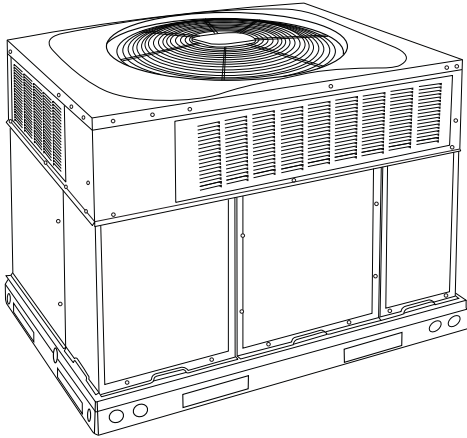


50VT-A

Performance™ 14 SEER Single-Packaged Heat Pump System with Puron® (R-410A) Refrigerant Single and Three Phase 2 to 5 Nominal Tons (Sizes 24-60)



## Product Data



A09033

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
- ECM Motor-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.

**ECM 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.

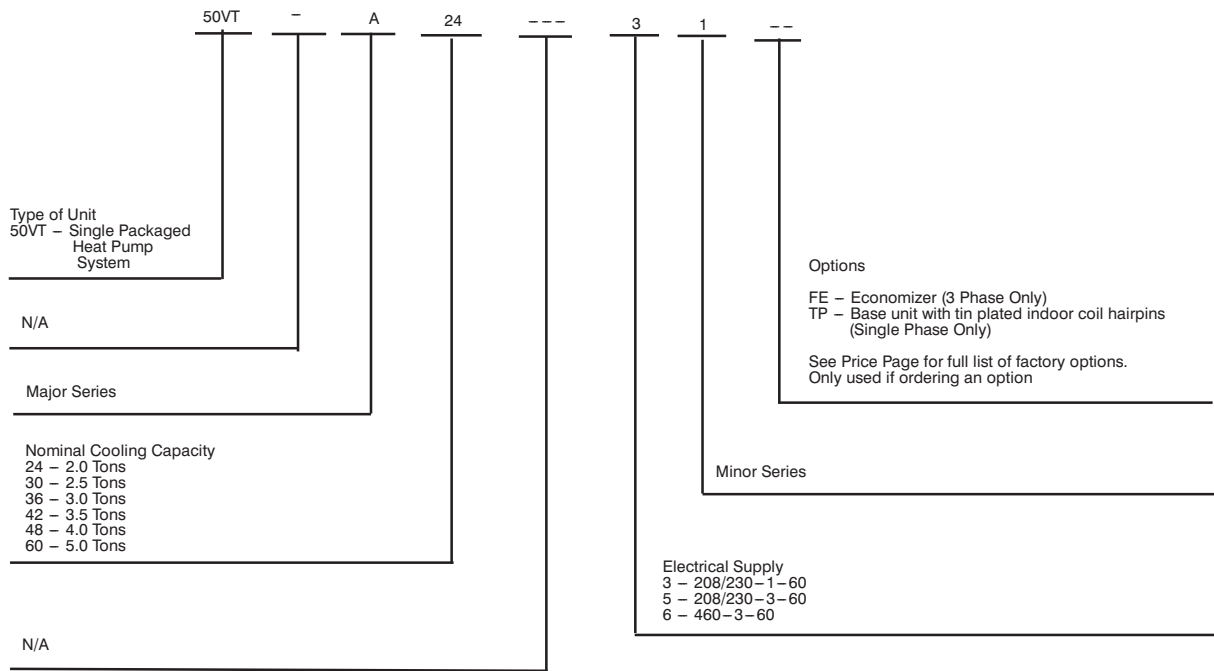
**Short-Cycling protection** for the compressor is incorporated into our defrost control board ensuring a five minute delay (+/-2 minutes) before restarting compressor after shutdown for any reason.

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**50VT --A**

## MODEL NUMBER NOMENCLATURE



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](http://www.ahridirectory.org).



**AHRI\* CAPACITIES**  
**COOLING CAPACITIES AND EFFICIENCIES**

50VT-A	NOMINAL TONS	STANDARD CFM	COOLING CAPACITY	EER	SEER
24--31	2	800	23000	12.0	14.2
30--31/51	2.5	1000	28600	12.0	14.2
36--31/51/61	3	1200	35800	12.0	14.5
42--31/51/61	3.5	1400	40500	12.0	14.5
48--31/51/61	4	1600	46500	12.0	14.5
60--31/51/61	5	1750	57000	12.0	14.5

**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--31	23000	3.5	11400	2.2	8.0
30--31/51	29600	3.5	15400	2.1	8.0
36--31/51/61	35800	3.5	19800	2.4	8.0
42--31/51/61	41500	3.4	23000	2.3	8.0
48--31/51/61	45500	3.4	26000	2.4	8.0
60--31/51/61	59000	3.5	32000	2.4	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.

**50VT --A**

# PHYSICAL DATA - UNIT 50VT-A

50VT --A

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)	354	346	426	472	460	515
(kg)	161	157	193	214	209	234
COMPRESSOR QUANTITY	1					
TYPE	SCROLL COMPRESSOR					
REFRIGERANT	R-410A					
REFRIGERANT QUANTITY (lb)	11.1	10.3	9.9	11.3	12.5	15.2
QUANTITY (kg)	5.0	4.7	4.5	5.1	5.7	6.9
METERING DEVICE ID	TXV					
ORIFICE OD (in.)	0.032 (2)	0.037 (2)	0.038 (2)	0.040 (2)	0.040 (2)	0.049 (2)
(mm)	0.81 (2)	0.94 (2)	0.97 (2)	1.02 (2)	1.02 (2)	1.24 (2)
OUTDOOR COIL ROWS..FINS/in.	2..21	2..21	2..21	2..21	2..21	2..21
FACE AREA (sq. ft)	13.6	13.6	13.6	17.5	17.5	23.3
OUTDOOR FAN NOMINAL AIRFLOW	2500	2700	3100	3100	3100	3800
DIAMETER (in.)	24	24	26	26	26	26
DIAMETER (mm)	610	610	660	660	660	660
MOTOR HP (RPM)	1/10 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/5 (810)	1/4 (810)
INDOOR COIL ROWS..FINS/in.	3..17	3..17	3..17	3..17	3..17	3..17
FACE AREA (sq. ft)	3.7	3.7	4.7	4.7	5.6	5.6
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 (HP)	1/2	1/2	3/4	3/4	1	1
HIGH-PRESSURE SWITCH (psig) CUTOUT	650 ± 15					
RESET (AUTO)	420 ± 25					
LOSS-OF-CHARGE/LOW-PRESSURE SWITCH LIQUID LINE (psig) CUTOUT	20 ± 5					
RESET (AUTO)	45 ± 10					
RETURN-AIR FILTERS*† THROWAWAY (in.)	20x20x1	20x24x1	24x30x1	24x36x1		
(mm)	508x508x25	508x610x25	610x762x25	610x914x25		

\*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 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)

50VT-A	Standard Rating (dBA)	TYPICAL OCTAVE BAND SPECTRUM (Dda) (without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24---31	74	63.5	64.5	69	69.5	65	59.5	50
30---31/51	75	63.5	66	71	69.5	66.5	61	54
36---31/51/61	74	64	66	68	68	66.5	60.5	52
42---31/51/61	73	63.5	63.5	66.5	67	64.5	60	52.5
48---31/51/61	74	68.5	65	67	67.5	65	60.5	53
60---31/51/61	75	68	64.5	68.5	69	65.5	62	58

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

## 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*
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
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

\*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
<b>208/230 - SINGLE PHASE - 60 HZ</b>							
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
<b>208/230 - THREE PHASE - 60 HZ</b>							
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
<b>460 - THREE PHASE - 60 HZ</b>							
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.

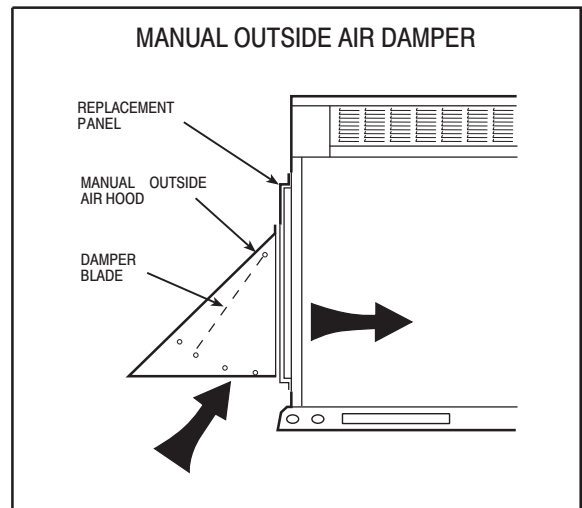
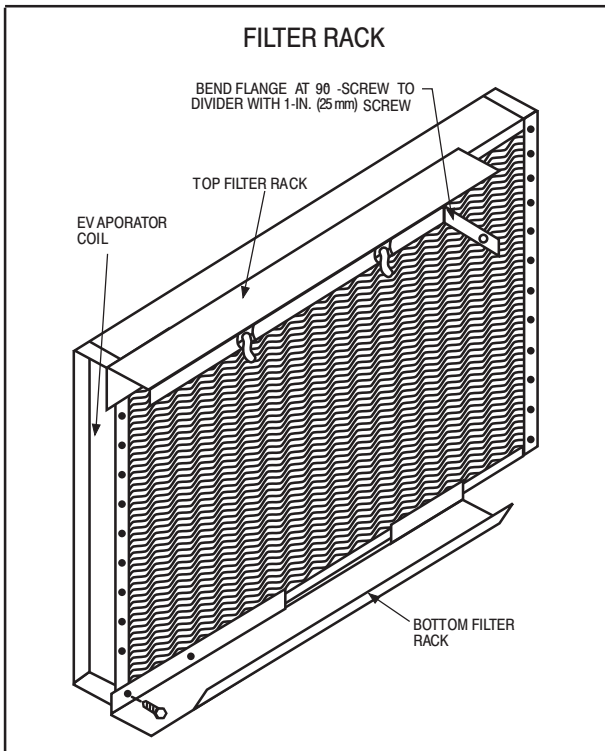
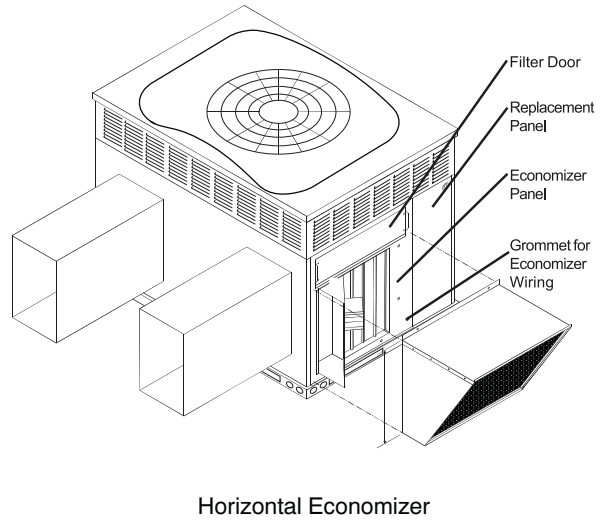
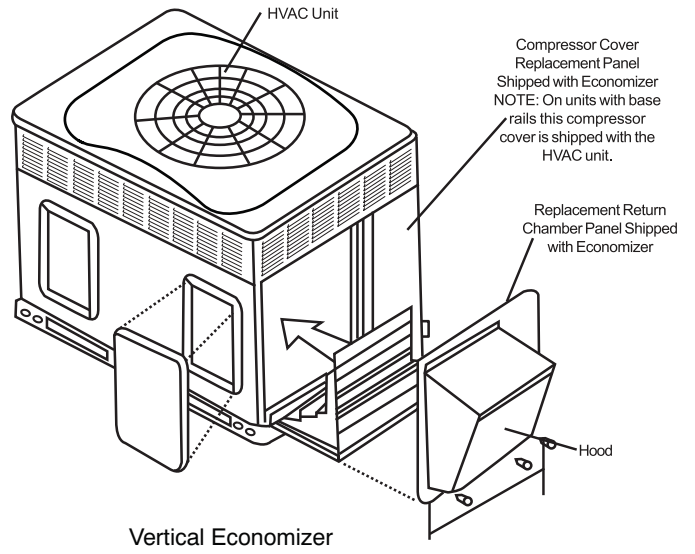
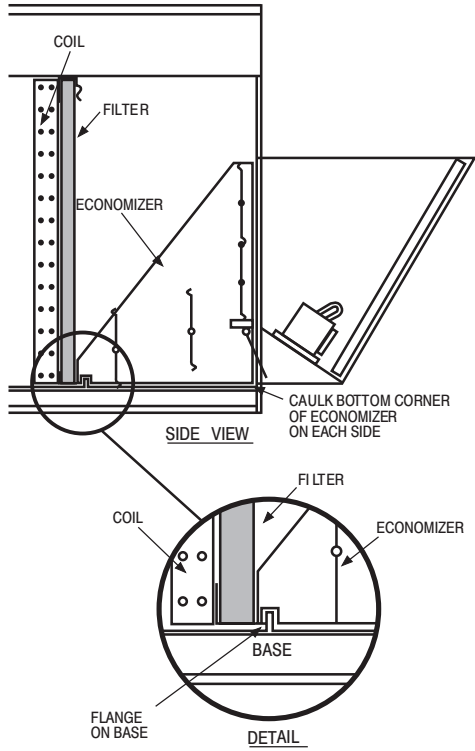
X = Approved combination

### 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



A09376

# UNIT DIMENSIONS - 50VT-A24-30

UNIT	SERIES	ELECTRICAL CHARACTERISTICS	UNIT WT.		UNIT HEIGHT IN MM		CENTER OF GRAVITY IN MM					
			LB	KG	A*	X	Y	Z				
50VT-A24-...	1	208/230-1	348	158	44-1/8	1121	20-1/2	521	15-1/2	394	16-1/2	419
50VT-A30-...	1	208/230-1	408	185	44-1/8	1121	20-1/2	521	15-1/2	394	16-1/2	419

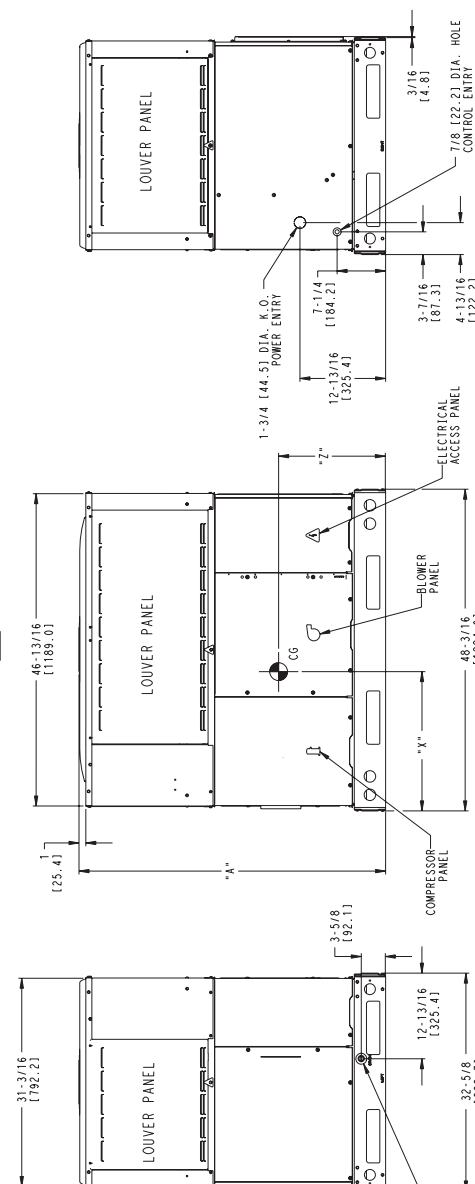
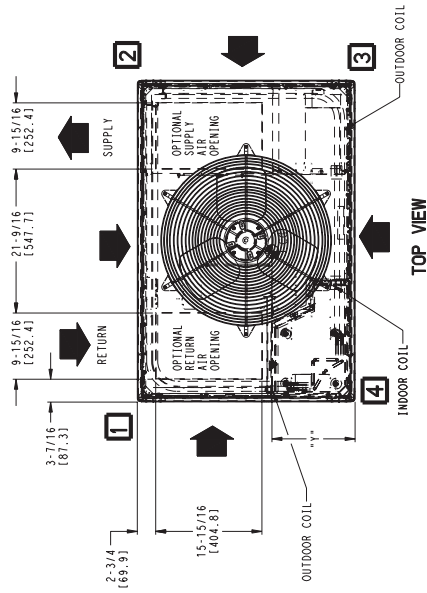
UNITS	VOLTAGE	CORNER WEIGHT LB/KG			
		1"	2"	3"	4"
50VT-A24-...	208/230	83	42	73	33
50VT-A30-...	208/230	90	41	71	32

NOTE: ALL TABLE DATA RELEVANT FOR ALL FACTORY INSTALLED OPTIONS EXCEPT ECONOMIZER

<b>REQUIRED CLEARANCES TO COMBUSTIBLE MATL.</b>		
TOP OF UNIT.....	INCHES (MM)	14 (355.6)
DUCT SIDE OF UNIT.....	INCHES (MM)	2 (50.8)
SIDE OPPOSITE DUCTS.....	INCHES (MM)	14 (355.6)
ELECTRICAL PANEL.....	INCHES (MM)	36 (914.4)
<b>NEC REQUIRED CLEARANCES</b>		
BETWEEN UNITS, POWER ENTRY SIDE.....	INCHES (MM)	42 (1066.8)
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE.....	INCHES (MM)	36 (914.4)
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, POWER ENTRY SIDE.....	INCHES (MM)	42 (1066.8)
<b>REQUIRED CLEARANCE FOR OPERATION AND SERVICING</b>		
EMVP, COIL ACCESS SIDE.....	INCHES (MM)	36 (914.4)
POWER ENTRY SIDE.....	INCHES (MM)	42 (1066.8)
UNIT TOP (FOR NEC REQUIREMENTS).....	INCHES (MM)	48 (1219.2)
SIDE OPPOSITE DUCTS.....	INCHES (MM)	36 (914.4)
DUCT PANEL.....	INCHES (MM)	12 (304.8)

\*MINIMUM DISTANCE: IF UNIT IS PLACED LESS THAN 12 (304.8) FROM WALL SYSTEM, THEN SYSTEM PERFORMANCE MAY BE COMPROMISED.

DIMENSIONS IN ( ) ARE IN MILLIMETERS



50VT500201 REV 2.0

50VT--A

# UNIT DIMENSIONS - 50VT-A36-60

50VT--A

UNIT	SERIES	ELECTRICAL CHARACTERISTICS	UNIT WT.				UNIT HEIGHT IN/MM				CENTER OF GRAVITY IN/MM			
			LB	KG	"A"	"B"	"X"	"Y"	"Z"					
50VT-A36	1	208/230-1, 208/230-3-60	418	190	44-3/4	1137	20-1/2	521	17-1/2	445	17-3/8	441		
50VT-A36	...	460-3-60	432	196	44-3/4	1137	20-1/2	521	17-1/2	445	17-3/8	441		
50VT-A42	1	208/230-1, 208/230-3-60	464	210	48-3/4	1238	20-1/2	521	17-1/2	445	17-3/8	448		
50VT-A42	...	460-3-60	476	216	48-3/4	1238	20-1/2	521	17-1/2	445	17-3/8	448		
50VT-A48	1	208/230-1, 208/230-3-60	452	205	48-3/4	1238	20-1/2	521	17-1/2	445	17-3/8	448		
50VT-A48	...	460-3-60	466	211	48-3/4	1238	20-1/2	521	17-1/2	445	17-3/8	448		
50VT-A60	1	208/230-1, 208/230-3-60	506	230	54-3/4	1391	20-1/2	521	17-1/2	445	18	457		
50VT-A60	...	460-3-60	520	236	54-3/4	1391	20-1/2	521	17-1/2	445	18	457		

UNIT	CORNER WEIGHTS LB/KG			
	"1"	"2"	"3"	"4"
50VT-A36	92	42	73	33
50VT-A36	...	460	96	43
50VT-A42	103	47	81	37
50VT-A42	...	460	105	48
50VT-A48	100	45	79	36
50VT-A48	...	460	103	47
50VT-A60	112	51	88	40
50VT-A60	...	460	115	52

NOTE: ALL TABLE DATA RELEVANT FOR ALL FACTORY INSTALLED OPTIONS EXCEPT ECONOMIZER

### REQUIRED CLEARANCES TO COMBUSTIBLE MATL.

	INCHES (MM)
TOP OF UNIT	2 (50.8)
DUCT SIDE OF UNIT	2 (50.8)
SIDE OPPOSITE DUCTS	14 (355.6)
BOTTOM OF UNIT	0 (0.0)
ELECTRICAL PANEL	36 (914.4)

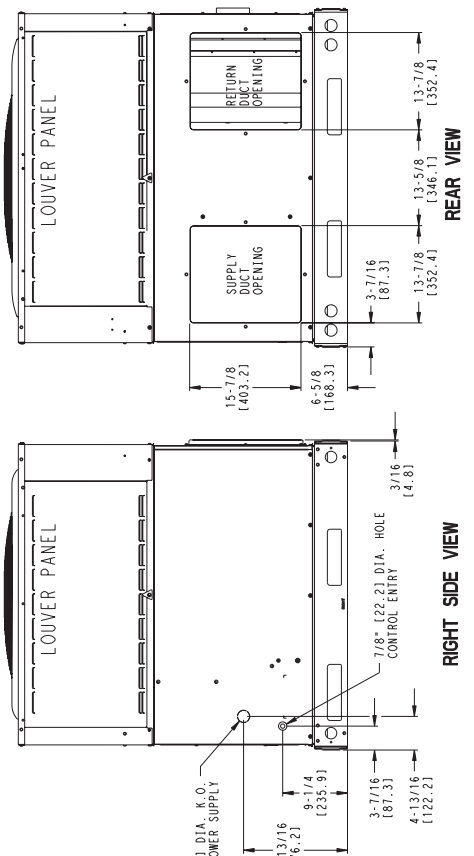
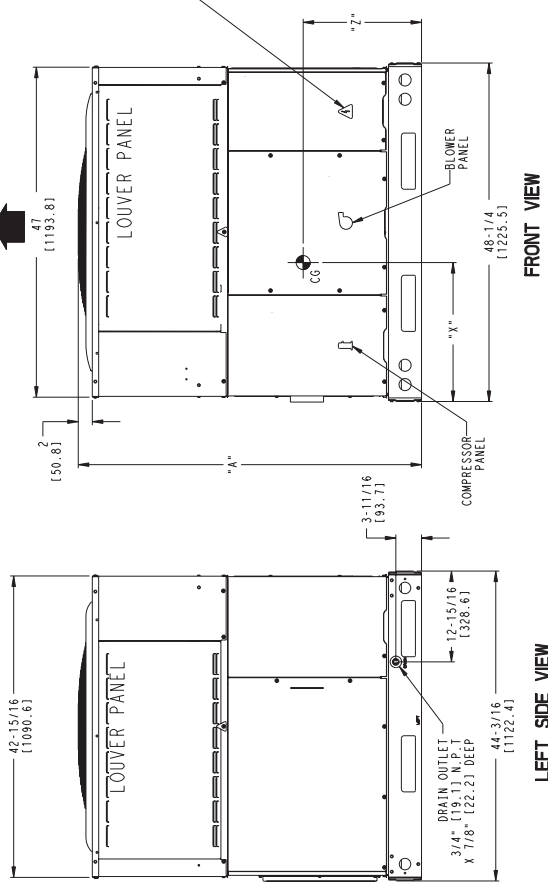
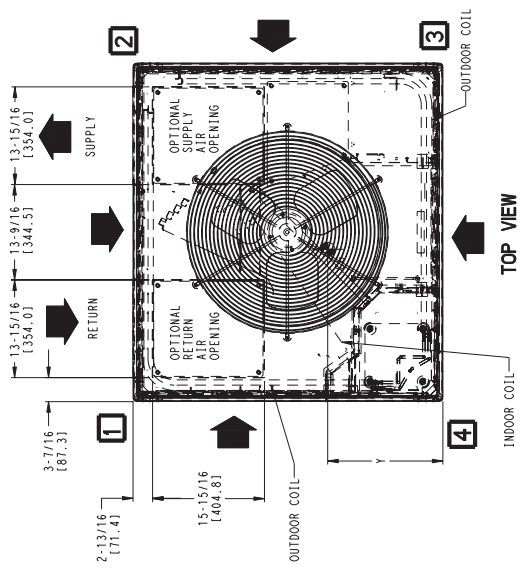
### NEC. REQUIRED CLEARANCES

	INCHES (MM)
BETWEEN UNITS, POWER ENTRY SIDE	42 (1066.8)
UNIT AND UNGROUNDED SURFACES, POWER ENTRY SIDE	36 (914.0)
UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED 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	36 (914.0)
UNIT (EXCEPT FOR NEC REQUIREMENTS)	42 (1066.8)
UNIT TOP	48 (1219.2)
SIDE OPPOSITE DUCTS	36 (914.0)
DUCT PANEL	12 (304.8)

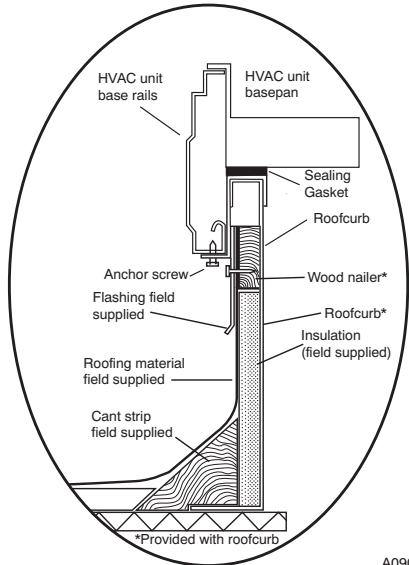
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DIMENSIONS IN ( ) ARE IN MM



REV 2.0  
50VT500202

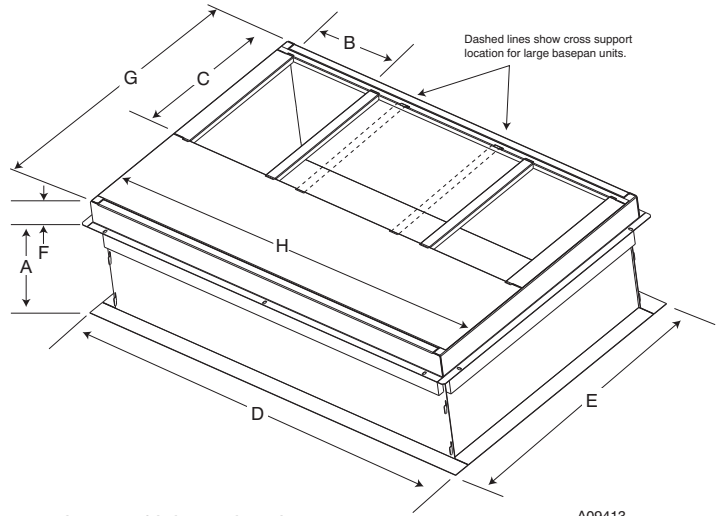


# ROOF CURB ACCESSORY DIMENSIONS



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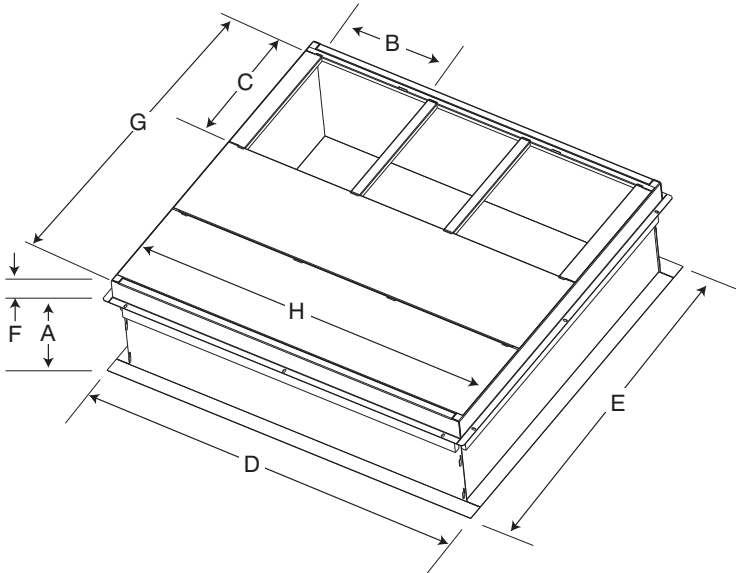
ROOF CURB DETAIL



SMALL/COMMON CURB

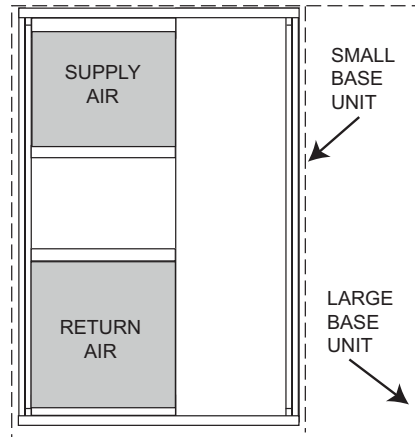
A09413

50VT--A



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	CPRFCURB010A00	11 (279)	10 (254)	14 (356)	16 (406)	47.8 (1214)	32.4 (822)	2.7 (69)	30.6 (778)	46.1 (1170)
	CPRFCURB011A00	14 (356)					43.9 (1116)			
Large	CPRFCURB012A00	11 (279)	14 (356)	14 (356)	16 (406)	47.8 (1214)	32.4 (822)	2.7 (69)	30.6 (778)	46.1 (1170)
	CPRFCURB013A00	14 (356)					43.9 (1116)			

\* 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 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 deg F (deg C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
		Capacity MBtuh	Total Sys kW	EWB	Capacity MBtuh	Total Sys kW	EWB	Capacity MBtuh	Total Sys kW	EWB	Capacity MBtuh	Total Sys kW	EWB	Capacity MBtuh	Total Sys kW	EWB	Capacity MBtuh	Total Sys kW	EWB
700	57 (13.9)	21.90	1.50	21.04	1.68	20.11	1.88	19.10	2.10	18.03	2.35	16.87	2.64						
	62 (16.7)	22.70	1.50	19.79	1.68	20.49	1.88	19.30	2.10	18.08	2.35	16.90	2.64						
	63 (17.2)	23.06	1.50	16.09	1.68	20.75	1.88	19.50	2.11	18.17	2.36	16.75	2.64						
	67 (19.4)	24.96	1.50	16.83	1.69	22.46	1.89	21.12	2.12	19.68	2.37	18.16	2.65						
	72 (22.2)	27.48	1.51	13.75	1.70	24.71	1.91	23.23	2.14	21.65	2.39	19.99	2.67						
	57 (13.9)	22.97	1.52	22.03	1.70	21.03	1.90	19.95	2.13	18.79	2.38	17.55	2.66						
	62 (16.7)	23.39	1.52	21.26	1.70	21.10	1.90	19.98	2.13	18.82	2.38	17.58	2.66						
800	63 (17.2)	23.69	1.52	17.20	1.70	21.26	1.91	19.94	2.13	18.56	2.38	17.09	2.66						
	67 (19.4)	25.63	1.52	18.02	1.71	23.00	1.92	21.58	2.14	20.09	2.39	18.51	2.67						
	72 (22.2)	28.18	1.53	14.50	1.73	25.28	1.93	23.72	2.16	22.08	2.41	20.35	2.69						
	57 (13.9)	23.89	1.54	22.88	1.72	21.81	1.93	20.66	2.15	19.43	2.40	18.11	2.69						
	62 (16.7)	24.03	1.54	22.92	1.72	21.85	1.93	20.69	2.15	19.46	2.40	18.14	2.69						
	63 (17.2)	24.20	1.54	18.26	1.72	21.66	1.93	20.30	2.15	18.86	2.40	17.35	2.68						
	67 (19.4)	26.16	1.54	19.18	1.73	23.42	1.94	21.95	2.16	20.41	2.41	18.78	2.69						
72 (22.2)	28.76	1.55	15.22	1.75	25.73	1.95	24.11	2.18	22.41	2.43	20.62	2.71							

\*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 deg F (deg 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	CFM	Capacity MBtuh	Total Sys kW	CFM	Capacity MBtuh	Total Sys kW	CFM	Capacity MBtuh	Total Sys kW	CFM	Capacity MBtuh	Total Sys kW	CFM	Capacity MBtuh	Total Sys kW	CFM	Capacity MBtuh	Total Sys kW	CFM	Capacity MBtuh	Total Sys kW	CFM
65 (18.3)	700	7.13	6.56	1.48	9.45	8.70	1.55	12.07	11.08	1.62	14.83	13.45	1.68	17.57	15.40	1.74	20.64	20.64	1.81	24.12	24.12	1.90	28.24	28.24	2.03
	800	7.23	6.65	1.49	9.58	8.81	1.55	12.45	11.43	1.62	14.96	13.57	1.67	17.75	15.55	1.72	20.87	20.87	1.78	24.44	24.44	1.86	28.65	28.65	1.98
	900	7.32	6.74	1.50	9.68	8.91	1.56	12.55	11.52	1.61	15.09	13.68	1.66	17.90	15.68	1.71	21.07	21.07	1.76	24.69	24.69	1.84	28.85	28.85	1.95
70 (21.1)	700	6.86	6.31	1.55	9.18	8.45	1.62	11.73	10.77	1.69	14.84	13.28	1.76	17.32	15.17	1.83	20.33	20.33	1.90	23.72	23.72	1.99	27.75	27.75	2.12
	800	6.97	6.41	1.55	9.31	8.57	1.62	11.89	10.92	1.68	14.77	13.40	1.75	17.50	15.33	1.80	20.57	20.57	1.87	24.04	24.04	1.95	28.17	28.17	2.07
	900	7.06	6.50	1.56	9.42	8.67	1.62	12.03	11.04	1.68	14.90	13.51	1.74	17.65	15.47	1.79	20.76	20.76	1.85	24.29	24.29	1.93	28.44	28.44	2.04
75 (23.9)	700	6.56	6.03	1.62	8.88	8.17	1.69	11.42	10.48	1.76	14.43	13.09	1.85	17.06	14.95	1.91	20.03	20.03	1.99	23.35	23.35	2.09	27.26	27.26	2.22
	800	6.67	6.13	1.62	9.02	8.30	1.69	11.57	10.62	1.75	14.57	13.22	1.83	17.24	15.11	1.89	20.26	20.26	1.96	23.65	23.65	2.04	27.67	27.67	2.17
	900	6.76	6.22	1.63	9.13	8.40	1.70	11.71	10.75	1.75	14.69	13.32	1.82	17.40	15.24	1.87	20.45	20.45	1.94	23.89	23.89	2.02	27.96	27.96	2.14

PERFORMANCE DATA (CONT)

30 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES deg F (deg C)																		
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)			
		CFM	EWB	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	57 (13.9)		27.14	27.14	1.89	26.11	26.11	2.10	25.02	25.02	2.33	23.84	23.84	2.59	22.53	22.53	2.89	21.09	21.09	3.23
	62 (16.7)		28.06	25.60	1.90	26.77	24.93	2.10	25.43	24.20	2.33	24.02	23.37	2.59	22.57	22.57	2.89	21.13	21.13	3.23
	63 (17.2)		28.55	20.86	1.90	27.21	20.23	2.10	25.81	19.58	2.33	24.31	18.88	2.59	22.68	18.13	2.89	20.91	17.30	3.23
	67 (19.4)		30.91	21.79	1.91	29.46	21.16	2.12	27.96	20.50	2.35	26.35	19.81	2.61	24.61	19.06	2.90	22.72	18.24	3.24
	72 (22.2)		34.14	17.72	1.93	32.54	17.12	2.14	30.88	16.51	2.37	29.10	15.87	2.63	27.19	15.17	2.92	25.11	14.39	3.25
	57 (13.9)		28.46	28.46	1.93	27.34	27.34	2.14	26.16	26.16	2.37	24.89	24.89	2.63	23.49	23.49	2.92	21.96	21.96	3.26
	62 (16.7)		28.88	27.57	1.93	27.56	26.80	2.14	26.22	26.22	2.37	24.94	24.94	2.63	23.53	23.53	2.92	21.99	21.99	3.26
1000	63 (17.2)		29.30	22.31	1.93	27.88	21.66	2.14	26.41	20.97	2.37	24.85	20.24	2.63	23.15	19.45	2.92	21.31	18.57	3.26
	67 (19.4)		31.70	23.35	1.95	30.18	22.69	2.15	28.60	22.00	2.38	26.91	21.27	2.64	25.10	20.49	2.93	23.14	19.62	3.27
	72 (22.2)		35.00	18.77	1.97	33.30	18.15	2.18	31.53	17.52	2.41	29.69	16.82	2.66	27.70	16.07	2.95	25.53	15.25	3.28
	57 (13.9)		29.59	29.59	1.97	28.40	28.40	2.17	27.13	27.13	2.40	25.78	25.78	2.66	24.30	24.30	2.96	22.67	22.67	3.30
	62 (16.7)		29.65	29.65	1.97	28.45	28.45	2.17	27.18	27.18	2.40	25.83	25.83	2.66	24.34	24.34	2.96	22.71	22.71	3.30
	63 (17.2)		29.89	23.70	1.97	28.41	23.02	2.17	26.89	22.31	2.40	25.26	21.54	2.66	23.52	20.70	2.95	21.64	19.77	3.29
	67 (19.4)		32.31	24.86	1.98	30.72	24.17	2.19	29.08	23.46	2.42	27.34	22.70	2.67	25.48	21.86	2.97	23.46	20.93	3.30
72 (22.2)		35.63	19.78	2.01	33.88	19.11	2.21	32.06	18.43	2.44	30.14	17.70	2.70	28.08	16.92	2.99	25.85	16.08	3.31	

\*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 deg F (deg 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		
65 (18.3)	875	9.56	8.79	1.94	12.51	11.51	2.01	16.03	14.71	2.09	19.18	17.39	2.16	22.61	19.81	2.23	26.50	26.50	2.32	31.02	31.02	2.44	36.42	36.42	2.60
	1000	9.74	8.96	1.96	12.71	11.70	2.02	16.27	14.93	2.09	19.37	17.57	2.15	22.86	20.03	2.22	26.81	26.81	2.30	31.42	31.42	2.41	36.91	36.91	2.56
	1125	9.89	9.10	1.98	12.89	11.86	2.04	16.43	15.08	2.10	19.55	17.73	2.15	23.07	20.21	2.21	27.06	27.06	2.29	31.72	31.72	2.39	37.19	37.19	2.54
70 (21.1)	875	9.13	8.40	2.02	12.12	11.15	2.10	15.35	14.09	2.17	18.92	17.16	2.26	22.31	19.55	2.34	26.15	26.15	2.43	30.55	30.55	2.55	35.85	35.85	2.71
	1000	9.31	8.57	2.04	12.32	11.34	2.11	15.60	14.31	2.17	19.13	17.35	2.25	22.56	19.77	2.32	26.45	26.45	2.40	30.95	30.95	2.51	36.34	36.34	2.67
	1125	9.47	8.72	2.06	12.50	11.51	2.12	15.85	14.55	2.18	19.31	17.51	2.25	22.77	19.95	2.31	26.70	26.70	2.39	31.25	31.25	2.50	36.67	36.67	2.66
75 (23.9)	875	8.67	7.98	2.11	11.69	10.76	2.19	14.93	13.70	2.27	18.68	16.94	2.37	22.01	19.29	2.45	25.79	25.79	2.54	30.10	30.10	2.67	35.28	35.28	2.83
	1000	8.85	8.14	2.12	11.90	10.95	2.20	15.16	13.92	2.27	18.88	17.12	2.36	22.25	19.50	2.43	26.09	26.09	2.51	30.49	30.49	2.63	35.76	35.76	2.78
	1125	9.01	8.29	2.15	12.08	11.12	2.21	15.36	14.10	2.28	19.05	17.27	2.36	22.46	19.68	2.42	26.33	26.33	2.50	30.79	30.79	2.61	36.10	36.10	2.77

# PERFORMANCE DATA (CONT)

## 36 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES deg F (deg C)																		
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)			
		Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	
1050	EWB	57 (13.9)	33.80	2.35	32.51	2.62	31.13	2.92	29.64	3.26	28.00	3.65	26.21	4.10	24.00	4.60	21.12	5.10	18.00	5.60
		62 (16.7)	35.12	2.36	33.51	2.62	30.03	2.92	28.60	3.26	28.11	3.65	26.26	4.10	24.00	4.60	21.12	5.10	18.00	5.60
		63 (17.2)	35.63	2.36	33.98	2.63	30.35	2.93	28.30	3.26	28.32	3.65	26.12	4.10	24.00	4.60	21.12	5.10	18.00	5.60
		67 (19.4)	38.56	2.38	36.80	2.65	34.93	2.95	32.93	3.28	30.76	3.67	28.43	4.11	24.00	4.60	21.12	5.10	18.00	5.60
		72 (22.2)	42.38	2.40	40.45	2.68	38.42	2.98	36.23	3.31	33.88	3.70	31.34	4.14	24.00	4.60	21.12	5.10	18.00	5.60
		57 (13.9)	35.46	2.39	34.08	2.66	32.59	2.96	30.99	3.30	29.24	3.69	27.32	4.13	24.00	4.60	21.12	5.10	18.00	5.60
		62 (16.7)	36.21	2.39	34.54	2.66	32.81	2.96	31.05	3.30	29.29	3.69	27.37	4.13	24.00	4.60	21.12	5.10	18.00	5.60
1200	EWB	63 (17.2)	36.62	2.39	34.89	2.66	33.05	2.96	31.08	3.30	28.96	3.68	26.68	4.13	24.00	4.60	21.12	5.10	18.00	5.60
		67 (19.4)	39.61	2.41	37.76	2.69	35.80	2.98	33.70	3.32	31.44	3.71	29.01	4.15	24.00	4.60	21.12	5.10	18.00	5.60
		72 (22.2)	43.49	2.44	41.47	2.72	39.34	3.02	37.05	3.35	34.60	3.74	31.95	4.17	24.00	4.60	21.12	5.10	18.00	5.60
		57 (13.9)	36.89	2.43	35.42	2.70	33.84	3.00	32.14	3.34	30.28	3.72	28.26	4.17	24.00	4.60	21.12	5.10	18.00	5.60
		62 (16.7)	37.18	2.43	35.49	2.70	33.90	3.00	32.19	3.34	30.33	3.72	28.31	4.17	24.00	4.60	21.12	5.10	18.00	5.60
		63 (17.2)	37.42	2.43	35.62	2.70	33.71	2.99	31.67	3.33	29.48	3.72	27.14	4.16	24.00	4.60	21.12	5.10	18.00	5.60
		67 (19.4)	40.44	2.45	38.52	2.72	36.49	3.02	34.31	3.36	31.98	3.74	29.48	4.18	24.00	4.60	21.12	5.10	18.00	5.60
72 (22.2)	44.37	2.48	42.29	2.75	40.06	3.05	37.69	3.39	35.15	3.77	32.42	4.21	24.00	4.60	21.12	5.10	18.00	5.60		

\*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 deg F (deg 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	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	
65 (18.3)	EWD	1050	12.06	11.10	2.28	15.34	14.11	2.37	19.31	17.73	2.48	22.99	20.85	2.57	27.20	23.83	2.67	32.01	27.9	37.62	2.96	44.15	42.75	3.17	50.00	47.50
		1200	12.24	11.26	2.28	15.55	14.31	2.37	19.49	17.89	2.48	23.21	21.05	2.54	27.49	24.09	2.63	32.36	28.06	37.82	2.96	44.15	42.75	3.17	50.00	47.50
		1350	12.40	11.41	2.29	15.73	14.47	2.37	19.66	18.05	2.46	23.40	21.22	2.53	27.72	24.29	2.62	32.62	28.28	38.08	2.96	44.15	42.75	3.17	50.00	47.50
		1050	11.60	10.67	2.40	14.89	13.70	2.49	19.02	17.45	2.61	22.66	20.55	2.69	26.81	23.49	2.80	31.55	27.93	37.02	3.10	43.57	43.57	3.32	50.00	47.50
		1200	11.79	10.84	2.40	15.10	13.89	2.49	19.22	17.64	2.59	22.88	20.75	2.67	27.09	23.74	2.76	31.91	28.8	37.47	3.10	43.57	43.57	3.32	50.00	47.50
		1350	11.95	10.99	2.41	15.28	14.06	2.49	19.39	17.80	2.59	23.08	20.93	2.66	27.33	23.94	2.74	32.17	28.86	37.72	3.10	43.57	43.57	3.32	50.00	47.50
		1050	11.10	10.21	2.52	14.41	13.26	2.62	18.18	16.69	2.72	22.35	20.27	2.83	26.42	23.15	2.94	31.08	28.06	36.44	3.24	42.87	42.87	3.48	50.00	47.50
75 (23.9)	EWD	1200	11.29	10.38	2.53	14.62	13.46	2.62	18.32	17.00	2.71	22.56	20.46	2.81	26.70	23.40	2.90	31.43	28.06	36.87	3.18	42.98	42.98	3.39	50.00	47.50
		1350	11.45	10.53	2.54	14.81	13.62	2.62	18.55	17.40	2.71	22.75	20.64	2.79	26.93	23.60	2.88	31.71	28.06	37.19	3.17	42.46	42.46	3.36	50.00	47.50

PERFORMANCE DATA (CONT)

42 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES deg F (deg 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							
1225	CFM	EWB	38.52	2.64	36.98	2.93	35.30	3.27	33.49	3.66	31.53	4.11	29.35	4.64	(13.9)	(16.7)	(17.2)	(19.4)	(22.2)	(13.9)	(16.7)	(17.2)	(19.4)	(22.2)		
	65	1400	38.52	2.64	36.98	2.93	35.30	3.27	33.49	3.66	31.53	4.11	29.35	4.64	38.52	2.64	36.98	2.93	35.30	3.27	33.49	3.66	31.53	4.11	29.35	4.64
	62	1400	40.25	2.66	38.38	2.95	36.38	3.28	34.25	3.67	31.99	4.12	29.51	4.64	40.25	2.66	38.38	2.95	36.38	3.28	34.25	3.67	31.99	4.12	29.51	4.64
	63	1400	40.42	2.66	38.51	2.95	36.47	3.28	34.29	3.67	31.96	4.12	29.43	4.64	40.42	2.66	38.51	2.95	36.47	3.28	34.29	3.67	31.96	4.12	29.43	4.64
	67	1400	43.85	2.69	41.76	2.98	39.56	3.32	37.21	3.71	34.68	4.17	31.95	4.70	43.85	2.69	41.76	2.98	39.56	3.32	37.21	3.71	34.68	4.17	31.95	4.70
	72	1400	47.65	2.73	45.34	3.02	42.92	3.37	40.32	3.77	37.55	4.23	34.58	4.76	47.65	2.73	45.34	3.02	42.92	3.37	40.32	3.77	37.55	4.23	34.58	4.76
	57	1400	40.25	2.70	38.58	2.99	36.77	3.33	34.83	3.72	32.71	4.18	30.39	4.71	40.25	2.70	38.58	2.99	36.77	3.33	34.83	3.72	32.71	4.18	30.39	4.71
62	1400	41.40	2.71	39.43	3.00	37.36	3.33	35.17	3.73	32.82	4.18	30.43	4.71	41.40	2.71	39.43	3.00	37.36	3.33	35.17	3.73	32.82	4.18	30.43	4.71	
63	1400	41.51	2.71	39.49	3.00	37.35	3.33	35.07	3.72	32.62	4.17	29.99	4.70	41.51	2.71	39.49	3.00	37.35	3.33	35.07	3.72	32.62	4.17	29.99	4.70	
67	1400	45.01	2.74	42.81	3.04	40.50	3.37	38.03	3.77	35.38	4.23	32.54	4.76	45.01	2.74	42.81	3.04	40.50	3.37	38.03	3.77	35.38	4.23	32.54	4.76	
72	1400	48.85	2.78	46.43	3.08	43.87	3.42	41.16	3.83	38.26	4.29	35.16	4.82	48.85	2.78	46.43	3.08	43.87	3.42	41.16	3.83	38.26	4.29	35.16	4.82	
57	1400	41.72	2.75	39.93	3.05	38.01	3.39	35.94	3.78	33.69	4.24	31.24	4.77	41.72	2.75	39.93	3.05	38.01	3.39	35.94	3.78	33.69	4.24	31.24	4.77	
62	1400	42.39	2.76	40.36	3.05	38.18	3.39	36.02	3.78	33.74	4.24	31.28	4.77	42.39	2.76	40.36	3.05	38.18	3.39	36.02	3.78	33.74	4.24	31.28	4.77	
63	1400	42.38	2.76	40.28	3.05	38.04	3.38	35.68	3.77	33.14	4.23	30.42	4.75	42.38	2.76	40.28	3.05	38.04	3.38	35.68	3.77	33.14	4.23	30.42	4.75	
67	1400	45.94	2.79	43.65	3.09	41.24	3.43	38.67	3.83	35.92	4.28	32.99	4.81	45.94	2.79	43.65	3.09	41.24	3.43	38.67	3.83	35.92	4.28	32.99	4.81	
72	1400	49.80	2.84	47.28	3.14	44.62	3.48	41.80	3.88	38.81	4.35	35.62	4.88	49.80	2.84	47.28	3.14	44.62	3.48	41.80	3.88	38.81	4.35	35.62	4.88	
		*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 deg F (deg 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	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)	CFM	EWB	13.77	2.42	17.68	2.58	21.89	2.72	25.94	2.83	30.55	2.94	35.85	3.08	42.16	3.29	48.46	3.55	55.11	3.89	61.82	4.18	68.49	4.47	75.16	4.76
	1225	1400	13.77	2.42	17.68	2.58	21.89	2.72	25.94	2.83	30.55	2.94	35.85	3.08	42.16	3.29	48.46	3.55	55.11	3.89	61.82	4.18	68.49	4.47	75.16	4.76
	1255	1400	12.83	2.44	17.89	2.59	22.07	2.72	26.18	2.82	30.86	2.92	36.22	3.06	42.20	3.24	47.82	3.50	54.47	3.84	61.03	4.13	67.70	4.42	73.97	4.71
	1275	1400	14.11	2.46	18.12	2.61	22.25	2.73	26.38	2.83	31.11	2.92	36.53	3.07	41.84	3.24	47.22	3.49	53.83	3.79	60.54	4.08	67.21	4.37	74.15	4.66
	1300	1400	13.46	2.56	17.32	2.59	21.69	2.72	25.65	2.86	30.15	2.92	35.34	3.02	41.53	3.24	48.06	3.71	54.67	3.99	61.38	4.28	68.05	4.57	74.84	4.86
	1325	1400	13.65	2.57	17.54	2.61	21.88	2.72	25.89	2.86	30.46	2.95	35.70	3.19	41.84	3.39	47.53	3.67	54.00	3.96	60.89	4.25	67.68	4.54	74.35	4.83
	1350	1400	13.82	2.59	17.73	2.63	22.04	2.74	26.11	2.86	30.72	2.95	36.01	3.20	41.57	3.39	46.99	3.65	53.52	3.92	60.40	4.21	67.09	4.50	73.86	4.79
75 (23.9)	CFM	EWB	12.03	2.69	16.92	2.85	21.46	3.00	25.36	3.11	29.77	3.22	34.82	3.37	40.89	3.60	47.64	3.89	54.51	4.18	61.38	4.47	68.25	4.76	75.10	5.05
	1225	1400	12.03	2.69	16.92	2.85	21.46	3.00	25.36	3.11	29.77	3.22	34.82	3.37	40.89	3.60	47.64	3.89	54.51	4.18	61.38	4.47	68.25	4.76	75.10	5.05
	1255	1400	13.27	2.71	17.15	2.86	21.67	3.00	25.60	3.20	30.06	3.34	35.19	3.54	41.34	3.56	47.18	3.84	54.00	4.13	60.89	4.42	67.70	4.71	74.15	4.99
1275	1400	13.45	2.73	17.36	2.88	21.83	3.01	25.80	3.20	30.32	3.34	35.47	3.54	41.27	3.54	46.71	3.83	53.52	4.08	60.40	4.33	67.09	4.67	73.86	4.96	

# PERFORMANCE DATA (CONT)

## 48 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES deg F (deg C)																			
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)				
		Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW		
1400	CFM	EWB		Total Sys kW		Capacity MBtuh		Total Sys kW		Capacity MBtuh		Total Sys kW		Capacity MBtuh		Total Sys kW		Capacity MBtuh		Total Sys kW	
	57 (13.9)	44.75	44.75	3.06	42.98	42.98	41.06	39.00	39.00	36.79	36.79	4.67	34.42	34.42	5.18	5.18					
	62 (16.7)	46.12	41.54	3.07	43.97	40.35	39.04	37.55	37.55	36.86	36.86	4.67	34.48	34.48	5.18	5.18					
	63 (17.2)	46.70	33.68	3.07	44.47	32.60	31.45	30.23	30.23	28.94	28.94	4.67	34.05	27.58	5.18	5.18					
	67 (19.4)	50.55	35.24	3.10	48.13	34.15	32.98	31.75	31.75	30.45	30.45	4.70	36.89	29.07	5.21	5.21					
	72 (22.2)	55.52	28.74	3.13	52.82	27.67	26.55	25.36	25.36	24.12	24.12	4.73	40.47	22.80	5.24	5.24					
	57 (13.9)	46.77	46.77	3.13	44.87	44.87	42.79	40.57	40.57	38.20	38.20	4.74	35.66	35.66	5.25	5.25					
62 (16.7)	47.44	44.50	3.14	45.22	43.17	42.89	40.63	40.63	38.26	38.26	4.74	35.71	35.71	5.25	5.25						
63 (17.2)	47.85	35.90	3.14	45.50	34.77	33.55	32.27	32.27	30.91	30.91	4.73	34.62	29.45	5.24	5.24						
67 (19.4)	51.78	37.65	3.17	49.22	36.50	35.26	33.97	33.97	32.61	32.61	4.76	37.48	31.13	5.27	5.27						
72 (22.2)	56.83	30.24	3.20	53.99	29.12	27.94	26.71	26.71	25.40	25.40	4.80	41.08	24.03	5.30	5.30						
57 (13.9)	48.51	48.51	3.20	46.46	46.46	44.24	41.88	41.88	39.36	39.36	4.81	36.67	36.67	5.32	5.32						
62 (16.7)	48.63	48.63	3.20	46.54	46.54	44.31	41.95	41.95	39.42	39.42	4.81	36.72	36.72	5.32	5.32						
63 (17.2)	48.76	38.03	3.20	46.31	36.85	35.57	34.21	34.21	32.76	32.76	4.80	35.07	31.19	5.30	5.30						
67 (19.4)	52.73	39.96	3.23	50.06	38.75	37.47	36.10	36.10	34.64	34.64	4.83	37.93	33.06	5.33	5.33						
72 (22.2)	57.85	31.65	3.26	54.90	30.49	29.26	27.98	27.98	26.62	26.62	4.86	41.53	25.19	5.36	5.36						

\*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 deg F (deg 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	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW	Capacity MBtuh	Total Sys kW	Total Sys kW			
65 (18.3)	EDB	CFM	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	
	1400	15.24	14.02	3.00	20.15	18.54	3.09	25.29	23.21	3.21	29.94	27.15	3.32	35.20	30.84	3.45	41.16	41.16	3.62	48.10	48.10	3.83	54.59	54.59	4.07	60	54.59	4.07
	1600	15.50	14.26	3.04	20.44	18.80	3.12	25.55	23.45	3.23	30.25	27.43	3.33	35.57	31.17	3.45	41.64	41.64	3.63	47.73	47.73	3.81	53.60	53.60	4.04	60	53.60	4.04
	1800	15.74	14.48	3.09	20.70	19.05	3.16	25.78	23.66	3.26	30.52	27.68	3.35	35.88	31.43	3.47	41.86	41.86	3.63	47.20	47.20	3.82	52.65	52.65	4.03	60	52.65	4.03
	1400	14.75	13.57	3.12	19.66	18.09	3.22	25.02	22.96	3.36	28.60	26.84	3.47	34.73	30.43	3.61	40.57	40.57	3.79	47.52	47.52	4.02	54.22	54.22	4.26	60	54.22	4.26
	1600	15.01	13.81	3.16	19.94	18.34	3.25	25.26	23.19	3.37	29.91	27.12	3.48	35.11	30.76	3.61	41.02	41.02	3.78	47.42	47.42	3.98	53.38	53.38	4.23	60	53.38	4.23
	1800	15.27	14.04	3.21	20.24	18.62	3.29	25.51	23.41	3.40	30.18	27.37	3.50	35.42	31.04	3.63	41.43	41.43	3.80	46.98	46.98	3.99	52.55	52.55	4.22	60	52.55	4.22
1400	14.22	13.08	3.25	19.13	17.60	3.36	24.68	22.65	3.51	29.23	26.51	3.64	34.26	30.30	3.78	39.96	39.96	3.96	46.79	46.79	4.21	53.79	53.79	4.46	60	53.79	4.46	
1600	14.48	13.32	3.29	19.44	17.89	3.39	24.97	22.92	3.53	29.54	26.79	3.64	34.63	30.34	3.78	40.40	40.40	3.95	47.06	47.06	4.16	53.09	53.09	4.42	60	53.09	4.42	
1800	14.73	13.55	3.34	19.71	18.14	3.43	25.22	23.15	3.56	29.82	27.04	3.66	34.95	30.62	3.79	40.82	40.82	3.98	46.70	46.70	4.17	52.35	52.35	4.42	60	52.35	4.42	

PERFORMANCE DATA (CONT)

60 Cooling Extended Performance Table

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES deg F (deg 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
CFM	EWB	75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
1750	57 (13.9)	56.58	56.58	3.82	54.25	54.25	4.23	4.69	49.03	49.03	5.20	46.02	46.02	5.80	42.74	42.74	6.47		
	62 (16.7)	58.15	51.34	3.84	55.29	49.87	4.24	4.69	49.14	49.14	5.21	46.10	46.10	5.80	42.80	42.80	6.47		
	63 (17.2)	58.96	41.68	3.85	56.05	40.35	4.25	4.70	49.57	37.43	5.21	45.96	35.80	5.79	42.09	34.04	6.46		
	67 (19.4)	63.58	43.48	3.90	60.40	42.13	4.30	4.75	53.35	39.18	5.26	49.42	37.52	5.84	45.21	35.73	6.50		
	72 (22.2)	69.81	35.09	3.96	66.25	33.84	4.37	4.82	58.39	31.04	5.33	54.03	29.43	5.90	49.34	27.71	6.55		
	57 (13.9)	59.07	59.07	3.93	56.53	56.53	4.33	4.79	50.87	50.87	5.31	47.61	47.61	5.89	44.07	44.07	6.56		
	62 (16.7)	59.71	55.08	3.93	56.79	56.35	4.34	4.79	50.94	50.94	5.31	47.68	47.68	5.90	44.13	44.13	6.56		
2000	63 (17.2)	60.33	44.49	3.94	57.22	43.10	4.34	4.79	50.41	40.03	5.30	46.64	38.29	5.88	42.63	36.38	6.54		
	67 (19.4)	64.95	46.50	3.99	61.60	45.09	4.39	4.84	54.20	41.98	5.35	50.08	40.22	5.93	45.71	38.29	6.58		
	72 (22.2)	71.19	37.15	4.06	67.47	35.74	4.46	4.91	59.27	32.74	5.42	54.69	31.06	5.99	49.83	29.27	6.63		
	57 (13.9)	61.14	61.14	4.03	58.43	58.43	4.43	4.89	52.36	52.36	5.40	48.89	48.89	5.99	45.23	45.23	6.65		
	62 (16.7)	61.25	61.25	4.03	58.52	58.52	4.43	4.89	52.43	52.43	5.40	48.95	48.95	5.99	45.28	45.28	6.65		
	63 (17.2)	61.37	47.18	4.03	58.11	45.72	4.43	4.88	51.04	42.48	5.38	47.15	40.61	5.96	43.03	38.53	6.62		
	67 (19.4)	65.96	49.40	4.08	62.50	47.93	4.48	4.93	54.82	44.65	5.44	50.57	42.76	6.01	46.07	40.65	6.66		
72 (22.2)	72.28	38.89	4.15	68.41	37.47	4.55	5.00	59.88	34.37	5.51	55.14	32.63	6.08	50.13	30.78	6.71			

\*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 deg F (deg 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	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
EDB	CFM	-10 (-23.3)			0 (-17.8)			10 (-12.2)			20 (-6.7)			30 (-1.1)			40 (4.4)			50 (10)			60 (15.6)		
65 (18.3)	1750	21.10	19.41	3.70	26.76	24.62	3.86	32.87	30.17	4.02	39.65	35.96	4.20	46.23	40.51	4.36	53.69	45.5	62.45	62.45	4.80	72.83	72.83	5.13	
	2000	21.50	19.78	3.75	27.19	25.02	3.90	33.42	30.68	4.05	40.05	36.32	4.20	46.75	40.96	4.35	54.33	45.33	63.26	63.26	4.75	73.85	73.85	5.06	
	2250	21.87	20.12	3.81	27.58	25.37	3.95	34.54	31.70	4.11	40.41	36.65	4.23	47.21	41.37	4.36	54.88	45.88	63.92	63.92	4.74	74.66	74.66	5.04	
	70 (21.1)	1750	20.30	18.67	3.85	26.01	23.93	4.02	32.15	29.51	4.19	39.25	35.59	4.39	45.69	40.03	4.56	52.98	42.76	61.56	61.56	5.02	71.76	71.76	5.35
		2000	20.71	19.05	3.90	26.46	24.34	4.06	32.62	29.94	4.22	39.63	35.94	4.39	46.19	40.47	4.55	53.62	43.62	62.37	62.37	4.96	72.76	72.76	5.27
		2250	21.08	19.39	3.96	26.85	24.71	4.11	33.01	30.30	4.25	40.01	36.29	4.42	46.63	40.86	4.56	54.16	44.16	63.03	63.03	4.95	73.56	73.56	5.26
		75 (23.9)	1750	19.43	17.88	4.01	25.22	23.21	4.19	31.39	28.81	4.38	38.81	35.20	4.60	45.13	39.54	4.78	52.29	42.29	60.72	60.72	5.24	70.71	70.71
2000			19.85	18.26	4.06	25.67	23.62	4.23	31.88	29.26	4.40	39.22	35.57	4.60	45.64	39.99	4.76	52.90	42.90	61.50	61.50	5.18	71.69	71.69	5.50
2250			20.22	18.61	4.12	26.07	23.98	4.28	32.31	29.65	4.44	39.61	35.92	4.62	46.08	40.37	4.77	53.44	43.44	62.15	62.15	5.16	72.44	72.44	5.47



## 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:

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

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

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

Where:  $h_{lwb}$  = 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 x (1 + BF) x (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)

Multiplication Factors	HEATERVOLT RATING	VOLTAGE DISTRIBUTION	MULTIPLICATION FACTOR
240		200	0.69
		208	0.75
		230	0.92
		240	1.00
480		460	0.92

### Dry Coil Air Delivery CFM\* - Horizontal 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							
<b>50VT-A24</b>	Low	Blue	754	650	536	429	---	---	---	---	---	---	---	---	---	---	---	
	Med-Low	Pink	851	777	675	591	475	---	---	---	---	---	---	---	---	---	---	
	Medium <sup>1</sup>	Red	941	851	774	684	576	479	---	---	---	---	---	---	---	---	---	---
	Med-High	Orange	1009	917	840	759	667	577	447	---	---	---	---	---	---	---	---	---
	High	Black	1241	1167	1111	1036	969	881	818	731	640	---	---	---	---	---	---	---
	Low	Blue	741	638	547	415	---	---	---	---	---	---	---	---	---	---	---	---
<b>50VT-A30</b>	Med-Low	Pink	973	887	823	733	665	538	451	---	---	---	---	---	---	---	---	---
	Medium	Red	1088	1023	954	881	800	723	658	563	461	---	---	---	---	---	---	---
	Med-High <sup>1</sup>	Orange	1140	1064	996	915	840	758	687	564	480	---	---	---	---	---	---	---
	High	Black	1202	1140	1082	1015	961	881	810	732	631	---	---	---	---	---	---	---
	Low	Blue	1176	1121	1079	1019	974	920	877	826	754	---	---	---	---	---	---	---
	Med-Low	Pink	1295	1234	1182	1126	1075	1016	955	898	857	---	---	---	---	---	---	---
<b>50VT-A36</b>	Medium <sup>1</sup>	Red	1345	1282	1235	1194	1140	1095	1027	974	921	---	---	---	---	---	---	---
	Med-High	Orange	1505	1452	1413	1358	1323	1282	1234	1169	1130	---	---	---	---	---	---	---
	High	Black	1705	1643	1607	1568	1518	1483	1448	1404	1360	---	---	---	---	---	---	---
	Low	Blue	1295	1234	1182	1126	1075	1016	955	898	857	---	---	---	---	---	---	---
	Med-Low	Pink	1345	1282	1235	1194	1140	1095	1027	974	921	---	---	---	---	---	---	---
	Medium	Red	1505	1452	1413	1358	1323	1282	1234	1169	1130	---	---	---	---	---	---	---
<b>50VT-A42</b>	Med-High <sup>1</sup>	Orange	1545	1492	1449	1411	1362	1313	1278	1231	1188	---	---	---	---	---	---	---
	High	Black	1705	1643	1607	1568	1518	1483	1448	1404	1360	---	---	---	---	---	---	---
	Low	Blue	1430	1374	1327	1267	1223	1176	1127	1072	1027	---	---	---	---	---	---	---
	Med-Low	Pink	1445	1389	1341	1281	1236	1189	1139	1072	1027	---	---	---	---	---	---	---
	Medium <sup>1</sup>	Red	1678	1635	1602	1558	1513	1474	1438	1404	1360	---	---	---	---	---	---	---
	Med-High	Orange	2131	2088	2065	2013	1982	1941	1888	1860	1785	---	---	---	---	---	---	---
<b>50VT-A48</b>	High	Black	2461	2409	2339	2286	2192	2140	2062	1968	1874	---	---	---	---	---	---	---
	Low	Blue	1445	1389	1341	1281	1236	1189	1139	1072	1027	---	---	---	---	---	---	---
	Med-Low	Pink	1678	1635	1602	1558	1513	1474	1438	1404	1349	---	---	---	---	---	---	---
	Medium <sup>1</sup>	Red	1962	1915	1880	1843	1794	1753	1711	1675	1628	---	---	---	---	---	---	---
	Med-High	Orange	2131	2088	2065	2013	1982	1941	1888	1860	1785	---	---	---	---	---	---	---
	High	Black	2461	2409	2339	2286	2192	2140	2062	1968	1874	---	---	---	---	---	---	---

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

<sup>1</sup> Factory - shipped cooling/heat pump heating speed

**NOTE:** Duct field - 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 for dehumidification speed.

Note: Deduct 10% for 208 volt operation.

**Dry Coil Air Delivery - Downflow Discharge**

UNIT	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)	EXTERNAL STATIC PRESSURE (IN. W.C.)																	
				0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.0								
50VTA24	Low	CFM		809	664	554	447	--	--	--	--	--	--	--	--	--	--	--	--	--	
		WATTS	Blue	85	82	87	95	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		BHP		0.09	0.09	0.09	0.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MedLow	CFM	Pink	875	787	693	612	498	392	--	--	--	--	--	--	--	--	--	--	--	--
		WATTS		101	111	115	125	131	142	--	--	--	--	--	--	--	--	--	--	--	--
		BHP		0.11	0.12	0.12	0.13	0.14	0.15	--	--	--	--	--	--	--	--	--	--	--	--
	Medium <sup>1</sup>	CFM	Red	939	860	748	663	591	472	399	--	--	--	--	--	--	--	--	--	--	--
		WATTS		119	124	134	138	147	155	164	--	--	--	--	--	--	--	--	--	--	--
		BHP		0.13	0.13	0.14	0.14	0.15	0.16	0.17	0.18	--	--	--	--	--	--	--	--	--	--
	MedHigh	CFM	Orange	1026	949	873	786	694	604	516	--	--	--	--	--	--	--	--	--	--	--
		WATTS		146	151	161	167	177	183	195	--	--	--	--	--	--	--	--	--	--	--
		BHP		0.16	0.16	0.17	0.18	0.19	0.20	0.21	--	--	--	--	--	--	--	--	--	--	--
High	CFM	Black	1264	1202	1134	1070	1002	931	870	806	699	610	--	--	--	--	--	--	--	--	
	WATTS		250	261	274	279	290	296	308	319	328	332	--	--	--	--	--	--	--	--	
	BHP		0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.34	0.35	0.36	--	--	--	--	--	--	--	--	
50VTA30	Low	CFM	Blue	756	669	548	457	--	--	--	--	--	--	--	--	--	--	--	--	--	
		WATTS		84	90	96	106	--	--	--	--	--	--	--	--	--	--	--	--	--	--
		BHP		0.09	0.10	0.10	0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	MedLow	CFM	Pink	1002	928	842	733	660	560	450	--	--	--	--	--	--	--	--	--	--	--
		WATTS		144	155	161	173	185	192	203	--	--	--	--	--	--	--	--	--	--	--
		BHP		0.15	0.17	0.17	0.19	0.20	0.21	0.22	--	--	--	--	--	--	--	--	--	--	--
	Medium	CFM	Red	1110	1025	967	879	814	706	611	509	--	--	--	--	--	--	--	--	--	--
		WATTS		188	195	205	211	223	236	243	255	--	--	--	--	--	--	--	--	--	--
		BHP		0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27	--	--	--	--	--	--	--	--	--	--
	MedHigh <sup>1</sup>	CFM	Orange	1160	1091	1004	945	866	804	699	615	496	--	--	--	--	--	--	--	--	--
		WATTS		213	225	232	243	249	261	273	285	291	--	--	--	--	--	--	--	--	--
		BHP		0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.31	0.31	--	--	--	--	--	--	--	--	--
High	CFM	Black	1240	1173	1110	1031	966	902	821	726	626	--	--	--	--	--	--	--	--	--	
	WATTS		254	266	274	284	295	302	315	327	331	--	--	--	--	--	--	--	--	--	
	BHP		0.27	0.29	0.29	0.30	0.32	0.32	0.34	0.35	0.35	--	--	--	--	--	--	--	--	--	

Dry Coil Air Delivery - Downflow Discharge

UNIT	MOTOR SPEED	WIRE COLOR	CFM	EXTERNAL STATIC PRESSURE (IN. W.C.)									
				0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.0
50VTA36	Low	Blue	CFM	1307	1249	1192	1138	1084	1038	987	934	886	840
			WATTS	158	160	173	180	193	205	218	230	237	249
			BHP	0.17	0.17	0.19	0.19	0.21	0.22	0.23	0.25	0.25	0.27
	MedLow	Pink	CFM	1365	1324	1284	1233	1181	1127	1084	1039	984	939
			WATTS	177	189	201	210	222	236	248	261	269	281
			BHP	0.19	0.20	0.22	0.23	0.24	0.25	0.27	0.28	0.29	0.30
	Medium <sup>1</sup>	Red	CFM	1425	1384	1339	1301	1254	1199	1151	1104	1065	1015
			WATTS	197	210	223	235	248	257	271	284	296	305
			BHP	0.21	0.23	0.24	0.25	0.27	0.28	0.29	0.30	0.32	0.33
	MedHigh	Orange	CFM	1582	1549	1509	1469	1433	1392	1346	1300	1249	1213
			WATTS	267	280	294	308	322	336	344	359	374	387
			BHP	0.29	0.30	0.32	0.33	0.35	0.36	0.37	0.38	0.40	0.42
High	Black	CFM	1775	1736	1696	1660	1622	1588	1557	1516	1472	1426	
		WATTS	371	386	401	410	424	439	453	468	483	497	
		BHP	0.40	0.41	0.43	0.44	0.45	0.47	0.49	0.50	0.52	0.53	
50VTA42	Low	Blue	CFM	1365	1324	1284	1233	1181	1127	1084	1039	984	939
			WATTS	177	189	201	210	222	236	248	261	269	281
			BHP	0.19	0.20	0.22	0.23	0.24	0.25	0.27	0.28	0.29	0.30
	MedLow	Pink	CFM	1425	1384	1339	1301	1254	1199	1151	1104	1065	1015
			WATTS	197	210	223	235	248	257	271	284	296	305
			BHP	0.21	0.23	0.24	0.25	0.27	0.28	0.29	0.30	0.32	0.33
	Medium	Red	CFM	1582	1549	1509	1469	1433	1392	1346	1300	1249	1213
			WATTS	267	280	294	308	322	336	344	359	374	387
			BHP	0.29	0.30	0.32	0.33	0.35	0.36	0.37	0.38	0.40	0.42
	MedHigh <sup>1</sup>	Orange	CFM	1623	1586	1553	1511	1470	1433	1393	1350	1309	1261
			WATTS	285	299	312	324	335	349	363	378	393	407
			BHP	0.31	0.32	0.33	0.35	0.36	0.37	0.39	0.41	0.42	0.44
High	Black	CFM	1775	1736	1696	1660	1622	1588	1557	1516	1472	1426	
		WATTS	371	386	401	410	424	439	453	468	483	497	
		BHP	0.40	0.41	0.43	0.44	0.45	0.47	0.49	0.50	0.52	0.53	

### Dry Coil Air Delivery - Downflow Discharge

UNIT	MOTOR SPEED	WIRE COLOR	EXTERNAL STATIC PRESSURE (IN. W.C.)	EXTERNAL STATIC PRESSURE (IN. W.C.)										
				0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.0	
50VTA48	Low	Blue	CFM	1491	1445	1403	1358	1306	1261	1199	1169	1122	1069	
			WATTS	232	239	254	262	278	293	303	316	323	335	
	MedLow	Pink	BHP	0.25	0.26	0.27	0.28	0.30	0.31	0.32	0.32	0.34	0.35	
			CFM	1479	1436	1387	1346	1298	1253	1206	1160	1114	1061	
				WATTS	224	239	247	262	270	284	300	307	319	330
				BHP	0.24	0.26	0.26	0.28	0.29	0.30	0.32	0.32	0.34	0.35
				CFM	1813	1785	1745	1709	1663	1632	1592	1548	1506	1450
				WATTS	411	427	435	451	462	478	489	504	518	529
				BHP	0.44	0.46	0.47	0.48	0.50	0.51	0.52	0.54	0.56	0.57
				CFM	2178	2148	2105	2073	2036	2002	1967	1919	1845	1751
		MedHigh	Orange	WATTS	674	691	703	717	733	743	758	754	734	701
				BHP	0.72	0.74	0.75	0.77	0.79	0.80	0.81	0.81	0.79	0.75
	High	Black	CFM	2480	2432	2375	2322	2236	2161	2085	2006	1917	1808	
			WATTS	1029	1012	995	975	941	908	869	836	796	751	
			BHP	1.10	1.09	1.07	1.05	1.01	0.97	0.93	0.90	0.85	0.81	
			CFM	1479	1436	1387	1346	1298	1253	1206	1160	1114	1061	
50VTA60	Low	Blue	WATTS	224	239	247	262	270	284	300	307	319	330	
			BHP	0.24	0.26	0.26	0.28	0.29	0.30	0.32	0.33	0.34	0.35	
	MedLow	Pink	CFM	1841	1796	1761	1724	1690	1651	1616	1578	1527	1478	
			WATTS	425	434	453	460	476	485	501	508	525	542	
				BHP	0.46	0.47	0.49	0.49	0.51	0.52	0.54	0.54	0.56	0.58
				CFM	1944	1913	1872	1838	1801	1771	1731	1698	1655	1613
		Medium <sup>1</sup>	Red	WATTS	486	501	511	529	537	554	565	578	595	603
				BHP	0.52	0.54	0.55	0.57	0.58	0.59	0.61	0.62	0.64	0.65
		MedHigh	Orange	CFM	2178	2148	2105	2073	2036	2002	1967	1919	1845	1751
				WATTS	674	691	703	717	733	743	758	754	734	701
		High	Black	BHP	0.72	0.74	0.75	0.77	0.79	0.80	0.81	0.81	0.79	0.75
				CFM	2480	2432	2375	2322	2236	2161	2085	2006	1917	1808
			WATTS	1029	1012	995	975	941	908	869	836	796	751	
			BHP	1.10	1.09	1.07	1.05	1.01	0.97	0.93	0.90	0.85	0.81	

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

<sup>1</sup> Factory-shipped heating speed

<sup>2</sup> Factory-shipped cooling speed

"NA" = Not allowed for heating speed

**NOTE:** Ducted field-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 for dehumidification speed.

**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,	0.03	0.04	0.05	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	-	-	-	-
	2.5,																	
	3.0																	
1200-1800CFM 16x24x1+14x24x1 (406x610x25+356x610x25)	3.5,	-	-	-	-	0.04	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.12
	4.0																	
	5.0																	
1500-2200CFM 16x24x1+18x24x1 (406x610x25+457x610x25)	5.0	-	-	-	-	-	-	-	-	-	-	-	-	0.04	0.06	0.08	0.10	0.11

**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	0.06	0.08	0.11									
30				0.05	0.06	0.07	0.08	0.11									
36				0.06	0.06	0.09	0.10	0.11	0.14								
42					0.05	0.05	0.06	0.07	0.08	0.08	0.09	0.09	0.11				
48							0.04	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	0.10	0.12	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,	-	-	0.08	0.09	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.13	0.14	-	-	-	-
	2.5,																	
	3.0																	
1200-1800CFM 16x24x1+14x24x1 (406x610x25+356x610x25)	3.5,	-	-	-	-	-	-	0.09	0.10	0.10	0.10	0.13	0.15	0.17	0.19	0.21	-	-
	4.0																	
	5.0																	
1500-2200CFM 16x24x1+18x24x1 (406x610x25+457x610x25)	5.0	-	-	-	-	-	-	-	-	-	-	-	-	0.15	0.17	0.18	0.20	0.21

**Electric Heat Pressure Drop Table (IN. W.C.)  
Small Cabinet: 24-36**

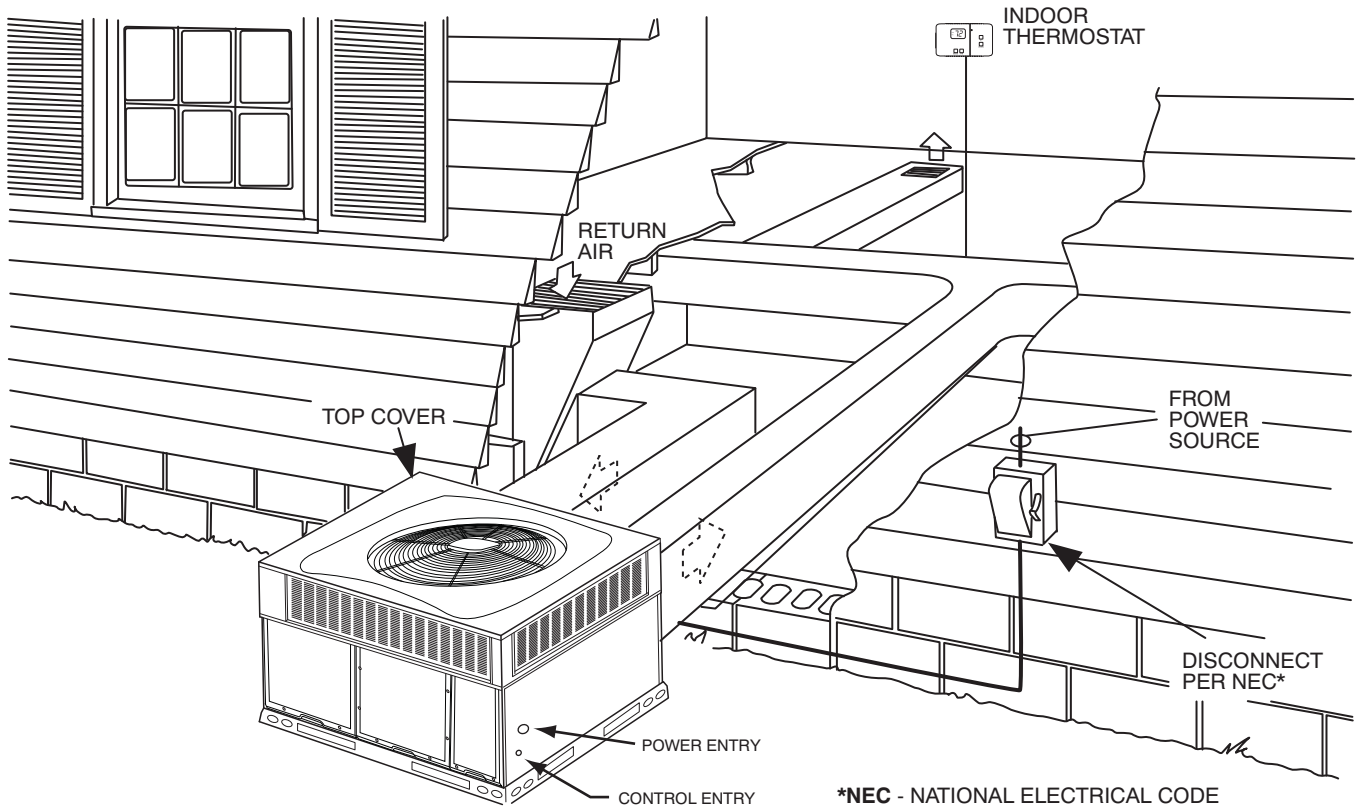
STATIC	STANDARD CFM (SCFM)															
	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600				
5kw	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.07				
7.5 kw	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.05	0.07	0.08	0.09				
10 kw	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.06	0.07	0.09	0.10	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**

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

50VT --A



A09238



## 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.

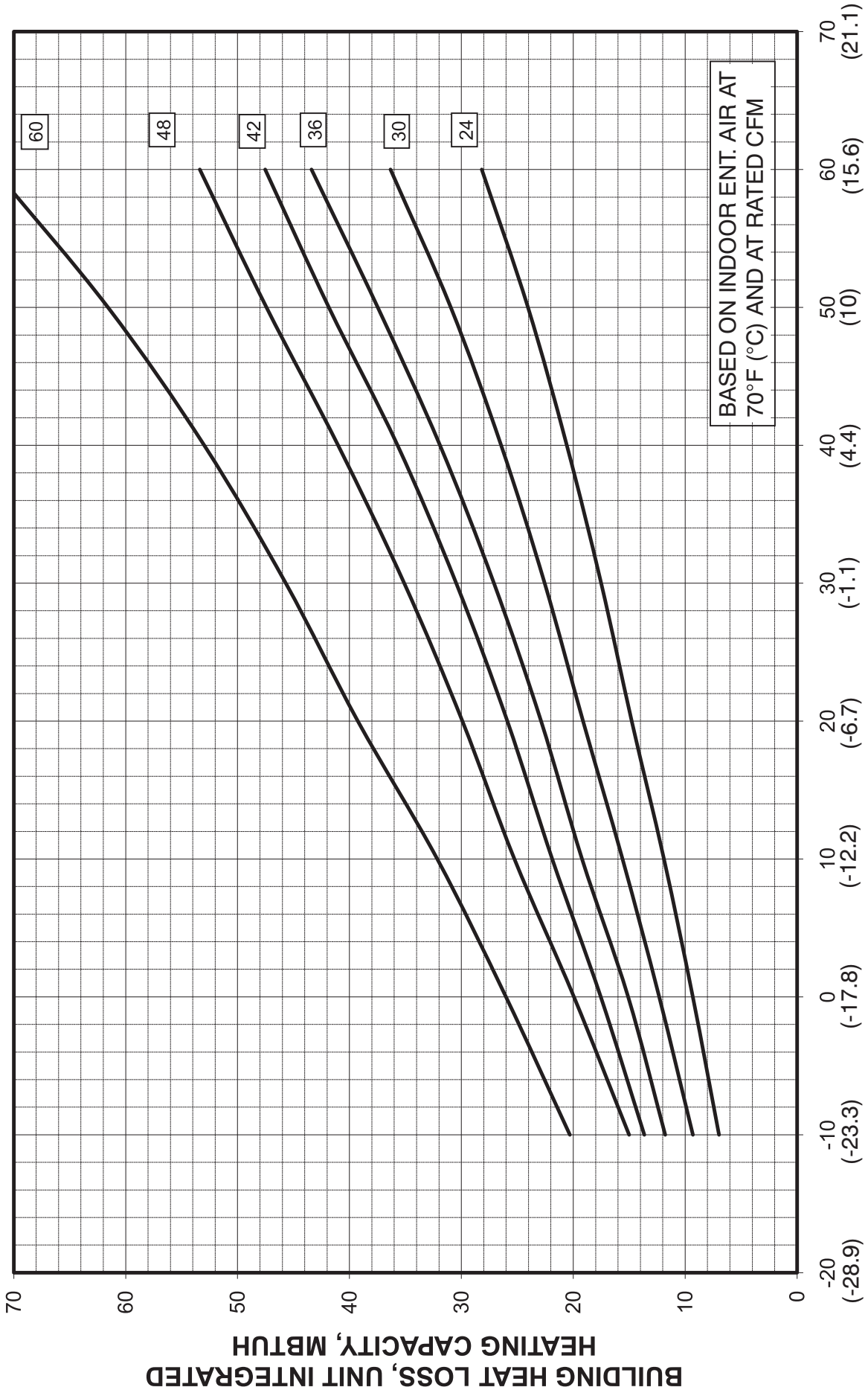
**Minimum cooling airflow** — Minimum cooling airflow is 350 CFM per ton in cooling mode. Airflow can be lower in certain modes when humidity removal is an issue however, low airflow could result in indoor coil freezing and/or refrigerant floodback.

**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).

50VT --A

BALANCE POINT WORKSHEET



# ELECTRICAL DATA

## 50VT Electrical Data

MODEL	NOMINAL V-PH-HZ	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	ELECTRIC HEAT		POWER SUPPLY	MOCP
		MIN	MAX	RLA	LRA	FLA	FLA	NOMINAL kW	FLA	MCA	
50VT-A24--31--	208/230-1-60	187	253	13.5	58.3	0.7	4.1	-/-	-/-	21.7	30
								3.8/5	18.1/20.8	44.3/47.7	45/50
								5.4/7.2	25.9/30	54.1/59.2	60/60
								7.5/10	36.1/41.7	66.8/73.8	70/80
50VT-A30--31--	208/230-1-60	187	253	14.1	73	1.2	4.1	-/-	-/-	22.9	35
								3.8/5	18.1/20.8	45.6/48.9	50/50
								5.4/7.2	25.9/30	55.3/60.4	60/70
								7.5/10	36.1/41.7	68.1/75.1	70/80
50VT-A30--51--	208/230-3-60	187	253	9	58	1.2	4.1	-/-	-/-	16.6	25
								3.8/5	10.4/12	29.6/31.6	30/35
								7.5/10	20.8/24.1	42.6/46.7	45/50
								11.3/15	31.2/36.1	55.6/61.7	60/70
50VT-A36--31--	208/230-1-60	187	253	17.1	79	1.2	6.0	-/-	-/-	28.6	40
								3.8/5	18.1/20.8	51.2/54.6	60/60
								5.4/7.2	25.9/30	61/66.1	70/70
								7.5/10	36.1/41.7	73.7/80.7	80/90
50VT-A36--51--	208/230-3-60	187	253	11.5	73	1.2	6.0	-/-	-/-	21.6	30
								3.8/5	10.4/12	34.6/36.6	35/40
								7.5/10	20.8/24.1	47.6/51.7	50/60
								11.3/15	31.2/36.1	60.6/66.7	70/70
50VT-A36--61--	460-3-60	414	506	5.8	38	0.5	3.0	-/-	-/-	10.8	15
								3.8/5	6	18.3/18.3	20
								7.5/10	12	25.8/25.8	30
								11.3/15	18	33.3/33.3	35
50VT-A42--31--	208/230-1-60	187	253	20.6	112	1.2	6.0	-/-	-/-	33	50
								3.8/5	18.1/20.8	55.6/59	60/60
								5.4/7.2	25.9/30	65.3/70.5	70/80
								7.5/10	36.1/41.7	78.1/85.1	80/90
								11.3/15	54.2/62.5	100.7/111.1	110/125
50VT-A42--51--	208/230-3-60	187	253	13.5	88	1.2	6.0	15/20	72.2/83.3	123.2/137.1	125/150
								-/-	-/-	24.1	35
								3.8/5	10.4/12	37.1/39.1	40/40
								7.5/10	20.8/24.1	50.1/54.2	60/60
								11.3/15	31.2/36.1	63.1/69.2	70/70
50VT-A42--61--	460-3-60	414	506	6.1	44	0.5	3.0	15/20	41.4/47.9	75.8/84	80/90
								-/-	-/-	11.1	15
								3.8/5	6	18.6/18.6	20
								7.5/10	12	26.1/26.1	30
								11.3/15	18	33.6/33.6	35
50VT-A48--31--	208/230-1-60	187	253	23.4	109	1.2	7.6	15/20	24.1	41.3/41.3	45
								-/-	-/-	38.1	50
								3.8/5	18.1/20.8	60.7/64.1	70/70
								5.4/7.2	25.9/30	70.4/75.6	80/80
								7.5/10	36.1/41.7	83.2/90.2	90/100
50VT-A48--51--	208/230-3-60	187	253	16	83	1.2	7.6	11.3/15	54.2/62.5	105.8/116.2	110/125
								15/20	72.2/83.3	128.3/142.2	150/150
								-/-	-/-	28.8	40
								3.8/5	10.4/12	41.8/43.8	45/45
								7.5/10	20.8/24.1	54.8/58.9	60/60
50VT-A48--61--	460-3-60	414	506	7.2	41	0.5	3.8	11.3/15	31.2/36.1	67.8/73.9	70/80
								15/19.91	41.4/47.9	80.6/88.7	90/90
								-/-	-/-	13.3	20
								3.8/5	6	20.8/20.8	25
								7.5/10	12	28.3/28.3	30
50VT-A60--31--	208/230-1-60	187	253	29.6	134	1.2	7.6	11.3/15	18	35.8/35.8	40
								15/20	24.1	43.4/43.4	45
								-/-	-/-	45.8	60
								3.8/5	18.1/20.8	68.4/71.8	70/80
								5.4/7.2	25.9/30	78.2/83.3	80/90
50VT-A60--51--	208/230-3-60	187	253	19.9	110	1.2	7.6	11.3/15	54.2/62.5	113.6/123.9	125/125
								15/19.91	72.2/83.3	136.1/149.9	150/150
								-/-	-/-	33.7	50
								3.8/5	10.4/12	46.7/48.7	50/50
								7.5/10	20.8/24.1	59.7/63.8	60/70

50VT --A

# ELECTRICAL DATA

## 50VT Electrical Data

MODEL	NOMINAL V-PH-HZ	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	ELECTRIC HEAT		POWER SUPPLY	MOCP
		MIN	MAX	RLA	LRA	FLA	FLA	NOMINAL kW	FLA	MCA	
50VT-A60--61--	460-3-60	414	506	8.6	52	0.6	3.8	-/-	-/-	15.2	20
								3.8/5	6	22.7/22.7	25
								7.5/10	12	30.2/30.2	35
								11.3/15	18	37.7/37.7	40
								15/20	24.1	45.3/45.3	50

See Legend and Notes.

### LEGEND

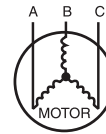
- FLA - Full Load Amps
- IFM - Indoor Fan Motor
- LRA - Locked Rotor Amps
- MCA - Minimum Circuit Amps
- MOCP - Maximum Over Current Protection
- OFM - Outdoor Fan Motor
- RLA - Rated Load Amps

### 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  
208/230-1-60

**NOTES:**

- IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED, THEY MUST BE REPLACED WITH THE SAME WIRE OR ITS EQUIVALENT.
- SEE PRICE PAGES FOR THERMOSTATS.
- USE 75 DEG. COPPER CONDUCTORS FOR FIELD INSTALLATION.
- SEE INSTALLATION INSTRUCTIONS FOR PROPER HEATING AND COOLING CONNECTIONS FOR YOUR UNIT INDOOR FAN MOTOR PLUGS - "DO NOT DISCONNECT UNDER LOAD"
- CCH NOT USED ON ALL UNITS.
- THIS FUSE IS MANUFACTURED BY LITTELFUSE, P/N 257003.
- UNIT FACTORY-SHIPPED IN STD MODE.

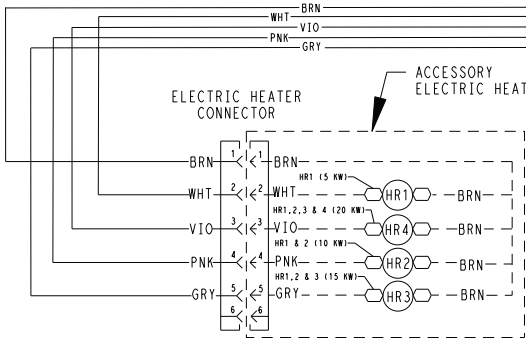
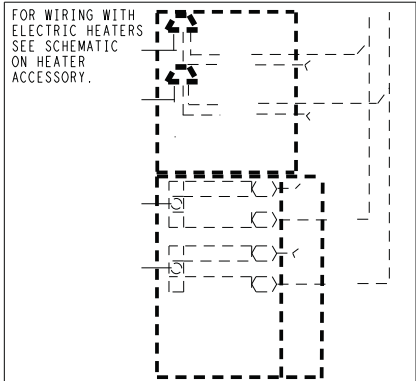
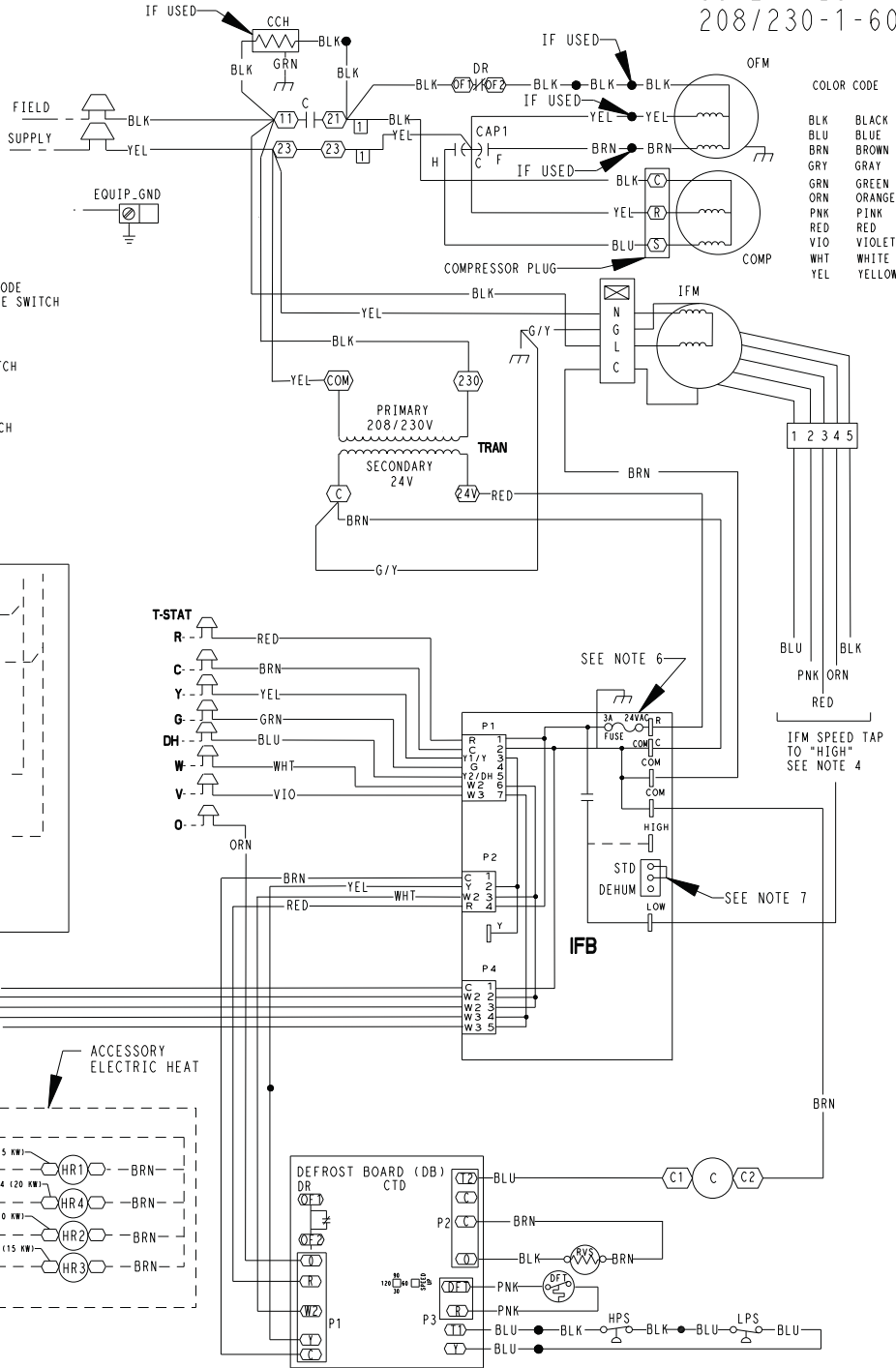
**LEGEND**

- △ FIELD SPLICE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- SPLICE (IF USED)
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- ACCESSORY OR OPTIONAL WIRING
- TO INDICATE COMMON POTENTIAL ONLY
- NOT TO REPRESENT WIRING

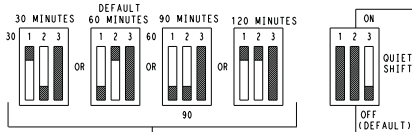
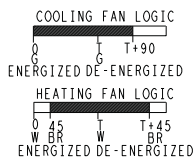
- COMP COMPRESSOR MOTOR
- DB DEFROST BOARD
- DEHUM DEHUMIDIFICATION MODE
- DFT DEFROST TEMPERATURE SWITCH
- DR DEFROST RELAY
- EQUIP EQUIPMENT
- GND GROUND
- HPS HIGH PRESSURE SWITCH
- HR HEATER RELAY
- IFB INDOOR FAN BOARD
- IFM INDOOR FAN MOTOR
- LPS LOW PRESSURE SWITCH
- OFM OUTDOOR FAN MOTOR
- RVS REVERSING VALVE
- STD STANDARD MODE
- TRAN TRANSFORMER
- T-STAT THERMOSTAT

- C CONTACTOR
- CAP 1 CAPACITOR, COMP
- CCH CRANK CASE HEATER

- COLOR CODE**
- BLK BLACK
  - BLU BLUE
  - BRN BROWN
  - GRY GRAY
  - GRN GREEN
  - ORN ORANGE
  - PNK PINK
  - RED RED
  - VIO VIOLET
  - WHT WHITE
  - YEL YELLOW



**DIP SWITCH SETTINGS**



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

- MOMENTARILY SHORT PINS AND RELEASE TO BYPASS COMPRESSOR OFF DELAY.
- SHORT FOR 5+ SEC. AND RELEASE FOR FORCED DEFROST.
- PERMANENT SHORT WILL BE IGNORED.

DEFROST WILL TERMINATE IN 30 SEC. IF DFT OPEN. DEFROST WILL TERMINATE NORMALLY IF DFT IS CLOSED.

THE COMPRESSOR WILL SHUT OFF FOR 30 SEC. ON DEFROST INITIATION AND TERMINATION IN THE "QUIET SHIFT" ON POSITION

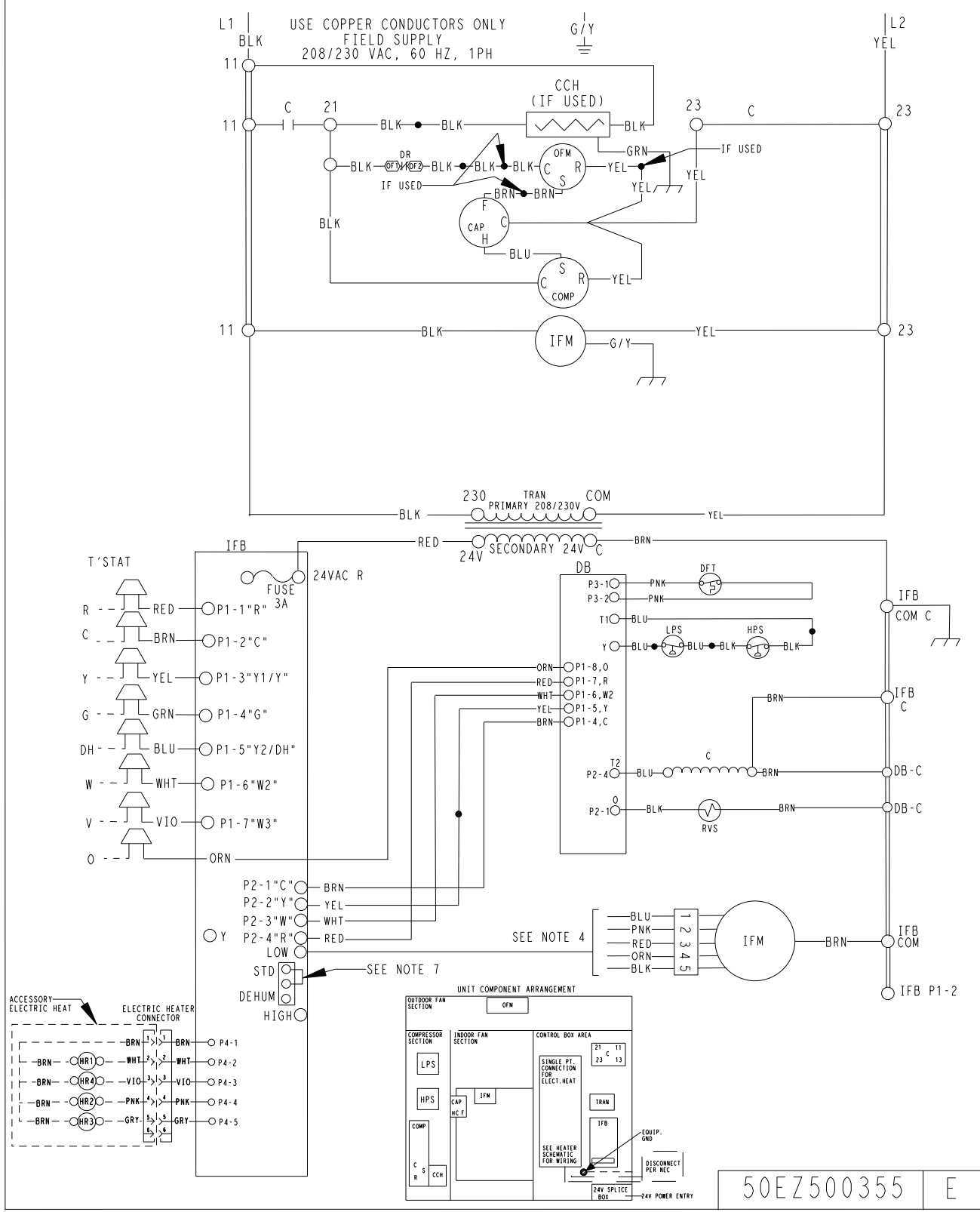
50VT-A

# TYPICAL LADDER WIRING SCHEMATIC - 208/230-1-60

## LADDER WIRING DIAGRAM

DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING

50VT --A



# TYPICAL CONNECTION WIRING SCHEMATIC - 208/230-3-60

## CONNECTION WIRING DIAGRAM

**DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING**

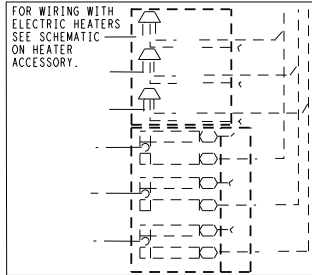
SCHEMATIC  
208/230-3-60

**NOTES:**

- IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED, THEY MUST BE REPLACED WITH THE SAME WIRE OR ITS EQUIVALENT.
- SEE PRICE PAGES FOR THERMOSTATS.
- USE 75 DEG. COPPER CONDUCTORS FOR FIELD INSTALLATION.
- SEE INSTALLATION INSTRUCTIONS FOR PROPER HEATING AND COOLING CONNECTIONS FOR YOUR UNIT. INDOOR FAN MOTOR PLUGS - "DO NOT DISCONNECT UNDER LOAD"
- THIS FUSE IS MANUFACTURED BY LITTELFUSE, P/N 251003.
- REMOVE YELLOW SPICE WIRE WHEN ECONOMIZER AND ECONOMIZER RELAYS ARE USED AND CONNECT TO RELAY R1 AS SHOWN.
- WHEN ECONOMIZER AND ECONOMIZER RELAYS ARE USED, CONNECT THE YELLOW AND BLACK WIRES TO RELAY R AS SHOWN. RELAY R1\* REQUIRED WITH ECONOMIZER AND HEAT PUMP/DUAL FUEL UNITS.
- WHEN ECONOMIZER AND ECONOMIZER RELAYS ARE USED, INSTALL WIRES AS SHOWN ONTO THE COILS OF RELAY R AND RELAY R1.
- DEHUM FEATURE CANNOT BE USED WHEN ECONOMIZER IS INSTALLED. UNIT FACTORY-SHIPED IN STD MODE.

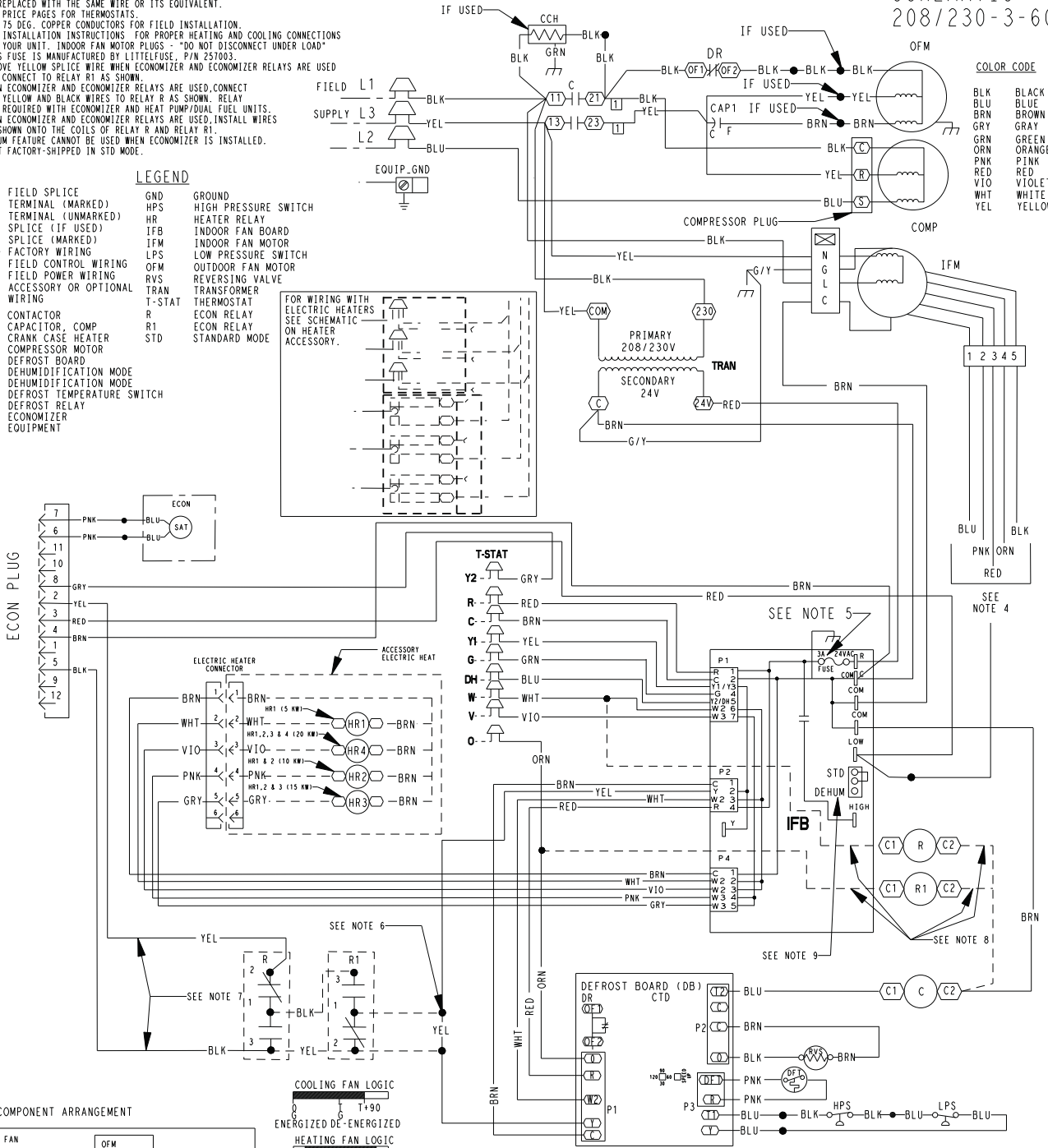
**LEGEND**

- |       |                              |        |                      |
|-------|------------------------------|--------|----------------------|
| △     | FIELD SPLICE                 | GND    | GROUND               |
| ○     | TERMINAL (MARKED)            | HPS    | HIGH PRESSURE SWITCH |
| ○     | TERMINAL (UNMARKED)          | HR     | HEATER RELAY         |
| ●     | SPLICE (IF USED)             | IFB    | INDOOR FAN BOARD     |
| ○     | SPLICE (MARKED)              | IFM    | INDOOR FAN MOTOR     |
| ---   | FACTORY WIRING               | LPS    | LOW PRESSURE SWITCH  |
| ---   | FIELD CONTROL WIRING         | OFM    | OUTDOOR FAN MOTOR    |
| ---   | FIELD POWER WIRING           | RVS    | REVERSING VALVE      |
| ---   | ACCESSORY OR OPTIONAL WIRING | TRAN   | TRANSFORMER          |
| C     | CONTACTOR                    | T-STAT | THERMOSTAT           |
| CAP 1 | CAPACITOR, COMP              | R      | ECON RELAY           |
| CCH   | CRANK CASE HEATER            | R1     | ECON RELAY           |
| COMP  | COMPRESSOR MOTOR             | STD    | STANDARD MODE        |
| DB    | DEFOST BOARD                 |        |                      |
| DH    | DEHUMIDIFICATION MODE        |        |                      |
| DEHUM | DEHUMIDIFICATION MODE        |        |                      |
| DFT   | DEFOST TEMPERATURE SWITCH    |        |                      |
| DR    | DEFOST RELAY                 |        |                      |
| ECON  | ECONOMIZER                   |        |                      |
| EQUIP | EQUIPMENT                    |        |                      |

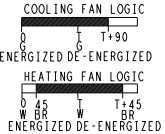
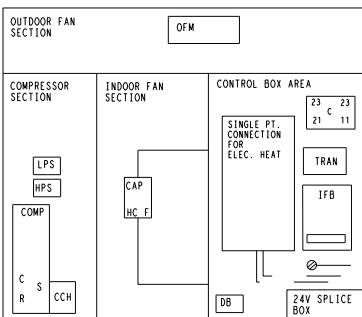


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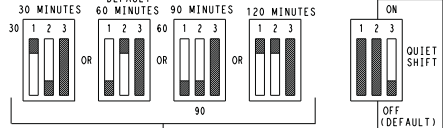
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BLU	BLUE
BRN	BROWN
GRY	GRAY
GRN	GREEN
ORN	ORANGE
PNK	PINK
RED	RED
VIO	VIOLET
WHT	WHITE
YEL	YELLOW



**UNIT COMPONENT ARRANGEMENT**



**DIP SWITCH SETTINGS**



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

- MOMENTARILY SHORT PINS AND RELEASE TO BYPASS COMPRESSOR OFF DELAY.
  - SHORT FOR 5+ SEC. AND RELEASE FOR FORCED DEFOST.
  - PERMANENT SHORT WILL BE IGNORED.
- DEFOST WILL TERMINATE IN 30 SEC. IF DFT OPEN. DEFOST WILL TERMINATE NORMALLY IF DFT IS CLOSED.
- THE COMPRESSOR WILL SHUT OFF FOR 30 SEC. ON DEFOST INITIATION AND TERMINATION IN THE "QUIET SHIFT" ON POSITION

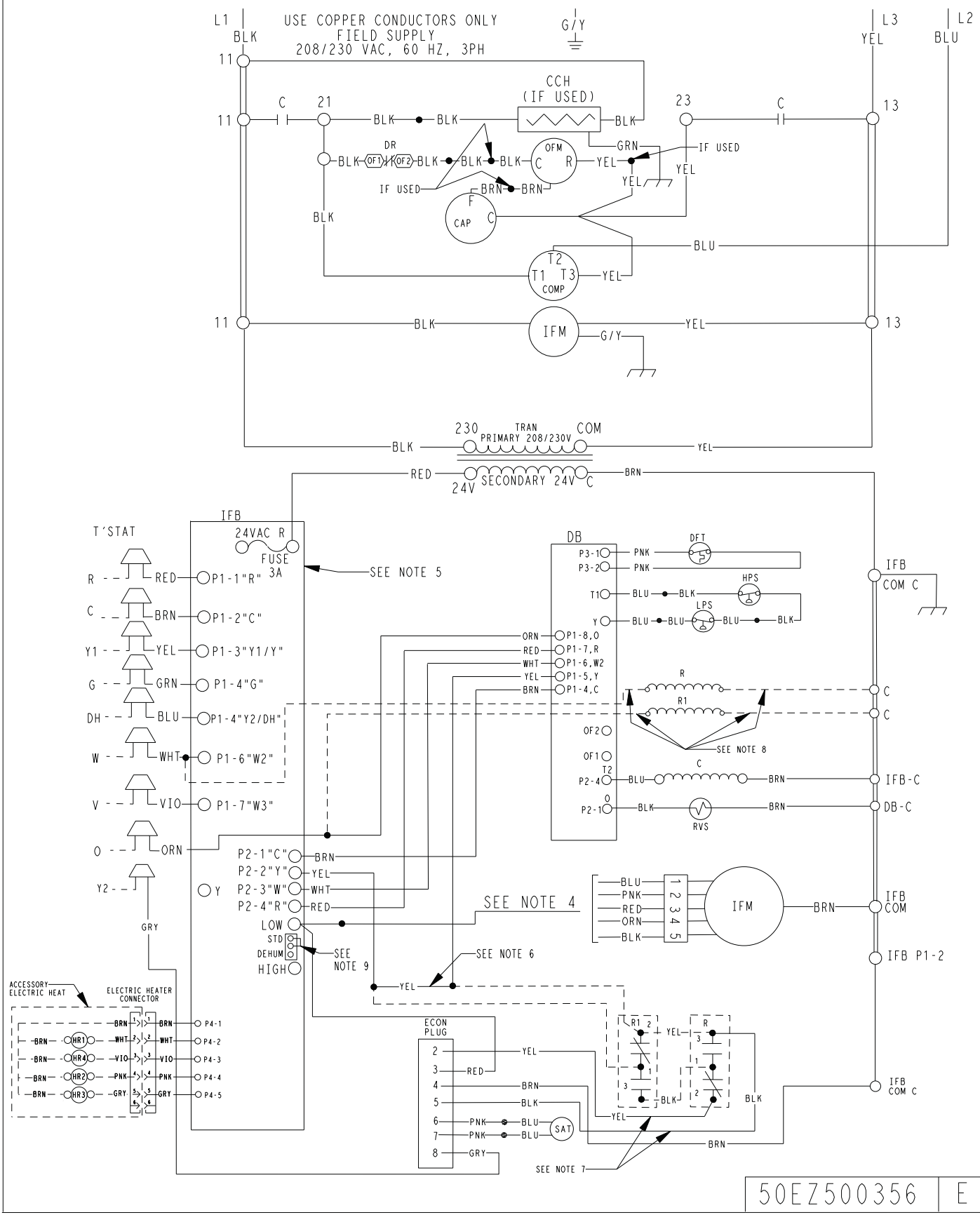
50VT--A

# TYPICAL LADDER WIRING SCHEMATIC - 208/230-3-60

## LADDER WIRING DIAGRAM

DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING

50VT--A



50EZ500356 | E

A11005



# TYPICAL CONNECTION WIRING SCHEMATIC - 460-3-60

## CONNECTION WIRING DIAGRAM

**DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING**

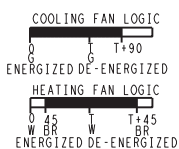
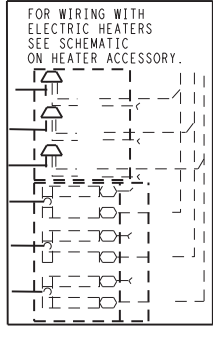
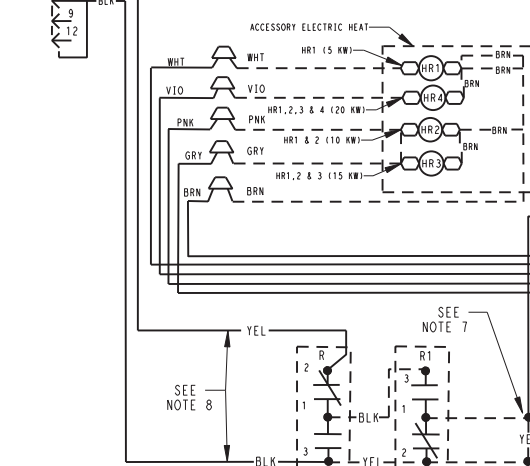
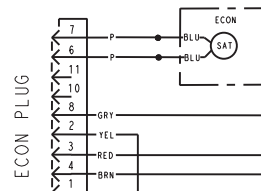
SCHEMATIC  
460-3-60

**NOTES:**

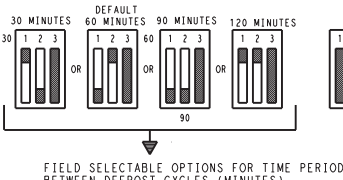
- IF ANY OF THE ORIGINAL WIRES FURNISHED ARE REPLACED, THEY MUST BE REPLACED WITH THE SAME WIRE OR ITS EQUIVALENT.
- SEE PRICE PAGES FOR THERMOSTATS.
- USE 75 DEG. COPPER CONDUCTORS FOR FIELD INSTALLATION.
- SEE INSTALLATION INSTRUCTIONS FOR PROPER HEATING AND COOLING CONNECTIONS FOR YOUR UNIT. INDOOR FAN MOTOR PLUGS - DO NOT DISCONNECT UNDER LOAD.
- THESE FUSES ARE MANUFACTURED BY COOPER BUSSMANN, P/N FNO-R-5.
- THIS FUSE IS MANUFACTURED BY LITTELFUSE, P/N 257003.
- REMOVE YELLOW SPLICE WHEN ECONOMIZER AND ECONOMIZER RELAYS ARE USED AND CONNECT TO RELAY R1 AS SHOWN.
- WHEN ECONOMIZER AND ECONOMIZER RELAYS ARE USED, CONNECT THE YELLOW AND BLACK WIRES TO RELAY "R" AS SHOWN. RELAY KIT REQUIRED WITH ECONOMIZER AND HEAT PUMP/DUAL FUEL UNITS.
- WHEN ECONOMIZER AND ECONOMIZER RELAYS ARE USED, INSTALL WIRES AS SHOWN ONTO THE COILS OF RELAY R AND RELAY R1.
- DEHUM FEATURE CANNOT BE USED WHEN ECONOMIZER IS INSTALLED. UNIT FACTORY-SHIPPED IN STD MODE.

**LEGEND**

△	FIELD SPLICE	DH	DEHUMIDIFICATION MODE
○	TERMINAL (MARKED)	DR	DEHUMIDIFICATION MODE
○	TERMINAL (UNMARKED)	DR	DEFROST RELAY
○	SPLICE	ECON	ECONOMIZER
○	SPLICE (MARKED)	EQUIP	EQUIPMENT
—	FACTORY WIRING	FU	FUSE
---	FIELD CONTROL WIRING	GND	GROUND
---	FIELD POWER WIRING	HPS	HIGH PRESSURE SWITCH
---	ACCESSORY OR OPTIONAL WIRING	HR	HEATER RELAY
		IFB	INDOOR FAN BOARD
		IFM	INDOOR FAN MOTOR
		LPS	LOW PRESSURE SWITCH
		OFM	OUTDOOR FAN MOTOR
		OFR	OUTDOOR FAN RELAY
		RVS	REVERSING VALVE
		TRAN	TRANSFORMER
		T-STAT	THERMOSTAT
		R	ECON RELAY
		R1	ECON RELAY
		DFT	DEFROST TEMPERATURE SWITCH
		STD	STANDARD MODE



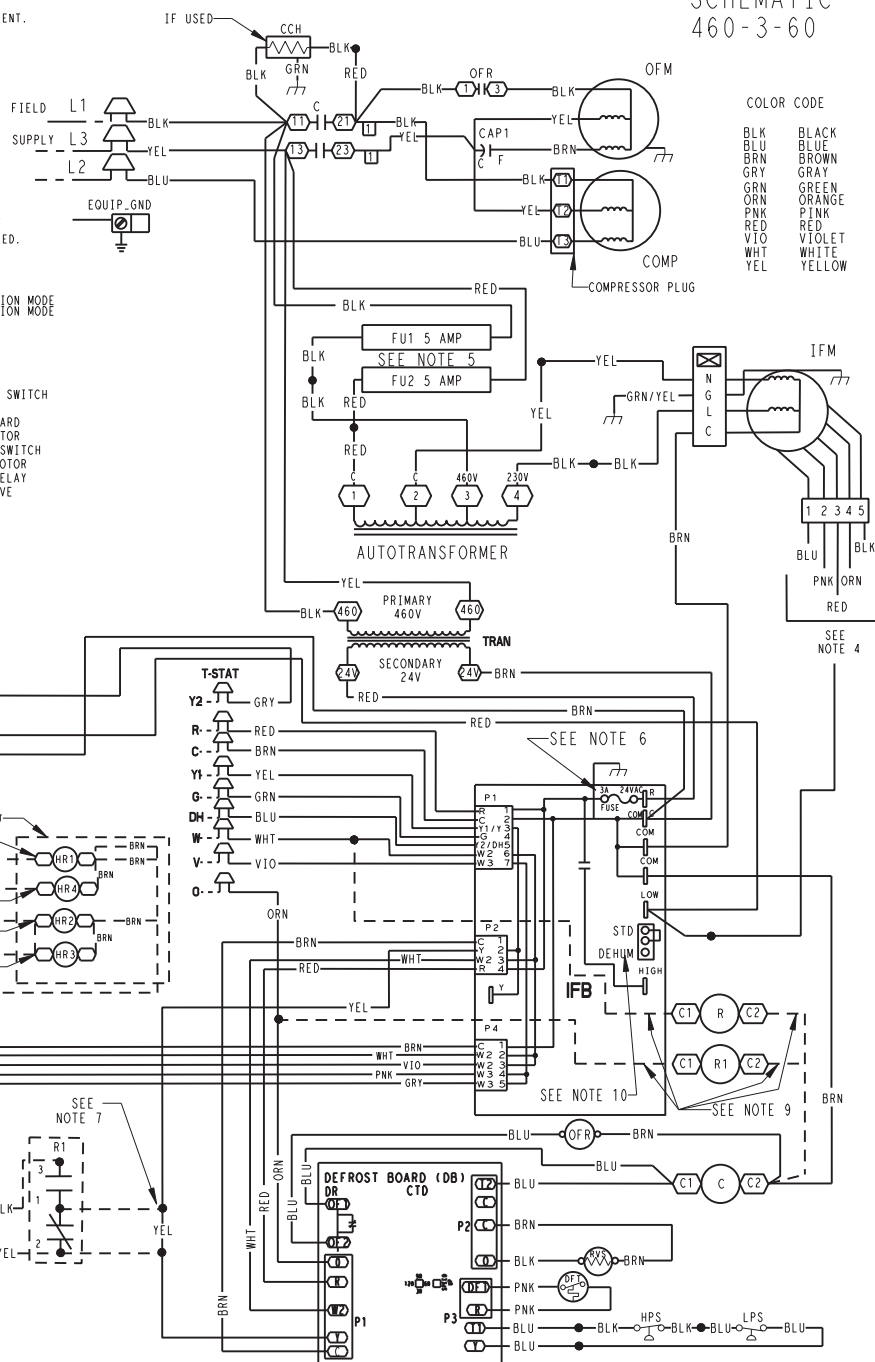
**DIP SWITCH SETTINGS**



FIELD SELECTABLE OPTIONS FOR TIME PERIOD BETWEEN DEFROST CYCLES (MINUTES)

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

- MOMENTARILY SHORT PINS AND RELEASE TO BYPASS COMPRESSOR OFF DELAY.
  - SHORT FOR 5+ SEC. AND RELEASE FOR FORCED DEFROST.
  - PERMANENT SHORT WILL BE IGNORED.
- DEFROST WILL TERMINATE IN 30 SEC. IF DFT OPEN. DEFROST WILL TERMINATE NORMALLY IF DFT IS CLOSED.
- THE COMPRESSOR WILL SHUT OFF FOR 30 SEC. ON DEFROST INITIATION AND TERMINATION IN THE "QUIET SHIFT" ON POSITION



**COLOR CODE**

BLK	BLACK
BLU	BLUE
BRN	BROWN
GRY	GRAY
GRN	GREEN
ORN	ORANGE
PNK	PINK
RED	RED
VIO	VIOLET
WHT	WHITE
YEL	YELLOW

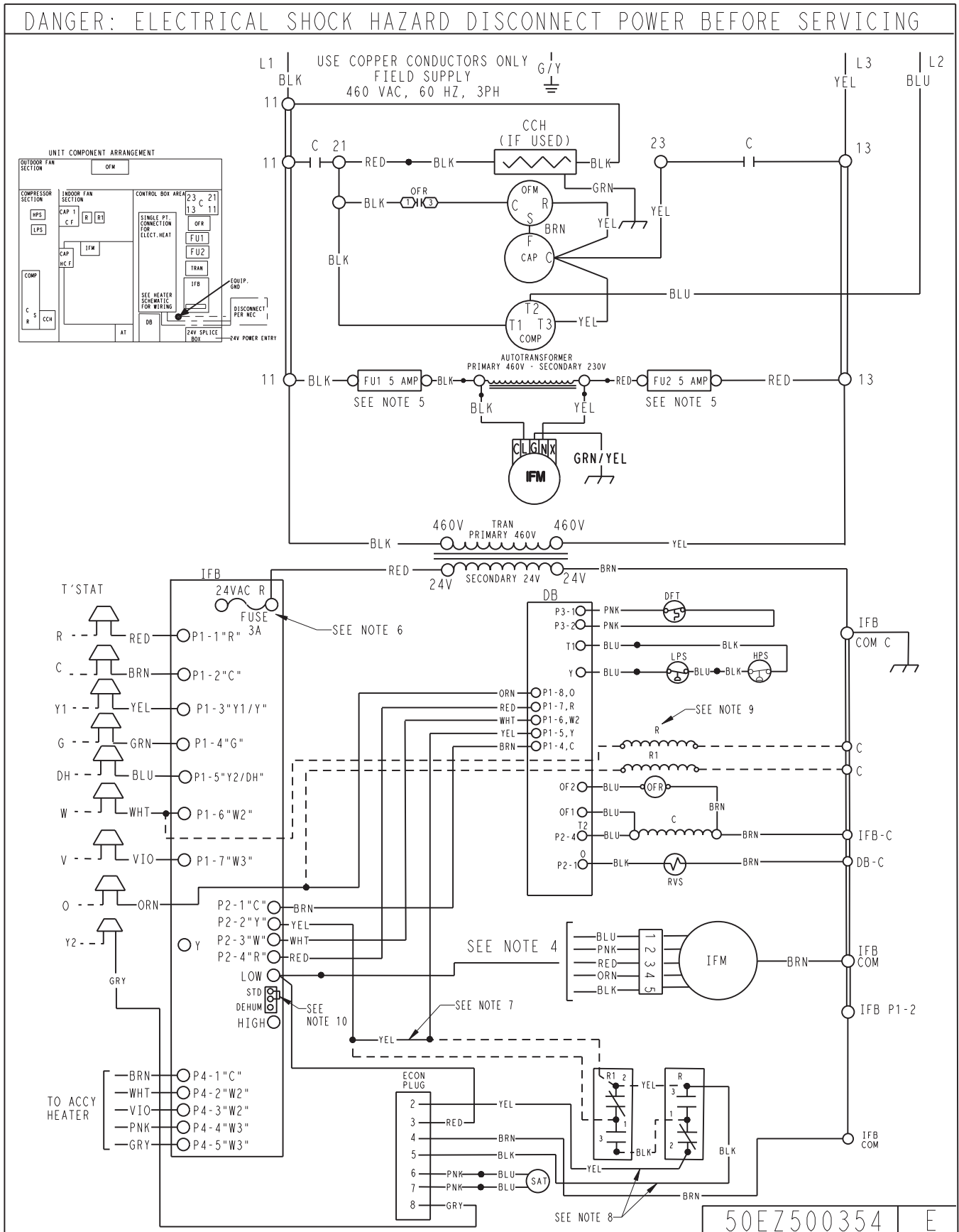
50VT -A

# TYPICAL LADDER WIRING SCHEMATIC - 460-3-60

## LADDER WIRING DIAGRAM

DANGER: ELECTRICAL SHOCK HAZARD DISCONNECT POWER BEFORE SERVICING

50VT --A



A10195L

## 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 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.
- 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 ECM 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.

## GUIDE SPECIFICATIONS (CONT)

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.
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. W.C. 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.
13. 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.

