — On 3-phase units it is important to be certain compressor is rotating in the proper direction. To determine whether or not compressor is rotating in the proper direction:

1. Connect service gauges to suction and discharge pressure fittings.
2. Energize the compressor.
3. The suction pressure should drop and the discharge pressure should rise, as is normal on any start-up.

If the suction pressure does not drop and the discharge pressure does not rise to normal levels:

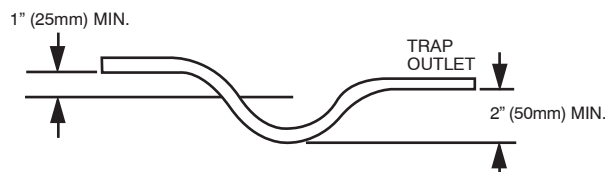
1. Turn off power to the unit and tag disconnect.
2. Reverse any two of the unit power leads.
3. Turn on power to the unit.

The suction and discharge pressure levels should now move to their normal start-up levels.

NOTE: When the compressor is rotating in the wrong direction, the unit makes an elevated level of noise and does not provide cooling.

APPLICATION DATA

Condensate trap — A 2-in. (50 mm) condensate trap must be field supplied.



Maximum cooling airflow — To minimize the possibility of condensate blow-off from the evaporator, airflow through the units should not exceed 450 cfm/ton.

Minimum cooling airflow — The minimum cooling airflow is 350 cfm/ton.

Minimum cooling operating outdoor air temperature — All standard units have a minimum ambient operating temperature of 40°F (4.4°C). With accessory low ambient temperature kit, units can operate at temperatures down to 0°F (-17.8°C).

Maximum operating outdoor air temperature — Maximum outdoor operating air temperature for cooling is 125°F (51.7°C).

GUIDE SPECIFICATIONS

SMALL PACKAGED PRODUCT AIR-TO-AIR HEAT PUMP CONSTANT VOLUME APPLICATION

HVAC GUIDE SPECIFICATIONS

SIZE RANGE: 2 TO 5 TONS, NOMINAL (COOLING)
21,800 TO 52,000 BTUH, NOMINAL
(HEATING)

MODEL NUMBER: PH3Z

PART I - GENERAL

SYSTEM DESCRIPTION

Outdoor packaged, electrically controlled, air-to-air heat pump utilizing a scroll compressor for heating and cooling duty. Unit shall discharge supply air horizontally as shown on contract drawings.

QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standards 210/240, and 270. Designed in accordance with UL Standard 1995.**
- B. Unit shall be designed to conform to ASHRAE 15.**
- C. Unit shall be UL listed as a total package for safety requirements.**
- D. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.**

DELIVERY, STORAGE, AND HANDLING

Unit shall be stored and handled per manufacturer's recommendations.

PART 2- PRODUCTS

EQUIPMENT

A. General:

Factory-assembled, single piece, air-to-air heat pump. Contained within the unit enclosure shall be all factory wiring, piping, controls, and refrigerant charge (R-22).

B. Unit Cabinet:

- 1. Unit cabinet shall be constructed of phosphated, bonderized, zinc-coated, prepainted steel.
- 2. Basepan shall be made of a single-piece non-corrosive, composite material.
- 3. Indoor fan compartment cabinet surfaces shall be insulated with a minimum 1/2 in. (12.7 mm) thick, flexible insulation, coated on the air side, with aluminum foil-faced insulation.
- 4. Cabinet panels shall be easily removable for servicing.
- 5. Unit shall have a factory-installed, sloped, noncorrosive, condensate drain.
- 6. Unit insulation conforms to ASHRAE 62P.

C. Fans:

- 1. Indoor Blower (Indoor Fan):
 - a. Fan shall be multispeed, direct drive as shown on the equipment drawings.
 - b. Fan wheel shall be made from steel, be double-inlet type. It shall have forward-curved blades with a corrosion-resistant finish and shall be dynamically balanced.
- 2. Outdoor fan shall be of the direct-driven propeller type with aluminum blades, riveted to corrosion-resistant steel spiders. It shall be dynamically balanced, and shall discharge air upwards.

D. Compressor:

Fully-hermetic scroll type with internal and external vibration isolation.

E. Coils:

- 1. Indoor and outdoor coils shall have aluminum-plate fins mechanically bonded to seamless copper tubes with all joints brazed.
- 2. Tube sheet openings shall be bellied to prevent tube wear.
- 3. Outdoor coil shall be protected by metal louvered panels.

F. Refrigerant Components:

- 1. TXV and AccuRater feed system.
- 2. Service gauge connections on suction, discharge and liquid lines.
- 3. Equipped with liquid line strainers.
- 4. Equipped with liquid line loss-of-charge switch.

G. Controls and Safeties:

- 1. Unit Controls:
 - a. Unit shall be complete with self-contained low voltage control circuit.
 - b. Defrost board is equipped with 5 minute compressor time delay protection.
 - c. Unit shall incorporate an outdoor coil defrost system to prevent excessive frost accumulation during heating cycle and shall be controlled as follows:
 - 1) Defrost shall be initiated on the basis of time and coil temperature.
 - 2) A 30/60/90/120-minute timer shall activate defrost cycle only if coil temperature is low enough to indicate a heavy frost condition.
 - 3) Defrost cycle shall terminate when defrost thermostat is satisfied or shall have a positive termination time of 10 minutes.
- 2. Safeties:
 - Compressor, overtemperature, overcurrent.

H. Operating Characteristics:

- 1. Unit shall be capable of starting and running at 115°F (46.1°C) ambient outdoor temperature per maximum load criteria of ARI Standard 240.
- 2. Compressor with standard controls shall be capable of operation down to 40°F (4.4°C) ambient outdoor temperature in cooling duty.
- 3. Compressor shall be capable of operation in heating cycle down to -20°F (-28.9°C) ambient outdoor-air temperature.
- 4. Unit shall be capable of simultaneous heating duty and defrost cycle operation when using electric heaters indicated in Section K, Special Features.
- 5. Compressors will be prevented from restarting for a minimum of 5 minutes after shutdown.

I. Electrical Requirements:

All unit power wiring shall enter unit cabinet at a single location.

J. Motors:

- 1. Compressor motors shall be of the refrigerant-cooled type with line break thermal and current overload protection.
- 2. All fan motors shall have permanently lubricated bearings and inherent automatic-reset thermal overload protection.
- 3. Outdoor-fan motor shall be totally enclosed.

GUIDE SPECIFICATIONS (CONT)

K. Special Features:

1. Electric Resistance Heaters:
 - a. Open-wire nichrome elements with all necessary safety and operating controls.
 - b. Heaters are UL listed as indicated on basic unit information plate.
 - c. Each heater assembly shall include the following safety features:
 - 1) Automatic-reset switches.
 - 2) Heat limiters for primary and secondary, overcurrent, and thermal protection.
 - d. Available with power single-point connections.
2. Outdoor Thermostat Kit:

Thermostat allows for staging of electric heaters based on outdoor air temperature.
3. Thermostat and Subbase:

Provides staged cooling and heating automatic (or manual) changeover, fan control.
4. Electronic Programmable Thermostat:

Thermostat provides 2-stage heating and 2-stage cooling control with remote communication ability.

L. Grille

1. Louvered Grille:

Louvered grille shall be standard on all units.

M. Special Features Available

1. Coil Options:

Shall include factory-installed optional tin-plated indoor coil.
2. Thermostat:

To provide for two-stage heating and cooling in addition to manual or automatic changeover and indoor fan control.
3. Low-Ambient Package:

Shall consist of a solid-state control and outdoor coil temperature sensor for controlling outdoor fan motor operation, which shall allow unit to operate down to 0°F (-17.8°C) outdoor ambient temperature in cooling.
4. Crankcase Heater:

Shall provide anti-floodback protection for low-load cooling applications. (Standard on 030-060 sizes)
5. Electric heaters:
 - a. Electric heater shall be available as a field-installed option.
 - b. Heater elements shall be open wire type, adequately supported and insulated with ceramic bushings.
 - c. Electric heater packages must provide single point power connection capability.
6. Compressor Hard Start Kit:

Shall be available to give a boost to the compressor motor at each start-up.

