

Up to 14.5 SEER, 8.0 HSPF
PACKAGE HEAT PUMP
2 to 5 TONS
 Single Phase, 208/230 V, 60 Hz

GRANDAIRE
Heating & Cooling Products

WPH4



Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program. For verification of certification for individual products, go to www.ahridirectory.org.



UNIT PERFORMANCE DATA							
Model Number	COOLING			HEATING		Unit Dimensions Height x Width x Depth in (mm)	Operating Weight lbs (kg)
	Capacity BTU/h	SEER	EER	Capacity BTU/h	HSPF		
WPH4244000RKB	23,000	14.5	12.0	22,600	8.0	47 ³ / ₄ x 48 ³ / ₁₆ x 32 ⁵ / ₈ (1213 x 1224 x 829)	311 (141)
WPH4304000RKB	28,600	14.0	11.5	28,400	8.0	51 ³ / ₄ x 48 ³ / ₁₆ x 32 ⁵ / ₈ (1315 x 1224 x 829)	351 (159)
WPH4364000RKB	34,200	14.0	11.5	34,400	8.0	48 ³ / ₄ x 48 ³ / ₁₆ x 44 ³ / ₁₆ (1137 x 1224 x 1122)	387 (176)
WPH4424000RKB	41,000	14.0	11.5	40,000	8.0	54 ³ / ₄ x 48 ³ / ₁₆ x 44 ³ / ₁₆ (1238 x 1224 x 1122)	435 (197)
WPH4484000RKB	48,000	14.0	12.0	46,000	8.0	54 ³ / ₄ x 48 ³ / ₁₆ x 44 ³ / ₁₆ (1238 x 1224 x 1122)	456 (207)
WPH4604000RKB	57,500	14.0	11.5	57,500	8.0	48 ³ / ₄ x 48 ³ / ₁₆ x 44 ³ / ₁₆ (1391 x 1224 x 1122)	487 (221)

REFRIGERATION CIRCUIT

- Environmentally sound R-410A refrigerant
- Copper tube/aluminum fin condenser and evaporator coils
- Scroll compressor standard on all models
- Short-cycling protection for the compressor is built into the defrost control board

EASY TO INSTALL AND SERVICE

- Installs easily on a rooftop or at ground level
- Easy three-panel accessibility for maintenance and installation
- Easily converts to down discharge applications
- Combination electric heating and cooling

BUILT TO LAST

- High efficiency ECM indoor blower motor on all models
- Pre-painted steel cabinet
- Vertical condenser fan discharge
- Full perimeter steel base rails
- High and low pressure switches provide added reliability for the compressor

LIMITED WARRANTY *

- 1 year unit replacement limited warranty
- 10 year parts limited warranty (including compressor and coils) with timely registration
- 5 year parts limited warranty if not registered within 90 days of original installation

* See warranty certificate for complete details and restrictions

Product Specifications

MODEL NUMBER NOMENCLATURE

MODEL NOMENCLATURE										
Digit Position:	1, 2	3	4	5, 6	7	8,9,10	11	12	13	14
Example Part Number:	WP	H	4	36	4	000	R	K	B	1
WP = Package										
A = Air Conditioner										
H = Heat Pump										
G = Gas/Electric										
										TYPE
4 = 14										
										SEER
24 = 24,000 BTUH = 2 Tons										
30 = 30,000 BTUH = 2.5 Tons										
36 = 36,000 BTUH = 3 Tons										
42 = 42,000 BTUH = 3.5 Tons										
48 = 48,000 BTUH = 4 Tons										
60 = 60,000 BTUH = 5 Tons										
										NOMINAL COOLING BTUH
4 = R-410A										
										REFRIGERANT
000 = no gas heat (use accessory electric heater)										
										NOMINAL HEATING BTUH
R = Regular										
L = Low NOx Combustion (WPG models only)										
										FEATURES
K = 208/230-1-60										
										VOLTAGE
Sales Model Digit										
Engineering Digit										

AHRI* CAPACITIES

COOLING CAPACITIES AND EFFICIENCIES

UNIT	NOMINAL TONS	STANDARD CFM	COOLING CAPACITY	EER	SEER
24	2	800	23000	12.0	14.5
30	2.5	1000	28600	11.5	14.0
36	3	1200	34200	11.5	14.0
42	3.5	1400	41000	11.5	14.0
48	4	1600	48000	12.0	14.0
60	5	1750	57500	11.5	14.0

HEAT PUMP HEATING CAPACITIES AND EFFICIENCIES

UNIT	HEATING CAPACITY (BTUH) @ 47°F (8.3°C)	COP @ 47°F (8.3°C)	HEATING CAPACITY (BTUH) @ 17°F (-8.3°C)	COP @ 17°F (-8.3°C)	HSPF
24	22600	3.7	12000	2.30	8.0
30	28400	3.7	15600	2.35	8.0
36	34400	3.6	18600	2.30	8.0
42	40000	3.6	22600	2.40	8.0
48	46000	3.6	25800	2.40	8.0
60	57500	3.7	33000	2.45	8.0

LEGEND

dB—Sound Levels (decibels)

db—Dry Bulb

SEER—Seasonal Energy Efficiency Ratio

wb—Wet Bulb

COP—Coefficient of Performance

HSPF—Heating Season Performance Factor

* Air Conditioning, Heating & Refrigeration Institute.

**At "A" conditions—80°F (26.7°C) indoor db/67°F (19.4°C) indoor wb & 95°F (35°C) outdoor db.

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

Notes:

1. Ratings are net values, reflecting the effects of circulating fan heat.

Ratings are based on:

Cooling Standard: 80°F (26.7°C) db, 67°F (19.4°C) wb indoor entering—air temperature and 95°F (35°C) db outdoor entering—air temperature.

2. Before purchasing this appliance, read important energy cost and efficiency information available from your retailer.

PHYSICAL DATA

	24	30	36	42	48	60
Unit Size	2	2.5	3	3.5	4	5
Shipping Weight (lb)	365	395	440	475	500	515
(kg)	166	179	200	215	227	234
Compressor Quantity	1					
Type	Scroll					
Refrigerant	R-410A					
Refrigerant Quantity (lb)	7.5	9.0	8.9	11.2	9.9	11.9
Quantity (kg)	3.4	4.1	4.0	5.1	4.5	5.4
Refrigerant Metering Device	Indoor TXV, Outdoor Dual Accuraters				Indoor Ac-curator, Outdoor Dual Accuraters	Indoor TXV, Outdoor Dual Accuraters
Orifice ID (in) (mm)	N/A				0.080 (1) 2.03 (1)	N/A
Orifice OD (in) (mm)	0.032 (2) 0.81 (2)	0.035 (2) 0.89 (2)	0.040 (2) 1.02 (2)	0.046 (2) 1.17 (2)	0.046 (2) 1.17 (2)	0.052 (2) 1.32 (2)
Outdoor Coil Rows...Fins/in, face area (sq. ft.)	1...21 15.4	1...21 18.8	1...21 17.5	1...21 23.3	1...21 23.3	2...21 17.5
Outdoor Fan Nominal Airflow (cfm)	2500	3000	3600	4000	4000	3800
Diameter (in.)	24	24	26	26	26	26
Diameter (mm)	610	610	660	660	660	660
Motor hp (rpm)	1/12 (810)	1/10 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/4 (810)
Indoor Coil Rows...Fins/in, face area (sq. ft.)	3...17 3.7	3...17 3.7	2...15 5.6	3...17 4.7	3...17 4.7	3...17 5.6
Indoor Blower Nominal Airflow (cfm)	800	1000	1200	1350	1600	1750
Size (in.)	10 x 10	10 x 10	11 x 10	11 x 10	11 x 10	11 x 10
Size (mm)	254 x 254	254 x 254	279 x 254	279 x 254	279 x 254	279 x 254
Motor hp (rpm)	1/2	1/2	1/2	1/2	1	1
High Pressure Switch (psig) Cutout Reset (Auto)	650 +/- 15 420 +/- 25					
Loss-of-Charge/Low Pressure Switch (psig) Cutout Reset (Auto)	20 +/- 5 45 +/- 10					
Return Air Filters disposable	2 each 20x12x1 in. 508x305x25 mm		1 each 24x16x1 in. 610x406x25 mm 24x18x1 in. 610x457x25 mm	1 each 24x14x1 in. 610x356x25 mm 24x16x1 in. 610x406x25 mm	1 each 24x16x1 in. 610x406x25 mm 24x18x1 in. 610x457x25 mm	1 each 24x16x1 in. 610x406x25 mm 24x18x1 in. 610x457x25 mm

*Required filter sizes shown are based on the larger of the AHRI (Air Conditioning Heating and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300–350 ft/minute for throwaway type or 450 ft/minute for high–capacity type. Air filter pressure drop for non–standard filters must not exceed 0.08 IN. W.C.

† If using accessory filter rack refer to the filter rack installation instructions for correct filter size and quantity.

A-WEIGHTED SOUND POWER LEVEL (dBA)

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24	74	55.1	54.3	56.7	54.9	51.7	47.2	42.9
30	75	52.7	53.0	57.9	58.7	54.8	52.2	43.2
36	74	61.9	63.3	58.9	59.9	58.7	56.2	52.4
42	73	52.7	56.9	61.5	60.7	56.7	54.1	47.9
48	74	57.4	57.1	60.9	63.2	57.8	54.8	46.1
60	75	59.3	62.2	62.1	64.1	59.4	55.8	50.2

NOTE: Tested in accordance with AHRI Standard 270–1995 (not listed in AHRI).

OPTIONS AND ACCESSORIES

ITEM	DESCRIPTION	FACTORY INSTALLED OPTION	FIELD INSTALLED ACCESSORY
Compressor Start Kit	Compressor Start Kit assists compressor start-up by providing additional starting torque on single phase units only.		X
Corporate Thermostats	Thermostats provide control for the system heating and cooling functions.		X
Crankcase Heater	Crankcase Heater provides anti-floodback protection for low-load cooling applications.		X*
Economizer	Horizontal Economizer with solid state controls and barometric relief dampers includes filter racks and provide outdoor air during cooling and reduce compressor operation.		X
	Vertical Economizer with solid state controls and barometric relief dampers includes filter racks and provide outdoor air during cooling and reduce compressor operation.		X
Electric Heaters	Electric Heat Supplement		X
Filter Rack	Filter Rack features easy installation, serviceability, and high-filtering performance for vertical applications. Includes 1-in. filter.		X
Flat Roof Curbs	Flat Roof Curbs in both 11-in (279 mm) and 14-in. (356 mm) sizes are available for roof mounted applications.		X
Low Ambient Kit	Low Ambient Kit (Motormaster II Control) allows the use of mechanical cooling down to outdoor temperatures as low as 0°F (-18°C) when properly installed.		X
Manual Outside Air Damper	Manual Outside Air Damper includes hood and filter rack with adjustable damper blade for up to 25% outdoor air.		X
Square-to-Round Duct Transition Kit	Square-to-Round Duct Transition Kit enable 24-48 size units to be fitted to 14 in. (356 mm) round ductwork.		X
Curb Adaptor	Adapter curb for new unit with base rail installed on existing curb		X
Gasket Kit	For field modified existing roof curb with new base rail unit.		X
Outdoor Coil Dense Metal Wire Grille	3/8" spacing Dense Metal Wire Grille provide hail and vandalism protection.		X
Dual Point Electric Heaters	Allows you to power the electric heater and unit contactor separately by having two individual field power supply circuits connected respectively.		X

Electric Heaters

ORDERING NO.	NOMINAL CAPACITY (kW @ 240 VOLTS)	USED WITH SIZES					
		24	30	36	42	48	60
208/230 – SINGLE PHASE – 60 HZ							
CPHEATER052A0*	5.0	X	X	X			
CPHEATER064A0*	5.0	X	X	X	X	X	X
CPHEATER069A0*	7.2	X					
CPHEATER070A0*	7.2	X	X	X	X	X	X
CPHEATER050A0*	10.0	X	X	X	X	X	X
CPHEATER066A0*	15.0		X	X	X	X	X
CPHEATER054A0*	20.0				X	X	X

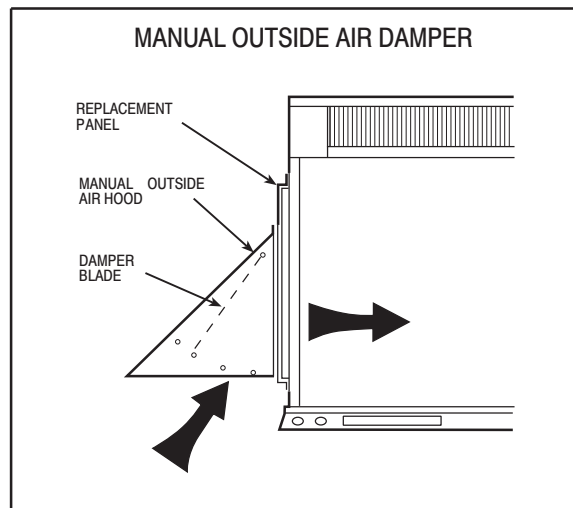
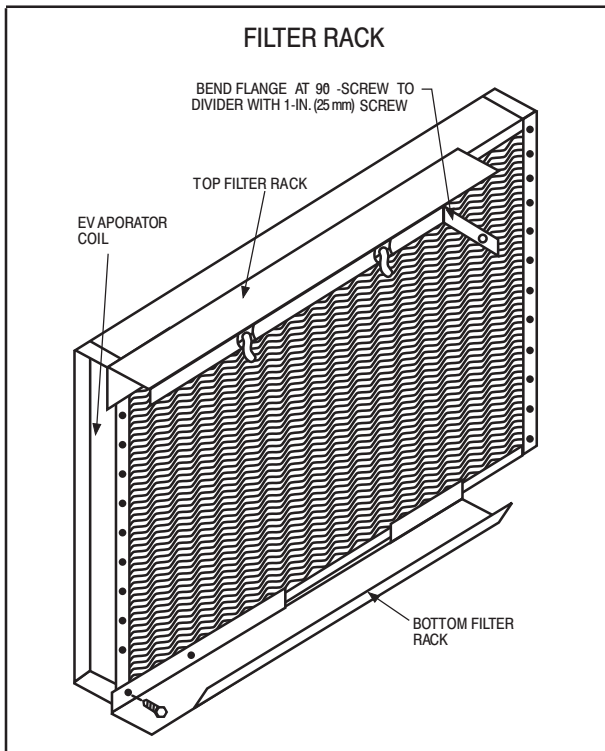
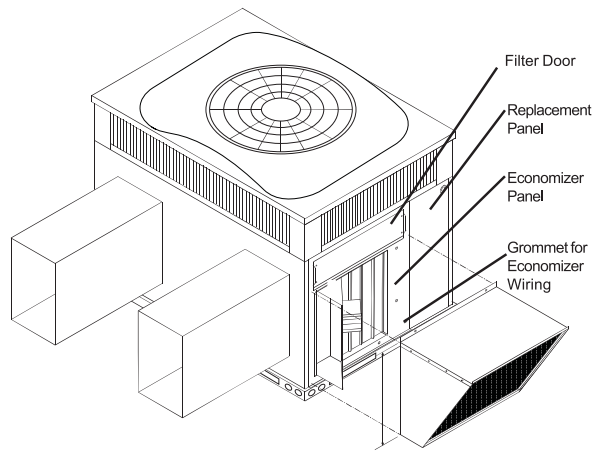
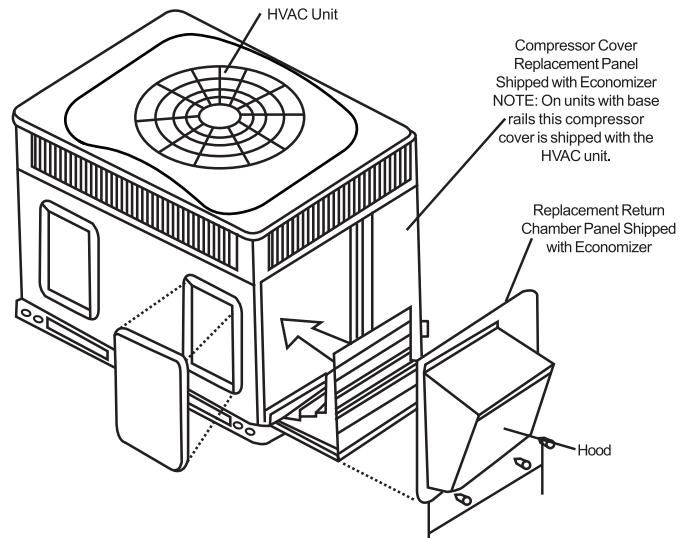
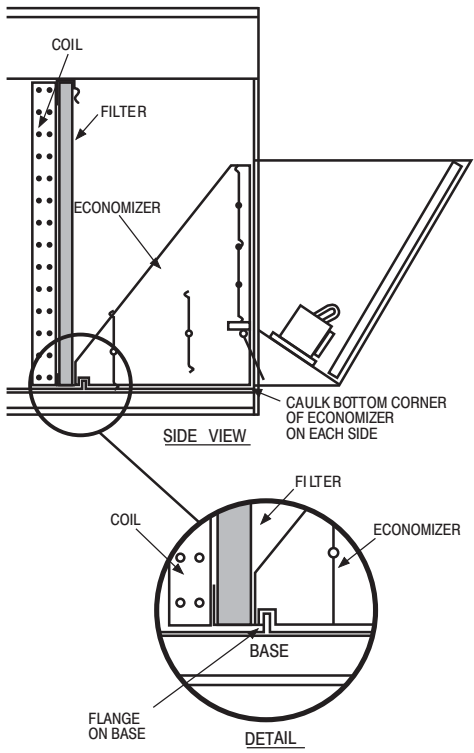
NOTE: Electric heaters are rated at 240v. Refer to Multiplication Factors table for other voltages.

X = Approved combination

Minimum Airflow for Reliable Electric Heater Operation (CFM)

SIZE	24	30	36	42	48	60
AIRFLOW (CFM)	800	1025	1250	1400	1710	1800

ECONOMIZER

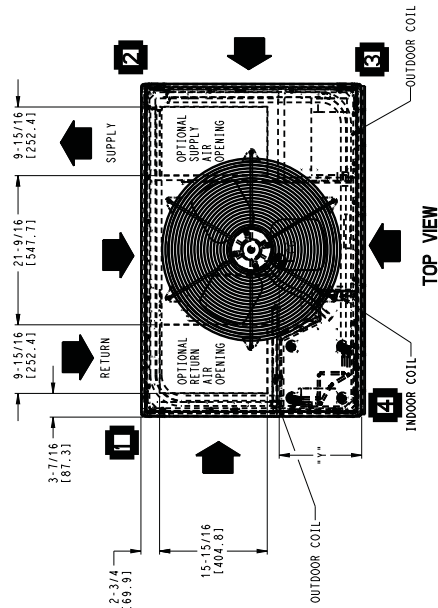


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UNIT DIMENSIONS – 24–30

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT		CENTER OF GRAVITY					
		LB	KG	"-A"	"-A"	X	Y	Z			
WPH424400RKB1	208/230-1-60	311	141.0	47-3/4	1213	19-3/4	501.7	14-3/4	374.7	17-1/2	444.5
WPH430400RKB1	208/230-1-60	351	159.2	51-3/4	1315	19-3/4	501.7	14-3/4	374.7	17-7/8	454.0

UNIT	CORNER WEIGHT								
	LB	KG	"-A"						
24	208/230	46.7	21.2	62.2	28.2	93.3	42.3	108.9	49.4
30	208/230	52.7	23.9	10.2	31.8	105.3	47.8	122.9	55.7



REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

INCHES [MM]

TOP OF UNIT..... 9 [230.6]

SIDE OF UNIT..... 4 [101.6]

SIDE OPPOSITE DUCTS..... 14 [355.6]

BOTTOM OF UNIT..... 0 [0.0]

ELECTRICAL PANEL..... 36 [914.4]

NEC REQUIRED CLEARANCES.

INCHES [MM]

BETWEEN UNITS, POWER ENTRY SIDE..... 42 [1066.8]

UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE..... 36 [914.0]

UNIT AND GROUNDED SURFACES, POWER ENTRY SIDE..... 42 [1066.8]

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

INCHES [MM]

EVAP. COIL ACCESS SIDE..... 42 [1066.8]

POWER ENTRY SIDE..... 42 [1066.8]

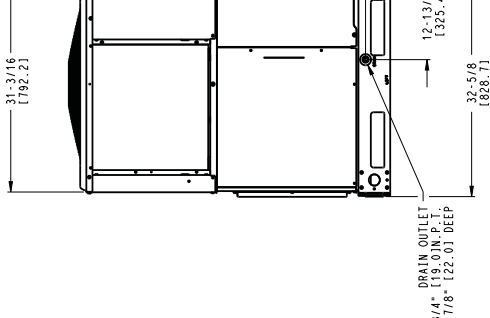
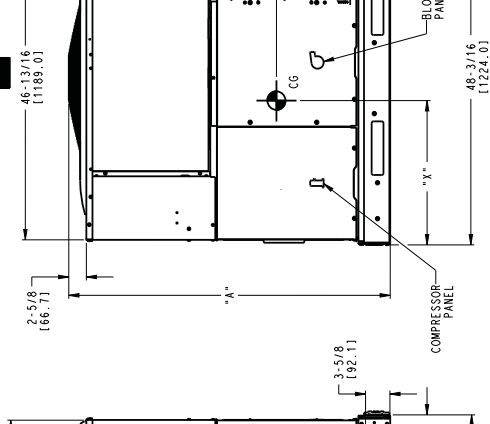
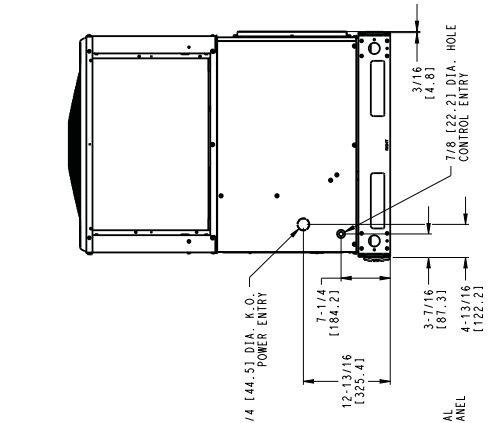
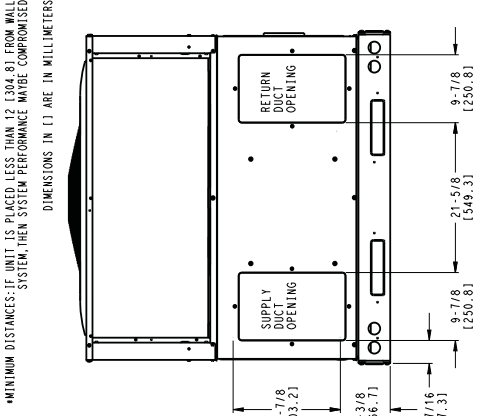
(EXCEPT FOR NEC REQUIREMENTS)

UNIT TOP..... 48 [1219.2]

SIDE OPPOSITE DUCTS..... 36 [914.0]

DUCT PANEL..... 12 [304.8]

*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12 (304.8) FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISED.



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UNIT DIMENSIONS – 36–60

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT IN/MM		CENTER OF GRAVITY IN/MM					
		LB	KG	"A"	"A"	X	Y	Z			
WPH436400RRB1	208/230-1-60	387	176.0	48-3/4	1238	19-3/4	501.7	14-3/4	374.7	18	457.2
WPH442400RRB1	208/230-1-60	435	197.0	54-3/4	1391	19-1/2	495.3	16-1/2	419.1	17	431.8
WPH448400RRB1	208/230-1-60	456	207.0	54-3/4	1391	19-1/2	495.3	16-1/2	419.1	17	431.8
WPH460400RRB1	208/230-1-60	487	221.0	48-3/4	1238	19-1/2	495.3	16-1/2	419.1	18	457.2

UNIT	VOLTAGE	CORNER WEIGHTS LB/KG		
		"1"	"2"	"3"
36	208/230	58.1	26.3	77.4
42	208/230	65.3	29.6	87.0
48	208/230	68.4	31.0	91.2
60	208/230	73.1	33.1	97.4

REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

	INCHES (MM)
TOP OF UNIT, UNIT	14 (355.6)
COIL ACCESS SIDE	14 (355.6)
SIDE OPPOSITE DUCTS	14 (355.6)
BOTTOM OF UNIT	0 (0.0)
ELECTRICAL PANEL	36 (914.4)

NEC REQUIRED CLEARANCES

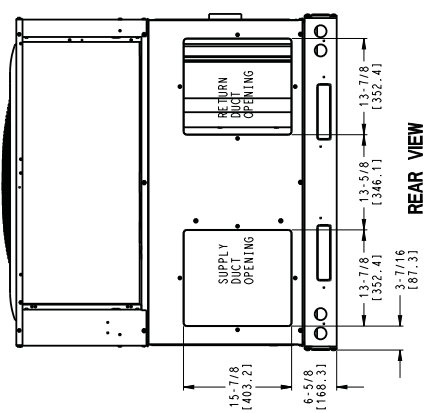
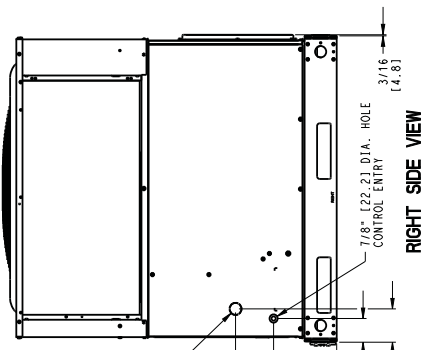
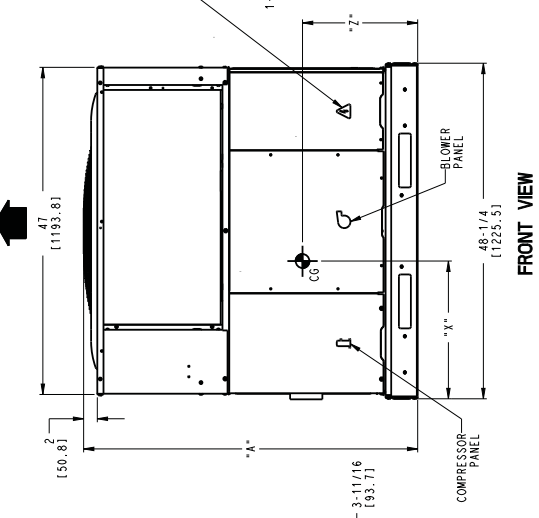
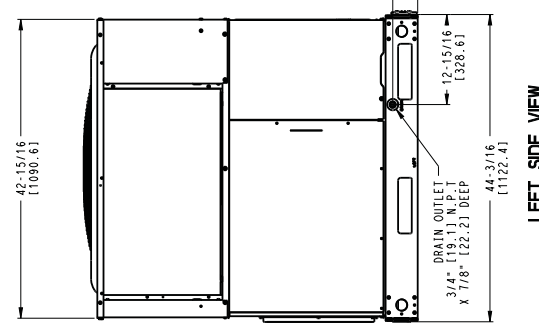
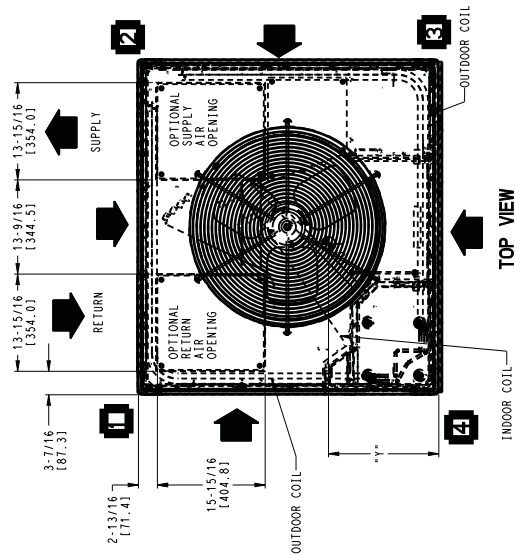
	INCHES (MM)
BETWEEN UNITS, POWER ENTRY SIDE	42 (1066.8)
UNIT AND UNGROUND SURFACES, POWER ENTRY SIDE	36 (914.0)
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUND SURFACES, POWER ENTRY SIDE	42 (1066.8)

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

	INCHES (MM)
EVAP. COIL ACCESS SIDE	36 (914.0)
POWER ENTRY SIDE	42 (1066.8)
UNIT TOP OR NEC REQUIREMENTS	48 (1219.2)
UNIT TOP OPPOSITE DUCTS	36 (914.0)
DUCT PANEL	12 (304.8)

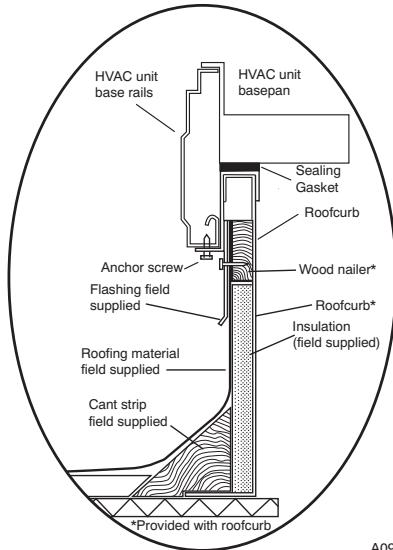
*MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12 (304.8) FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISED.

DIMENSIONS IN [] ARE IN MM



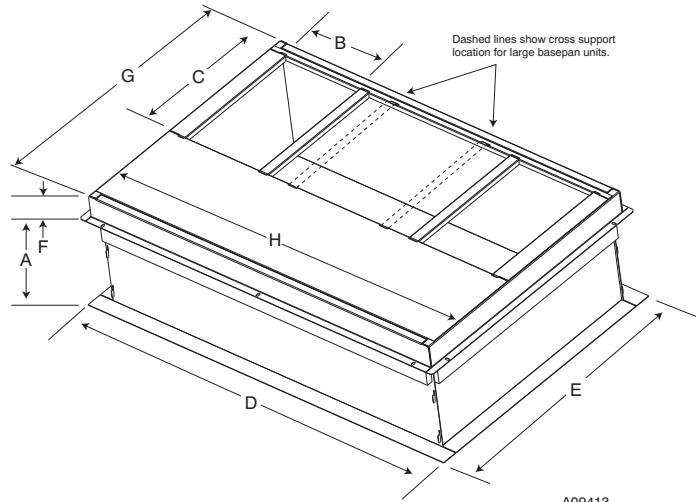
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ROOF CURB ACCESSORY DIMENSIONS



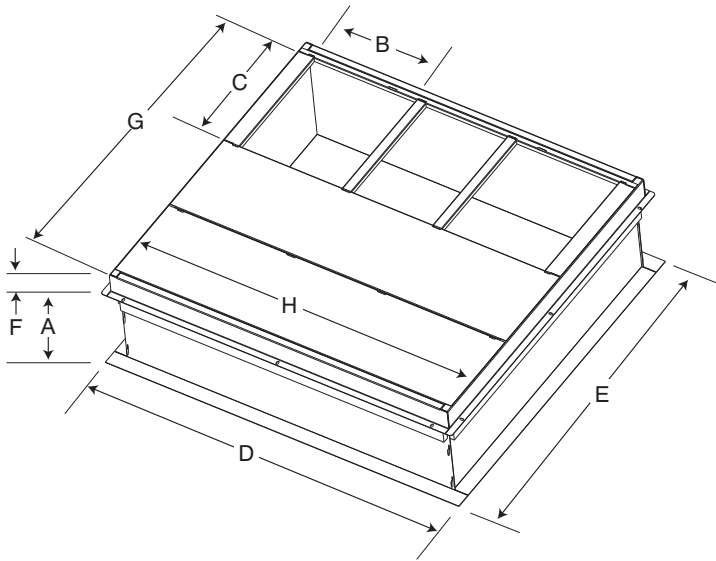
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ROOF CURB DETAIL



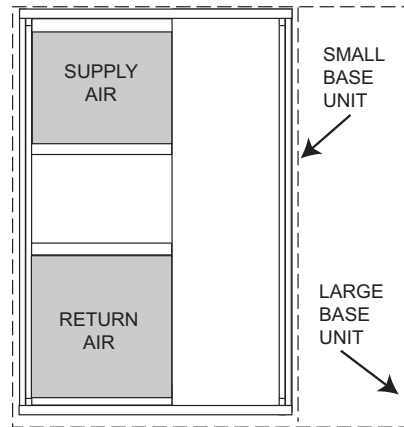
SMALL/COMMON CURB

A09413



LARGE CURB

A09415



UNIT PLACEMENT ON COMMON CURB

A09094

SMALL OR LARGE BASE UNIT

A09414

UNIT SIZE	CATALOG NUMBER	A IN. (mm)	B (small/common base) IN. (mm)*	B (large base) IN. (mm)*	C IN. (mm)	D IN. (mm)	E IN. (mm)	F IN. (mm)	G IN. (mm)	H IN. (mm)
Small or Large	CPRFCURB011A00	14 (356)	10 (254)	14 (356)	16 (406)	47.8 (1214)	32.4 (822)	2.7 (69)	30.6 (778)	46.1 (1170)
Large	CPRFCURB013A00	14 (356)	14 (356)				43.9 (1116)		42.2 (1072)	

* Part Numbers CPRFCURB011A00 can be used on both small and large basepan units. The cross supports must be located based on whether the unit is a small basepan or a large basepan.

NOTES:

1. Roof curb must be set up for unit being installed.
2. Seal strip must be applied, as required, to unit being installed.
3. Roof curb is made of 16-gauge steel.
4. Attach ductwork to curb (flanges of duct rest on curb).
5. Insulated panels: 1-in. (25 mm) thick fiberglass 1 lb. density.

SELECTION PROCEDURE (WITH EXAMPLE)

1. Determine cooling and heating requirements at design conditions:

Given:

Required Cooling Capacity (TC)	34,500 Btuh
Sensible Heat Capacity (SHC)	26,000 Btuh
Required Heating Capacity	60,000 Btuh
Condenser Entering Air Temperature . . .	95°F (35°C)
Indoor–Air Temperature	80°F (27°C) edb 67°F (19°C) ewb
Evaporator Air Quantity	1200 CFM
External Static Pressure	0.200 IN. W.C.
Electrical Characteristics	208–1–60

2. Select unit based on required cooling capacity.

Enter Net Cooling Capacities table at condenser entering temperature of 95°F (35°C). Unit 36 at 1200 CFM and 67°F (19°C) ewb (entering wet bulb) will provide a total capacity of 35,800 Btuh and a SHC of 26,950 Btuh. Calculate SHC correction, if required, using Note 4 under Cooling Capacities tables.

3. Select heating capacity of unit to provide design condition requirement.

In the Heating Capacities and Efficiencies table, note that the 36 size unit will deliver 34,800 BTUH at the AHRI high temp rating point. To achieve 60,000 BTUH, accessory electric heat will be required. Use the Balance Point Worksheet to plot the load line with the unit capacity. The difference between the load line and unit capacity at the design heating temperature is the amount of electric heat that will be required.

4. Determine fan speed and power requirements at design conditions.

Before entering the air delivery tables, calculate the total static pressure required. From the given example, the Wet Coil Pressure Drop Table, and the Filter Pressure Drop Table:

External Static Pressure	0.200 IN. W.C.
Filter	0.130 IN. W.C.
Wet Coil Pressure Drop	<u>0.18</u> IN. W.C.
Total Static Pressure	0.51 IN. W.C.

Enter the table for Dry Coil Air Delivery— At 0.50 IN. W.C. ESP (external static pressure) and MED–LOW speed the motor delivers 1140 CFM. To achieve 1200 CFM, a higher speed tap is required.

5. Select unit that corresponds to power source available.

The Electrical Data Table shows that the unit is designed to operate at 208/230–1–60.

PERFORMANCE DATA

24 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																			
CFM	EWB °F (°C)	75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)				
		Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens		
700	57 (13.9)	23.20	1.46	21.89	1.66	20.49	1.88	19.02	2.13	17.49	2.41	15.90	2.74	15.90	2.41	15.90	2.74	15.90	2.41	15.90	2.74
	62 (16.7)	23.93	1.46	22.33	1.66	20.71	1.88	19.05	2.13	17.52	2.41	15.92	2.74	15.92	2.41	15.92	2.74	15.92	2.41	15.92	2.74
	63* (17.2)	24.31	1.46	22.69	1.66	21.03	1.88	19.29	2.13	17.49	2.41	15.64	2.74	15.64	2.41	15.64	2.74	15.64	2.41	15.64	2.74
	67 (19.4)	26.08	1.47	24.35	1.67	22.58	1.90	20.74	2.15	18.83	2.43	16.87	2.75	16.87	2.43	16.87	2.75	16.87	2.43	16.87	2.75
	72 (22.2)	28.46	1.48	26.60	1.69	24.70	1.91	22.73	2.17	20.69	2.46	18.58	2.78	18.58	2.46	18.58	2.78	18.58	2.46	18.58	2.78
	57 (13.9)	24.19	1.48	22.79	1.68	21.30	1.90	19.75	2.15	18.14	2.44	16.47	2.77	16.47	2.44	16.47	2.77	16.47	2.44	16.47	2.77
	62 (16.7)	24.54	1.48	22.92	1.68	21.33	1.90	19.78	2.15	18.17	2.44	16.49	2.77	16.49	2.44	16.49	2.77	16.49	2.44	16.49	2.77
800	63* (17.2)	24.87	1.48	23.18	1.68	21.43	1.90	19.63	2.15	17.77	2.44	15.88	2.76	15.88	2.44	15.88	2.76	15.88	2.44	15.88	2.76
	67 (19.4)	26.67	1.48	24.86	1.69	23.00	1.92	21.09	2.17	19.13	2.45	17.11	2.77	17.11	2.45	17.11	2.77	17.11	2.45	17.11	2.77
	72 (22.2)	29.10	1.49	27.14	1.71	25.15	1.94	23.10	2.19	20.99	2.48	18.80	2.80	18.80	2.48	18.80	2.80	18.80	2.48	18.80	2.80
	57 (13.9)	25.03	1.50	23.55	1.70	21.99	1.93	20.36	2.18	18.68	2.47	16.94	2.79	16.94	2.47	16.94	2.79	16.94	2.47	16.94	2.79
	62 (16.7)	25.10	1.50	23.58	1.70	22.02	1.93	20.39	2.18	18.71	2.47	16.96	2.79	16.96	2.47	16.96	2.79	16.96	2.47	16.96	2.79
	63* (17.2)	25.31	1.50	23.56	1.70	21.75	1.92	19.90	2.17	18.00	2.46	16.08	2.78	16.08	2.46	16.08	2.78	16.08	2.46	16.08	2.78
	67 (19.4)	27.13	1.50	25.24	1.71	23.33	1.94	21.37	2.19	19.36	2.48	17.30	2.80	17.30	2.48	17.30	2.80	17.30	2.48	17.30	2.80
72 (22.2)	29.60	1.51	27.57	1.73	25.50	1.96	23.39	2.21	21.21	2.50	18.98	2.82	18.98	2.50	18.98	2.82	18.98	2.50	18.98	2.82	

*At 75 °F (23.9 °C) entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80 °F (26.7 °C) entering dry bulb. See Legend and Notes.

24 Heating Extended Performance Table -10-60 °F (-23.3-15.6 °C)

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																							
EDB °F (°C)	CFM	-10 (-23.3)			0 (-17.8)			10 (-12.2)			20 (-6.7)			30 (-1.1)			40 (4.4)			50 (10)			60 (15.6)		
		Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens
65 (18.3)	700	5.16	4.74	1.30	7.34	6.76	1.36	9.88	9.07	1.42	13.05	11.84	1.49	16.15	14.15	1.54	19.76	19.76	1.60	23.93	23.93	1.67	28.94	28.94	1.78
	800	5.23	4.81	1.31	7.44	6.84	1.37	10.00	9.18	1.42	13.17	11.94	1.48	16.30	14.28	1.52	19.97	19.97	1.57	24.23	24.23	1.64	29.26	29.26	1.71
	900	5.29	4.87	1.32	7.52	6.92	1.37	10.10	9.27	1.42	13.27	12.04	1.47	16.43	14.40	1.51	20.15	20.15	1.56	24.47	24.47	1.61	29.31	29.31	1.67
70 (21.1)	700	4.96	4.56	1.36	7.13	6.56	1.42	9.64	8.85	1.49	12.86	11.66	1.56	15.94	13.96	1.62	19.49	19.49	1.68	23.59	23.59	1.76	28.47	28.47	1.86
	800	5.04	4.63	1.36	7.23	6.65	1.43	9.77	8.97	1.48	12.99	11.79	1.55	16.09	14.10	1.60	19.70	19.70	1.65	23.88	23.88	1.72	28.78	28.78	1.80
	900	5.11	4.70	1.37	7.31	6.73	1.43	9.88	9.07	1.48	13.11	11.89	1.54	16.23	14.22	1.59	19.88	19.88	1.63	24.12	24.12	1.69	29.00	29.00	1.76
75 (23.9)	700	4.74	4.36	1.42	6.89	6.34	1.49	9.39	8.62	1.56	12.31	11.16	1.62	15.73	13.78	1.70	19.22	19.22	1.76	23.28	23.28	1.84	28.02	28.02	1.95
	800	4.81	4.43	1.43	6.99	6.44	1.49	9.52	8.74	1.55	12.51	11.34	1.61	15.89	13.92	1.68	19.43	19.43	1.73	23.53	23.53	1.80	28.43	28.43	1.90
	900	4.89	4.50	1.44	7.08	6.52	1.50	9.63	8.84	1.55	12.71	11.53	1.61	16.01	14.03	1.67	19.61	19.61	1.71	23.77	23.77	1.78	28.65	28.65	1.85

PERFORMANCE DATA (CONT)

30 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
CFM	EWB °F (°C)	75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens
875	57 (13.9)	29.07	1.88	27.22	2.14	25.32	2.43	23.37	2.76	21.36	3.15	19.29	3.60						
	62 (16.7)	29.99	1.89	24.76	2.14	23.67	2.43	23.30	2.76	21.39	3.15	19.32	3.60						
	63* (17.2)	30.49	1.89	20.08	2.15	26.05	2.43	23.78	2.77	21.43	3.15	19.04	3.60						
	67 (19.4)	32.82	1.91	30.45	2.16	28.08	2.45	25.64	2.78	23.16	3.17	20.61	3.60						
	72 (22.2)	36.00	1.93	33.44	2.19	30.86	2.48	28.22	2.81	25.53	3.19	22.78	3.62						
1000	57 (13.9)	30.31	1.92	28.34	2.18	26.34	2.47	24.28	2.80	22.17	3.19	19.99	3.64						
	62 (16.7)	30.74	1.92	26.50	2.18	26.38	2.47	24.32	2.80	22.20	3.19	20.02	3.64						
	63* (17.2)	31.18	1.93	28.86	2.18	26.55	2.47	24.19	2.80	21.78	3.19	19.33	3.63						
	67 (19.4)	33.54	1.94	31.07	2.20	28.60	2.49	26.08	2.82	23.52	3.20	20.91	3.64						
	72 (22.2)	36.76	1.96	34.09	2.22	31.41	2.51	28.68	2.84	25.91	3.22	23.08	3.66						
1125	57 (13.9)	31.37	1.96	29.29	2.22	27.19	2.51	25.04	2.84	22.83	3.23	20.57	3.67						
	62 (16.7)	31.43	1.96	29.33	2.22	27.23	2.51	25.07	2.84	22.86	3.23	20.59	3.67						
	63* (17.2)	31.70	1.96	22.69	2.22	26.93	2.50	24.52	2.84	22.05	3.22	19.56	3.67						
	67 (19.4)	34.09	1.98	31.54	2.23	29.00	2.52	26.42	2.85	23.79	3.24	21.13	3.68						
	72 (22.2)	37.37	2.00	34.61	2.26	31.85	2.55	29.03	2.88	26.19	3.26	23.29	3.69						

*At 75°F (23.9 °C) entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80°F (26.7 °C) entering dry bulb. See Legend and Notes.

30 Heating Extended Performance Table -10-60°F (-23.3-15.6°C)

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																							
EDB °F (°C)	CFM	-10 (-23.3)			0 (-17.8)			10 (-12.2)			20 (-6.7)			30 (-1.1)			40 (4.4)			50 (10)			60 (15.6)		
		Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens			
65 (18.3)	875	7.37	6.78	1.70	10.15	9.34	1.76	13.27	12.18	1.82	16.92	15.35	1.88	20.92	18.33	1.95	25.08	25.08	2.01	29.90	29.90	2.09	35.71	35.71	2.21
	1000	7.52	6.92	1.72	10.33	9.50	1.77	13.47	12.37	1.82	17.43	15.81	1.89	21.13	18.51	1.93	25.36	25.36	1.98	30.29	30.29	2.06	36.23	36.23	2.16
	1125	7.66	7.04	1.74	10.49	9.65	1.79	13.66	12.53	1.83	17.61	15.97	1.89	21.32	18.68	1.93	25.59	25.59	1.97	30.61	30.61	2.04	36.66	36.66	2.14
70 (21.1)	875	6.96	6.40	1.77	9.76	8.98	1.84	12.89	11.83	1.90	16.44	14.91	1.97	20.65	18.10	2.04	24.77	24.77	2.11	29.48	29.48	2.19	35.19	35.19	2.31
	1000	7.11	6.54	1.79	9.94	9.15	1.85	13.09	12.02	1.90	16.70	15.15	1.96	20.88	18.30	2.03	25.05	25.05	2.08	29.87	29.87	2.16	35.70	35.70	2.26
	1125	7.24	6.66	1.81	10.09	9.28	1.87	13.27	12.18	1.91	16.95	15.37	1.97	21.07	18.46	2.02	25.28	25.28	2.07	30.18	30.18	2.13	36.11	36.11	2.23
75 (23.9)	875	6.52	6.00	1.85	9.34	8.59	1.92	12.48	11.46	1.99	16.02	14.53	2.06	20.40	17.87	2.15	24.46	24.46	2.21	29.09	29.09	2.30	34.68	34.68	2.42
	1000	6.67	6.13	1.87	9.52	8.76	1.93	12.69	11.65	1.99	16.28	14.76	2.05	20.61	18.06	2.13	24.73	24.73	2.18	29.44	29.44	2.26	35.17	35.17	2.37
	1125	6.80	6.25	1.89	9.67	8.90	1.95	12.87	11.82	2.00	16.49	14.96	2.06	20.80	18.22	2.12	24.96	24.96	2.17	29.75	29.75	2.24	35.58	35.58	2.34

PERFORMANCE DATA (CONT)

36 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		CFM	EWB °F (°C)	Capacity MBtuh		Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh	Total Sys KW	
Total	Sens			Total	Sens				Total	Sens				Total	Sens				
1050	57 (13.9)	34.29	34.29	2.28	31.97	31.97	2.57	29.65	29.65	2.91	27.29	27.29	3.30	24.91	24.91	3.75	22.51	22.51	4.28
	62 (16.7)	35.83	31.87	2.28	33.11	30.41	2.58	30.40	28.91	2.91	27.69	27.37	3.30	24.97	24.97	3.75	22.54	22.54	4.28
	63* (17.2)	36.58	26.06	2.29	33.81	24.75	2.58	31.02	23.43	2.92	28.22	22.09	3.31	25.40	20.75	3.76	22.56	19.38	4.28
	67 (19.4)	39.49	27.08	2.30	36.51	25.75	2.60	33.53	24.42	2.94	30.54	23.07	3.33	27.53	21.71	3.78	24.50	20.33	4.29
	72 (22.2)	43.46	22.18	2.33	40.22	20.97	2.63	36.98	19.76	2.97	33.73	18.53	3.36	30.47	17.30	3.80	27.18	16.04	4.31
	57 (13.9)	35.76	35.76	2.31	33.32	33.32	2.61	30.86	30.86	2.95	28.38	28.38	3.34	25.88	25.88	3.79	23.36	23.36	4.31
	62 (16.7)	36.70	34.09	2.32	33.91	32.51	2.61	31.14	30.87	2.95	28.43	28.43	3.34	25.91	25.91	3.79	23.38	23.38	4.31
1200	63* (17.2)	37.43	27.64	2.32	34.56	26.28	2.62	31.66	24.91	2.95	28.77	23.53	3.34	25.86	22.13	3.79	22.94	20.71	4.31
	67 (19.4)	40.37	28.77	2.34	37.29	27.39	2.64	34.20	26.00	2.97	31.11	24.60	3.36	28.01	23.19	3.81	24.89	21.76	4.32
	72 (22.2)	44.39	23.24	2.36	41.05	22.00	2.67	37.70	20.75	3.01	34.35	19.49	3.39	30.98	18.21	3.84	27.60	16.93	4.35
	57 (13.9)	37.01	37.01	2.35	34.46	34.46	2.65	31.89	31.89	2.98	29.30	29.30	3.37	26.69	26.69	3.83	24.06	24.06	4.35
	62 (16.7)	37.46	36.08	2.35	34.56	34.56	2.65	31.92	31.92	2.98	29.33	29.33	3.37	26.72	26.72	3.83	24.09	24.09	4.35
	63* (17.2)	38.10	29.14	2.35	35.13	27.74	2.65	32.17	26.32	2.98	29.19	24.89	3.37	26.21	23.44	3.82	23.24	21.94	4.34
	67 (19.4)	41.06	30.38	2.37	37.88	28.95	2.67	34.72	27.51	3.01	31.55	26.07	3.39	28.36	24.61	3.84	25.19	23.11	4.35
72 (22.2)	45.13	24.24	2.40	41.68	22.96	2.70	38.26	21.68	3.04	34.81	20.39	3.43	31.36	19.09	3.87	27.91	17.77	4.38	

*At 75°F (23.9 °C) entering dry bulb—Tennessee Valley Authority (TVA) rating conditions; all others at 80°F (26.7 °C) entering dry bulb. See Legend and Notes.

36 Heating Extended Performance Table -10-60 °F (-23.3-15.6 °C)

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																							
		-10 (-23.3)			0 (-17.8)			10 (-12.2)			20 (-6.7)			30 (-1.1)			40 (4.4)			50 (10)			60 (15.6)		
		EDB °F (°C)	CFM	Capacity MBtuh		Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW					
Total	Integ			Total	Integ																Total	Integ	Total	Integ	Total
65 (18.3)	1050	8.91	8.20	1.99	12.09	11.12	2.10	15.84	14.54	2.20	20.16	18.29	2.51	25.50	22.34	2.46	30.51	30.51	2.59	36.18	36.18	2.74	42.89	42.89	2.94
	1200	9.08	8.35	2.00	12.29	11.31	2.10	16.09	14.77	2.19	20.48	18.57	2.29	25.78	22.58	2.42	30.85	30.85	2.54	36.62	36.62	2.68	43.51	43.51	2.86
	1350	9.23	8.49	2.02	12.47	11.48	2.11	16.30	14.96	2.19	20.74	18.81	2.28	25.99	22.77	2.40	31.14	31.14	2.51	36.99	36.99	2.63	44.03	44.03	2.80
70 (21.1)	1050	8.38	7.71	2.09	11.57	10.64	2.20	15.32	14.06	2.30	19.62	17.80	2.42	25.09	21.99	2.58	30.10	30.10	2.71	35.72	35.72	2.87	42.28	42.28	3.08
	1200	8.55	7.86	2.10	11.77	10.83	2.20	15.57	14.29	2.30	19.93	18.08	2.40	25.40	22.25	2.54	30.44	30.44	2.66	36.14	36.14	2.80	42.89	42.89	2.99
	1350	8.69	8.00	2.12	11.95	10.99	2.21	15.78	14.49	2.30	20.20	18.32	2.39	25.64	22.47	2.52	30.73	30.73	2.63	36.50	36.50	2.76	43.39	43.39	2.93
75 (23.9)	1050	7.83	7.20	2.20	11.02	10.14	2.30	14.78	13.56	2.41	19.06	17.29	2.53	24.02	21.05	2.67	29.70	29.70	2.85	35.30	35.30	3.01	41.68	41.68	3.22
	1200	7.98	7.34	2.21	11.22	10.32	2.31	15.02	13.79	2.41	19.37	17.57	2.51	24.54	21.50	2.64	30.03	30.03	2.79	35.70	35.70	2.94	42.27	42.27	3.13
	1350	8.12	7.47	2.22	11.40	10.49	2.32	15.24	13.98	2.41	19.63	17.80	2.50	25.23	22.10	2.64	30.31	30.31	2.75	36.01	36.01	2.89	42.76	42.76	3.07

PERFORMANCE DATA (CONT)

42 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
CFM	EWB °F (°C)	75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens
1175	57 (13.9)	41.22	2.67	38.65	3.02	36.03	3.43	33.36	3.92	30.67	4.50	27.95	5.18						
	62 (16.7)	42.88	2.68	39.82	3.03	36.79	3.45	33.74	3.93	30.72	4.50	28.00	5.18						
	63* (17.2)	43.45	2.69	40.36	3.04	37.28	3.45	34.17	3.94	31.05	4.51	27.90	5.18						
	67 (19.4)	46.78	2.73	43.42	3.08	40.10	3.50	36.77	4.00	33.43	4.58	30.08	5.25						
	72 (22.2)	51.06	2.78	47.40	3.14	43.79	3.57	40.20	4.08	36.60	4.68	32.99	5.37						
	57 (13.9)	43.16	2.73	40.38	3.08	37.57	3.50	34.75	4.00	31.90	4.58	29.02	5.26						
	62 (16.7)	44.08	2.74	40.92	3.09	37.79	3.51	34.81	3.99	31.95	4.58	29.06	5.26						
1350	63* (17.2)	44.59	2.75	41.33	3.10	38.10	3.51	34.87	4.00	31.64	4.57	28.39	5.24						
	67 (19.4)	47.99	2.78	44.45	3.14	41.00	3.57	37.54	4.06	34.07	4.64	30.60	5.32						
	72 (22.2)	52.34	2.84	48.53	3.21	44.76	3.64	41.02	4.15	37.28	4.75	33.55	5.44						
	57 (13.9)	44.79	2.79	41.81	3.15	38.87	3.57	35.90	4.07	32.91	4.66	29.90	5.34						
	62 (16.7)	45.17	2.79	41.88	3.15	38.92	3.57	35.95	4.07	32.96	4.66	29.94	5.35						
	63* (17.2)	45.49	2.80	42.10	3.15	38.77	3.57	35.43	4.06	32.09	4.63	28.77	5.30						
	67 (19.4)	48.94	2.84	45.27	3.20	41.68	3.62	38.10	4.12	34.56	4.71	31.00	5.39						
1525	72 (22.2)	53.35	2.90	49.40	3.27	45.51	3.70	41.65	4.21	37.80	4.81	33.97	5.51						

*At 75°F (23.9 °C) entering dry bulb—Tennessee Valley Authority (TVA) rating conditions; all others at 80°F (26.7 °C) entering dry bulb. See Legend and Notes.

42 Heating Extended Performance Table -10-60 °F (-23.3-15.6 °C)

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																							
EDB °F (°C)	CFM	-10 (-23.3)			0 (-17.8)			10 (-12.2)			20 (-6.7)			30 (-1.1)			40 (4.4)			50 (10)			60 (15.6)		
		Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens	Capacity MBtuh	Total Sys KW	Sens
65 (18.3)	1175	10.12	9.31	2.30	14.66	13.49	2.50	19.40	17.81	2.66	24.41	22.14	2.80	29.75	26.06	2.94	35.60	31.11	3.11	41.91	41.91	3.32	48.00	48.00	3.56
	1350	10.35	9.52	2.33	14.93	13.74	2.52	19.74	18.12	2.67	24.85	22.53	2.79	30.28	26.53	2.92	36.96	32.09	3.09	42.46	42.46	3.25	48.76	48.76	3.47
	1525	10.56	9.71	2.36	15.19	13.97	2.54	20.05	18.40	2.69	25.21	22.86	2.80	30.72	26.92	2.91	37.37	32.72	3.07	42.93	42.93	3.21	49.39	49.39	3.41
70 (21.1)	1175	9.48	8.72	2.42	13.96	12.84	2.62	18.67	17.13	2.78	23.68	21.48	2.92	28.98	25.39	3.07	34.72	34.72	3.24	41.44	41.44	3.48	47.32	47.32	3.73
	1350	9.71	8.94	2.45	14.25	13.11	2.64	19.04	17.47	2.79	24.12	21.88	2.92	29.51	25.86	3.05	35.45	35.45	3.21	41.94	41.94	3.41	48.04	48.04	3.64
	1525	9.91	9.12	2.48	14.51	13.36	2.66	19.35	17.76	2.81	24.49	22.21	2.93	29.96	26.25	3.04	36.79	36.79	3.21	42.34	42.34	3.37	48.65	48.65	3.57
75 (23.9)	1175	8.70	8.01	2.54	13.17	12.12	2.74	17.88	16.41	2.90	22.89	20.76	3.05	28.17	24.68	3.20	33.86	33.86	3.38	40.88	40.88	3.65	46.68	46.68	3.92
	1350	8.93	8.22	2.57	13.47	12.40	2.76	18.25	16.75	2.91	23.34	21.17	3.05	28.70	25.15	3.18	34.52	34.52	3.35	41.42	41.42	3.57	47.36	47.36	3.81
	1525	9.14	8.41	2.61	13.74	12.64	2.79	18.57	17.04	2.93	23.72	21.51	3.06	29.16	25.55	3.18	35.06	35.06	3.33	41.87	41.87	3.53	47.94	47.94	3.75

PERFORMANCE DATA (CONT)

48 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		CFM	EWB °F (°C)	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	
Total	Sens			Total	Sens		Total	Sens		Total	Sens		Total	Sens		Total	Sens		
1400	57 (13.9)	50.12	50.12	3.10	46.77	46.77	3.47	43.47	43.47	3.90	39.22	39.22	4.36	34.90	34.90	4.88	30.65	30.65	5.48
	62 (16.7)	51.55	44.71	3.10	47.78	41.45	3.48	44.03	38.34	3.91	39.31	39.31	4.36	34.97	34.97	4.88	30.70	30.70	5.48
	63* (17.2)	52.39	36.35	3.11	48.52	33.63	3.48	44.63	30.99	3.91	39.88	28.04	4.37	34.46	24.92	4.87	29.23	21.95	5.45
	67 (19.4)	55.61	37.17	3.13	51.57	34.45	3.51	47.38	31.68	3.94	43.53	29.46	4.42	38.57	26.58	4.97	32.97	23.55	5.53
	72 (22.2)	59.62	29.72	3.15	55.39	27.41	3.53	50.95	25.03	3.97	46.47	22.65	4.46	42.63	20.90	5.01	37.81	18.74	5.62
	57 (13.9)	51.78	51.78	3.16	48.29	48.29	3.54	44.77	44.77	3.97	41.24	41.24	4.46	36.65	36.65	4.99	32.12	32.12	5.57
	62 (16.7)	52.53	47.41	3.16	48.70	43.96	3.54	44.85	44.85	3.97	41.31	41.31	4.46	36.71	36.71	4.99	32.17	32.17	5.58
1600	63* (17.2)	53.23	38.40	3.17	49.26	35.59	3.54	45.25	32.81	3.97	40.90	30.12	4.46	35.28	26.82	4.95	29.90	23.64	5.52
	67 (19.4)	56.41	39.18	3.19	52.28	36.36	3.57	48.00	33.50	4.00	43.94	31.01	4.49	39.39	28.67	5.03	33.68	25.41	5.62
	72 (22.2)	60.37	30.80	3.21	56.05	28.44	3.59	51.53	25.98	4.03	46.91	23.51	4.53	42.97	21.80	5.08	38.26	19.80	5.69
	57 (13.9)	53.08	53.08	3.22	49.47	49.47	3.60	45.76	45.76	4.04	42.48	42.48	4.53	38.09	38.09	5.08	33.40	33.40	5.67
	62 (16.7)	53.36	49.71	3.22	49.54	49.54	3.60	45.79	45.79	4.04	42.53	42.53	4.53	38.15	38.15	5.08	33.45	33.45	5.67
	63* (17.2)	53.86	40.35	3.23	49.82	37.43	3.61	45.70	34.51	4.04	41.62	32.13	4.51	35.97	28.61	5.03	30.48	25.13	5.60
	67 (19.4)	57.01	41.09	3.25	52.81	38.19	3.63	48.44	35.21	4.06	44.19	32.41	4.55	39.90	30.52	5.09	34.30	27.16	5.70
72 (22.2)	60.93	31.81	3.27	56.55	29.40	3.65	51.95	26.88	4.09	47.23	24.35	4.59	43.19	22.58	5.15	38.57	20.77	5.75	

*At 75°F (23.9°C) entering dry bulb—Tennessee Valley Authority (TVA) rating conditions; all others at 80°F (26.7°C) entering dry bulb. See Legend and Notes.

48 Heating Extended Performance Table -10-60°F (-23.3-15.6°C)

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																							
		-10 (-23.3)			0 (-17.8)			10 (-12.2)			20 (-6.7)			30 (-1.1)			40 (4.4)			50 (10)			60 (15.6)		
		EDB CFM	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW	Capacity MBtuh	Total Sys KW					
Total	Integ																				Total	Integ	Total	Integ	Total
65 (18.3)	1400	12.87	11.84	2.61	17.23	15.86	2.76	22.14	20.32	2.90	27.76	25.18	3.07	34.69	30.39	3.25	40.97	40.97	3.40	48.22	48.22	3.59	56.85	56.85	3.82
	1600	13.16	12.11	2.64	17.57	16.17	2.78	22.53	20.68	2.92	28.19	25.57	3.07	35.00	30.66	3.23	41.41	41.41	3.36	48.82	48.82	3.53	57.70	57.70	3.74
	1800	13.42	12.35	2.68	17.87	16.44	2.81	22.86	20.98	2.94	28.58	25.92	3.08	35.31	30.94	3.23	41.80	41.80	3.35	49.33	49.33	3.50	58.41	58.41	3.70
70 (21.1)	1400	12.17	11.19	2.71	16.57	15.24	2.87	21.48	19.71	3.02	27.09	24.56	3.19	34.27	30.03	3.40	40.56	40.56	3.56	47.61	47.61	3.75	56.05	56.05	3.99
	1600	12.45	11.45	2.75	16.90	15.55	2.89	21.85	20.06	3.04	27.53	24.96	3.20	34.66	30.37	3.38	40.97	40.97	3.52	48.20	48.20	3.70	56.84	56.84	3.90
	1800	12.71	11.69	2.79	17.18	15.80	2.92	22.19	20.36	3.06	27.91	25.31	3.21	34.99	30.66	3.38	41.34	41.34	3.50	48.71	48.71	3.67	57.58	57.58	3.87
75 (23.9)	1400	11.44	10.52	2.82	15.86	14.59	2.99	20.79	19.09	3.15	26.39	23.94	3.33	32.89	28.81	3.51	40.10	40.10	3.73	47.02	47.02	3.93	55.27	55.27	4.18
	1600	11.72	10.78	2.86	16.18	14.89	3.01	21.17	19.43	3.17	26.83	24.34	3.33	33.55	29.40	3.50	40.56	40.56	3.69	47.59	47.59	3.87	56.04	56.04	4.09
	1800	11.97	11.01	2.90	16.47	15.16	3.04	21.50	19.73	3.19	27.21	24.68	3.34	34.55	30.27	3.53	40.92	40.92	3.67	48.08	48.08	3.83	56.73	56.73	4.04

PERFORMANCE DATA (CONT)

60 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		CFM	EWB °F (°C)	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	
Total	Sens			Total	Sens		Total	Sens		Total	Sens		Total	Sens					
1750	57 (13.9)	59.01	59.01	3.86	4.36	55.84	55.84	4.95	49.01	49.01	5.63	45.25	45.25	6.42	41.25	41.25	7.30		
	62 (16.7)	60.65	51.45	3.87	4.37	56.94	49.66	4.96	49.10	49.10	5.63	45.32	45.32	6.42	41.31	41.31	7.30		
	63* (17.2)	61.42	41.59	3.88	4.38	57.58	40.01	4.96	49.53	36.63	5.64	45.16	34.80	6.42	40.58	32.86	7.29		
	67 (19.4)	65.91	43.15	3.90	4.41	61.77	41.51	5.00	53.02	38.01	5.68	48.31	36.13	6.46	43.40	34.17	7.34		
	72 (22.2)	71.65	34.81	3.93	4.45	67.13	33.24	5.05	57.59	29.86	5.73	52.50	28.06	6.52	47.21	26.18	7.40		
	57 (13.9)	61.36	61.36	3.95	4.46	57.93	57.93	5.05	50.64	50.64	5.73	46.62	46.62	6.52	42.39	42.39	7.41		
2000	62 (16.7)	62.11	54.99	3.96	4.46	58.19	57.61	5.05	50.70	50.70	5.73	46.68	46.68	6.52	42.45	42.45	7.41		
	63* (17.2)	62.66	44.18	3.96	4.46	58.67	42.54	5.05	50.26	39.04	5.73	45.71	37.12	6.51	41.01	35.05	7.38		
	67 (19.4)	67.23	45.93	3.98	4.49	62.89	44.22	5.09	53.75	40.59	5.77	48.89	38.64	6.55	43.85	36.55	7.43		
	72 (22.2)	73.06	36.47	4.01	4.53	68.34	34.84	5.13	58.41	31.35	5.82	53.15	29.51	6.61	47.69	27.59	7.49		
	57 (13.9)	63.30	63.30	4.04	4.55	59.65	59.65	5.14	51.92	51.92	5.83	47.72	47.72	6.62	43.32	43.32	7.51		
	62 (16.7)	63.38	63.38	4.04	4.55	59.73	59.73	5.14	51.98	51.98	5.83	47.77	47.77	6.62	43.36	43.36	7.51		
2250	63* (17.2)	63.63	46.69	4.04	4.55	59.48	44.99	5.14	50.79	41.33	5.82	46.15	39.28	6.60	41.34	37.04	7.48		
	67 (19.4)	68.23	48.62	4.06	4.58	63.75	46.87	5.17	54.33	43.09	5.86	49.34	41.00	6.64	44.19	38.75	7.52		
	72 (22.2)	74.14	38.06	4.09	4.61	69.26	36.38	5.22	59.02	32.81	5.91	53.61	30.91	6.70	48.02	28.95	7.59		

*At 75°F (23.9 °C) entering dry bulb—Tennessee Valley Authority [TVA] rating conditions; all others at 80°F (26.7 °C) entering dry bulb. See Legend and Notes.

60 Heating Extended Performance Table -10-60°F (-23.3-15.6 °C)

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																							
		-10 (-23.3)			0 (-17.8)			10 (-12.2)			20 (-6.7)			30 (-1.1)			40 (4.4)			50 (10)			60 (15.6)		
		EDB °F (°C)	CFM	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	Capacity MBtuh		Total Sys KW	
Total	Integ			Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		
65 (18.3)	1750	17.66	16.25	3.76	23.16	21.31	3.84	29.24	26.84	3.95	35.94	32.60	4.09	43.49	38.10	4.26	52.28	4.47	60.79	60.79	4.67	70.82	70.82	4.91	
	2000	18.08	16.63	3.82	23.63	21.75	3.89	29.77	27.32	3.99	36.54	33.14	4.11	44.35	38.86	4.26	52.93	4.45	61.57	61.57	4.62	71.85	71.85	4.83	
	2250	18.45	16.97	3.89	24.06	22.13	3.95	30.23	27.75	4.04	37.06	33.61	4.15	45.80	40.13	4.31	53.47	4.45	62.27	62.27	4.60	72.73	72.73	4.79	
70 (21.1)	1750	16.61	15.28	3.89	22.18	20.41	3.98	28.31	25.98	4.10	35.03	31.77	4.25	42.48	37.22	4.43	51.67	4.67	60.02	60.02	4.88	69.83	69.83	5.12	
	2000	17.01	15.65	3.95	22.64	20.84	4.03	28.83	26.46	4.14	35.62	32.31	4.27	43.19	37.84	4.43	52.25	4.64	60.78	60.78	4.82	70.85	70.85	5.04	
	2250	17.37	15.98	4.02	23.05	21.21	4.09	29.29	26.88	4.18	36.14	32.77	4.31	43.80	38.38	4.45	52.80	4.64	61.42	61.42	4.80	71.71	71.71	5.00	
75 (23.9)	1750	15.54	14.30	4.03	21.18	19.49	4.13	27.35	25.10	4.26	34.10	30.93	4.42	41.52	36.38	4.61	50.99	50.99	4.88	59.24	59.24	5.09	68.87	68.87	5.35
	2000	15.92	14.65	4.09	21.62	19.89	4.18	27.86	25.57	4.30	34.68	31.45	4.44	42.20	36.98	4.61	51.63	4.84	59.98	59.98	5.03	69.84	69.84	5.26	
	2250	16.27	14.97	4.16	22.03	20.27	4.24	28.31	25.99	4.34	35.19	31.92	4.47	42.78	37.48	4.63	52.15	4.84	60.64	60.64	5.01	70.69	70.69	5.21	

PERFORMANCE DATA (CONT)

LEGEND

BF — Bypass Factor
 edb — Entering Dry—Bulb
 Ewb — Entering Wet—Bulb
 kW — Total Unit Power Input
 SHC — Sensible Heat Capacity (1000 Btuh)
 TC — Total Capacity (1000 Btuh) (net)
 rh —Relative Humidity

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:

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

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

$$\text{total capacity (Btuh)}$$

$$h_{lwb} = h_{ewb} - 4.5 \times \text{CFM}$$

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

4. The SHC is based on 80° F (26.6° C) edb temperature of air entering evaporator coil. Below 80° F (26.6° C) edb, subtract (corr factor x CFM) from SHC.
 Above 80° F (26.6° C) edb, add (corr factor x CFM) to SHC.
 Correction Factor = $1.10 \times (1 + \text{BF}) \times (\text{edb} - 80)$.

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

Multiplication Factors

HEATER VOLT RATING	VOLTAGE DISTRIBUTION	MULTIPLICATION FACTOR
240	200	0.69
	208	0.75
	230	0.92
	240	1.00

Dry Coil Air Delivery* – Horizontal and Downflow Discharge – Sizes 24–60 208/230VAC

Unit Size	Motor Speed	Wire Color	External Static Pressure (IN. W.C.)																		
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1									
24	Low ¹	CFM	669	580	525	423	303	---	---	---	---	---	---	---	---	---	---	---	---	---	
		BHP	0.09	0.10	0.11	0.11	0.12	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Med–Low ²	CFM	829	752	680	602	549	455	313	---	---	---	---	---	---	---	---	---	---	---	---
		BHP	0.14	0.15	0.15	0.16	0.17	0.17	0.18	---	---	---	---	---	---	---	---	---	---	---	---
	Medium ³	CFM	1014	929	884	818	746	683	600	537	405	305	---	---	---	---	---	---	---	---	---
		BHP	0.24	0.24	0.24	0.25	0.26	0.26	0.27	0.27	0.27	0.29	0.29	---	---	---	---	---	---	---	---
	Med–High	CFM	1041	972	916	850	782	713	631	581	465	340	---	---	---	---	---	---	---	---	---
		BHP	0.25	0.26	0.26	0.26	0.26	0.27	0.28	0.29	0.30	0.31	---	---	---	---	---	---	---	---	---
	High	CFM	1187	1124	1061	996	930	896	840	776	698	610	---	---	---	---	---	---	---	---	---
		BHP	0.36	0.36	0.37	0.37	0.38	0.38	0.39	0.39	0.39	0.40	---	---	---	---	---	---	---	---	---
30	Low ¹	CFM	669	580	525	423	303	---	---	---	---	---	---	---	---	---	---	---	---	---	
		BHP	0.09	0.10	0.11	0.11	0.12	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Med–Low ³	CFM	829	752	680	602	549	455	313	---	---	---	---	---	---	---	---	---	---	---	---
		BHP	0.14	0.15	0.15	0.16	0.17	0.17	0.18	---	---	---	---	---	---	---	---	---	---	---	---
	Medium ²	CFM	1014	929	884	818	746	683	600	537	405	305	---	---	---	---	---	---	---	---	---
		BHP	0.24	0.24	0.24	0.25	0.26	0.26	0.27	0.27	0.27	0.29	0.29	---	---	---	---	---	---	---	---
	Med–High	CFM	1041	972	916	850	782	713	631	581	465	340	---	---	---	---	---	---	---	---	---
		BHP	0.25	0.26	0.26	0.26	0.26	0.27	0.28	0.29	0.30	0.31	---	---	---	---	---	---	---	---	---
	High	CFM	1187	1124	1061	996	930	896	840	776	698	610	---	---	---	---	---	---	---	---	---
		BHP	0.36	0.36	0.37	0.37	0.38	0.38	0.39	0.39	0.39	0.40	---	---	---	---	---	---	---	---	---
36	Med–Low ¹	CFM	1170	1094	1027	955	883	870	810	748	680	591	---	---	---	---	---	---	---	---	
		BHP	0.19	0.20	0.21	0.22	0.23	0.24	0.24	0.24	0.25	0.26	0.26	---	---	---	---	---	---	---	
	Medium ²	CFM	1292	1246	1183	1124	1059	995	924	877	856	819	---	---	---	---	---	---	---	---	---
		BHP	0.25	0.26	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.34	---	---	---	---	---	---	---	---	---
	Med–High	CFM	1311	1225	1199	1145	1081	1015	952	902	885	843	---	---	---	---	---	---	---	---	---
		BHP	0.26	0.27	0.28	0.30	0.31	0.32	0.33	0.33	0.35	0.35	---	---	---	---	---	---	---	---	---
	High	CFM	1602	1535	1469	1404	1333	1260	1246	1192	1191	1131	---	---	---	---	---	---	---	---	---
		BHP	0.46	0.47	0.48	0.50	0.50	0.51	0.52	0.53	0.54	0.55	---	---	---	---	---	---	---	---	---
	Low ³	CFM	1001	902	833	777	717	650	575	527	466	419	---	---	---	---	---	---	---	---	---
		BHP	0.13	0.13	0.14	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.20	---	---	---	---	---	---	---	---
Med–Low ¹	CFM	1016	950	902	842	783	721	655	590	541	480	---	---	---	---	---	---	---	---	---	
	BHP	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	---	---	---	---	---	---	---	---	---	
Medium ²	CFM	1403	1358	1316	1265	1217	1167	1116	1067	1012	956	---	---	---	---	---	---	---	---	---	
	BHP	0.29	0.30	0.31	0.33	0.34	0.35	0.36	0.37	0.38	0.39	---	---	---	---	---	---	---	---	---	
Med–High	CFM	1461	1411	1367	1327	1275	1220	1174	1127	1074	1022	---	---	---	---	---	---	---	---	---	
	BHP	0.32	0.33	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42	---	---	---	---	---	---	---	---	---	
High	CFM	1575	1528	1488	1447	1406	1360	1314	1264	1213	1159	---	---	---	---	---	---	---	---	---	
	BHP	0.40	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.50	---	---	---	---	---	---	---	---	---	

Dry Coil Air Delivery* – Horizontal and Downflow Discharge – Sizes 24–60 208/230VAC (Cont.)

Unit Size	Motor Speed	Wire Color	External Static Pressure (IN. W.C.)									
			0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
48	Low ¹	CFM	1378	1344	1295	1260	1216	1179	1135	1087	1035	995
		BHP	0.26	0.27	0.29	0.31	0.31	0.33	0.34	0.36	0.36	0.38
	Med–Low ²	CFM	1696	1671	1631	1607	1574	1539	1507	1463	1432	1393
		BHP	0.45	0.47	0.49	0.50	0.52	0.52	0.54	0.55	0.57	0.58
	Medium ³	CFM	1994	1968	1943	1910	1882	1835	1774	1702	1614	1512
		BHP	0.72	0.73	0.75	0.76	0.78	0.78	0.76	0.73	0.70	0.66
	Med–High	CFM	2054	2013	1986	1964	1919	1854	1779	1695	1605	1498
		BHP	0.77	0.79	0.80	0.82	0.81	0.80	0.76	0.74	0.69	0.65
	High	CFM	2267	2201	2133	2071	1997	1923	1835	1739	1654	1551
		BHP	1.03	1.00	0.97	0.93	0.89	0.86	0.82	0.78	0.74	0.69
60	Low ³	CFM	1330	1277	1232	1191	1147	1103	1060	1004	963	919
		BHP	0.26	0.27	0.29	0.30	0.31	0.32	0.33	0.34	0.36	0.37
	Med–Low ¹	CFM	1475	1436	1399	1351	1317	1270	1236	1188	1152	1105
		BHP	0.35	0.36	0.37	0.38	0.40	0.41	0.42	0.43	0.45	0.45
	Medium ²	CFM	1736	1710	1668	1630	1600	1557	1522	1479	1450	1406
		BHP	0.53	0.54	0.55	0.58	0.59	0.60	0.62	0.63	0.64	0.65
	Med–High	CFM	1935	1909	1867	1836	1808	1766	1696	1619	1535	1454
		BHP	0.71	0.73	0.74	0.76	0.78	0.79	0.77	0.75	0.72	0.68
	High	CFM	2205	2150	2078	2011	1941	1852	1779	1672	1572	1473
		BHP	1.04	1.02	0.99	0.95	0.92	0.87	0.85	0.79	0.75	0.70

* Air delivery values are without air filter and are for dry coil (See Wet Coil Pressure Drop Table).

¹ Factory–shipped heating speed

² Factory–shipped cooling speed

³ Factory–shipped continuous fan speed

NOTE: Ductwork–supplied air filter pressure drop and wet coil pressure drop to obtain external static pressure available for ducting.

Shaded areas indicate speed/static combinations that are not permitted.

PERFORMANCE DATA (CONT)
Filter Pressure Drop Table (IN. W.C.)

FILTER SIZE IN. (MM)	COOLING TONS	STANDARD CFM (SCFM)																
		600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
600-1400 CFM 12x20x1+12x20x1 (305x508x25+305x508x25)	2.0, 2.5	0.03	0.04	0.05	0.06	0.06	0.07	0.07	0.08	0.08	-	-	-	-	-	-	-	-
1200-1800CFM 16x24x1+14x24x1 (406x610x25+356x610x25)	3.0, 3.5, 4.0	-	-	-	-	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.12	-	-	-
1500-2200CFM 16x24x1+18x24x1 (406x610x25+457x610x25)	5.0	-	-	-	-	-	-	-	-	-	0.04	0.06	0.08	0.10	0.11	0.13	0.14	0.15

Wet Coil Pressure Drop (IN. W.C.)

UNIT SIZE	STANDARD CFM (SCFM)																	
	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	
24	0.03	0.04	0.04	0.05	0.06													
30				0.05	0.06	0.07	0.08	0.11										
36			0.06	0.06	0.06	0.09	0.10	0.11	0.14									
42				0.06	0.05	0.05	0.06	0.07	0.08	0.08	0.09	0.09	0.11					
48					0.04	0.04	0.06	0.06	0.09	0.10	0.10	0.11	0.12	0.13	0.14			
60								0.06	0.06	0.07	0.07	0.08	0.09	0.09	0.10	0.12	0.13	0.13

Economizer with 1-in. Filter Pressure Drop (IN. W.C.)

FILTER SIZE IN. (MM)	COOLING TONS	STANDARD CFM (SCFM)																
		600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
600-1400 CFM 12x20x1+12x20x1 (305x508x25+305x508x25)	2.0, 2.5	-	-	0.08	0.09	0.10	0.10	0.11	0.11	0.13	0.14	-	-	-	-	-	-	-
1200-1800CFM 16x24x1+14x24x1 (406x610x25+356x610x25)	3.0, 3.5, 4.0	-	-	-	-	-	-	0.09	0.09	0.10	0.12	0.13	0.15	0.17	0.19	0.21	-	-
1500-2200CFM 16x24x1+18x24x1 (406x610x25+457x610x25)	5.0	-	-	-	-	-	-	-	-	-	-	0.15	0.17	0.18	0.20	0.21	0.22	0.23

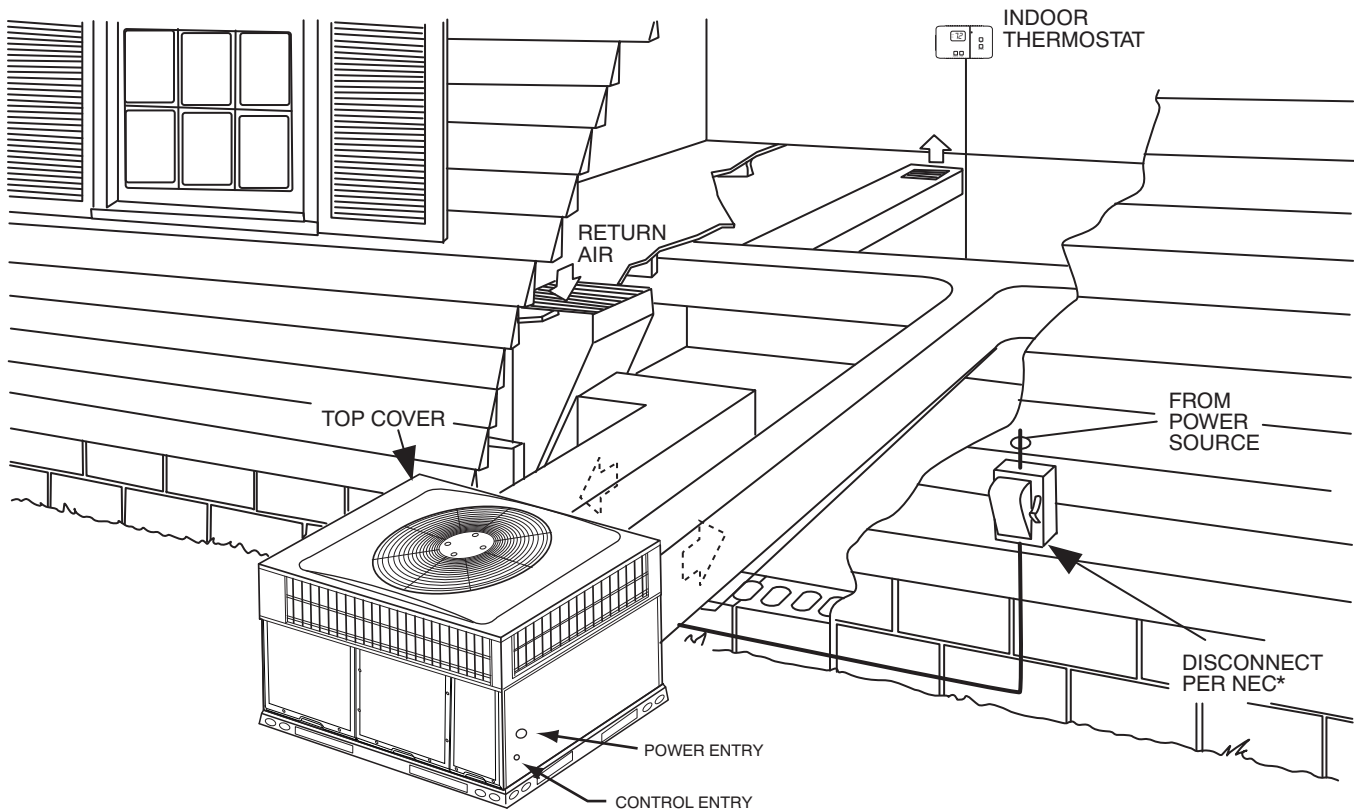
**Electric Heat Pressure Drop Table (IN. W.C.)
Small Cabinet: 24-30**

STATIC	STANDARD CFM (SCFM)																	
	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200
5kw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07	0.07
7.5 kw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.03	0.03	0.05	0.05	0.07	0.08	0.08	0.09
10 kw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.04	0.06	0.06	0.07	0.09	0.10	0.10	0.11	0.11
15 kw	0.00	0.00	0.00	0.02	0.02	0.04	0.04	0.06	0.08	0.08	0.10	0.10	0.12	0.14	0.14	0.16	0.16	0.18
20 kw	0.00	0.00	0.02	0.04	0.06	0.06	0.08	0.08	0.09	0.09	0.11	0.11	0.13	0.15	0.15	0.17	0.17	0.19

**Electric Heat Pressure Drop Table (IN. W.C.)
Large Cabinet 36-60**

STATIC	STANDARD CFM (SCFM)														
	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	2400	2500
5kw	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12
7.5 kw	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
10 kw	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13
15 kw	0.00	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15
20 kw	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16

TYPICAL PIPING AND WIRING



*NEC - National Electrical Code

APPLICATION DATA

Condensate trap — A 2-in. (51 mm) condensate trap must be field supplied.

Ductwork — Secure downflow discharge ductwork to roof curb. For horizontal discharge applications, attach ductwork to unit with flanges.

To convert a unit to downflow discharge — Units are equipped with factory-installed inserts in the downflow openings. Removal of the inserts is similar to removing an electrical knock-out. Units installed in horizontal discharge orientation do not require duct covers.

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

Minimum cooling airflow — Minimum cooling airflow is 350 CFM per ton in cooling mode. Airflow can be lower in certain modes when humidity removal is an issue however, low airflow could result in indoor coil freezing and/or refrigerant floodback.

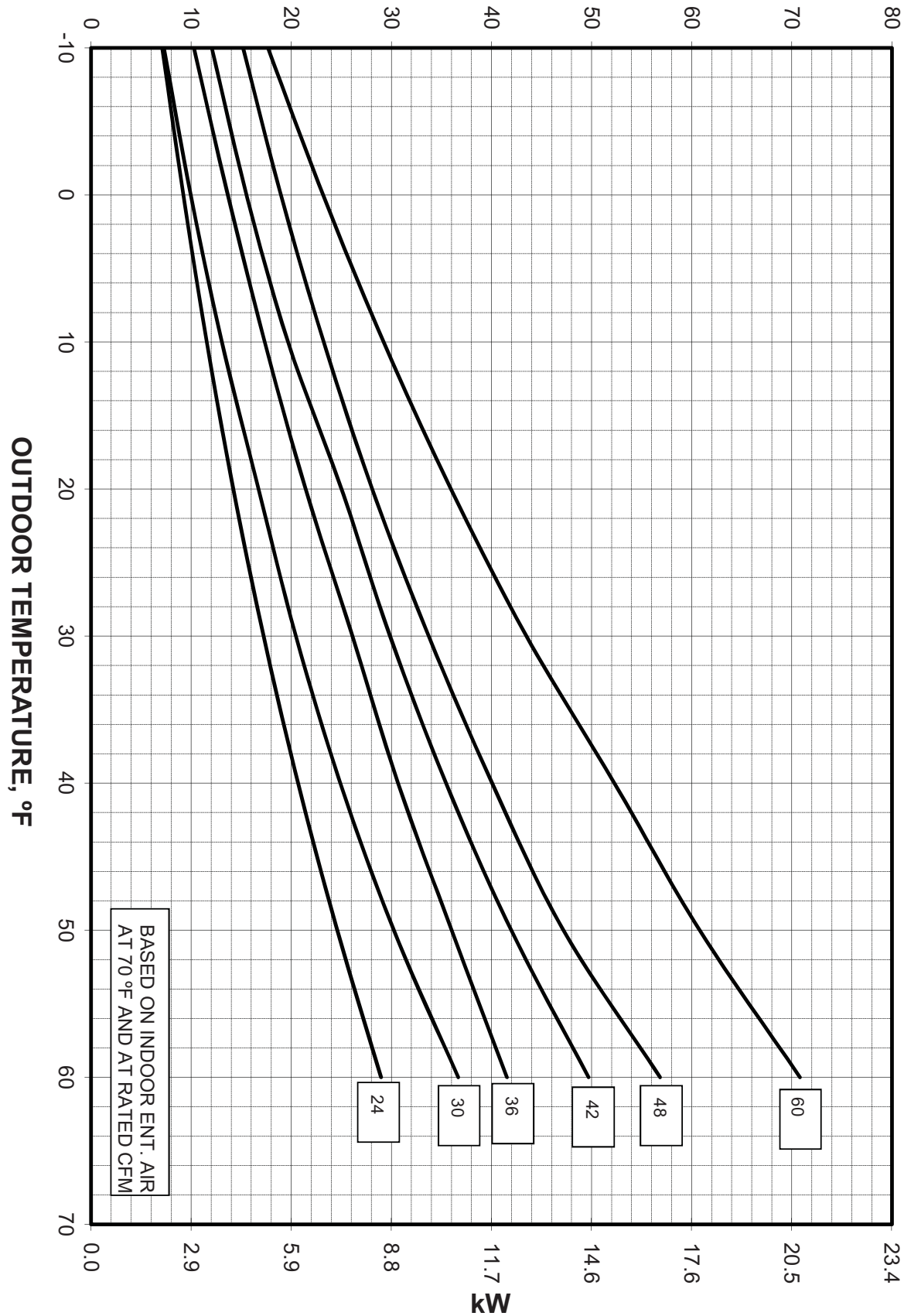
Minimum ambient cooling operation temperature — All standard units have a minimum ambient cooling operating temperature of 40°F (4.4°C). With accessory low ambient temperature kit, units can operate at temperatures down to 0°F (17.8°C).

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

A09240

BALANCE POINT WORKSHEET

BUILDING HEAT LOSS, UNIT INTEGRATED HEATING CAPACITY, MBTUH



BALANCE POINT WORKSHEET

ELECTRICAL DATA

MODEL	NOMINAL V-PH-HZ	VOLTAGE RANGE		COMPRES- SOR		OFM	IFM	NOMINAL ELECTRIC HEAT	POWER SUPPLY			
		MIN	MAX	RLA	LRA	FLA	FLA	KW	FLA	MCA	MOCP	
24	208/230-1-60	197	253	13.5	58.3	0.6	3.8	-/-	-/-	21.3	30	
								3.8/5	18.1/20.8	43.9/47.3	45/50	
								5.4/7.2	25.9/30	53.7/58.8	60/60	
								7.5/10	36.1/41.7	66.4/73.4	70/80	
30	208/230-1-60	197	253	14.1	73	0.7	3.8	-/-	-/-	22.1	35	
								3.8/5	18.1/20.8	44.8/48.1	45/50	
								5.4/7.2	25.9/30	54.5/59.6	60/60	
								7.5/10	36.1/41.7	67.3/74.3	70/80	
36	208/230-1-60	197	253	16.7	79	1	3.8	-/-	-/-	25.8	40	
								3.8/5	18.1/20.8	48.4/51.7	50/60	
								5.4/7.2	25.9/30	58.1/63.2	60/70	
								7.5/10	36.1/41.7	70.9/77.9	80/80	
42	208/230-1-60	197	253	19.3	112	1	3.8	-/-	-/-	29	45	
								3.8/5	18.1/20.8	51.6/55	60/60	
								5.4/7.2	25.9/30	61.4/66.5	70/70	
								7.5/10	36.1/41.7	74.1/81.1	80/90	
48	208/230-1-60	197	253	19.6	130	1.1	7.6	11.3/15	54.2/62.5	96.7/107.1	100/110	
								15/20	72.2/83.3	119.2/133.1	125/150	
								-/-	-/-	33.2	50	
								3.8/5	18.1/20.8	55.8/59.2	60/60	
60	208/230-1-60	197	253	24.4	144.2	1.3	7.7	5.4/7.2	25.9/30	65.5/70.7	70/80	
								7.5/10	36.1/41.7	78.3/85.3	80/90	
								11.3/15	54.2/62.5	100.9/111.3	110/125	
								15/20	72.2/83.3	123.4/137.3	125/150	

See Legend and Notes.

LEGEND

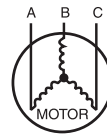
- FLA - Full Load Amps
- IFM - Indoor Fan Motor
- LRA - Locked Rotor Amps
- MCA - Minimum Circuit Amps
- MOCP - Maximum Over Current Protection
- OFM - Outdoor Fan Motor
- RLA - Rated Load Amps

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 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

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

EXAMPLE: Supply voltage is 230-3-60.



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

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

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

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{2}{229} \\ &= 0.8\% \end{aligned}$$

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.

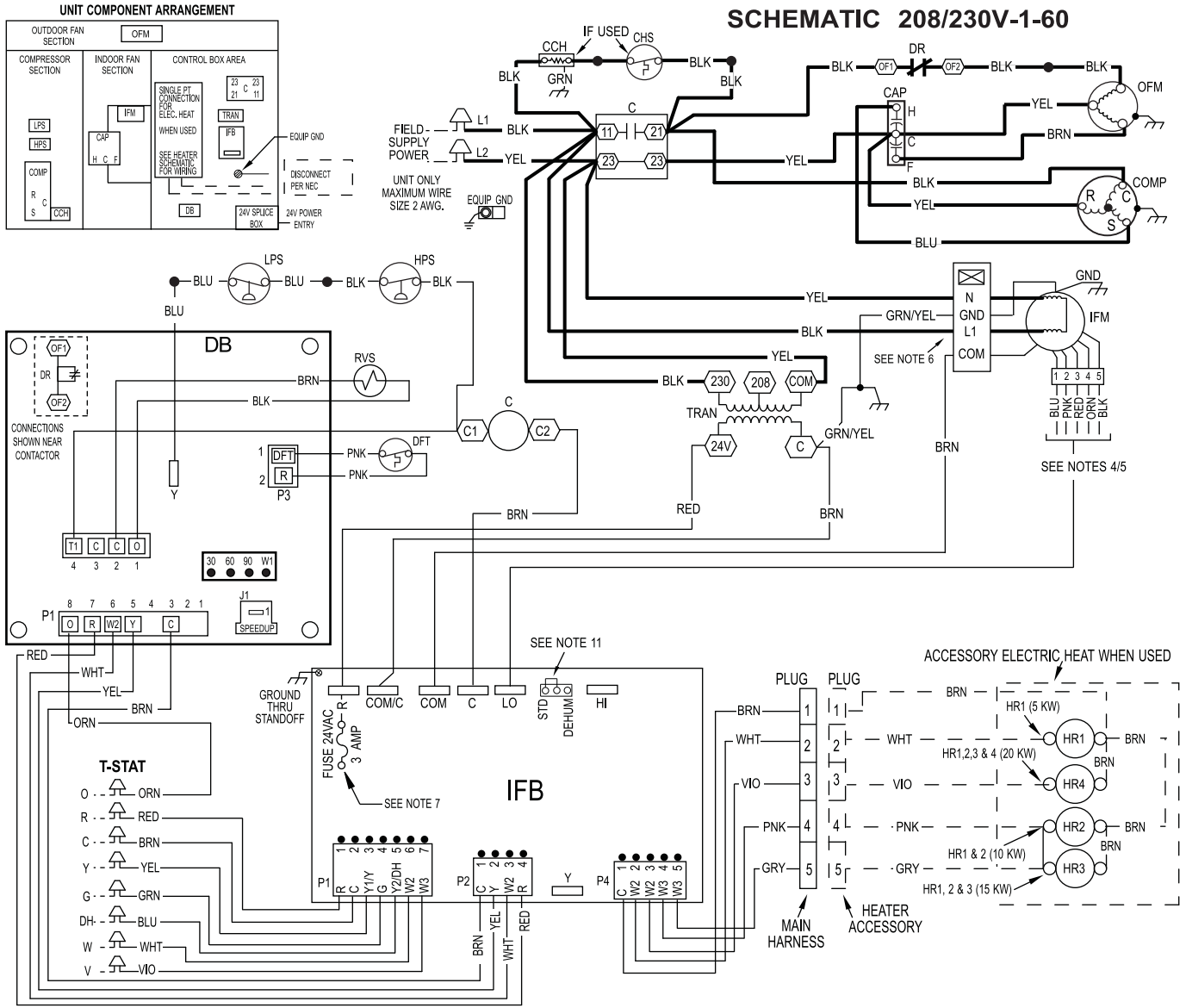
A09604

TYPICAL CONNECTION WIRING SCHEMATIC – 208/230-1-60

CONNECTION WIRING DIAGRAM

DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING

SCHEMATIC 208/230V-1-60



NOTES:

- IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED IT MUST BE REPLACED WITH THE SAME OR ITS EQUIVALENT.
- SEE PRE SALE LITERATURE FOR THERMOSTATS.
- USE 75 DEGREE C COPPER CONDUCTORS FOR FIELD INSTALLATION.
- REFER TO INSTALLATION INSTRUCTIONS FOR CORRECT SPEED SELECTION FOR IFM.
- 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".
- THIS FUSE IS MANUFACTURED BY LITTLE FUSE, P/N 287003.
- N.E.C. CLASS 2, 24V.
- UNIT FACTORY - SHIPPED IN STD MODE.
- CCH NOT USED ON ALL UNITS.
- DEHUM FEATURE CANNOT BE USED WHEN ECONOMIZER IS INSTALLED. UNIT FACTORY - SHIPPED IN STD MODE.

LEGEND

	FIELD SPLICE		C	CONTACTOR		IFM	INDOOR FAN MOTOR
	TERMINAL (MARKED)		CAP	CAPACITOR		LPS	LOW PRESSURE SWITCH
	TERMINAL (UNMARKED)		CCH	CRANKCASE HEATER		OFM	OUTDOOR FAN MOTOR
	SPLICE		COMP	COMPRESSOR MOTOR		RVS	REVERSING VALVE
	SPLICE (MARKED)		CTD	COMPRESSOR TIME DELAY		TRAN	TRANSFORMER
	FACTORY LO VOLTAGE		DH	DEHUM		T-STAT	THERMOSTAT
	FACTORY HI VOLTAGE		DB	DEFROST BOARD			
			DFT	DEFROST TEMPERATURE SWITCH			
			---	FIELD CONTROL WIRING			
			---	FIELD POWER WIRING			
			---	ACCESSORY OR OPTIONAL WIRING			
			GND	GROUND			
			HPS	HIGH PRESSURE SWITCH			
			HR	HEATER RELAY			
			IFB	INDOOR FAN BOARD			

TYPICAL LADDER WIRING SCHEMATIC – 208/230–1–60

LADDER WIRING DIAGRAM

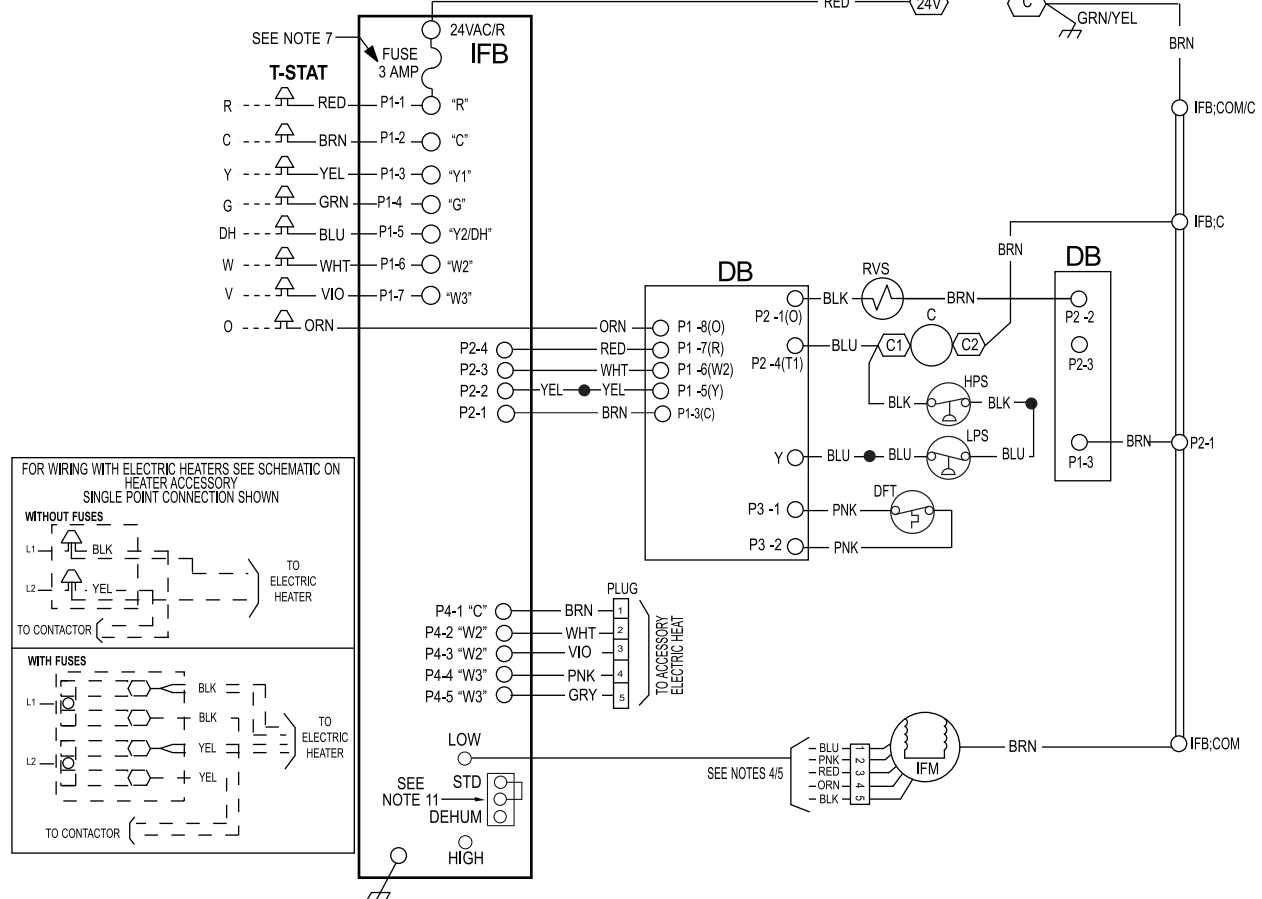
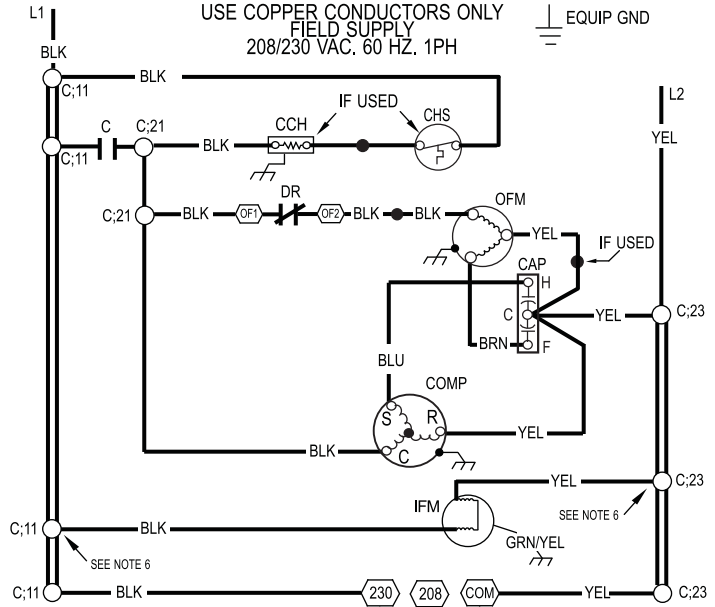
DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING

DEFROST TIMING SELECTION

FIELD SELECTABLE OPTIONS FOR TIME PERIOD BETWEEN DEFROST CYCLES (MINUTES)
FACTORY DEFROST SETTING IS 60 MIN.

SPEED UP JUMPERED TEST PINS (USE METAL OBJECT) FIELD SPEED-UP CYCLE

1. DFT MUST BE CLOSED TO INITIATE DEFROST CYCLE. IF NECESSARY, REMOVE DFT CONNECTION BEFORE PLACING JUMPER ACROSS DFT PINS.
2. AT THE SAME TIME DFT CLOSED, JUMPER "SPEED UP" PINS WITH SMALL SCREW DRIVER UNTIL DEFROST IS INITIATED. THEN REMOVE SCREW DRIVER.
3. SHORTED "SPEED UP" PINS WILL SPEED UP TIMER BY A FACTOR OF 256.



50VT500481 REV. -



50VT500481 REV. -

A150519

CONTROLS

Operating sequence

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

On units with crankcase heater, heater is also energized.

Cooling — With the thermostat in the cooling position, the thermostat makes circuit R–O. This energizes the reversing valve solenoid (RVS) and places the unit in standby condition for cooling.

As the space temperature rises, the thermostat closes circuit R–Y. A circuit is made to contactor (C), starting the compressor (COMP) and outdoor–fan motor (OFM). Circuit R–G is made at the same time and starts the indoor–fan motor (IFM).

When the thermostat is satisfied, contacts open, deenergizing C. The COMP and OFM stop, and the IFM stops after the preselected time delay.

Heating — On a call for heat, thermostat makes circuits R–Y and R–G.

A circuit is made to C, starting COMP and OFM. Circuit R–G also is completed, energizing IFR and starting IFM after the selected time delay.

Should room temperature continue to fall, circuit R–W is made through second–stage thermostat. If optional electric heat package is used, a relay is energized, bringing on first bank of supplemental electric heat. When thermostat is satisfied, contacts open, deenergizing contactor and relay; motors and heaters deenergize.

Defrost — Defrost board (DB) is a time and temperature control, which includes a field–selectable time period (dip switch 1 and 2 on the board) between checks for defrost (30, 60, 90, or 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.

NOTE:

1. Compressor time delay occurs through the defrost control board.
2. Defrost control board has built in 5 minute compressor delay; once the compressor has started and then stopped, it cannot be restarted again until 5 minutes have elapsed.

GUIDE SPECIFICATIONS

Packaged Heat Pump System

HVAC Guide Specifications

Size Range: 2 to 5 Tons, Nominal Cooling

Part 1—General

SYSTEM DESCRIPTION

Outdoor, packaged, air–to–air heat pump unit utilizing a hermetic scroll compressor for cooling duty and optional electric heating. Unit shall discharge supply air vertically or horizontally as shown on contract drawings. Outdoor fan/coil section shall have a draw–thru design with vertical discharge for minimum sound levels.

QUALITY ASSURANCE

- A. Unit shall be rated in accordance with AHRI Standards 210/240 and 270.
- B. Unit shall be designed in accordance with UL Standard 1995.
- C. Unit shall be manufactured in a facility registered to ISO 9001 manufacturing quality standard.

D. Unit shall be UL listed and c–UL certified as a total package for safety requirements.

E. Roof curb shall be designed to conform to NRCA Standards.

F. Insulation and adhesives shall meet NFPA 90A requirements for flame spread and smoke generation.

G. Cabinet insulation shall meet ASHRAE Standard 62P.

DELIVERY, STORAGE AND HANDLING

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

Part 2 — Products

EQUIPMENT

A. General:

Factory–assembled, single–piece, heat pump unit. Contained within the enclosure shall be all factory wiring, piping, controls, refrigerant charge (R–410A), and special features required prior to field start–up.

B. Unit Cabinet:

1. Unit cabinet shall be constructed of phosphated, zinc–coated, pre–painted steel capable of withstanding 500 hours of salt spray.
2. Normal service shall be through 3 removable cabinet panels.
3. The unit shall be constructed on a rust proof unit base that has an externally trapped, integrated sloped drain.
4. Indoor fan compartment top surface shall be insulated with a minimum 1/2–in. (13 mm) thick, flexible fiberglass insulation, coated on the air side and retained by adhesive and mechanical means. The indoor wall sections will be insulated with a minimum semi–rigid, foil–faced board capable of being wiped clean. Aluminum foil–faced fiberglass insulation shall be used in the entire indoor air cavity section.
5. Unit shall have a field–supplied condensate trap.
6. Metal Insulated Duct Covers for side discharge will be standard on all sizes.
7. Unit insulation conforms to ASHRAE 62P.

C. Fans:

1. The indoor fan shall be 5–speed, direct–drive, as shown on equipment drawings.
2. Fan wheel shall be made from steel and shall be double–inlet type with forward–curved blades with corrosion resistant finish. Fan wheel shall be dynamically balanced.
3. Outdoor fan shall be direct–drive, propeller–type with aluminum blades riveted to corrosion resistant steel spiders, be dynamically balanced, and discharge air vertically.

D. Compressor:

1. Fully hermetic compressors with factory–installed vibration isolation.
2. Scroll compressors shall be standard on all units.

E. Coils:

Indoor and outdoor coils shall have aluminum plate fins mechanically bonded to seamless copper tubes with all joints brazed. Tube sheet openings shall be belled to prevent tube wear.

F. Refrigerant Metering Device:

Refrigerant metering device shall be thermostatic expansion valve or fixed orifice for cooling, and fixed orifice for heating.

G. Filters:

Filter section shall consist of field–installed, throwaway, 1–in. (25 mm) – thick fiberglass filters of commercially available sizes.

H. Controls and Safeties:

1. Unit controls shall be complete with a self-contained, low-voltage control circuit.
2. Units shall incorporate an internal compressor protector that provides reset capability.

I. Operating Characteristics:

1. Unit shall be capable of starting and running at 125°F (51.7°C) ambient outdoor temperature.
2. Compressor with standard controls shall be capable of operation down to 40°F (4.4°C) ambient outdoor temperature in cooling mode.
3. Unit shall be provided with 90-second fan time delay after the thermostat is satisfied.

J. Electrical Requirements:

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

K. 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. Condenser fan motor shall be totally enclosed.
4. Evaporator fan motor to be ECM Motor.

L. Special Features Available:

1. Compressor Start Kit (single phase units only):
Shall provide additional starting torque for single-phase compressors.
2. Thermostat:
To provide for two-stage heating and one-stage cooling in addition manual or automatic changeover and indoor fan control.
3. Crankcase Heater:
Shall provide anti-floodback protection for lowload cooling applications.
4. Economizer:
(Horizontal – Field installed accessory)
(Vertical – Field installed accessory)
 - a. Economizer controls capable of providing free cooling using outside air.
 - b. Equipped with low leakage dampers not to exceed 3% leakage, at 1.0 IN. W.C. pressure differential.
 - c. Spring return motor shuts off outdoor damper on power failure.

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. Filter Rack Kit:

Shall provide filter mounting for downflow applications. Offered as a field installed accessory.

7. Flat Roof Curb:

Curbs shall have seal strip and a wood nailer for flashing and shall be installed per manufacturer's instructions.

8. 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 (-17.7°C) outdoor ambient temperature.

9. Manual Outdoor Air Damper:

Package shall consist of damper, birdscreen, and rainhood which can be preset to admit outdoor air for year-round ventilation.

10. Square-To-Round Duct Transitions (24-48 size):

Shall have the ability to convert the supply and return openings from rectangular to round.

11. Dual Point Electric Heaters:

Allows you to power the electric heater and unit contactor separately by having two individual field power supply circuits connected respectively.

WPH4 ACCESSORIES				
Accessory Model Number	Description			Use With
CURBS				
CPRFCURB011A00	Roof Curb, 14" High			24 – 60
CPRFCURB013A00	Roof Curb, 14" High			36 – 60
Note: CPRFCURB011A00 can be used with 42–60 size units with some overhang.				
ADAPTER CURBS*				
CPADCURB001A00	Adapter curb for use with NPRFCURB006A00 & NPRFCURB007A00			24 – 30
CPADCURB002A00	Adapter curb for use with NPRFCURB008A00 & NPRFCURB009A00			36 – 60
* Can also be used when replacing other manufacturer's older generation units that contain a composite base without a metal base rail.				
CONCENTRIC ADAPTERS – (Use with curb only)				
NPCONADP001A00	For 18" round duct (use with curb CPRFCURB011A00)			Small Curb
NPCONADP002A00	For 18" round duct (use with curb CPRFCURB013A00)			Large Curb
ECONOMIZERS				
CPECOMZR007B00	Dedicated Vertical Economizer – Internal with solid state controller, gear driven, fully modulating damper, spring return actuator, up to 50% barometric relief, supply and dry bulb outdoor air sensors. Includes filter rack with 1" filters*.			24 – 30
CPECOMZR008A00				36 – 42
CPECOMZR009A00				48 – 60
CPECOMZR010A00	Dedicated Horizontal Economizer – Internal with solid state controller, fully modulating damper, spring return actuator, supply and dry bulb outdoor air sensor, and low ambient compressor lockout switch included. Includes filter rack with 1–inch filters*.			24 – 30
CPECOMZR011A00				36 – 42
CPECOMZR012A00				48 – 60
CPRLYKIT001A00	Economizer Relay for Heat Pumps			36 – 60
AXB078ENT	Outdoor Enthalpy Control			ALL
* Outdoor enthalpy available as field installed accessory; Filter rack and 1" filter, same as CPFILTRK kit				
DAMPERS				
CPMANDPR007A00	Manual Outside Air Damper (Includes filter rack and 1" filter, same as CPFILTRK kit)			24 – 30
CPMANDPR008A00				36 – 42
CPMANDPR009A00				48 – 60
INTERNAL FILTER RACKS				
CPFILTRK007A00	Internal Filter Rack (includes 1–inch filters)			24 – 30
CPFILTRK008A00				36 – 42
CPFILTRK009A00				48 – 60
CRANKCASE HEATERS				
NPCRKHTR008A00	240V Crankcase Heater (included on all other sizes)			36
LOW AMBIENT, ANTI-CYCLE TIMER, COMPRESSOR START ASSIST				
CPLOWAMB001A00	Low Ambient Control – enables cooling system to operate down to 0 Deg. F by cycling condenser fan on and off.			ALL
NRTIMEGD001A00	Five Minute Compressor Delay			ALL
CPHSTART002A00	PTC Compressor Start Assist Kit (All single phase)			ALL
HAIL GUARDS / COIL PROTECTION				
NAPA00901GR	3/8" spacing dense wire grilles			24
NAPA01401GR	3/8" spacing dense wire grilles			30
NAPA01001GR	3/8" spacing dense wire grilles			36, 60
NAPA01301GR	3/8" spacing dense wire grilles			42, 48
DUCT TRANSITIONS				
NPDUCFLG002A00	Square to Round (1 set of 2, use with horizontal duct flanges only)			24 – 48
ELECTRIC HEATERS				
PART NO.	Voltage / Nominal Capacity kW / Fuses			
	NOMINAL CAPACITY (kW)	FUSED	STAGES	USED WITH
208/230V – 1 PHASE – 60 HZ				
CPHEATER052A0*	3.8 / 5.0	NO	1	24 – 36
CPHEATER064A0*	3.8 / 5.0	YES	1	ALL
CPHEATER070A0*	5.4 / 7.2	YES	1	ALL
CPHEATER050A0*	7.5 / 10.0	YES	1	ALL
CPHEATER066A0*	11.3 / 15.0	YES	2	30 – 60
CPHEATER054A0*	15.0 / 20.0	YES	2	42 – 60

* Denotes digit can be 0, 1, or 2

NOTE: If installing an accessory heater, the thermostat must have capability to energize "G" (fan) on a call for "W" (electric heat). TSTAT0406 and TSTAT0408 contain this feature.