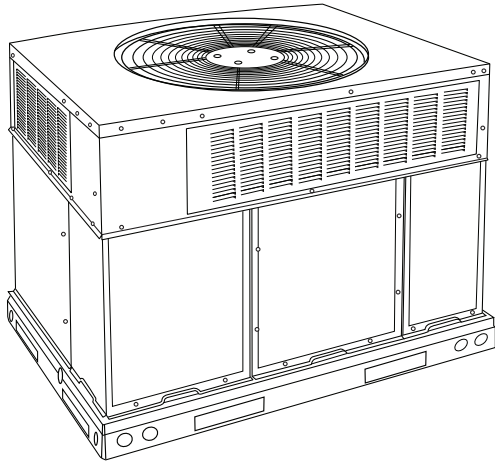


**50VT-A
Performance™ Single-Packaged Heat Pump Units with Puron®
(R-410A) Refrigerant
Single And Three Phase
2 to 5 Nominal Tons (Sizes 24-60)**



Turn to the Experts.™

Product Data



A09042

Fig. 1 - Unit 50VT-A

Single-Packaged Products with Energy-Saving Features and Puron® refrigerant.

- Up to 14.5 SEER
- 8.0 HSPF
- 12 EER at 95°F (35°C) OD
- Factory-Installed TXV
- Multi-Speed High Efficiency Brushless DC Blower-Standard

FEATURES/BENEFITS

One-piece Heat Pump unit with optional electric heater, low installation cost, dependable performance and easy maintenance.

Efficient operation High-efficiency design with SEERs (Seasonal Energy Efficiency Ratio) of up to 14.5.

Puron Environmentally Sound Refrigerant is Carrier's unique refrigerant designed to help protect the environment. Puron is an HFC refrigerant which does not contain chlorine that can harm the ozone layer. Puron refrigerant is in service in millions of systems, proving highly reliable, environmentally sound performance.

Easy Installation

Factory-assembled package is a compact, fully self-contained, heat pump unit that is prewired, pre-piped, and pre-charged for minimum installation expense. These units are available in a variety of standard capacity ranges with voltage options to meet residential and light commercial requirements. Units are lightweight and install easily on a rooftop or at ground level. The high tech composite base eliminates rust problems associated with ground level applications.

Durable, dependable components Compressors are designed for high efficiency. Each compressor is hermetically sealed against contamination to help promote longer life and dependable operation. Each compressor also has vibration isolation to provide quieter operation. All compressors have internal high pressure and overcurrent protection.

Direct-drive multi-speed brushless DC blower motor is standard on all 50VT-A models. Direct-drive, PSC (Permanent Split Capacitor) condenser-fan motors are designed to help reduce

energy consumption and provide for cooling operation down to 40°F (4.4°C) outdoor temperature. Motormaster® II low ambient kit is available as a field installed accessory.

Innovative Unit Base Design

On the inside a high-tech composite material will not rust and incorporates a sloped drain pan which improves drainage and helps inhibit mold, algae and bacterial growth. On the outside metal base rails provide added stability as well as easier handling and rigging.

Thermostat Controls designed to work as a system with Carrier's small packaged product.

Thermostatic Expansion Valve - A hard shutoff, balance port TXV maintains a constant superheat at the evaporator exit (cooling cycle) resulting in higher overall system efficiency.

Refrigerant system is designed to provide dependability. Liquid filter driers are used to promote clean, unrestricted operation. Each unit leaves the factory with a full refrigerant charge. Refrigerant service connections make checking operating pressures easier.

High and Low Pressure Switches provide added reliability for the compressor.

Indoor and Outdoor coils are computer-designed for optimum heat transfer and efficiency. The indoor coil is fabricated from copper tube and aluminum fins and is located inside the unit for protection against damage. The outdoor coil is internally mounted on the top tier of the unit.

Low sound ratings ensure a quiet indoor and outdoor environment with sound ratings as low as 72dBA.

Easy to service cabinets provide easy 3 panel accessibility to serviceable components during maintenance and installation. The base with integrated drain pan provides easy ground level installation with mounting pad. A nesting feature ensures a positive basepan to roof curb seal when the unit is roof mounted. A convenient 3/4-in. wide perimeter flange makes frame mounting on a rooftop easy.

Convertible duct configuration

Unit is designed for use in either downflow or horizontal applications. Each unit is converted from horizontal to downflow with the two standard duct covers. Downflow operation is easily provided in the field to allow vertical ductwork connections. The basepan utilizes seals on the bottom openings to ensure a positive seal in the vertical airflow mode.

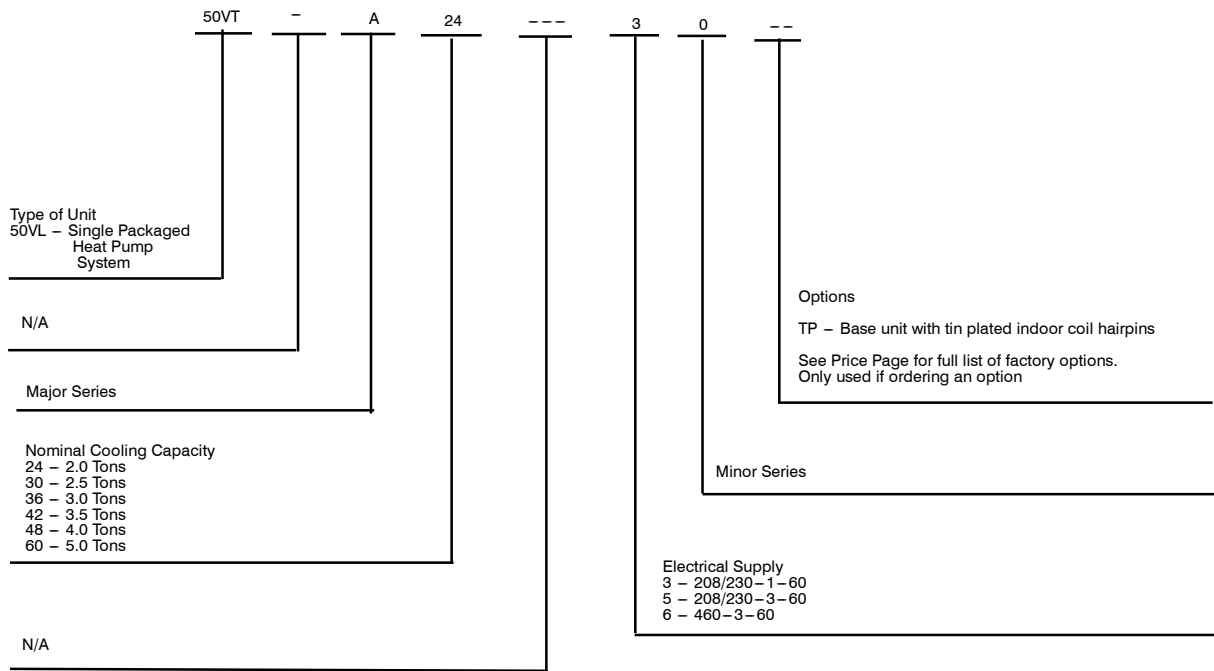
Cabinets are constructed of heavyduty, phosphated, zinc-coated prepainted steel capable of withstanding 500 hours in salt spray. Interior surfaces of the evaporator and electric heater compartments are insulated with cleanable semi-rigid insulation board, which keeps the conditioned air from being affected by the outdoor ambient temperature and provides improved indoor air quality. (Conforms to American Society of Heating, Refrigeration and Air Conditioning Engineers No. 62P.) The sloped drain pan minimizes standing water in the drain. An external drain is provided.

Short-Cycling protection for the compressor is incorporated into our defrost control board ensuring a five minute delay (+/-2 minutes) before restarting compressor after shutdown for any reason.

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MODEL NUMBER NOMENCLATURE



As an Energy Star Partner, the company has determined that this product meets the Energy Star guidelines for energy efficiency.

ARI* CAPACITIES

COOLING CAPACITIES AND EFFICIENCIES

50VT-A	NOMINAL TONS	STANDARD CFM	COOLING CAPACITY	EER	SEER
24---301	2	800	23000	12.0	14.5
30---301/501	2.5	1000	29000	12.0	14.5
36---301/501/601	3	1200	36000	12.0	14.5
42---301/501/601	3.5	1400	41000	12.0	14.5
48---301/501/601	4	1600	46000	12.0	14.5
60---301/501/601	5	1750	59000	12.0	14.2

HEAT PUMP HEATING CAPACITIES AND EFFICIENCIES

50VT-A	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---301	23600	3.4	12500	2.2	8.0
30---301/501	29000	3.5	15500	2.2	8.0
36---301/501/601	34800	3.5	18700	2.2	8.0
42---301/501/601	40500	3.5	22600	2.3	8.0
48---301/501/601	45500	3.3	23800	2.3	8.0
60---301/501/601	60000	3.5	33600	2.3	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 & 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 ARI 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.

50VT--A

PHYSICAL DATA - UNIT 50VT

UNIT SIZE	50VT - A24	50VT - A30	50VT - A36	50VT - A42	50VT - A48	50VT - A60
NOMINAL CAPACITY (ton)	2	2.5	3	3.5	4	5
SHIPPING WEIGHT† (lb)	336	346	408	449	469	499
(kg)	152	157	185	204	213	226
COMPRESSOR QUANTITY	1					
TYPE	SCROLL COMPRESSOR					
REFRIGERANT	R-410A					
Refrigerant (R-410A) Quantity (lb)	9.5	12.0	9.0	14.0	17.0	16.0
Quantity (kg)	4.3	5.5	4.1	6.4	7.7	7.3
METERING DEVICE ID	TXV					
ORIFICE OD (in.)	0.032 (2)	0.038 (2)	0.040 (2)	0.038 (Left OD Coil)	0.040 (2)	0.049 (2)
(mm)	.81	.97	1.02	0.040 (Right OD Coil)	1.02	1.24
				.97/102		
OUTDOOR COIL						
Rows... Fins/in.	2...21	2...21	2...21	2...21	2...21	2...21
face area (sq. ft.)	13.6	15.4	13.6	19.4	19.4	23.3
OUTDOOR FAN						
Nominal Airflow	2500	2600	3000	3500	3500	3800
Diameter Motor HP (RPM)	1/8 (825)	1/8 (825)	1/4 (1100)	1/8 (825)	1/4 (1100)	1/3 (1100)
INDOOR COIL						
Rows... Fins/in.	3...17	3...17	3...17	3...17	3...17	4...17
face area (sq. ft.)	3.7	3.7	4.7	4.7	5.7	5.7
INDOOR BLOWER						
Nominal Cooling Airflow (CFM)	800	1000	1200	1400	1600	1750
Size (in.)	10x10	10x10	11x10	11x10	11x10	11x10
(mm)	254x254	254x254	279x254	279x254	279x254	279x254
Motor (HP)	1/2	1/2	3/4	3/4	1.0	1.0
HIGH-PRESSURE SWITCH (psig)	650±15					
Cutout	420±25					
Reset (Auto)						
LOSS-OF-CHARGE/LOW-PRESSURE SWITCH	20±5					
(Liquid Line) (psig)	45±10					
Cutout	20±5					
Reset (Auto)	45±10					
RETURN-AIR FILTERS*†	24x30x1					
throwaway (in.)	20x20x1	20x24x1	24x30x1		24x36x1	
(mm)	508x508x25	508x610x25	610x762x25		610x914x25	

*Required filter sizes shown are based on the larger of the ARI (Air conditioning and Refrigeration Institute) rated cooling airflow or the heating airflow velocity of 300 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.

‡ For 460 volt units, add 14 lb (6.4 kg) to the weight.

A-WEIGHTED SOUND POWER LEVEL (dBA)

MODEL 50VT - A	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dBA) (without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24---301	74	67.0	65.5	68.5	68.0	63.5	59.5	53.5
30---301/501	72	61.5	62.5	66.0	66.0	63.0	57.5	50.5
36---301/501/601	78	62.0	69.0	72.5	73.0	70.5	67.5	62.0
42---301/501/601	75	62.5	62.5	68.5	70.0	67.0	62.0	58.5
48---301/501/601	78	70.5	69.5	71.0	72.5	69.5	66.0	59.5
60---301/501/601	79	69.0	69.0	71.5	74.0	72.0	67.5	59.5

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

50VT -A

OPTIONS AND ACCESSORIES

ITEM	DESCRIPTION	FACTORY INSTALLED OPTION	FIELD INSTALLED ACCESSORY
Coil Options	Base unit with tin plated indoor coil hairpins	X	
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
Time Guard II	Automatically prevents the compressor from restarting for at least 4 minutes and 45 seconds after shutdown of the compressor. Not required when a corporate programmable thermostat is applied or with a RTU-MP control.		X

*Refer to Price page for application detail.

50VT-A

Electric Heaters

ORDERING NO.	NOMINAL CAPACITY (kW @ 240 or 480 VOLTS)	USED WITH SIZES					
		24	30	36	42	48	60
208/230 - SINGLE PHASE - 60 HZ							
CPHEATER052A00	5.0	X	X	X			
CPHEATER064A00	5.0	X	X	X	X	X	X
CPHEATER070A00	7.2	X	X	X	X	X	X
CPHEATER050A00	10.0	X	X	X	X	X	X
CPHEATER066A00	15.0		X	X	X	X	X
CPHEATER054A00	20.0				X	X	X
208/230 - THREE PHASE - 60 HZ							
CPHEATER055A00	5.0		X	X	X	X	X
CPHEATER056A00	10.0		X	X	X		
CPHEATER068A00	10.0		X	X	X	X	X
CPHEATER058A00	15.0		X	X	X	X	X
CPHEATER059A01	20.0				X	X	X
460 - THREE PHASE - 60 HZ							
CPHEATER060A00	5.0			X	X	X	X
CPHEATER061A00	10.0			X	X	X	X
CPHEATER062A00	15.0			X	X	X	X
CPHEATER063A00	20.0				X	X	X

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

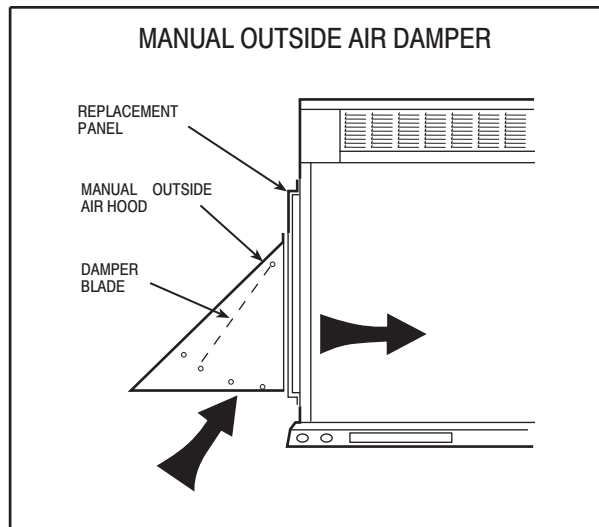
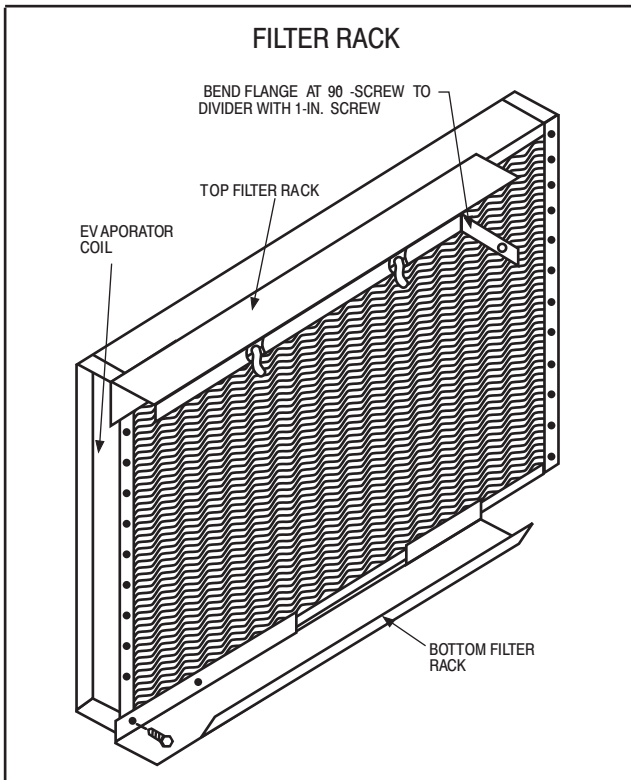
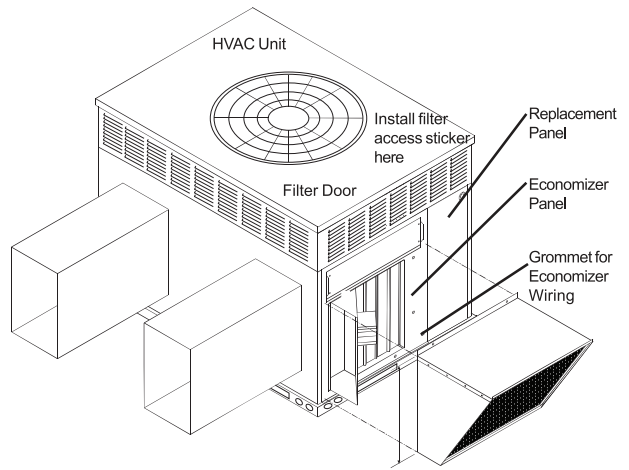
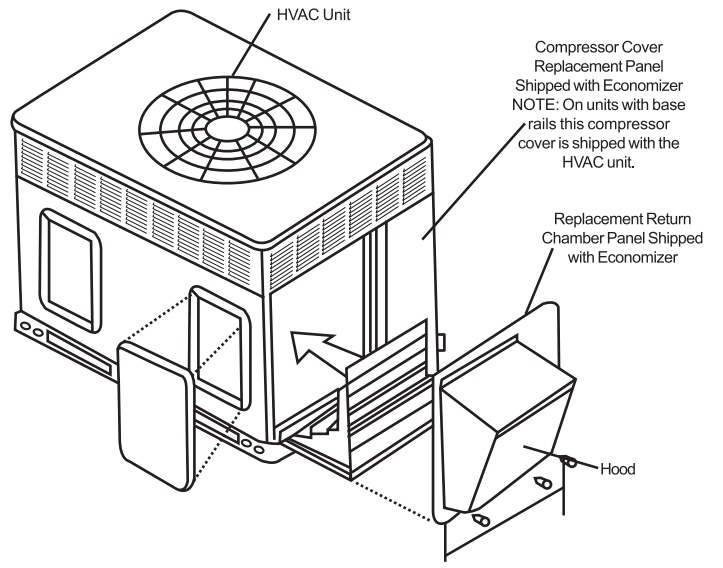
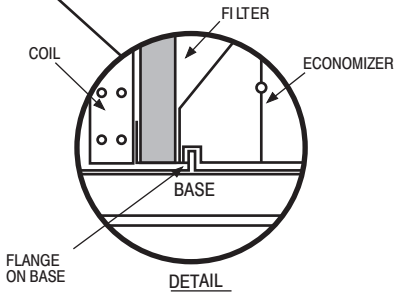
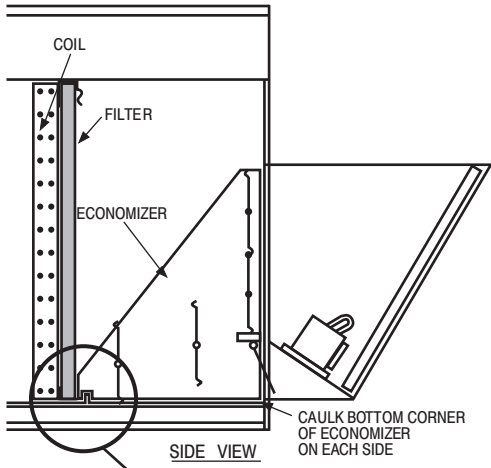
X = Approved combination

Minimum Airflow for Reliable Electric Heater Operation (CFM)

SIZE	50VT-A24	50VT-A30	50VT-A36	50VT-A42	50VT-A48	50VT-A60
AIRFLOW (CFM)	800	1025	1250	1400	1710	1800

ECONOMIZER

50VT --A



A09374

UNIT DIMENSIONS - 50VT-A24-30

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT "4"	CENTER OF GRAVITY IN/MM		
		LB	KG		X	Y	Z
A24	208/230-1-60	329	149.1	41-7/8 [1063.6]	20-1/2 [507.7]	15-3/4 [400.1]	16-5/8 [422.3]
A30	208/230-1, 208/230-3-60	339	153.7	45-7/8 [1165.2]	20-1/2 [507.7]	15-3/4 [400.1]	16-5/8 [422.3]

UNITS	VOLTAGE	CORNER WEIGHT LB/KG		
		"1"	"2"	"3"
A24	208/230	65.8 [29.9]	52.6 [23.9]	35.8 [16.2]
A30	208/230	67.8 [30.8]	54.2 [24.6]	38.9 [17.6]

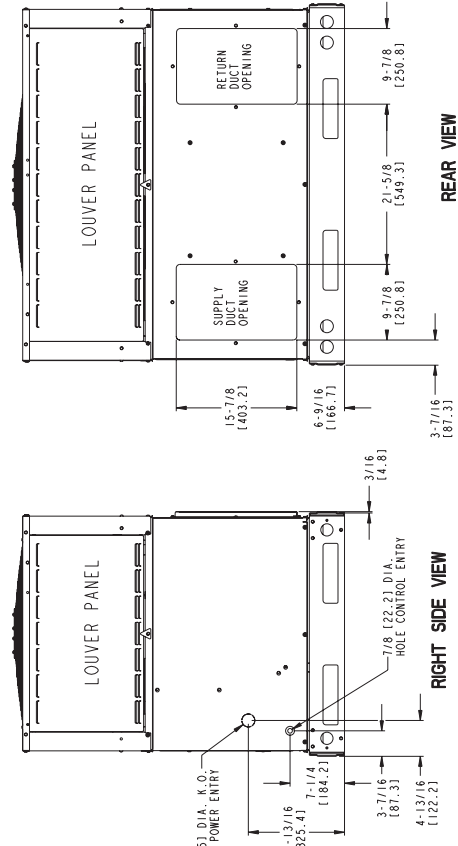
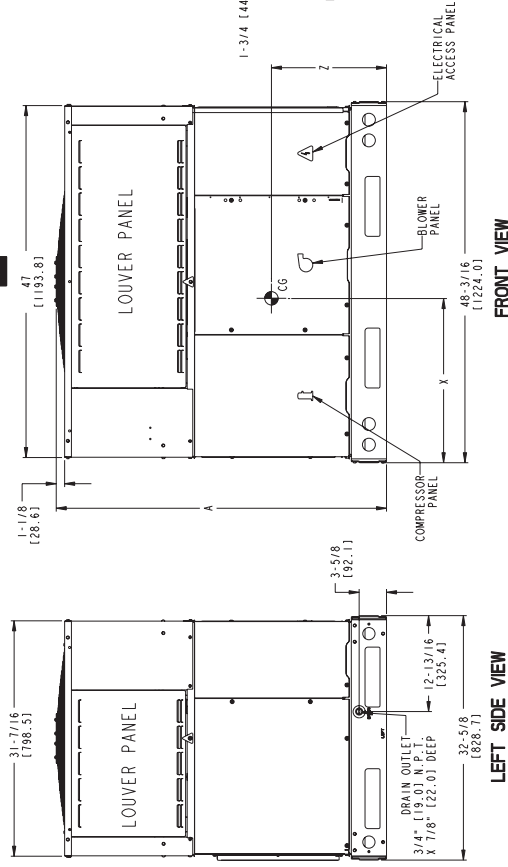
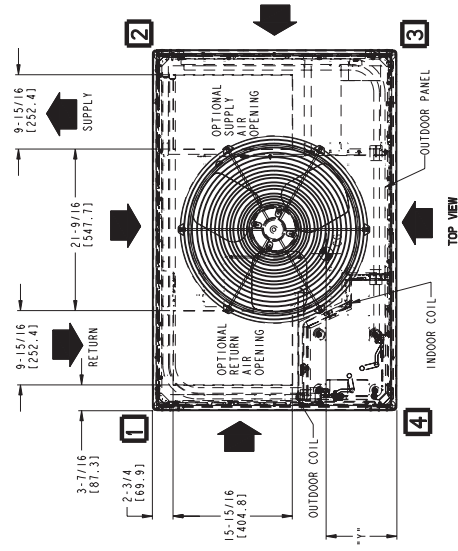
REQUIRED CLEARANCES TO COMBUSTIBLE MATL.
 TOP OF UNIT.....14 [355.6]
 SIDE OPPOSITE DUCTS.....4 [101.6]
 BOTTOM OF UNIT.....0 [0.0]
 ELECTRICAL PANEL.....36 [914.4]
 INCHES (MM)

NEC - REQUIRED CLEARANCES.
 BETWEEN UNITS, POWER ENTRY SIDE.....42 [1066.8]
 UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE.....36 [914.0]
 UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE.....42 [1066.8]
 INCHES (MM)

REQUIRED CLEARANCE FOR OPERATION AND SERVICING
 FEMP, COIL ACCESS SIDE.....0
 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]
 INCHES (MM)

•MINIMUM DISTANCES: IF UNIT IS PLACED LESS THAN 12 [304.8] FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAYBE COMPROMISED.

DIMENSIONS IN [] ARE IN MILLIMETERS



50VT500186
REV 2.0

50VT--A

UNIT DIMENSIONS - 50VT-A36-60

50VT--A

UNIT	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT "A"	CENTER OF GRAVITY IN/AM				
		LB	KG		X	Y	Z		
A36	208/230-1, 208/230-3, 60	399	181.1	43-7/8 (1114.4)	20-1/4	514.4	17-1/2	444.5	17-5/8 (447.0)
	460-3-60	413	187.4	43-7/8 (1114.4)	20-1/4	514.4	17-1/2	444.5	17-5/8 (447.0)
A42	208/230-1, 208/230-3, 60	440	199.7	49-7/8 (1266.8)	20-1/4	514.4	17-1/2	444.5	17-5/8 (447.0)
	460-3-60	454	206.0	49-7/8 (1266.8)	20-1/4	514.4	17-1/2	444.5	17-5/8 (447.0)
A48	208/230-1, 208/230-3, 60	460	208.8	49-7/8 (1266.8)	20-1/4	514.4	17-1/2	444.5	17-5/8 (447.0)
	460-3-60	474	215.1	49-7/8 (1266.8)	20-1/4	514.4	17-1/2	444.5	17-5/8 (447.0)
A60	208/230-1, 208/230-3, 60	490	222.4	55-7/8 (1368.4)	20-1/4	514.4	17-1/2	444.5	18 (457.2)
	460-3-60	500	226.9	55-7/8 (1368.4)	20-1/4	514.4	17-1/2	444.5	18 (457.2)

REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

UNITS VOLTAGE	CORNER WEIGHT LB/KG		
	1"	2"	3"
208/230	79.8	36.3	63.9
460	79.8	36.3	63.9
208/230	88.0	40.0	70.4
460	88.0	40.0	70.4
208/230	92.0	41.8	73.6
460	92.0	41.8	73.6
208/230	98.0	44.5	78.4
460	98.0	44.5	78.4

INCHES (MM)
 TOP OF UNIT.....14 (355.6)
 TOP SIDE OF UNIT.....2 (50.8)
 SIDE OPPOSITE DUCTS.....14 (355.6)
 SIDE OPPOSITE ELECTRICAL PANEL.....36 (914.4)
 ELECTRICAL PANEL.....36 (914.4)

NEC - REQUIRED CLEARANCES.

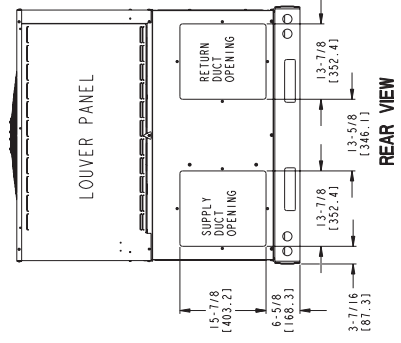
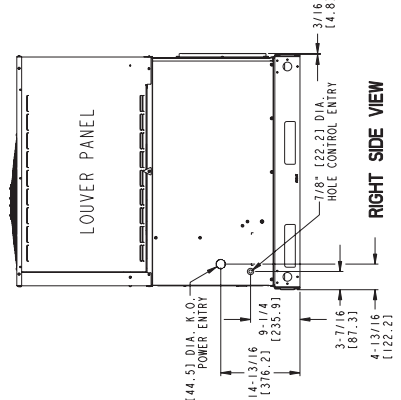
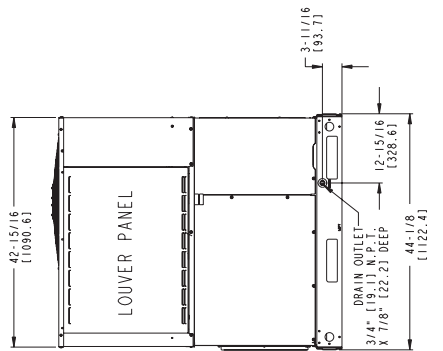
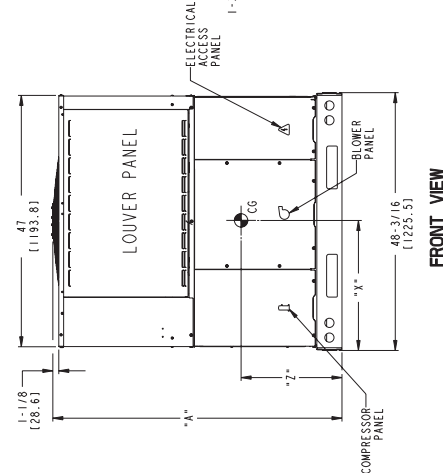
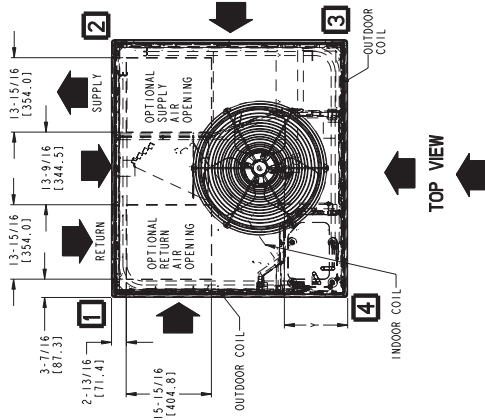
INCHES (MM)
 BETWEEN UNITS, POWER ENTRY SIDE.....106 (2692.8)
 UNIT AND UNGROUND SURFACES, POWER ENTRY SIDE.....36 (914.0)
 UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUND SURFACES, POWER ENTRY SIDE.....42 (1066.8)

REQUIRED CLEARANCE FOR OPERATION AND SERVICING

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

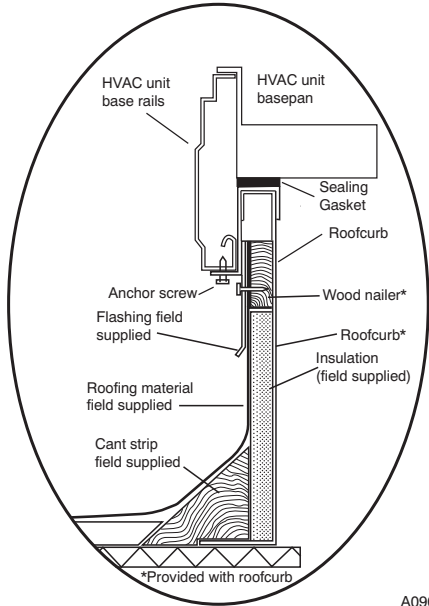
MINIMUM DISTANCES-IF UNIT IS PLACED LESS THAN 12 (304.8) FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAY BE COMPROMISED.

DIMENSIONS IN () ARE IN MILLIMETERS



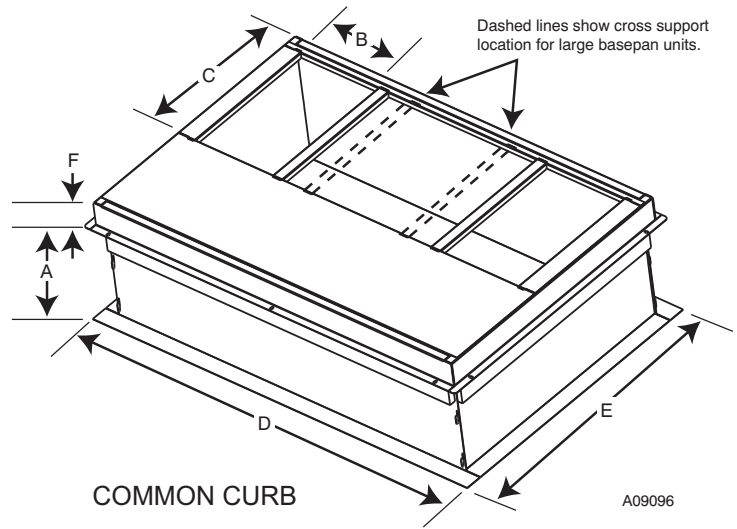
50VT500187
 REV 2.0

ACCESSORY DIMENSIONS



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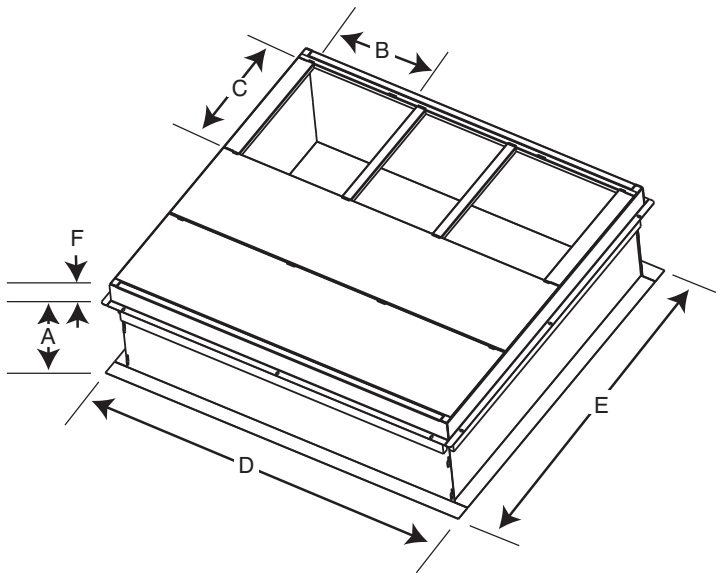
ROOF CURB DETAIL



COMMON CURB

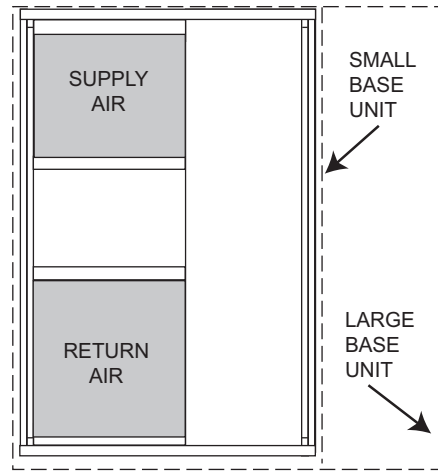
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50VT--A



LARGE CURB

A09095



UNIT PLACEMENT ON COMMON CURB

A09094

SMALL OR LARGE BASE UNIT

A09097

UNIT SIZE	CATALOG NUMBER	A IN. (mm)	B (small base) IN. (mm)*	B (large base) IN. (mm)*	C IN. (mm)	D IN. (mm)	E IN. (mm)	F IN. (mm)
Small or Large	CPRFCURB010A00	11 (279)	10 (254)	14 (356)	16 (406)	47.8 (1214)	32.4 (822)	2.7 (69)
	CPRFCURB011A00	14 (356)						
Large	CPRFCURB012A00	11 (279)	14 (356)	14 (356)	16 (406)	47.8 (1214)	43.9 (1116)	2.7 (69)
	CPRFCURB013A00	14 (356)						

* Part Numbers CPRFCURB010A00 and 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 36,000 Btuh and a SHC of 27,400 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 ARI 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)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		CFM / BF	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					
700 / 0.08	57 (13.8)	23.20	23.20	1.51	21.79	21.79	1.69	20.35	20.35	1.90	18.87	18.87	2.12	17.34	17.34	2.36	15.72	15.72	2.63
	62 (16.6)	23.89	22.10	1.51	22.26	20.78	1.69	20.63	19.47	1.90	18.99	18.11	2.12	17.35	17.35	2.36	15.72	15.72	2.63
	63* (17.2)	24.22	17.97	1.51	22.54	16.83	1.69	20.86	15.71	1.90	19.15	14.59	2.12	17.40	13.47	2.36	15.56	12.33	2.63
	67 (19.4)	26.13	18.68	1.51	24.33	17.52	1.69	22.51	16.37	1.90	20.66	15.25	2.12	18.76	14.06	2.37	16.75	12.87	2.63
	72 (22.2)	28.61	15.23	1.51	26.64	14.20	1.70	24.63	13.18	1.90	22.59	12.15	2.13	20.48	11.12	2.37	18.24	10.05	2.63
	57 (13.8)	24.24	24.24	1.53	22.73	22.73	1.71	21.20	21.20	1.91	19.62	19.62	2.14	18.00	18.00	2.38	16.26	16.26	2.64
	62 (16.6)	24.56	23.69	1.53	22.89	22.23	1.71	21.22	21.22	1.91	19.62	19.62	2.14	18.00	18.00	2.38	16.26	16.26	2.64
800 / 0.09	63* (17.2)	24.83	19.13	1.53	23.09	17.95	1.71	21.33	16.77	1.91	19.55	15.59	2.14	17.72	14.39	2.38	15.82	13.15	2.64
	67 (19.4)	26.77	19.94	1.53	24.90	18.72	1.71	23.00	17.50	1.92	21.07	16.28	2.14	19.09	15.05	2.38	17.00	13.78	2.65
	72 (22.2)	29.30	16.01	1.53	27.24	14.94	1.72	25.15	13.87	1.92	23.02	12.79	2.14	21.99	12.21	2.11	18.49	10.58	2.65
	57 (13.8)	25.13	25.13	1.54	23.54	23.54	1.73	21.92	21.92	1.93	20.26	20.26	2.16	18.53	18.53	2.40	16.69	16.69	2.66
	62 (16.6)	25.17	25.17	1.54	23.54	23.54	1.73	21.92	21.92	1.93	20.26	20.26	2.16	18.53	18.53	2.40	16.70	16.70	2.66
	63* (17.2)	25.31	20.26	1.54	23.51	19.02	1.73	21.70	17.77	1.93	19.86	16.52	2.16	17.98	15.25	2.40	16.03	13.93	2.66
	67 (19.4)	27.29	21.14	1.55	25.34	19.86	1.73	23.38	18.58	1.93	21.38	17.30	2.16	19.34	15.99	2.40	17.19	14.61	2.66
72 (22.2)	29.85	16.75	1.55	27.72	15.64	1.73	25.55	14.52	1.94	23.35	13.40	2.16	22.34	12.76	2.13	18.67	11.09	2.66	

*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 (-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			
Total	Integ				Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ							
65	700	7.36	6.77	1.58	9.63	8.86	1.63	12.04	11.05	1.68	14.61	13.25	1.74	17.53	15.36	1.81	20.88	20.88	1.90	24.68	24.68	2.02	29.14	29.14	2.15
	800	7.48	6.88	1.58	9.76	8.98	1.62	12.18	11.18	1.67	14.77	13.40	1.72	17.76	15.56	1.78	21.18	21.18	1.86	25.22	25.22	1.96	29.17	29.17	2.09
	900	7.58	6.97	1.59	9.86	9.07	1.62	12.30	11.29	1.66	14.92	13.53	1.70	17.99	15.76	1.76	21.51	21.51	1.84	25.23	25.23	1.93	28.82	28.82	2.06
70	700	7.07	6.50	1.66	9.38	8.63	1.71	11.80	10.83	1.77	14.39	13.05	1.83	17.25	15.12	1.91	20.57	20.57	2.00	24.27	24.27	2.12	28.75	28.75	2.27
	800	7.18	6.61	1.66	9.50	8.75	1.71	11.94	10.96	1.76	14.55	13.20	1.81	17.47	15.31	1.88	20.85	20.85	1.96	24.78	24.78	2.07	28.90	28.90	2.19
	900	7.28	6.70	1.67	9.61	8.85	1.71	12.07	11.08	1.75	14.68	13.32	1.80	17.66	15.47	1.85	21.09	21.09	1.93	25.00	25.00	2.03	28.67	28.67	2.16
75	700	6.74	6.20	1.74	9.10	8.38	1.80	11.56	10.61	1.87	14.17	12.85	1.93	16.98	14.88	2.01	23.90	23.90	2.23	28.30	28.30	2.30	28.30	28.30	2.39
	800	6.86	6.31	1.74	9.23	8.50	1.80	11.70	10.74	1.85	14.33	12.99	1.91	17.19	15.06	1.98	20.53	20.53	2.06	24.32	24.32	2.17	28.58	28.58	2.30
	900	6.96	6.41	1.75	9.35	8.60	1.80	11.82	10.85	1.84	14.46	13.12	1.89	17.37	15.22	1.95	20.76	20.76	2.04	24.73	24.73	2.14	28.48	28.48	2.27

PERFORMANCE DATA (CONT)

30 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 / BF	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					
875 / 0.05	57 (13.8)	28.47	28.47	1.94	27.21	27.21	2.15	25.85	25.85	2.37	24.39	24.39	2.62	22.78	22.78	2.88	20.95	20.95	3.15
	62 (16.6)	29.18	25.42	1.94	27.67	24.95	2.15	26.09	24.39	2.37	24.42	24.42	2.62	22.78	22.78	2.88	20.95	20.95	3.15
	63* (17.2)	29.61	20.60	1.94	28.05	20.16	2.15	26.40	19.65	2.38	24.64	19.08	2.62	22.73	18.41	2.88	20.62	17.62	3.15
	67 (19.4)	31.91	21.40	1.95	30.23	20.96	2.16	28.45	20.46	2.38	26.52	19.88	2.63	24.44	19.21	2.89	22.12	18.39	3.16
	72 (22.2)	34.97	17.28	1.96	33.11	16.85	2.17	31.12	16.32	2.39	28.99	15.72	2.64	26.68	15.03	2.90	24.10	14.20	3.17
	57 (13.8)	29.72	29.72	1.98	28.36	28.36	2.18	26.91	26.91	2.41	25.32	25.32	2.65	23.58	23.58	2.91	21.60	21.60	3.19
	62 (16.6)	29.97	27.26	1.98	28.41	28.34	2.18	26.91	26.91	2.41	25.33	25.33	2.65	23.58	23.58	2.91	21.60	21.60	3.19
1000 / 0.05	63* (17.2)	30.31	21.98	1.98	28.67	21.52	2.18	26.94	21.00	2.41	25.10	20.40	2.65	23.10	19.69	2.91	20.89	18.83	3.18
	67 (19.4)	32.64	22.87	1.99	30.88	22.42	2.19	29.00	21.90	2.42	26.98	21.29	2.66	24.80	20.58	2.92	22.39	19.70	3.19
	72 (22.2)	35.74	18.21	2.00	33.79	17.74	2.20	31.70	17.19	2.43	29.47	16.56	2.67	27.04	15.84	2.93	24.35	14.99	3.20
	57 (13.8)	30.79	30.79	2.01	29.34	29.34	2.22	27.78	27.78	2.44	26.09	26.09	2.69	24.23	24.23	2.95	22.12	22.12	3.22
1125 / 0.06	62 (16.6)	30.79	30.79	2.01	29.34	29.34	2.22	27.79	27.79	2.44	26.09	26.09	2.69	24.23	24.23	2.95	22.12	22.12	3.22
	63* (17.2)	30.85	23.30	2.01	29.15	22.83	2.22	27.36	22.29	2.44	25.44	21.65	2.68	23.38	20.89	2.94	21.11	19.95	3.21
	67 (19.4)	33.20	24.29	2.02	31.37	23.82	2.23	29.41	23.28	2.45	27.32	22.64	2.69	25.06	21.88	2.95	22.58	20.93	3.22
	72 (22.2)	36.33	19.07	2.03	34.30	18.58	2.24	32.12	18.01	2.46	29.81	17.37	2.70	27.30	16.63	2.96	24.52	15.74	3.23

*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 (-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				
Total	Integ			Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ					
65	875	9.06	8.34	1.90	12.11	11.14	1.98	15.26	14.00	2.04	18.55	16.82	2.12	22.03	19.31	2.19	25.87	25.87	2.28	30.37	30.37	2.39	35.63	35.63	2.54
	1000	9.26	8.52	1.92	12.33	11.34	1.99	15.48	14.21	2.05	18.79	17.05	2.10	22.30	19.54	2.17	26.34	26.34	2.24	30.84	30.84	2.34	36.27	36.27	2.47
	1125	9.43	8.68	1.94	12.51	11.51	2.00	15.68	14.39	2.10	19.00	17.24	2.10	22.53	19.74	2.16	26.65	26.65	2.22	31.24	31.24	2.31	36.86	36.86	2.43
70	875	8.53	7.85	1.98	11.67	10.73	2.06	14.87	13.65	2.14	18.46	16.74	2.21	21.99	19.03	2.30	25.47	25.47	2.40	29.91	29.91	2.52	35.05	35.05	2.67
	1000	8.73	8.03	2.00	11.89	10.94	2.08	15.11	13.87	2.14	18.46	16.74	2.21	21.99	19.26	2.28	25.82	25.82	2.36	30.36	30.36	2.46	35.68	35.68	2.59
	1125	8.91	8.20	2.02	12.08	11.11	2.09	15.31	14.05	2.15	18.68	16.94	2.21	22.22	19.47	2.27	26.12	26.12	2.34	30.74	30.74	2.42	36.20	36.20	2.55
75	875	7.95	7.31	2.06	11.18	10.29	2.15	14.45	13.27	2.24	17.84	16.18	2.33	21.36	18.73	2.42	25.11	25.11	2.52	29.46	29.46	2.64	34.49	34.49	2.80
	1000	8.15	7.50	2.08	11.40	10.49	2.17	14.70	13.49	2.24	18.10	16.41	2.33	21.66	18.97	2.39	25.43	25.43	2.48	29.90	29.90	2.58	35.09	35.09	2.72
	1125	8.33	7.66	2.11	11.60	10.67	2.18	14.90	13.68	2.25	18.32	16.61	2.32	21.89	19.18	2.38	25.72	25.72	2.45	30.27	30.27	2.55	35.60	35.60	2.67

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 / BF	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					
1050 / 0.08	57 (13.8)	38.00	34.81	2.44	34.81	31.68	2.95	31.68	28.58	28.58	3.23	25.51	25.51	3.53	22.43	22.43	3.85		
	62 (16.6)	39.23	32.70	2.45	35.69	32.23	2.95	28.85	28.27	28.85	3.23	25.55	25.55	3.53	22.43	22.43	3.85		
	63* (17.2)	39.74	28.36	2.45	36.13	32.59	2.95	29.11	22.76	29.11	3.24	25.68	20.90	3.53	22.28	19.03	3.85		
	67 (19.4)	42.90	29.50	2.46	39.01	27.57	2.70	35.20	25.66	31.45	2.97	27.77	21.86	3.55	24.10	19.94	3.87		
	72 (22.2)	46.93	24.09	2.47	42.69	22.40	2.72	38.51	19.04	34.42	2.98	30.38	17.37	3.57	26.35	15.68	3.89		
	57 (13.8)	39.72	39.72	2.48	36.36	33.04	2.72	33.04	29.76	29.76	2.99	26.51	26.51	3.57	23.26	23.26	3.88		
1200 / 0.09	62 (16.6)	40.35	37.43	2.48	36.71	33.12	2.72	33.12	29.77	29.77	3.02	26.52	26.52	3.57	23.26	23.26	3.88		
	63* (17.2)	40.77	30.20	2.48	37.03	28.20	2.72	33.35	26.23	29.75	2.99	24.28	22.32	3.57	22.70	20.32	3.88		
	67 (19.4)	43.99	31.47	2.49	39.95	29.42	2.74	36.00	27.40	25.39	3.00	28.31	23.39	3.58	24.52	21.34	3.90		
	72 (22.2)	48.09	25.31	2.51	43.69	23.54	2.75	39.37	21.78	20.04	3.00	30.95	18.29	3.60	26.79	16.52	3.92		
	57 (13.8)	41.20	41.20	2.51	37.67	37.67	2.76	34.19	34.19	30.76	3.02	27.36	27.36	3.60	23.95	23.95	3.92		
	62 (16.6)	41.37	39.65	2.51	37.69	37.69	2.76	34.19	34.19	30.76	3.02	27.36	27.36	3.60	23.95	23.95	3.92		
1350 / 0.10	63* (17.2)	41.60	31.96	2.51	37.74	29.86	2.76	33.95	27.79	25.74	3.00	26.62	23.66	3.60	23.02	21.54	3.91		
	67 (19.4)	44.85	33.35	2.52	40.70	31.21	2.77	36.63	29.08	26.97	3.03	28.73	24.84	3.61	24.84	22.67	3.93		
	72 (22.2)	49.01	26.47	2.54	44.48	24.63	2.78	40.03	22.80	20.98	3.05	31.39	19.16	3.63	27.12	17.31	3.95		

*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 (-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	
Total	Integ			Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total
65	1050	11.29	10.39	2.23	14.77	13.59	2.33	18.36	16.85	2.42	22.15	20.09	2.51	26.29	23.04	2.61	31.12	31.12	2.74	36.45	36.45	2.89	43.29	43.29	3.09
	1200	11.49	10.57	2.25	14.97	13.78	2.33	18.58	17.05	2.41	22.39	20.30	2.48	26.60	23.31	2.57	31.43	31.43	2.68	37.07	37.07	2.82	43.51	43.51	2.98
	1350	11.66	10.72	2.26	15.15	13.94	2.34	18.77	17.23	2.40	22.59	20.49	2.47	26.87	23.54	2.55	31.76	31.76	2.64	37.79	37.79	2.77	42.96	42.96	2.92
70	1050	10.75	9.89	2.33	14.33	13.18	2.43	17.99	16.51	2.53	21.82	19.79	2.64	25.90	22.70	2.74	30.63	30.63	2.88	35.89	35.89	3.03	42.54	42.54	3.25
	1200	10.95	10.08	2.34	14.54	13.38	2.43	18.22	16.72	2.52	22.06	20.01	2.61	26.21	22.96	2.70	31.01	31.01	2.82	36.42	36.42	2.96	43.07	43.07	3.13
	1350	11.13	10.24	2.35	14.72	13.55	2.44	18.41	16.90	2.52	22.27	20.20	2.60	26.47	23.19	2.68	31.48	31.48	2.78	37.12	37.12	2.91	42.78	42.78	3.06
75	1050	10.16	9.34	2.42	13.63	12.73	2.54	17.57	16.13	2.65	21.46	19.46	2.76	25.55	22.39	2.88	30.22	30.22	3.02	35.36	35.36	3.10	41.76	41.76	3.40
	1200	10.36	9.53	2.43	13.83	12.94	2.54	17.81	16.35	2.64	21.71	19.69	2.74	25.83	22.69	2.96	30.58	30.58	3.10	35.87	35.87	3.18	42.56	42.56	3.29
	1350	10.53	9.69	2.45	14.25	13.11	2.55	18.01	16.53	2.64	21.92	19.88	2.72	26.07	22.84	2.81	30.89	30.89	2.92	36.37	36.37	3.05	42.48	42.48	3.21

PERFORMANCE DATA (CONT)
42 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)			
		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	
CFM / BF	EWB °F (°C)	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	
		1225 / 0.19	57 (13.8)	39.54	37.86	2.66	37.86	2.97	36.04	3.31	34.09	3.68	33.27	3.64	29.41	29.41	29.41	29.41	29.41	29.41
62 (16.6)	41.07		39.05	2.68	39.05	2.99	34.59	3.32	34.67	3.69	33.74	3.64	29.46	29.46	29.46	29.46	29.46	29.46	29.46	4.50
63* (17.2)	41.31		39.26	2.68	39.26	2.99	27.73	3.32	34.77	3.69	33.77	3.64	29.35	29.35	29.35	29.35	29.35	29.35	29.35	4.50
67 (19.4)	44.64		42.44	2.72	42.44	3.03	28.99	3.36	37.58	3.73	36.64	3.69	31.64	31.64	31.64	31.64	31.64	31.64	31.64	4.54
72 (22.2)	48.47		46.05	2.76	46.05	3.07	23.53	3.41	40.72	3.77	39.79	3.74	34.12	34.12	34.12	34.12	34.12	34.12	34.12	4.59
57 (13.8)	41.22		39.41	2.72	39.41	3.03	37.47	3.37	35.37	3.74	34.56	3.70	30.33	30.33	30.33	30.33	30.33	30.33	30.33	4.56
62 (16.6)	42.17		40.08	2.73	40.08	3.04	36.85	3.38	35.52	3.74	34.66	3.70	30.34	30.34	30.34	30.34	30.34	30.34	30.34	4.56
1400 / 0.21	63* (17.2)	42.36	40.21	2.74	40.21	3.04	29.32	3.37	35.51	3.74	34.52	3.70	29.83	29.83	29.83	29.83	29.83	29.83	29.83	4.55
	67 (19.4)	45.76	43.45	2.78	43.45	3.08	30.70	3.42	38.36	3.78	37.43	3.75	32.13	32.13	32.13	32.13	32.13	32.13	32.13	4.59
	72 (22.2)	49.65	47.11	2.82	47.11	3.13	24.56	3.46	41.52	3.83	40.63	3.80	34.63	34.63	34.63	34.63	34.63	34.63	34.63	4.64
	57 (13.8)	42.65	40.73	2.78	40.73	3.09	38.67	3.43	36.45	3.80	35.65	3.76	31.08	31.08	31.08	31.08	31.08	31.08	31.08	4.62
	62 (16.6)	43.14	40.94	2.79	40.94	3.09	38.75	3.43	36.45	3.80	35.65	3.76	31.08	31.08	31.08	31.08	31.08	31.08	31.08	4.62
	63* (17.2)	43.20	40.97	2.79	40.97	3.09	38.61	3.42	36.08	3.79	35.10	3.75	30.20	30.20	30.20	30.20	30.20	30.20	30.20	4.60
	67 (19.4)	46.66	44.26	2.83	44.26	3.13	32.33	3.47	38.97	3.83	38.06	3.80	32.50	32.50	32.50	32.50	32.50	32.50	32.50	4.64
72 (22.2)	50.59	47.95	2.87	47.95	3.18	25.51	3.51	42.14	3.88	41.29	3.86	35.01	35.01	35.01	35.01	35.01	35.01	35.01	4.69	

*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.

42 Heating Extended Performance Table -10-60 (-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)		
		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
EDB CFM	CFM	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens		
		65	1225	13.75	12.65	2.45	17.57	16.17	2.56	21.58	19.81	2.68	25.83	23.43	2.81	30.61	28.82	2.96	36.10	36.10	3.14	42.45	42.45	3.36	50.07
1400	13.97		12.85	2.47	17.81	16.38	2.57	21.83	20.04	2.68	26.10	23.67	2.79	30.97	27.13	2.92	36.56	36.56	3.08	43.06	43.06	3.29	50.69	50.69	3.55
1575	14.17		13.03	2.49	18.01	16.57	2.58	22.05	20.23	2.68	26.32	23.87	2.78	31.28	27.40	2.90	36.94	36.94	3.15	43.53	43.53	3.26	50.61	50.61	3.51
1225	13.24		12.18	2.59	17.15	15.78	2.70	21.21	19.47	2.82	25.49	23.12	2.96	30.16	26.42	3.11	35.59	35.59	3.30	41.83	41.83	3.53	49.28	49.28	3.84
1400	13.47		12.39	2.59	17.39	16.00	2.70	21.46	19.70	2.82	25.76	23.37	2.94	30.51	26.74	3.07	36.03	36.03	3.24	42.41	42.41	3.45	50.08	50.08	3.72
70	1225	13.87	12.57	2.81	17.80	16.19	2.72	21.88	19.90	2.82	26.00	23.58	2.93	30.82	27.00	3.05	36.40	36.40	3.21	42.88	42.88	3.41	50.18	50.18	3.67
	1225	12.99	11.87	2.69	16.88	15.35	2.63	20.80	19.09	2.67	25.13	23.08	2.76	29.77	26.08	2.88	35.10	35.10	3.17	41.22	41.22	3.71	48.53	48.53	4.02
	1400	12.91	11.88	2.71	16.93	15.57	2.64	21.07	19.34	2.66	25.41	23.34	2.77	30.09	26.37	2.84	35.53	35.53	3.41	41.79	41.79	3.63	49.30	49.30	3.91
	1575	13.12	12.07	2.74	17.14	15.77	2.65	21.29	19.54	2.67	25.65	23.26	2.78	30.37	26.61	2.81	35.88	35.88	3.37	42.24	42.24	3.58	49.68	49.68	3.84
	1400	13.12	12.07	2.74	17.14	15.77	2.65	21.29	19.54	2.67	25.65	23.26	2.78	30.37	26.61	2.81	35.88	35.88	3.37	42.24	42.24	3.58	49.68	49.68	3.84

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)			
		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	
CFM / BF	EWB °F (°C)	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens	Total	Sens		
		1400 / 0.09	57 (13.8)	48.07	48.07	2.99	44.60	44.60	3.35	41.11	41.11	3.74	37.59	37.59	4.18	33.97	33.97	4.66	30.20	30.20	5.18				
62 (16.6)	49.24		42.95	3.00	45.38	40.81	3.35	38.58	37.68	3.75	37.68	37.68	4.18	33.97	33.97	4.66	30.20	30.20	5.18						
1600 / 0.10	63* (17.2)	49.85	34.74	3.00	45.89	32.91	3.35	41.92	31.03	3.75	37.95	29.14	4.18	33.92	27.18	4.66	29.77	25.09	5.17						
	67 (19.4)	53.72	36.13	3.02	49.45	34.25	3.38	45.16	32.34	3.77	40.85	30.39	4.21	36.48	28.37	4.68	31.96	26.23	5.20						
1800 / 0.11	72 (22.2)	58.70	29.21	3.05	54.00	27.52	3.41	49.26	25.79	3.80	44.53	24.03	4.24	39.71	22.21	4.72	34.74	20.27	5.23						
	57 (13.8)	50.08	50.08	3.05	46.40	46.40	3.41	42.70	42.70	3.81	38.95	38.95	4.25	35.11	35.11	4.72	31.11	31.11	5.24						
1800 / 0.10	62 (16.6)	50.54	45.92	3.06	46.59	43.48	3.41	42.71	42.71	3.81	38.95	38.95	4.25	35.11	35.11	4.72	31.11	31.11	5.24						
	63* (17.2)	50.98	36.96	3.06	46.86	35.03	3.41	42.75	33.06	3.81	38.62	31.05	4.24	34.44	28.96	4.72	30.16	26.75	5.23						
1800 / 0.11	67 (19.4)	54.90	38.50	3.08	50.46	36.52	3.44	46.00	34.50	3.83	41.53	32.45	4.27	37.00	30.30	4.74	32.34	28.01	5.26						
	72 (22.2)	59.95	30.65	3.11	55.05	28.88	3.47	50.14	27.07	3.86	45.24	25.24	4.30	40.25	23.33	4.77	35.12	21.31	5.28						
1800 / 0.11	57 (13.8)	51.77	51.77	3.11	47.91	47.91	3.47	44.01	44.01	3.87	40.06	40.06	4.31	36.03	36.03	4.79	31.82	31.82	5.30						
	62 (16.6)	51.79	51.79	3.11	47.91	47.91	3.47	44.02	44.02	3.87	40.06	40.06	4.31	36.03	36.03	4.79	31.82	31.82	5.30						
1800 / 0.11	63* (17.2)	51.85	39.08	3.11	47.61	37.05	3.47	43.38	34.99	3.87	39.13	32.86	4.30	34.84	30.64	4.78	30.46	28.24	5.29						
	67 (19.4)	55.81	40.79	3.14	51.24	38.71	3.50	46.63	36.58	3.89	42.04	34.40	4.33	37.39	32.12	4.80	32.61	29.67	5.31						
1800 / 0.11	72 (22.2)	60.91	32.02	3.17	55.86	30.17	3.53	50.80	28.29	3.92	45.76	26.38	4.36	40.65	24.40	4.83	35.38	22.30	5.34						

*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 (-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)			
		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					
EDB CFM	CFM	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ	Total	Integ						
		65	1400	15.21	14.00	3.19	19.74	18.16	3.29	24.43	22.43	3.40	29.38	26.64	3.51	34.68	30.38	3.63	40.80	40.60	3.78	47.66	47.66	3.97	55.91	55.91	4.22						
1600	15.51		14.27	3.22	20.06	18.45	3.31	24.77	22.74	3.40	29.73	26.97	3.50	35.08	30.74	3.61	41.18	41.18	3.74	48.35	48.35	3.90	57.32	57.32	4.12								
70	1800	15.79	14.52	3.26	20.34	18.71	3.35	25.07	23.01	3.42	30.04	27.25	3.51	35.44	31.05	3.60	41.70	41.70	3.72	48.93	48.93	3.87	57.75	57.75	4.06								
	1400	14.51	13.35	3.32	19.15	17.62	3.44	23.92	21.96	3.56	28.91	26.22	3.68	34.20	29.97	3.81	39.99	39.99	3.97	46.96	46.96	4.17	55.04	55.04	4.42								
1800	14.81	13.63	3.36	19.47	17.92	3.46	24.26	22.27	3.57	29.28	26.55	3.67	34.61	30.33	3.79	40.53	40.53	3.92	47.63	47.63	4.09	56.25	56.25	4.32									
	1800	15.09	13.88	3.40	19.76	18.18	3.50	24.57	22.55	3.59	29.60	26.84	3.69	34.97	30.64	3.78	40.99	40.99	3.90	48.19	48.19	4.06	57.10	57.10	4.25								
75	1400	13.74	12.64	3.46	18.50	17.02	3.59	23.96	21.44	3.72	28.41	25.77	3.86	33.71	29.54	4.00	39.42	39.42	4.16	46.29	46.29	4.37	54.20	54.20	4.63								
	1600	14.04	12.92	3.49	18.83	17.32	3.62	23.71	21.77	3.73	28.79	26.11	3.85	34.13	29.90	3.97	39.91	39.91	4.11	46.93	46.93	4.29	55.09	55.09	4.52								
1800	14.32	13.17	3.54	19.12	17.59	3.65	24.02	22.05	3.75	29.12	26.41	3.85	34.49	30.22	3.96	40.36	40.36	4.08	47.48	47.48	4.25	56.24	56.24	4.46									



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 / BF	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 / 0.07	57 (13.8)	63.53	63.53	3.78	4.29	53.97	53.97	4.86	49.09	49.09	5.49	44.01	44.01	6.19	42.42	42.42	6.41		
	62 (16.6)	65.04	51.03	3.79	4.30	54.44	49.51	4.86	49.15	49.15	5.50	44.01	44.01	6.19	38.66	38.66	6.95		
	63* (17.2)	65.92	41.28	3.80	4.31	54.99	39.84	4.87	49.48	38.85	5.50	43.83	37.60	6.19	42.07	38.16	6.40		
	67 (19.4)	70.86	42.85	3.85	4.35	59.00	41.40	4.92	52.98	40.40	5.54	46.84	39.11	6.23	40.50	37.40	6.98		
	72 (22.2)	77.33	34.48	3.90	4.41	64.19	32.79	4.98	57.55	31.67	5.60	50.77	30.29	6.29	43.78	28.58	7.03		
	57 (13.8)	66.05	66.05	3.88	4.40	55.88	55.88	4.97	50.65	50.65	5.60	45.26	45.26	6.30	39.58	39.58	7.06		
	62 (16.6)	66.61	54.49	3.89	4.40	55.88	55.88	4.97	50.66	50.66	5.60	45.25	45.25	6.30	39.57	39.57	7.06		
2000 / 0.08	63* (17.2)	67.26	43.89	3.89	4.40	55.88	42.41	4.97	50.16	41.35	5.59	44.32	39.99	6.29	38.33	38.21	7.04		
	67 (19.4)	72.23	45.64	3.94	4.45	59.87	44.14	5.01	53.63	43.07	5.64	47.29	41.70	6.33	40.75	39.91	7.08		
	72 (22.2)	78.76	36.15	4.00	4.51	65.10	34.38	5.07	58.23	33.22	5.70	51.25	31.78	6.38	44.04	29.99	7.12		
2250 / 0.09	57 (13.8)	68.16	68.16	3.98	4.50	57.41	57.41	5.07	51.90	51.90	5.70	46.22	46.22	6.40	40.27	40.27	7.16		
	62 (16.6)	68.17	68.17	3.98	4.50	57.41	57.41	5.07	51.90	51.90	5.71	46.22	46.22	6.40	40.27	40.27	7.16		
	63* (17.2)	68.27	46.41	3.98	4.49	56.54	44.84	5.06	50.64	43.71	5.69	44.66	42.24	6.38	38.53	40.25	7.13		
	67 (19.4)	73.27	48.35	4.03	4.54	60.50	46.77	5.10	54.10	45.64	5.73	47.60	44.16	6.42	40.92	42.14	7.17		
	72 (22.2)	79.84	37.74	4.09	4.60	65.73	35.91	5.16	58.70	34.70	5.79	51.53	33.23	6.48	44.15	31.39	7.22		

*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 (-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
Total	Integ				Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ		Total	Integ	
65	1750	21.44	19.72	3.85	27.02	24.86	3.97	32.88	30.18	4.09	39.13	35.49	4.23	46.71	40.44	4.40	54.26	54.26	4.61	63.98	63.98	4.86	74.82	74.82	5.16
	2000	21.85	20.11	3.90	27.45	25.26	4.01	33.33	30.60	4.12	39.63	35.94	4.24	46.77	40.38	4.38	55.02	55.02	4.56	65.19	65.19	4.78	74.99	74.99	5.04
	2250	22.24	20.46	3.97	27.85	25.63	4.06	33.75	30.98	4.15	40.07	36.34	4.26	47.32	41.46	4.39	56.12	56.12	4.56	65.29	65.29	4.75	73.80	73.80	4.99
70	1750	20.75	19.09	4.03	26.44	24.33	4.16	32.38	29.72	4.30	38.84	35.04	4.45	45.82	39.97	4.62	53.55	53.55	4.84	62.76	62.76	5.10	73.96	73.96	5.41
	2000	21.17	19.48	4.09	26.88	24.73	4.20	32.84	30.14	4.32	39.14	35.50	4.45	46.18	40.46	4.60	54.29	54.29	4.79	64.31	64.31	5.02	74.39	74.39	5.29
	2250	21.56	19.84	4.15	27.28	25.11	4.25	33.25	30.52	4.36	39.59	35.91	4.47	46.68	40.90	4.61	54.93	54.93	4.78	64.77	64.77	4.98	73.71	73.71	5.23
75	1750	20.00	18.40	4.22	25.80	23.74	4.36	31.63	28.21	4.51	38.15	34.60	4.66	45.07	39.49	4.86	52.71	52.71	5.07	61.83	61.83	5.35	73.09	73.09	5.66
	2000	20.42	18.79	4.28	26.26	24.16	4.40	32.50	29.64	4.53	38.62	35.03	4.67	45.64	39.99	4.83	53.58	53.58	5.03	63.19	63.19	5.27	73.64	73.64	5.54
	2250	20.82	19.15	4.34	26.67	24.54	4.46	32.73	30.04	4.57	39.07	35.43	4.69	46.14	40.43	4.84	54.20	54.20	5.01	64.17	64.17	5.22	73.39	73.39	5.47

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:

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

$$t_{wb} = \text{Wet-bulb temperature corresponding to enthalpy}$$

$$\text{air leaving evaporator coil (} t_{lwb} \text{)}$$

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

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

4. The SHC is based on 80°F (26.7 °C) edb temperature of air entering evaporator coil. Below 80°F (26.7°C) edb, subtract (corr factor x cfm) from SHC. Above 80°F (26.7°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.

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

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

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:

4. The SHC is based on 805 F (26.6°C) edb temperature of air entering evaporator coil. Below 805 F (26.6°C) edb, subtract (corr factor x cfm) from SHC. Above 805 F (26.6°C) edb, add (corr factor x cfm) to SHC. Correction Factor = $1.10 \times (1 + BF) \times (\text{edb} + 80)$.
5. Integrated capacity is maximum (instantaneous) capacity less the effect of frost on the outdoor coil and the heat required to defrost it.

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

Wet Coil Air Delivery - Downflow - High Speed with 1-in. (25 mm) Filter and Economizer

UNIT SIZE	EXTERNAL STATIC PRESSURE (in. W.C.)									
	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
36, 42	1612	1569	1527	1481	1451	1393	1351	1317	1278	1242
48	2298	2239	2180	2110	2044	1951	1862	1777	1697	1591
60	2000	1926	1825	1820	1759	1705	1634	1496	1412	1328

Economizer 1-in. (25 mm) Filter Pressure Drop (in. wc)

UNIT50VT	PRESSURE DROP
024-030	0.20
036-060	0.25

Multiplication Factors

HEATER KW RATING	VOLTAGE DISTRIBUTION	MULTIPLICATION FACTOR
240	200	0.69
	208	0.75
	230	0.92
	240	1.00
	240	0.92
480	460	0.92

Electric Heat Pressure Drop Table (in. W.C.)

Small Cabinet: 24-36

HEATER CAPACITY	STANDARD CFM (S.C.F.M)											
	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
5kw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07
7.5 kw	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.07	0.08	0.09
10 kw	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07	0.09	0.10	0.11
15 kw	0.00	0.00	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18
20 kw	0.00	0.00	0.02	0.04	0.06	0.08	0.09	0.11	0.13	0.15	0.17	0.19

Electric Heat Pressure Drop Table (in. W.C.)

Large Cabinet 42-60

HEATER CAPACITY	STANDARD CFM (S.C.F.M)														
	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

50VT-A Horizontal Wet Coil Pressure Drop (in. W.C.)

UNIT SIZE	STANDARD CFM (S.C.F.M)															
	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
24		0.06	0.07	0.08	0.09	0.1										
30				0.12	0.15	0.19	0.23	0.27								
36						0.07	0.11	0.18	0.26	0.35						
42								0.04	0.07	0.1	0.15	0.21				
48										0.11	0.14	0.17	0.22	0.28		
60												0.1	0.17	0.23	0.31	0.36

50VT-A

Horizontal Filter Pressure Drop Table (in. W.C.)

FILTER SIZE in. (mm)	STANDARD CFM (S.C.F.M)																		
	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300
20X20X1 (508X508X25)	0.05	0.07	0.08	0.1	0.12	0.13	0.14	0.15	—	—	—	—	—	—	—	—	—	—	—
20X24X1 (508X610X25)	—	—	—	.09	.10	.11	.13	.14	.15	.16	—	—	—	—	—	—	—	—	—
24X30X1 (610X762X25)	—	—	—	0.04	0.05	0.06	0.07	0.07	0.08	0.09	0.1	—	—	—	—	—	—	—	—
24X36X1 (610X914X25)	—	—	—	—	—	—	—	0.06	0.07	0.07	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.14	0.14

Dry Coil Air Delivery* - Horizontal and Downflow Discharge - Unit 50VT-A24-60

UNIT	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	
50VT--A24060	Low	Blue	CFM	741	638	547	415	---	---	---	---	---	---
	Med-Low ¹	Pink	CFM	898	820	738	662	536	---	---	---	---	---
	Medium	Red	CFM	973	887	823	733	665	538	451	---	---	---
	Med-High	Orange	CFM	1140	1064	996	915	840	758	687	564	480	---
	High	Black	CFM	1202	1140	1082	1015	961	881	810	732	631	---
50VT--A30060	Low	Blue	CFM	741	638	547	415	---	---	---	---	---	---
	Med-Low	Pink	CFM	898	820	738	662	536	---	---	---	---	---
	Med-High ¹	Orange	CFM	1140	1064	996	915	840	758	687	564	480	---
	High	Black	CFM	1202	1140	1082	1015	961	881	810	732	631	---
50VT--A36090	Low	Blue	CFM	1295	1234	1182	1126	1075	1016	955	898	857	---
	Med-Low	Pink	CFM	1345	1282	1235	1194	1140	1095	1027	974	921	---
	Medium	Red	CFM	1505	1452	1413	1358	1323	1282	1234	1169	1130	---
	Med-High ¹	Orange	CFM	1545	1492	1449	1411	1362	1313	1278	1231	1188	---
	High	Black	CFM	1705	1643	1607	1568	1518	1483	1448	1404	1360	---
50VT--A42090	Low	Blue	CFM	1295	1234	1182	1126	1075	1016	955	898	857	---
	Med-Low	Pink	CFM	1345	1282	1235	1194	1140	1095	1027	974	921	---
	Medium	Red	CFM	1505	1452	1413	1358	1323	1282	1234	1169	1130	---
	Med-High ¹	Orange	CFM	1545	1492	1449	1411	1362	1313	1278	1231	1188	---
	High	Black	CFM	1705	1643	1607	1568	1518	1483	1448	1404	1360	---
50VT--A48090	Low	Blue	CFM	1445	1389	1341	1281	1236	1189	1139	1072	1027	---
	Med-Low ¹	Pink	CFM	1678	1635	1602	1558	1513	1474	1438	1404	1349	---
	Medium	Red	CFM	1962	1915	1880	1843	1794	1753	1711	1675	1628	---
	Med-High	Orange	CFM	2131	2088	2065	2013	1982	1941	1888	1860	1785	---
	High	Black	CFM	2461	2409	2339	2286	2192	2140	2062	1968	1874	---
50VT--A60130	Low	Blue	CFM	1448	1321	1282	1235	1192	1145	1101	1057	1011	---
	Med-Low	Pink	CFM	1722	1675	1614	1543	1499	1442	1408	1356	1308	---
	Medium ¹	Red	CFM	1887	1847	1783	1726	1677	1625	1578	1527	1432	---
	Med-High	Orange	CFM	2055	2008	1958	1927	1900	1768	1685	1581	1458	---
	High	Black	CFM	2292	2238	2158	2049	1935	1840	1732	1635	1513	---

50VT--A

* Air delivery values are without air filter and are for dry coil (See 50VT--A Wet Coil Pressure Drop Table).

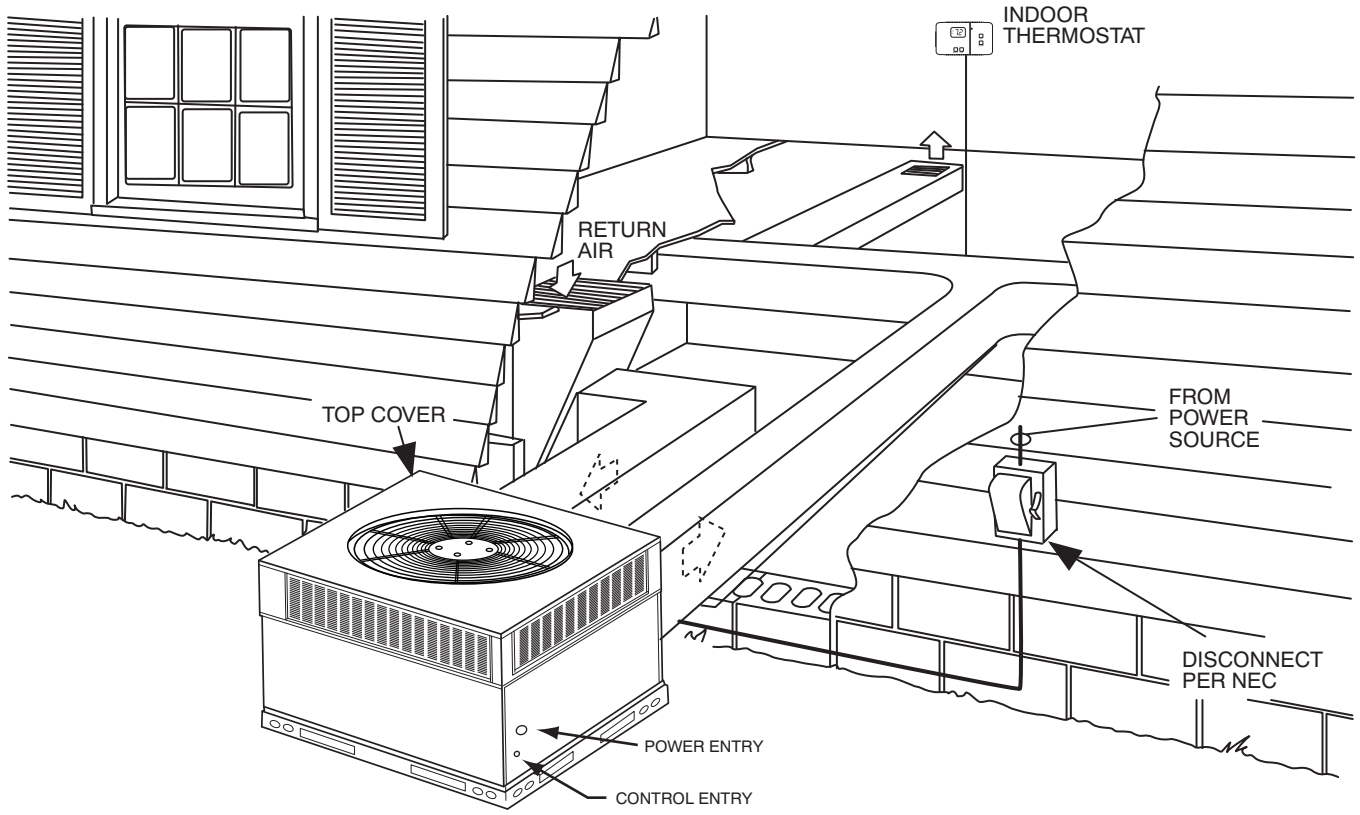
¹ Factory - shipped cooling/heat pump heating speed

NOTE: For horizontal applications deduct field-supplied air filter pressure drop and wet coil pressure drop to obtain external static pressure available for ducting. For downflow applications see Wet Coil Air Delivery table for available static including wet coil, 1 -in. (25 mm) filter and economizer.

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

TYPICAL PIPING AND WIRING

50VT--A



A09098

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.

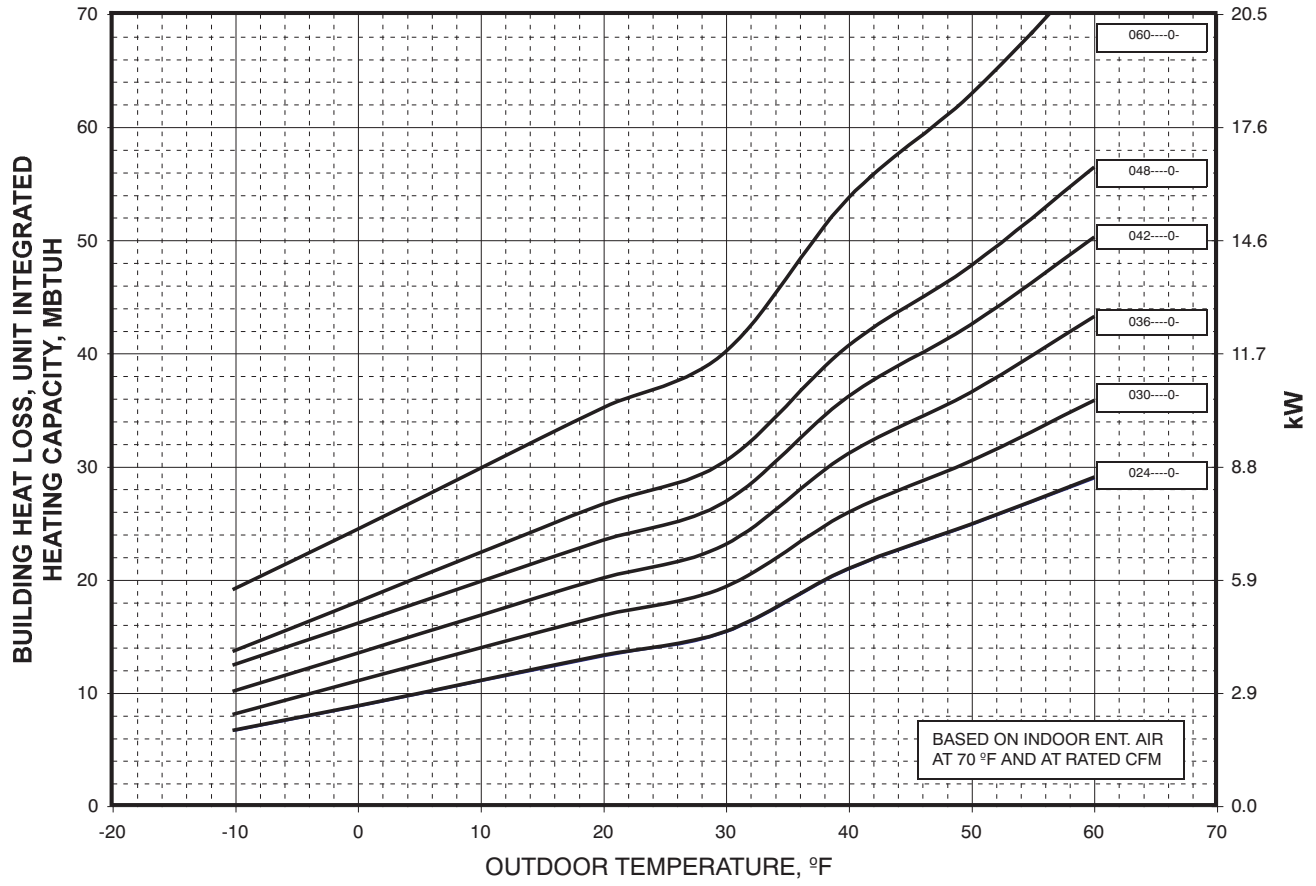
Minimum ambient cooling operation temperature — All standard units have a minimum ambient cooling operating temperature of 40°F (4.4°C). With accessory low ambient temperature kit, units can operate at temperatures down to 0°F (17.8°C).

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

BALANCE POINT WORKSHEET

BALANCE POINT WORKSHEET

50VT--A



A08226

ELECTRICAL DATA

50VT Electrical Data

MODEL	V-PH-HZ	RANGE		RLA	LRA	OFM	IFM	NOMINAL kW	FLA	MCA	MOCP
		MIN	MAX			FLA	FLA				
50VT-A24---30--	208/230-1-60	197	253	13.5	58.3	0.9	4.1	-/-	-/-	21.8	30
								3.8/5	18.1/20.8	44.5/47.9	45/50
								5.4/7.2	25.9/30	54.3/59.4	60/60
								7.5/10	36.1/41.7	67/74	70/80
50VT-A30---30--	208/230-1-60	197	253	14.3	73	0.9	4.1	-/-	-/-	22.9	35
								3.8/5	18.1/20.8	45.5/48.9	50/50
								5.4/7.2	25.9/30	55.3/60.4	60/70
								7.5/10	36.1/41.7	68/75	70/80
50VT-A30---50--	208/230-3-60	197	253	10.3	58	0.9	4.1	-/-	-/-	17.8	25
								3.8/5	10.4/12	30.9/32.9	35/35
								7.5/10	20.8/24.1	43.9/48	45/50
								11.3/15	31.2/36.1	56.9/63	60/70
50VT-A36---30--	208/230-1-60	197	253	16.7	79	1.5	6.0	-/-	-/-	28.3	40
								3.8/5	18.1/20.8	51/54.4	60/60
								5.4/7.2	25.9/30	60.8/65.9	70/70
								7.5/10	36.1/41.7	73.5/80.5	80/90
50VT-A36---50--	208/230-3-60	197	253	11.3	88	1.5	6.0	-/-	-/-	21.6	30
								3.8/5	10.4/12	34.6/36.6	35/40
								7.5/10	20.8/24.1	47.6/51.8	50/60
								11.3/15	31.2/36.1	60.6/66.8	70/70
50VT-A36---60--	460-3-60	414	506	5.8	38	0.6	3.0	-/-	-/-	10.8	15
								3.8/5	6	18.4/18.4	20
								7.5/10	12	25.9/25.9	30
								11.3/15	18	33.4/33.4	35
50VT-A42---30--	208/230-1-60	197	253	21.4	112	0.9	6.0	-/-	-/-	33.6	50
								3.8/5	18.1/20.8	56.3/59.7	60/60
								5.4/7.2	25.9/30	66/71.2	70/80
								7.5/10	36.1/41.7	78.8/85.8	80/90
50VT-A42---50--	208/230-3-60	197	253	14.1	88	0.9	6.0	-/-	-/-	24.6	35
								3.8/5	10.4/12	37.5/39.5	40/40
								7.5/10	20.8/24.1	50.5/54.7	60/60
								11.3/15	31.2/36.1	63.5/69.7	70/70
50VT-A42---60--	460-3-60	414	506	6.6	44	0.6	3.0	-/-	-/-	11.8	15
								3.8/5	6	19.4/19.4	20
								7.5/10	12	26.9/26.9	30
								11.3/15	18	34.4/34.4	35
50VT-A48---30--	208/230-1-60	197	253	22.1	109	1.5	7.6	-/-	-/-	36.8	50
								3.8/5	18.1/20.8	59.4/62.7	60/70
								5.4/7.2	25.9/30	69.1/74.2	70/80
								7.5/10	36.1/41.7	81.9/88.9	90/90
50VT-A48---50--	208/230-3-60	197	253	15.9	83	1.5	7.6	-/-	-/-	29	40
								3.8/5	10.4/12	42/44	45/45
								7.5/10	20.8/24.1	55/59.1	60/60
								11.3/15	31.2/36.1	68/74.1	70/80
50VT-A48---60--	460-3-60	414	506	7.2	41	0.9	3.8	-/-	-/-	13.6	20
								3.8/5	6	21.2/21.2	25
								7.5/10	12	28.7/28.7	30
								11.3/15	18	36.2/36.2	40
50VT-A60---30--	208/230-1-60	197	253	26.4	134	1.9	7.6	-/-	-/-	42.5	60
								3.8/5	18.1/20.8	65.1/68.5	70/70
								5.4/7.2	25.9/30	74.9/80	80/80
								7.5/10	36.1/41.7	87.6/94.6	90/100
50VT-A60---50--	208/230-3-60	197	253	17	110	1.9	7.6	-/-	-/-	110.3/120.6	125/125
								3.8/5	10.4/12	43.8/45.8	45/50
								7.5/10	20.8/24.1	56.8/60.9	60/70
								11.3/15	31.2/36.1	69.8/75.9	70/80
50VT-A60---60--	460-3-60	414	506	7.8	52	1	3.8	-/-	-/-	14.4	20
								3.8/5	6	22.1/22.1	25
								7.5/10	12	29.6/29.6	30
								11.3/15	18	37.1/37.1	40
								15/20	24.1	44.7/44.7	45

See Legend and Notes.

50VT--A

LEGEND

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



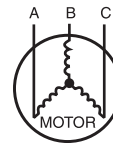
NOTES:

- 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. 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

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

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

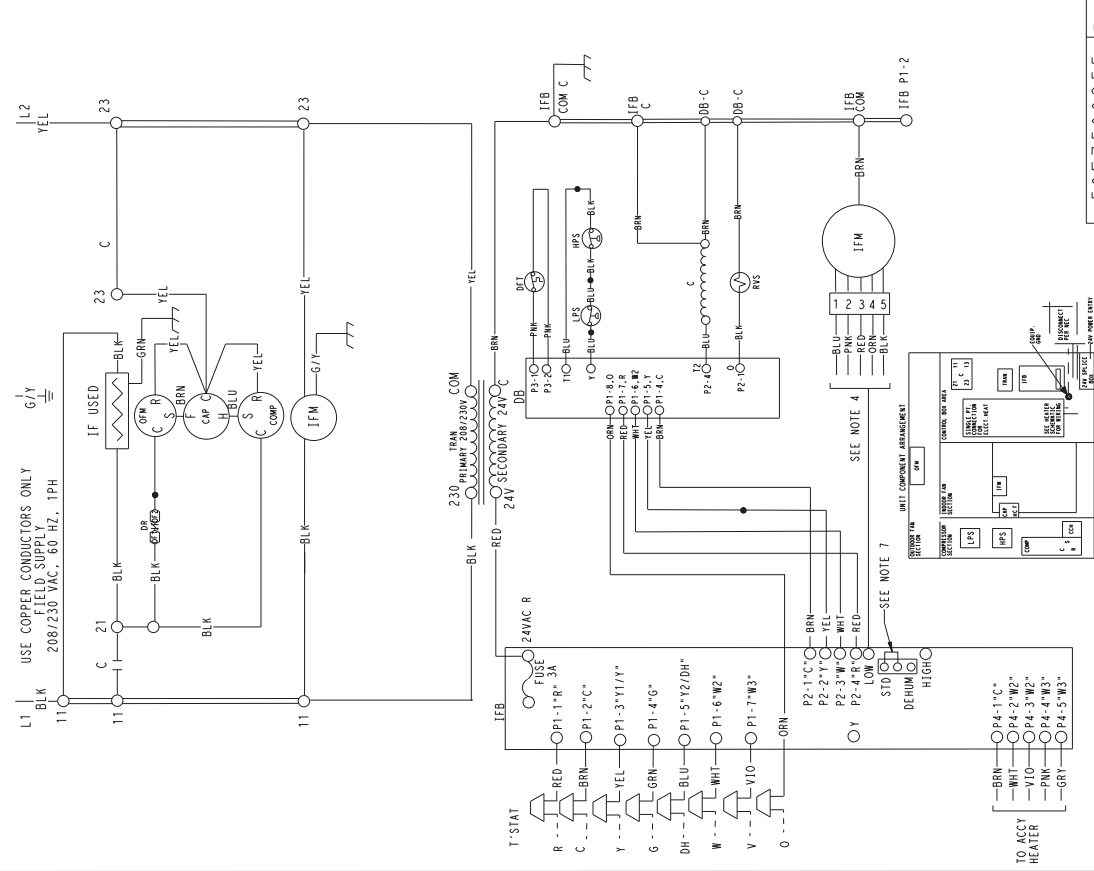
$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{2}{229} \\ &= 0.8\% \end{aligned}$$

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

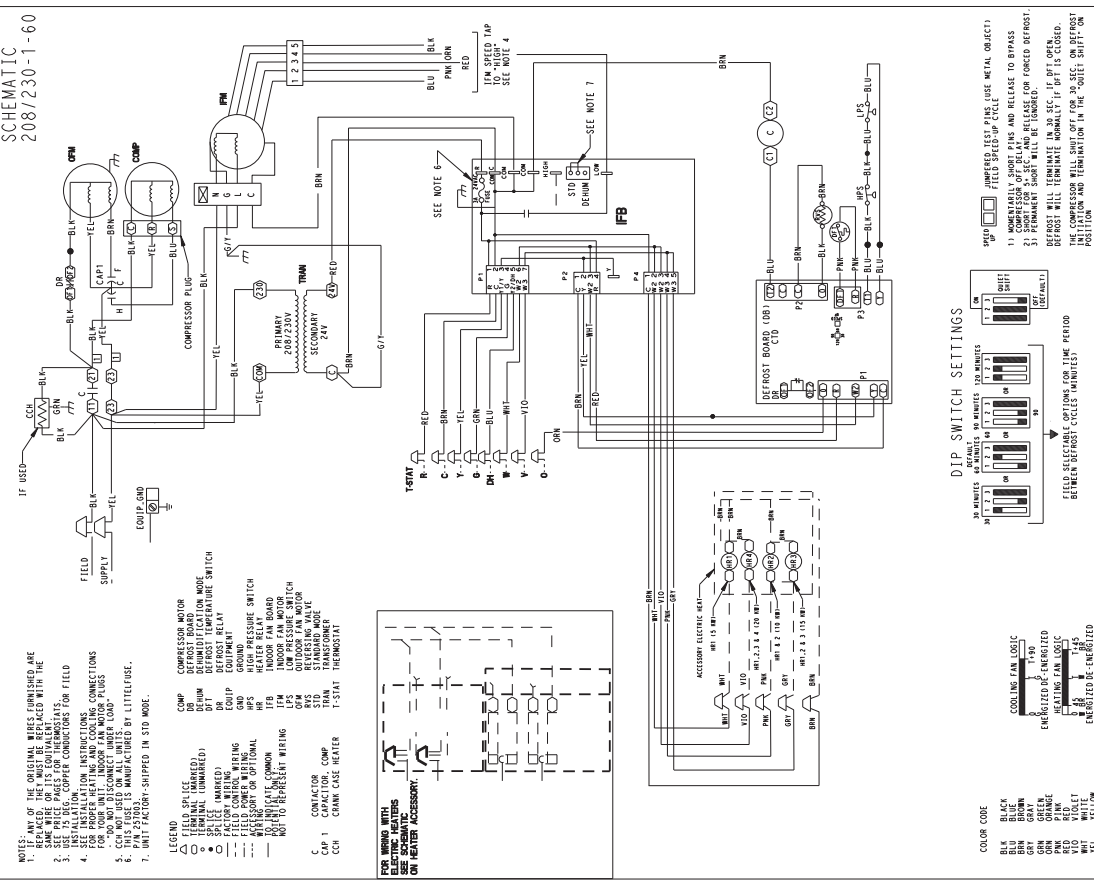
IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

A06564

LADDER WIRING DIAGRAM
 DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING

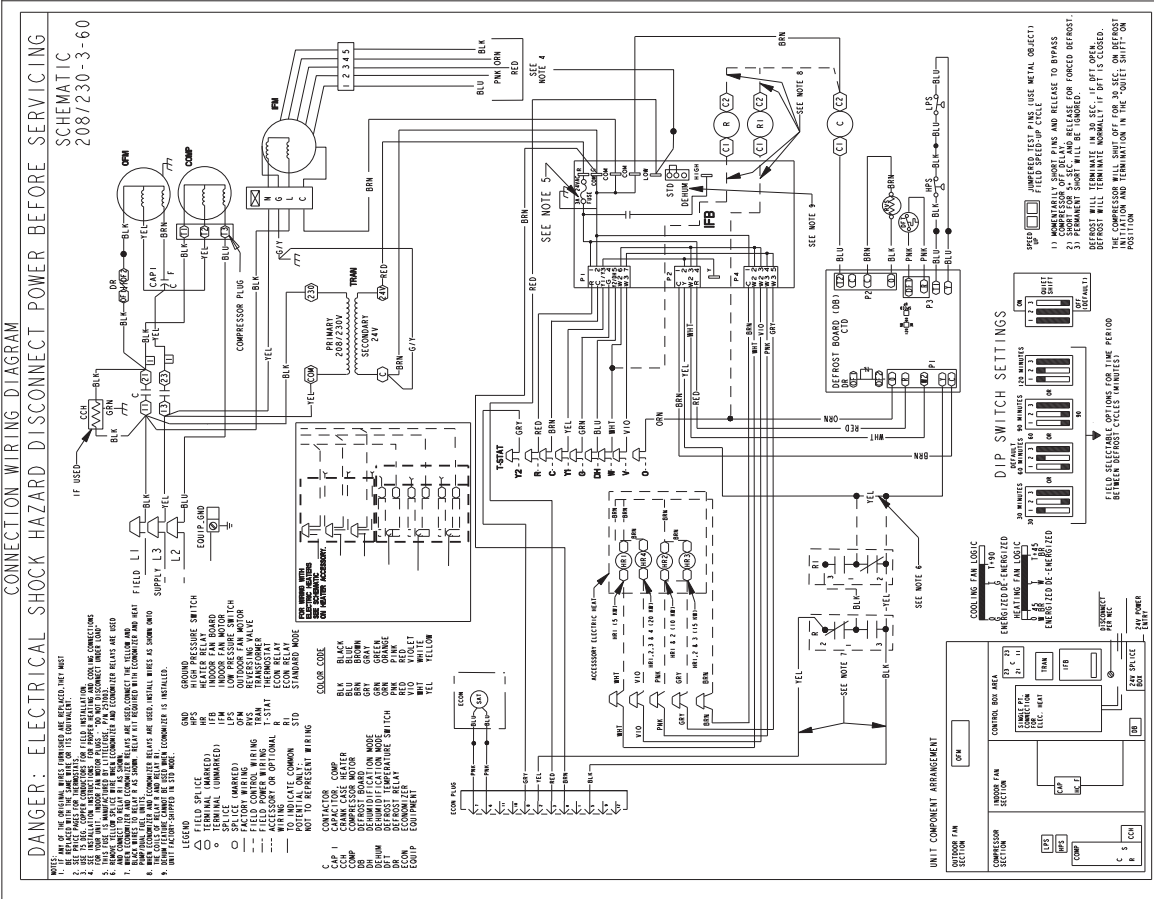
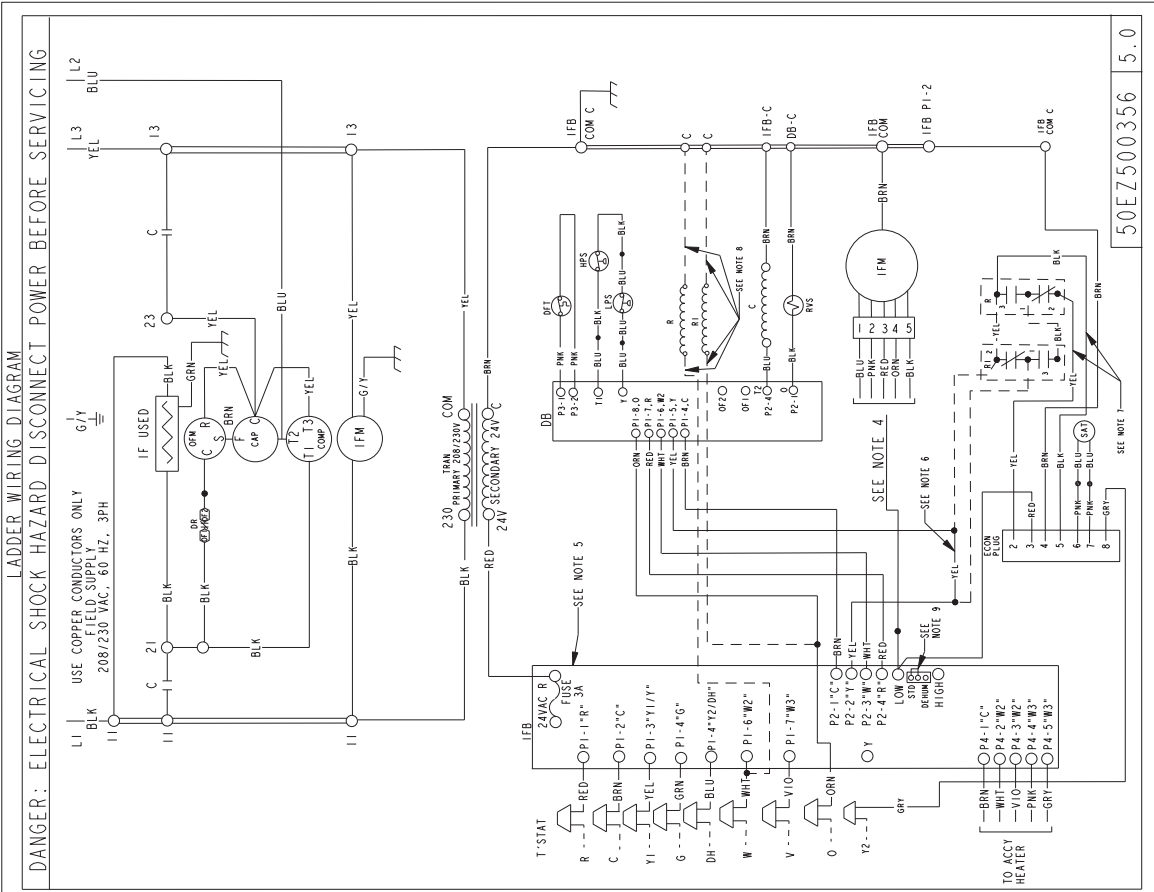


CONNECTION WIRING DIAGRAM
 DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING



50VT--A

50VT--A



- NOTES:**
1. WIRE COLORS ARE SHOWN IN PINK AND WHITE UNLESS NOTED OTHERWISE.
 2. USE THE FIELD WIRING SCHEMATIC FOR FIELD INSTALLATION.
 3. TERMINALS ARE IDENTIFIED BY LETTERS AND NUMBERS.
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- LEGEND:**
- OPEN
 - CLOSED
 - OPEN
 - CLOSED
 - OPEN
 - CLOSED
 - OPEN
 - CLOSED
 - OPEN
 - CLOSED

- COMPONENTS:**
- IFM - INDOOR FAN MOTOR
 - COMP - COMPRESSOR MOTOR
 - DEF - DEFROST BOARD
 - R - RELAY
 - C - CONTACTOR
 - Y - YOLK
 - G - GATE
 - DH - DEFROST HEATER
 - W - WIRE
 - V - VALVE
 - O - OIL
 - 12 - 12V BATTERY

- COLOR CODE:**
- BLACK
 - BLU
 - GRY
 - GRN
 - ORN
 - RED
 - WHI
 - YEL

- UNIT COMPONENT ARRANGEMENT:**
- INDOOR FAN SECTION
 - COMPRESSOR SECTION
 - CONTROL BOARD AREA
 - DEFROST BOARD (DEF)
 - INDOOR FAN MOTOR (IFM)
 - COMPRESSOR MOTOR (COMP)
 - DEFROST HEATER (DH)
 - RELAY (R)
 - CONTACTOR (C)
 - YOLK (Y)
 - GATE (G)
 - VALVE (V)
 - OIL (O)
 - 12V BATTERY (12)

- DIP SWITCH SETTINGS:**
- COOLING FAN LOGIC: ENERGIZED BY ENERGIZED RELAY FAN LOGIC, ENERGIZED BY ENERGIZED DE-ENERGIZED
 - DEFROST CYCLE: 30 MINUTES, 45 MINUTES, 60 MINUTES
 - DEFROST CYCLE: 15 MINUTES, 30 MINUTES, 45 MINUTES
 - DEFROST CYCLE: 15 MINUTES, 30 MINUTES, 45 MINUTES

- FIELD SELECTABLE OPTIONS FOR TIME PERIOD BETWEEN DEFROST CYCLES (MINUTES):**
- 15 MINUTES
 - 30 MINUTES
 - 45 MINUTES

- DEFROST TEST PINS (USE METAL OBJECT):**
- 1. MOMENTARILY SHORT PINS AND RELEASE TO BYPASS DEFROST.
 - 2. SHORT PINS TO GROUND AND RELEASE FOR FORCED DEFROST.
 - DEFROST WILL TERMINATE NORMALLY IF DFT IS OPEN.
 - DEFROST WILL TERMINATE NORMALLY IF DFT IS CLOSED.
 - DEFROST WILL TERMINATE NORMALLY IF DFT IS OPEN.
 - DEFROST WILL TERMINATE NORMALLY IF DFT IS CLOSED.

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- INDOOR FAN SECTION
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 - GATE (G)
 - VALVE (V)
 - OIL (O)
 - 12V BATTERY (12)

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.

The defrost board is also equipped with a third dip switch for selecting Quiet Shift operation. The Quiet Shift operation turns compressor off at defrost initiation and termination. Unit is factory shipped with quiet shift turned off.

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**

Model Number: **50VT-A**

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 ARI 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-22), 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.
- 3. Compressor Protection:
Defrost control shall protect compressor by preventing "short cycling."

E. Coils:

Indoor and outdoor coils shall have aluminum plate fins mechanically bonded to seamless copper tubes with all joints brazed. (Copper/copper and vinyl-coated construction available as option.) Tube sheet openings shall be belled to prevent tube wear.

F. Refrigerant Metering Device:

Refrigerant metering device shall be thermostatic expansion valve 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 high efficiency brushless DC motor.

L. Special Features Available:

- 1. Coil Options:
Base unit with tin plated indoor coil hairpins available as a factory installed option.
- 2. Compressor Start Kit (single phase units only):
Shall provide additional starting torque for single-phase compressors.
- 3. Thermostat:
To provide for two-stage heating and one-stage cooling in addition manual or automatic changeover and indoor fan control.
- 4. Crankcase Heater:
Shall provide anti-floodback protection for lowload cooling applications.

GUIDE SPECIFICATIONS (CONT)

5. Economizer:
 - 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. wc pressure differential.
 - c. Spring return motor shuts off outdoor damper on power failure.
6. 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.
7. Filter Rack Kit:

Shall provide filter mounting for downflow applications.
8. Flat Roof Curb:

Curbs shall have seal strip and a wood nailer for flashing and shall be installed per manufacturer's instructions.
9. 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.
10. Manual Outdoor Air Damper:

Package shall consist of damper, birdscreen, and rainhood which can be preset to admit outdoor air for year-round ventilation.
11. Square-To-Round Duct Transitions (24-48 size):

Shall have the ability to convert the supply and return openings from rectangular to round.
12. Time Guard II
Automatically prevents the compressor from restarting for at least 4 minutes and 45 seconds after shutdown of the compressor. Not required when a corporate programmable thermostat is applied or with a RTU-MP control.