



Installation Instructions

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SAFETY CONSIDERATIONS

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform basic maintenance functions of cleaning coils and filters and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in the literature, tags and labels attached to the unit, and other safety precautions that may apply.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguishers available for all brazing operations.

Recognize safety information. This is the safety-alert symbol . When you see this symbol on the furnace and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies a hazard which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could cause personal injury or death.

Before performing service or maintenance operations on unit, turn off main power switch to unit and install lockout tag. Ensure electrical service to rooftop unit agrees with voltage and amperage listed on the unit rating plate.

INSTALLATION

Unit is shipped in the vertical discharge configuration. To convert to horizontal discharge application, remove duct opening covers. Using the same screws, install covers on duct openings in basepan of unit with insulation-side down. Seals around openings must be tight. (See Fig. 1.)

Step 1 —Provide Unit Support

Roof Curb

Assemble and install accessory roof curb in accordance with instructions shipped with curb. (See Fig. 2.) Install insulation, cant strips, roofing felt, and counter flashing as shown. *Ductwork must be attached to curb, not to the unit.* If electric control power or gas service is to be routed through the basepan, attach the accessory thru-the-bottom service connections to the basepan in accordance with the accessory installation instructions. Connections must be installed before unit is set on roof curb.

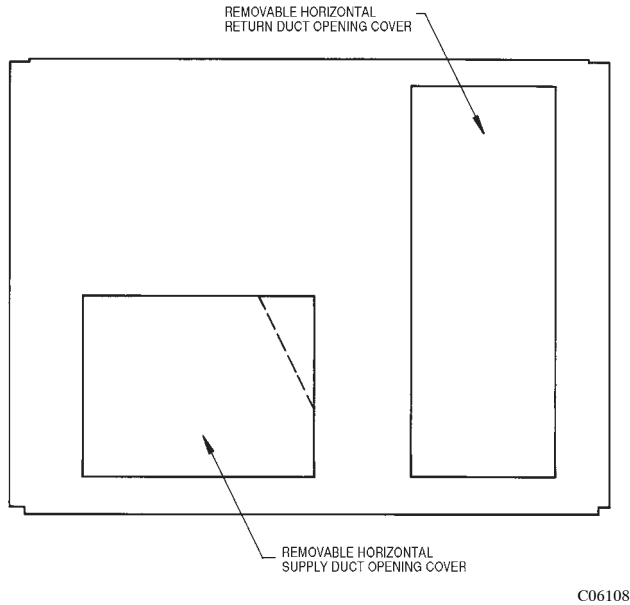


Fig. 1 – Horizontal Conversion Panels

IMPORTANT: The gasketing of the unit to the roof curb is critical for a watertight seal. Install gasket supplied with the roof curb as shown in Fig. 2. Improperly applied gasket can result in air leaks and poor unit performance.

Curb should be level. Unit leveling tolerances are shown in Fig. 3. This is necessary for unit drain to function properly. Refer to Accessory Roof Curb Installation Instructions for additional information as required.

Slab Mount (Horizontal Units Only)

Provide a level concrete slab that extends a minimum of 6 in. beyond unit cabinet. Install a gravel apron in front of condenser-coil air inlet to prevent grass and foliage from obstructing airflow.

NOTE: Horizontal units may be installed on a roof curb if required.

Alternate Unit Support

When the curb or adapter cannot be used, support unit with sleeper rails using unit curb or adapter support area. If sleeper rails cannot be used, support the long sides of the unit with a minimum of 3 equally spaced 4-in. x 4-in. pads on each side.

Step 2 —Field Fabricate Ductwork

Secure all ducts to roof curb and building structure on vertical discharge units. *Do not connect ductwork to unit.* For horizontal applications, field-supplied isolation flanges should be attached to horizontal discharge openings and all ductwork should be secured to the flanges. Insulate and weatherproof all external ductwork, joints, and roof openings with counter flashing and mastic in accordance with applicable codes.

Ducts passing through an unconditioned space must be insulated and covered with a vapor barrier.

If a plenum return is used on a vertical unit, the return should be ducted through the roof deck to comply with applicable fire codes.

A minimum clearance is not required around ductwork. Cabinet return-air static pressure (a negative condition) shall not exceed 0.35 in. wg with economizer or 0.45 in. wg without economizer.

Step 3 —Install External Trap for Condensate Drain

Condensate drain connections are located on the bottom and side of the unit. Unit discharge connections do not determine the use of drain connections; either drain connection can be used with vertical or horizontal applications.


When using the standard side drain connection, ensure the plug (Red) in the alternate bottom connection is tight before installing the unit.

To use the bottom drain connection for a roof curb installation, relocate the factory-installed plug (Red) from the bottom connection to the side connection. The center drain plug looks like a star connection, however it can be removed with a 1/2-in. socket drive extension. (See Fig. 4.) The piping for the condensate drain and external trap can be completed after the unit is in place.

All units must have an external trap for condensate drainage. Install a trap 4-in. deep and protect against freeze-up. If drain line is installed downstream from the external trap, pitch the line away from the unit at 1 in. per 10 ft of run. Do not use a pipe size smaller than the unit connection (3/4 in.). (See Fig. 5.)

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	GAS	POWER	CONTROL	ACCESSORY POWER
CRBTMPWR001A01				3/4 [19] NPT	3/4 [19] NPT		
CRBTMPWR002A01				1/2 [12.7] NPT	1/4 [31.7]		
CRBTMPWR003A01	1 - 9 1/16 [551]	1 - 4 [406]	1 3/4 [44.5]	3/4 [19] NPT	3/4 [19] NPT	1/2 [12.7]	1/2 [12.7]
CRBTMPWR004A01				3/4 [19] NPT	1/4 [31.7]		

ROOF CURB ACCESSORY	A	UNIT SIZE
CRRFCURB001A01	1 - 2 [356]	50HJ004-007
CRRFCURB002A01	2 - 0 [610]	50HE003-006

- NOTES:
- Roof curb accessory is shipped disassembled.
 - Insulated panels.
 - Dimensions in [] are in millimeters.
 - Roof curb: galvanized steel.
 - Attach ductwork to curb (flanges of duct rest on curb).
 - Service clearance: 4 ft on each side.
 -  Direction of airflow.
 - Connector packages CRBTMPWR001A01 and 002A01 are for thru-the-curb type gas. Packages CRBTMPWR003A01 and 004A01 are for thru-the-bottom type gas connections.

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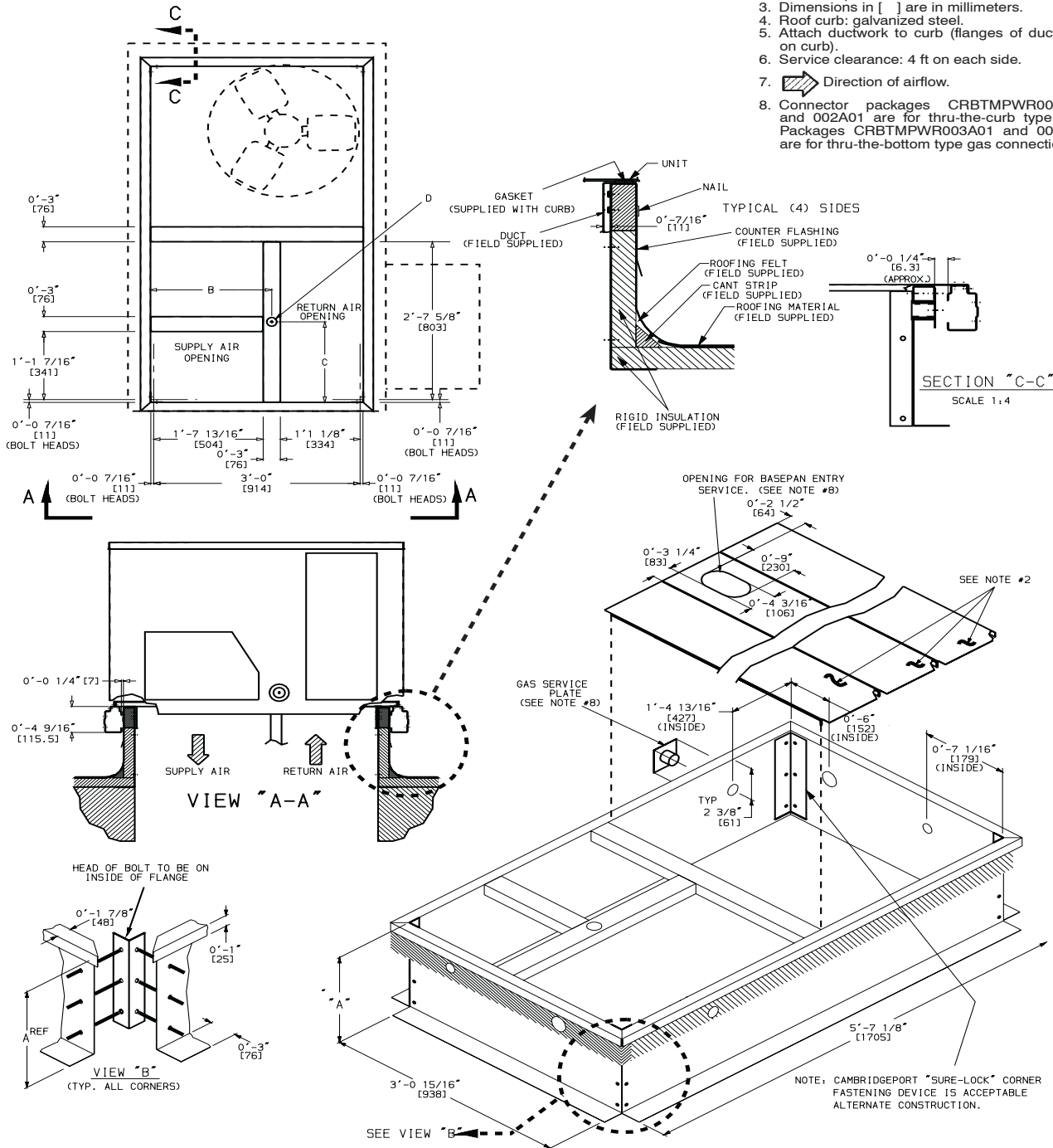


Fig. 2 – Roof Curb Details

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Step 4 —Rig and Place Unit

Inspect unit for transportation damage, and file any claim with transportation agency. Keep unit upright and do not drop. Spreader bars are not required if top crating is left on unit, and rollers may be used to move unit across a roof. Level by using unit frame as a reference. See Table 1, 2 and Fig. 6 for additional information. Operating weight is shown in Table 1, 2 and Fig. 6. Lifting holes are provided in base rails as shown in Fig. 7. Refer to rigging instructions on unit.

⚠ WARNING

PERSONAL INJURY AND PROPERTY DAMAGE HAZARD

Failure to follow this warning could result in personal injury, death and property damage.

All panels must be in place when rigging and lifting.

Positioning

Maintain clearance around and above unit to provide minimum distance from combustible materials, proper airflow, and service access. (See Fig. 7, 8 and 9.)

Position unit on roof curb so that the following clearances are maintained: 1/4 in. clearance between the roof curb and the base rail inside the front and rear, 0.0 in. clearance between the roof curb and the base rail inside on the duct end of the unit. This will result in the distance between the roof curb and the base rail inside on the condenser end of the unit being approximately equal to Fig. 2, section C-C.

Do not install unit in an indoor location. Do not locate unit air inlets near exhaust vents or other sources of contaminated air.

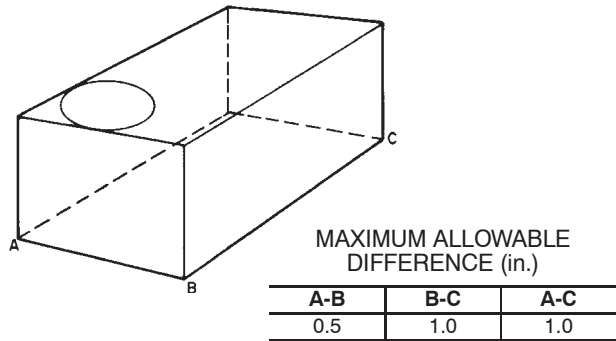
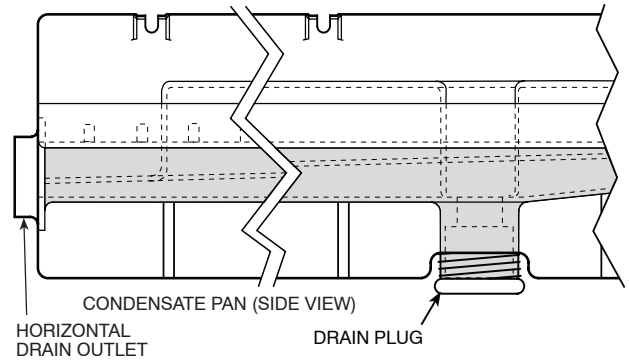


Fig. 3 – Unit Leveling Tolerances

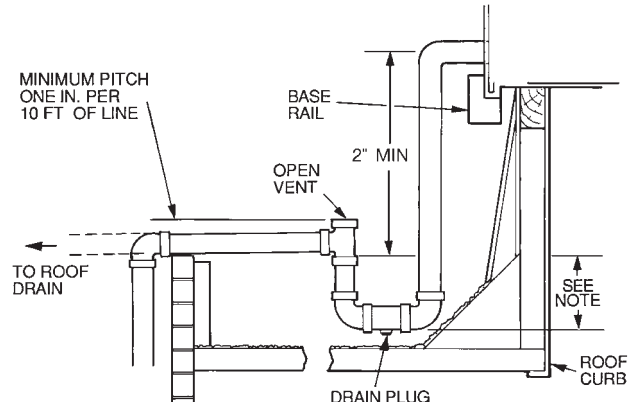
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NOTE: Drain plug is shown in factory-installed position.

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Fig. 4 – Condensate Drain Connection



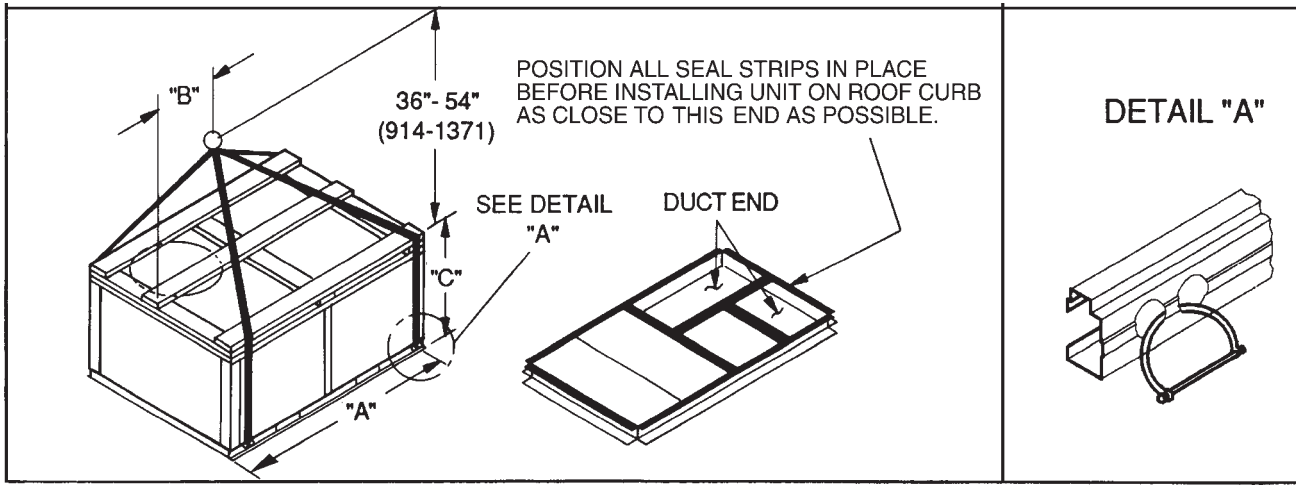
NOTE: Trap should be deep enough to offset maximum unit static difference. A 4-in. trap is recommended.

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Fig. 5 – Condensate Drain Piping Details

Although unit is weatherproof, guard against water from higher level runoff and overhangs.

After unit is in position, remove polyethylene shipping wrapper and top crating.



NOTES:

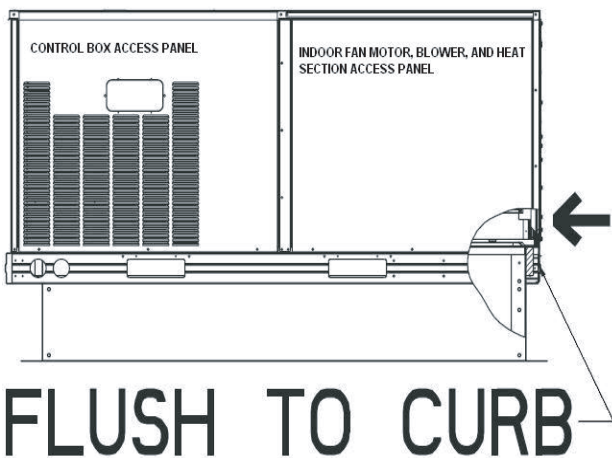
1. Place unit on curb as close as possible to the duct end.
2. Dimension in () is in millimeters.
3. Hook rigging shackles through holes in base rail as shown in detail "A." Holes in base rails are centered around the unit center of gravity. Use wooden top skid when rigging to prevent rigging straps from damaging unit.
4. Weights include base unit without economizer. See Table 1 for unit operating weights with accessory economizer.
5. Weights include base unit without the Humidi-MiZer™ adaptive dehumidification system. See Table 1 for unit operating weights with the Humidi-MiZer system.

Fig. 6 – Rigging Details

C06111

UNIT 50HE	OPERATING WEIGHT		DIMENSIONS					
			"A"		"B"		"C"	
	lb	kg	in.	mm	in.	mm	in.	mm
003	435	197	73.69	1872	35.50	902	33.31	847
004	445	202	73.69	1872	35.50	902	33.31	847
005	465	211	73.69	1872	35.50	902	33.31	847
006	520	236	73.69	1872	35.50	902	33.31	847

UNIT 50HJ	OPERATING WEIGHT		DIMENSIONS					
			"A"		"B"		"C"	
	lb	kg	in.	mm	in.	mm	in.	mm
004	530	240	73.69	1872	35.50	902	33.31	847
005	540	245	73.69	1872	35.50	902	33.31	847
006	560	254	73.69	1872	35.50	902	33.31	847
007	635	288	73.69	1872	35.50	902	33.31	847



⚠ WARNING

PERSONAL INJURY AND PROPERTY DAMAGE HAZARD

Failure to follow this warning could result in personal injury, death and property damage.

All panels must be in place when rigging and lifting.

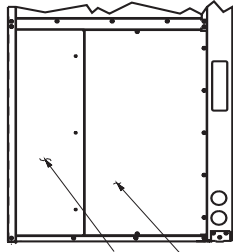
Fig. 7 – Roof Curb Alignment

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CONNECTION SIZES

A	1 3/8" DIA. [55]	FIELD POWER SUPPLY HOLE
B	2" DIA. [51]	POWER SUPPLY KNOCK-OUT
C	1 3/4" DIA. [44]	CHARGING PORT HOLE
D	7/8" DIA. [22]	FIELD CONTROL WIRING HOLE
E	3/4" -14 NPT	CONDENSATE DRAIN
F	2 1/2" DIA. [64]	POWER SUPPLY KNOCK-OUT



BOTTOM POWER CHART:
THESE HOLES REQ'D FOR USE WITH ACCESSORY PACKAGES - CRBTMPR001A01, 2A01, 3A01, OR 4A01

THREADED WIRE CONDUIT SIZE	REQ'D HOLE USE SIZES (MAX.)
1/2"	7/8" [22.2]
3/4"	1 1/8" [28.4]
1 1/4"	1 7/8" [44.4]
(003) 1/2" FT GAS	1 1/4" [31.8]
(004) 3/4" FT GAS	1 5/8" [41.3]

* - SELECT EITHER 3/4" OR 1 1/4" FOR POWER, DEPENDING ON WIRE SIZE.

UNIT	STD. UNIT WEIGHT		ECONOMIZER IV WEIGHT		VERT. W/P.E. WEIGHT		ECONOMIZER IV CORNER WEIGHT		CORNER WEIGHT		CORNER WEIGHT		CORNER WEIGHT			
	KG	LB	KG	LB	KG	LB	KG	LB	KG	LB	KG	LB	KG	LB		
50HJ004	435	137	50	22.7	90	40.9	124	56.2	106	48.1	95	43.1	110	49.9	27'-9 5/16"	846.5
50HJ005	445	202					127	57.6	108	49.0	97	44.0	113	51.3		
50HJ006	465	211					133	60.3	113	51.3	101	45.8	118	53.5		
50HJ007	540	245					155	70.3	132	59.9	116	52.6	137	62.1	3'-5 5/16"	1050

NOTES:
1. DIMENSIONS IN [] ARE IN MILLIMETERS.

2. ⦿ CENTER OF GRAVITY.

3. → DIRECTION OF AIR FLOW.

4. DUCTWORK TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY.

5. MINIMUM CLEARANCE (LOCAL CODES OR JURISDICTION MAY PREVAIL) TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) BOTTOM TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB) 0 INCHES, ON HORIZONTAL DISCHARGE UNITS WITH ELECTRIC HEAT 1 INCH CLEARANCE TO DUCTWORK FOR 1 FOOT.

6. CONDENSER COIL, FOR PROPER AIR FLOW, 36 INCHES ONE SIDE, 12 INCHES THE OTHER. THE SIDE GETTING THE GREATER CLEARANCE IS OPTIONAL.

7. OVERHEAD, 60 INCHES TO ASSURE PROPER CONDENSER FAN OPERATION.

8. BETWEEN UNITS, CONTROL BOX SIDE, 42 IN. PER NEC. BETWEEN UNIT AND UNGROUND SURFACES, CONTROL BOX SIDE, 36 IN. PER NEC.

9. BETWEEN UNIT AND BLOCK OR CONCRETE WALLS AND OTHER GROUNDED SURFACES, CONTROL BOX SIDE, 42 IN. PER NEC.

10. HORIZONTAL SUPPLY AND RETURN END, 0 INCHES WHEN THE ALTERNATE CONDENSATE DRAIN IS USED.

11. WITH THE EXCEPTION OF THE CLEARANCE FOR THE CONDENSER COIL AS STATED IN NOTES 5a, b, AND c, ALL REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.

12. UNITS MAY BE INSTALLED ON COMBUSTIBLE FLOORS MADE FROM WOOD OR CLASS A, B, OR C ROOF COVERING MATERIAL.

13. THE VERTICAL CENTER OF GRAVITY IS 1'-6 1/2" [470] UP FROM THE BOTTOM OF THE BASE RAIL.

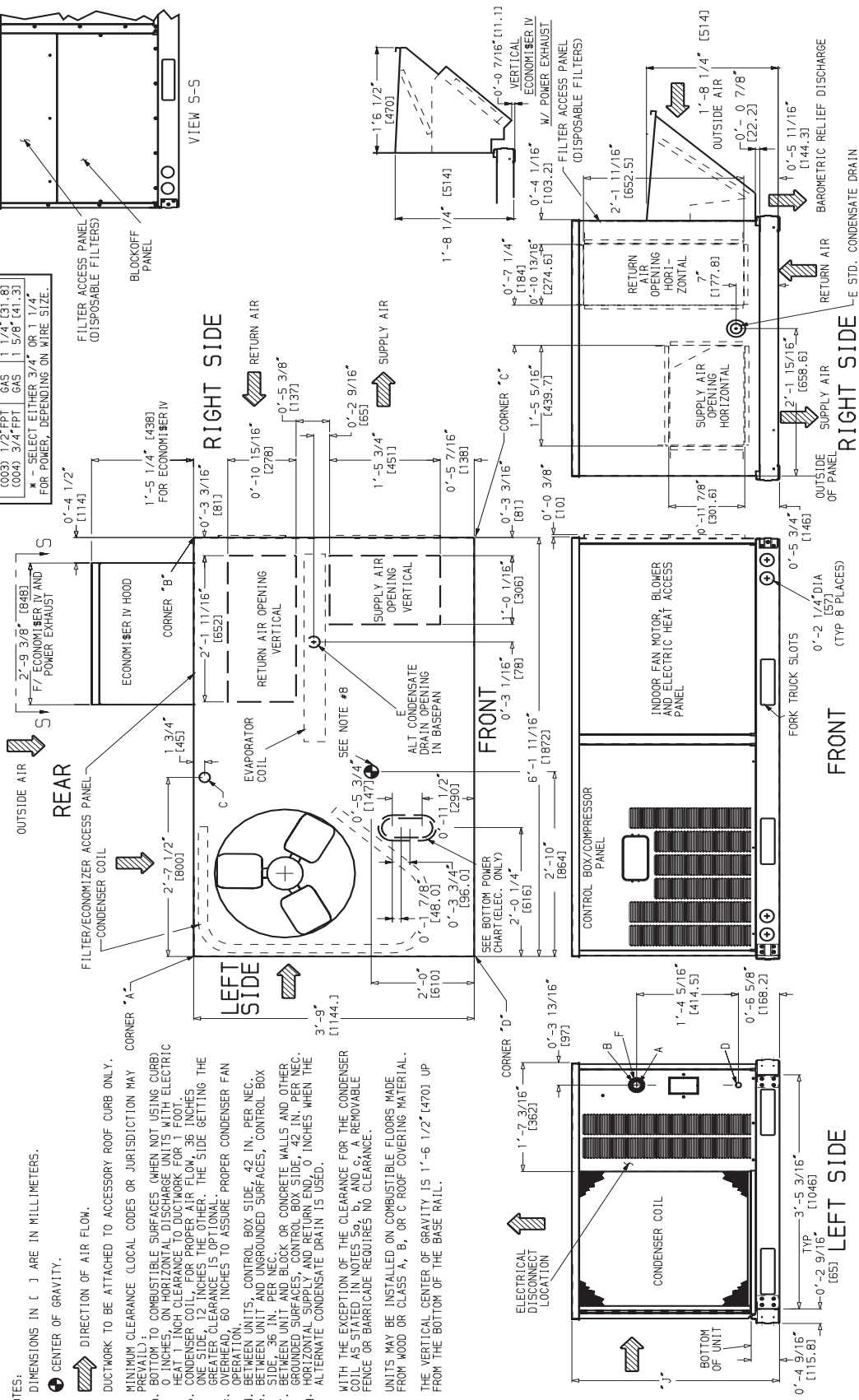


Fig. 8 - 50HJ004-007 Base Unit Dimensions

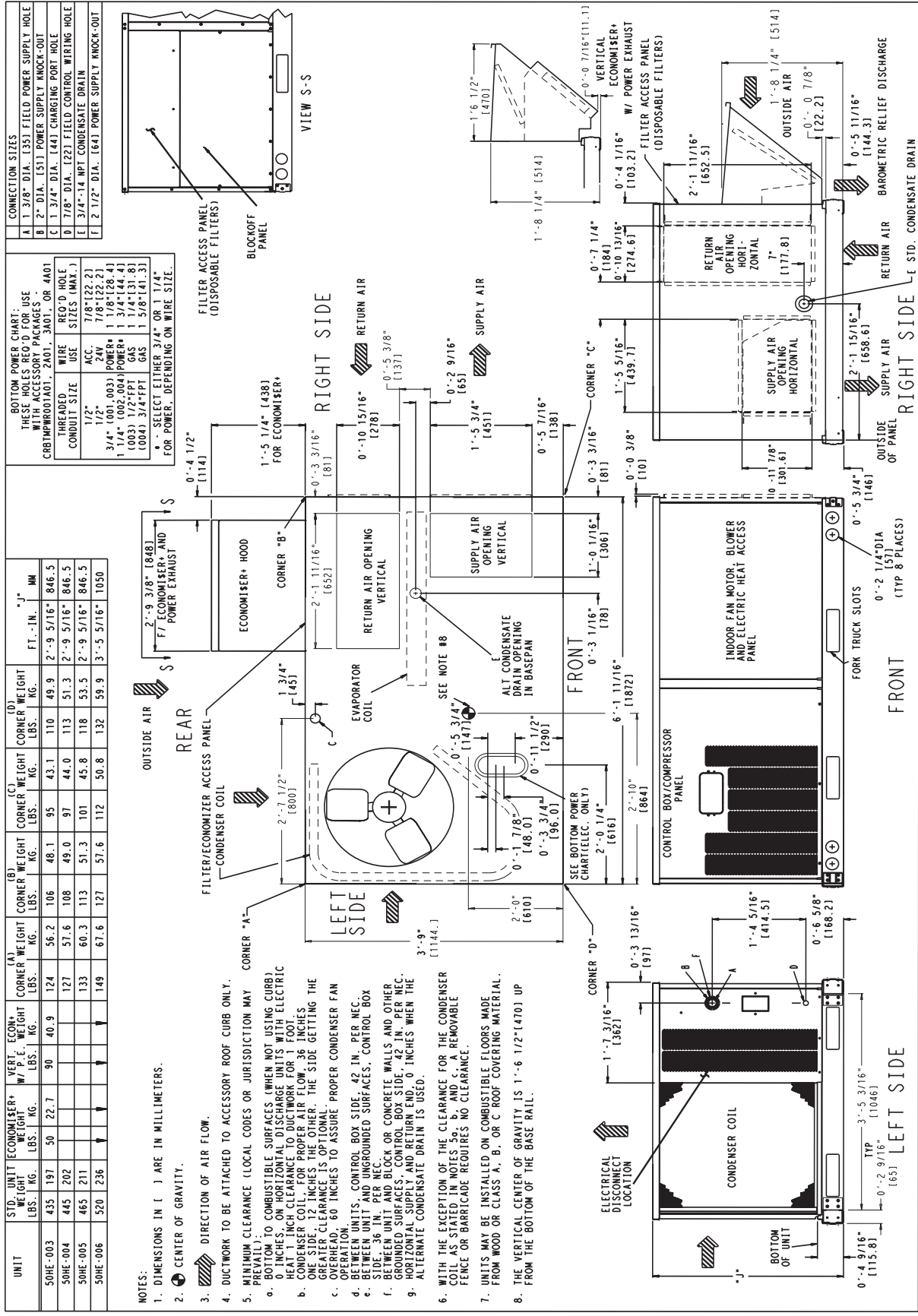


Fig. 9 - 50HE003-006 Base Unit Dimensions

Step 5 —Make Electrical Connections

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death,

Unit cabinet must have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. This ground may consist of electrical wire connected to unit ground lug in control compartment, or conduit approved for electrical ground when installed in accordance with NEC (National Electrical Code), ANSI/NFPA (National Fire Protection Association), latest edition, and local electrical codes. *Do not use gas piping as an electrical ground.*

50HE,HJ

Field Power Supply

All units except 208/230-v units are factory wired for the voltage shown on the nameplate. If the 208/230-v unit is to be connected to a 208-v power supply, the transformer *must* be rewired by disconnecting the black wire from the 230-v 1/4-in. terminal on the transformer and connecting it to the 200-v 1/4-in. terminal from the transformer.

Refer to unit label diagram for additional information. Pigtails are provided for field service. Use factory-supplied splices or UL (Underwriters' Laboratories) approved copper connector.

When installing units, provide a disconnect per NEC.

All field wiring must comply with NEC and local requirements.

Install field wiring as follows:

1. Install conduit through side panel openings. For units without electric heat, install conduit between disconnect and control box.
2. Install power lines to terminal connections as shown in Fig. 12.
3. For units with electric heat, refer to Accessory Electric Heat Installation Instructions.

During operation, voltage to compressor terminals must be within range indicated on unit nameplate (also see Table 3 and 4). On 3-phase units, voltages between phases must be balanced within 2% and the current within 10%. Use the formula shown in Table 3 and 4, Note 2, to determine the percentage of voltage imbalance. Operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components. Such operation invalidates any applicable Carrier warranty.

NOTE: If accessory thru-the-bottom connections and roof curb are used, refer to the Thru-the-Bottom Accessory Installation Instructions for information on wiring the unit.

Field Control Wiring

Install a Carrier-approved accessory thermostat assembly according to installation instructions included with the accessory. Locate thermostat assembly on a solid wall in the conditioned space to sense average temperature in accordance with thermostat installation instructions.

Route thermostat cable or equivalent single leads of colored wire from subbase terminals through connector on unit to low-voltage connections (shown in Fig. 10 and 11).

NOTE: For wire runs up to 50 ft, use no. 18 AWG (American Wire Gauge) insulated wire (35°C minimum). For 50 to 75 ft, use no. 16 AWG insulated wire (35°C minimum). For over 75 ft, use no. 14 AWG insulated wire (35°C minimum). All wire larger than no. 18 AWG cannot be directly connected to the thermostat and will require a junction box and splice at the thermostat.

1. Connect thermostat wires to screw terminals of low-voltage terminal board.
2. Pass the control wires through the hole provided in the control box.
3. Some models may be equipped with a raceway built into the corner post on the left side of control box (See Fig. 13.) This raceway provides the required clearance between high-voltage and low voltage wiring. For models without a raceway, ensure to provide the NEC required clearance between high-voltage and low-voltage wiring.

Heat Anticipator Settings

Set heat anticipator settings at 0.8 amp for first stage and 0.3 for second stage heating.

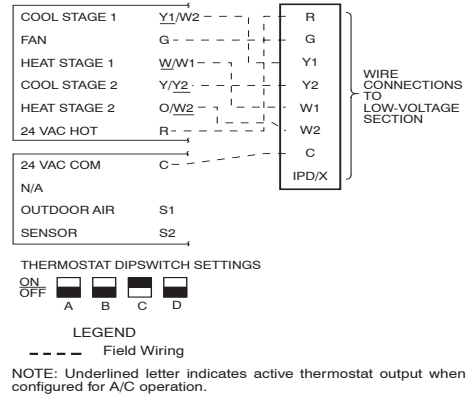


Fig. 10 – Low-Voltage connections With or Without Economizer or Two-Position Damper

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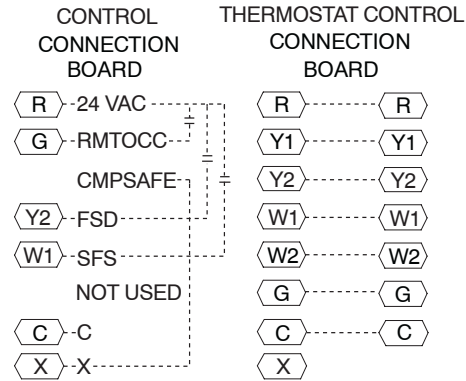


Fig. 11 – Low-Voltage Connections (Units with PremierLink™ Controls)

C06009

Table 1—Physical Data 50HJ

BASE UNIT 50HJ	004	005	006	007
NOMINAL CAPACITY	3	4	5	6
OPERATING WEIGHT (lb)				
Unit	435	445	465	540
Humidi-MiZer™ Adaptive Dehumidification System	15	23	25	29
EconoMiSer IV	50	50	50	50
Roof Curb	115	115	115	115
COMPRESSOR		Scroll		
Quantity	1	1	1	1
Oil (oz)	42	53	50	60
REFRIGERANT TYPE		R-22		
Expansion Device		Acutrol™ Metering Device		
Operating Charge (lb-oz)				
Standard Unit	5-8	10-2	10-0	12- 8
Unit With Humidi-Mizer Adaptive Dehumidification System	12-5	18-8	20-5	23-14
CONDENSER FAN		Propeller		
Quantity...Diameter (in.)	1...22	1...22	1...22	1...22
Nominal Cfm	3500	3500	4100	4100
Motor Hp...Rpm	1/8...825	1/8...825	1/4...1100	1/4...1100
Watts Input (Total)	180	180	320	320
CONDENSER COIL		Enhanced Copper Tubes, Aluminum Lanced Fins		
Rows...Fins/in.	1...17	2...17	2...17	2...17
Total Face Area (sq ft)	14.6	16.5	16.5	21.3
EVAPORATOR COIL		Enhanced Copper Tubes, Aluminum Double-Wavy Fins		
Standard Unit				
Rows...Fins/in.	2...15	2...15	4...15	4...15
Total Face Area (sq ft)	5.5	5.5	5.5	7.3
Unit with Humidi-Mizer Adaptive Dehumidification System				
Rows...Fins/in.	1...17	2...17	2...17	2...17
Total Face Area (sq ft)	3.9	3.9	3.9	5.2
EVAPORATOR FAN		Centrifugal Type, Belt Drive		
Quantity...Size (in.)	1...10 x 10	1...10 x 10	1...10 x 10	1...10 x 10
Nominal Cfm	1200	1600	2000	2400
Maximum Continuous Bhp	Std 1.20	1.20	1.30/2.40*	2.40
	Hi-Static 2.40	2.40	2.90	2.90
Motor Frame Size	Std 48	48	56	56
	Hi-Static 56	56	56	56
Fan Rpm Range	Std 680-1044	770-1185	1035-1460/1035-1460*	1120-1585
	Hi-Static 1075-1455	1075-1455	1300-1685	1300-1685
Motor Bearing Type	Ball	Ball	Ball	Ball
Maximum Fan Rpm	2100	2100	2100	2100
Motor Pulley Pitch Diameter A/B (in.)	Std 1.9/2.9	1.9/2.9	2.4/3.4	2.4/3.4
	Hi-Static 2.8/3.8	2.8/3.8	3.4/4.4	3.4/3.4
Nominal Motor Shaft Diameter (in.)	Std 1/2	1/2	5/8	5/8
	Hi-Static 5/8	5/8	7/8	7/8
Fan Pulley Pitch Diameter (in.)	Std 4.5	4.0	4.0	3.7
	Hi-Static 4.5	4.5	4.5	4.5
Belt — Type...Length (in.)	Std 1...A...36	1...A...36	1...4...40	1...A...38
	Hi-Static 1...A...39	1...A...39	1...A...40	1...A...40
Pulley Center Line Distance (in.)	10.0-12.4	10.0-12.4	14.7-15.5	14.7-15.5
Speed Change per Full Turn of Movable Pulley Flange (rpm)	Std 65	70	75	95
	Hi-Static 65	65	60	60
Movable Pulley Maximum Full Turns from Closed Position	Std 5	5	6	5
	Hi-Static 6	6	5	5
Factory Setting — Full Turns Open	Std 3	3	3	3
	Hi-Static 3 1/2	3 1/2	3 1/2	3 1/2
Factory Speed Setting (rpm)	Std 826	936	1248	1304
	Hi-Static 1233	1233	1396	1396
Fan Shaft Diameter at Pulley (in.)	5/8	5/8	5/8	5/8
HIGH-PRESSURE SWITCH (psig)		450 ± 50		
Standard Compressor Internal Relief		428		
Cutout		320		
Reset (Auto.)				
LOSS-OF-CHARGE/LOW-PRESSURE SWITCH (Liquid Line) (psig)		7 ± 3		
Cutout		22 ± 5		
Reset (Auto.)				
FREEZE PROTECTION THERMOSTAT		30		
Opens (F)		45		
Closes (F)				
OUTDOOR-AIR INLET SCREENS		Cleanable. Screen quantity and size varies with option selected.		
RETURN-AIR FILTERS		Throwaway		
Quantity...Size (in.)		2...16 x 25 x 2		2...16 x 16 x 2

50HE, HJ

LEGEND

Bhp — Brake Horsepower

*Single phase/three phase.

Table 2—Physical Data 50HE

BASE UNIT 50HE	003	004	005	006
NOMINAL CAPACITY	2	3	4	5
OPERATING WEIGHT (lb)				
Unit	435	445	465	635
Humidi-MiZer™ Adaptive Dehumidification System	13	15	23	25
EconoMi\$er IV	50	50	50	50
Roof Curb	115	115	115	115
COMPRESSOR			Scroll	
Quantity	1	1	1	1
Oil (oz)	25	42	56	53
REFRIGERANT TYPE			R-22	
Expansion Device			Acutrol™ Metering Device	
Operating Charge (lb-oz)				
Standard Unit	5–3	7–11	8–8	12–11
Unit With Humidi-Mizer Adaptive Dehumidification System	10–2	14–0	14–13	21–0
CONDENSER FAN			Propeller	
Quantity...Diameter (in.)	1...22	1...22	1...22	1...22
Nominal Cfm	3000	3500	3500	4100
Motor Hp...Rpm	1/8...825	1/8...825	1/8...825	1/4...1100
Watts Input (Total)	180	180	180	320
CONDENSER COIL			Enhanced Copper Tubes, Aluminum Lanced Fins	
Rows...Fins/in.	1...17	1...17	2...17	2...17
Total Face Area (sq ft)	14.6	14.6	16.5	16.5
EVAPORATOR COIL			Enhanced Copper Tubes, Aluminum Double-Wavy Fins	
Standard Unit				
Rows...Fins/in.	2...15	2...15	2...15	4...15
Total Face Area (sq ft)	4.2	5.5	5.5	5.5
Unit with Humidi-Mizer Adaptive Dehumidification System				
Rows...Fins/in.	1...17	1...17	2...17	2...17
Total Face Area (sq ft)	3.5	3.9	3.9	3.9
EVAPORATOR FAN			Centrifugal Type, Belt Drive	
Quantity...Size (in.)	1...10 x 10	1...10 x 10	1...10 x 10	1...10 x 10
Nominal Cfm	800	1200	1600	2000
Maximum Continuous Bhp	Std 0.58	1.20	1.20	1.30/2.40*
	Hi-Static	2.40	2.40	2.90
Motor Frame Size	Std 48	48	48	48/56*
	Hi-Static	56	56	56
Motor Rpm	1620	1620	1620	1725
Fan Rpm Range	Std 400-1000	680-1044	770-1185	1035-1460
	Hi-Static	1075-1455	1075-1455	1300-1685
Motor Bearing Type	Ball	Ball	Ball	Ball
Maximum Fan Rpm	1620	2100	2100	2100
Motor Pulley Pitch Diameter A/B (in.)	Std 2.4/3.2	1.9/2.9	1.9/2.0	2.4/3.4
	Hi-Static	2.8/3.8	2.8/3.8	3.4/4.4
Nominal Motor Shaft Diameter (in.)	Std 5/8	1/2	1/2	5/8
	Hi-Static	5/8	5/8	5/8
Fan Pulley Pitch Diameter (in.)	Std 4.0	4.5	4.0	4.0
	Hi-Static	4.5	4.0	4.5
Belt — Type...Length (in.)	Std 1...A...36	1...A...36	1...A...36	1...A...40
	Hi-Static	1...A...39	1...A...39	1...A...40
Pulley Center Line Distance (in.)	10.0–12.4	10.0-12.4	10.0-12.4	14.7-15.5
Speed Change per Full Turn of Movable Pulley Flange (rpm)	Std 60	65	70	75
	Hi-Static	65	65	60
Movable Pulley Maximum Full Turns from Closed Position	Std 5	5	5	6
	Hi-Static	6	6	5
Factory Setting — Full Turns Open	Std 3	3	3	3
	Hi-Static	3 1/2	3 1/2	3 1/2
Factory Speed Setting (rpm)	Std 756	826	936	1248
	Hi-Static	1233	1233	1396
Fan Shaft Diameter at Pulley (in.)	5/8	5/8	5/8	5/8
HIGH-PRESSURE SWITCH (psig)				
Standard Compressor Internal Relief			450 ± 50	
Cutout			428	
Reset (Auto.)			320	
LOSS-OF-CHARGE/LOW-PRESSURE SWITCH (Liquid Line) (psig)				
Cutout			7 ± 3	
Reset (Auto.)			22 ± 5	
FREEZE PROTECTION THERMOSTAT				
Opens (F)			30	
Closes (F)			45	
OUTDOOR-AIR INLET SCREENS			Cleanable. Screen quantity and size varies with option selected.	
RETURN-AIR FILTERS			Throwaway	
Quantity...Size (in.)			2...16 x 25 x 2	

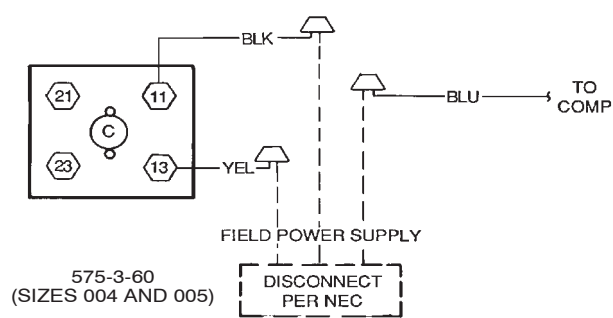
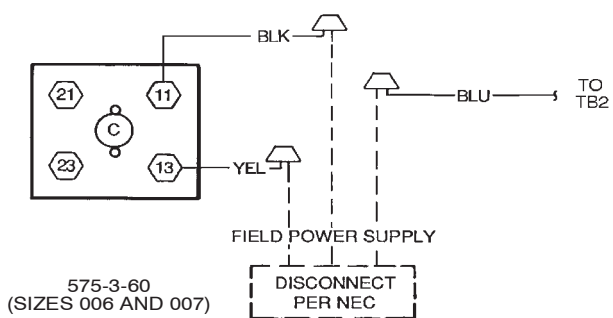
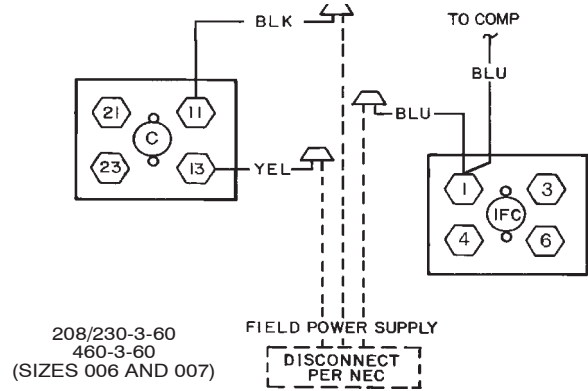
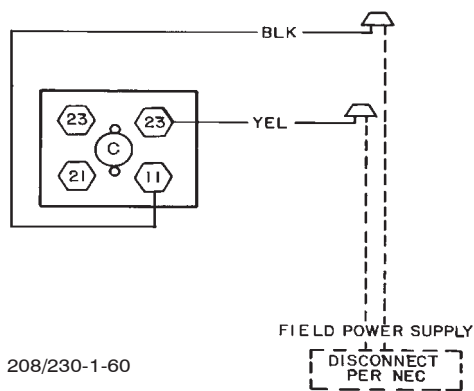
LEGEND

Bhp — Brake Horsepower

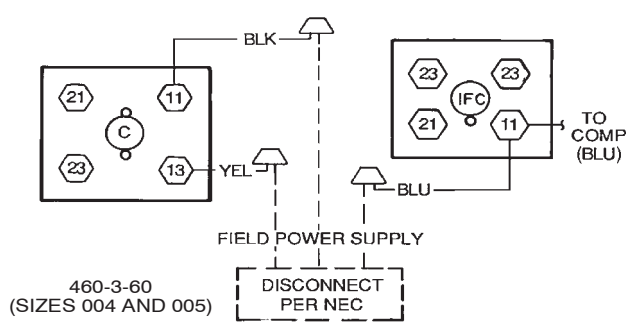
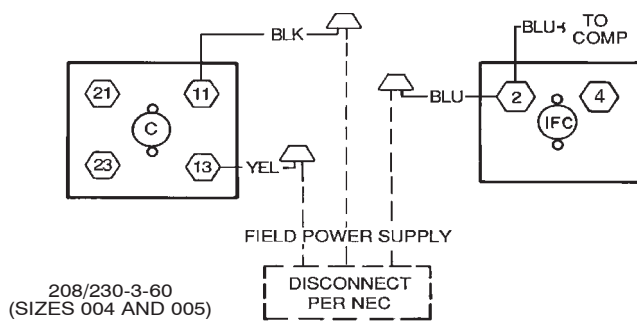
*Single phase/three phase.

***These units do NOT meet the California low NOx requirements.
 ††California SCAQMD compliant low NOx models have combustion products that are controlled to 40 nanograms per joule or less.

50HE_HJ



50HE,HJ



- LEGEND**
- C** — Contactor
 - COMP** — Compressor
 - IFC** — Indoor (Evaporator) Fan Contactor
 - NEC** — National Electrical Code
 - TB** — Terminal Block

Fig. 12 – Power Wiring Connections

C06158

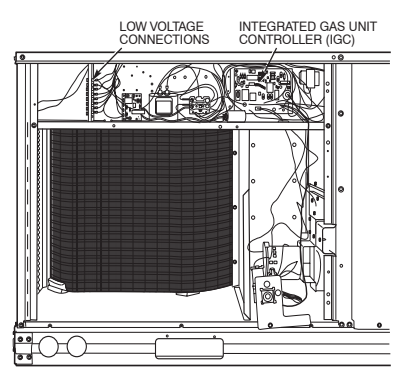


Fig. 13 – Field Control Wiring Raceway

C06125

Table 3—Electrical Data-50HE

UNIT SIZE	Nominal V-Ph-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)				OUTDOOR FAN			IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT Actual		POWER SUPPLY *			DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA	FLA	Actual kWt			FLA	MCA	MOCPS**	FLA	LRA		
003 (2 tons)	208/230-1-60	STD	NO	187	254	1	10.9	63.0	1	0.7	2.0	NONE	3.3/4.0	15.9/18.3	22.4/25.4	25/30	20/20	16.3/16.3	16/16	69/69	
												002A00	4.9/5.8	23.5/27.1	31.8/36.4	35/40	35/40	29/33	69/69		
												003B00	6.5/8.0	31.4/36.3	41.8/47.8	45/50	38/44	69/69			
												004B00	7.9/9.6	37.9/43.8	49.9/57.2	50/60	46/53	69/69			
												NONE	3.3/4.0	15.9/18.3	22.3/22.3	25/25	21/21	73/73			
												002A00	4.9/5.8	23.5/27.1	36.8/41.4	40/45	35/39	73/73			
	208/230-1-60	STD	YES	187	254	1	16.0	88.0	1	0.7	4.9	NONE	3.3/4.0	15.9/18.3	26.0/29.0	30/30	25/27	101/101			
												002A00	4.9/5.8	23.5/27.1	35.5/40.0	40/40	33/37	101/101			
												003B00	6.5/8.0	31.4/36.3	45.4/51.4	50/60	42/47	101/101			
												004B00	7.9/9.6	37.9/43.8	53.5/60.8	60/70	49/56	101/101			
												NONE	3.3/4.0	15.9/18.3	31.6/31.6	35/35	30/30	106/106			
												002A00	4.9/5.8	23.5/27.1	40.5/45.0	45/45	38/42	106/106			
004 (3 tons)	208/230-1-60	STD	NO	187	254	1	10.3	77.0	1	0.7	4.9	NONE	3.3/4.0	15.9/18.3	28.1/30.7	30/35	27/29	95/95			
												002A00	4.9/5.8	23.5/27.1	38.8/42.7	40/45	32/35	95/95			
												003B00	6.5/8.0	31.4/36.3	48.5/54.5	50/60	47/53	106/106			
												004B00	7.9/9.6	37.9/43.8	58.5/65.8	60/70	55/61	106/106			
												002.002	9.8/11.6	46.9/54.2	68.8/78.8	70/80	65/73	106/106			
												NONE	3.3/4.0	15.9/18.3	18.5/18.5	25/25	18/18	90/90			
	208/230-3-60	STD	YES	187	254	1	10.3	77.0	1	0.7	4.9	NONE	3.3/4.0	15.9/18.3	28.1/30.7	30/35	27/29	95/95			
												002A00	4.9/5.8	23.5/27.1	38.8/42.7	40/45	32/35	95/95			
												003B00	6.5/8.0	31.4/36.3	48.5/54.5	50/60	47/53	106/106			
												004B00	7.9/9.6	37.9/43.8	58.5/65.8	60/70	55/61	106/106			
												002.002	9.8/11.6	46.9/54.2	68.8/78.8	70/80	65/73	106/106			
												NONE	3.3/4.0	15.9/18.3	18.5/18.5	25/25	18/18	90/90			
460-3-60	208/230-3-60	HS	NO	187	254	1	10.3	77.0	1	0.7	5.8	NONE	3.3/4.0	15.9/18.3	24.2/26.8	30/30	22/25	120/120			
												002A00	4.9/5.8	23.5/27.1	34.6/38.8	35/40	28/31	120/120			
												003B00	6.5/8.0	31.4/36.3	44.9/50.4	40/45	32/36	120/120			
												004B00	7.9/9.6	37.9/43.8	54.9/60.4	50/60	45/51	120/120			
												NONE	3.3/4.0	15.9/18.3	25.4/25.4	30/30	25/25	124/124			
												002A00	4.9/5.8	23.5/27.1	28.2/31.8	35/35	28/30	124/124			
	460-3-60	STD	YES	187	254	1	10.3	77.0	1	0.7	5.8	NONE	3.3/4.0	15.9/18.3	25.4/25.4	30/30	25/25	124/124			
												002A00	4.9/5.8	23.5/27.1	34.9/38.4	40/40	33/36	124/124			
												003B00	6.5/8.0	31.4/36.3	44.9/50.4	40/45	37/41	124/124			
												004B00	7.9/9.6	37.9/43.8	53.9/60.4	50/60	46/50	124/124			
												005A00	12/14.7	33.4/38.5	53.9/60.4	60/70	51/56	124/124			
												NONE	3.3/4.0	15.9/18.3	11.8	15.0	9.0	46.0			
006A00	5.5	7.2	11.8	15.0	11.0	46.0															
007A00	8.1	10.6	16.0	20.0	15.0	46.0															
008A00	10.6	13.8	20.0	25.0	18.0	46.0															
009A00	12.9	16.8	23.8	25.0	22.0	46.0															
NONE	5.5	7.2	11.7	15.0	11.0	48.0															
006A00	5.5	7.2	15.1	20.0	13.0	48.0															
007A00	8.1	10.6	19.4	20.0	17.0	48.0															
008A00	10.6	13.8	23.4	25.0	21.0	48.0															
009A00	12.9	16.8	27.2	30.0	24.0	48.0															

Table 3 — Electrical Data-50HE (cont)

UNIT SIZE	Nominal V-Ph-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN			IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT		POWER SUPPLY *		DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA	FLA			Actual kWt	FLA	MCA	MOCp**	FLA	LRA
004 (3 tons)	460-3-60	HS	NO	414	508	1	5.1	39.0	1	0.4	2.6	NONE	—	9.4	15.0	9.0	60.0		
												006A00	5.5	7.2	12.3	15.0	11.0	60.0	
												007A00	8.1	10.6	16.5	20.0	15.0	60.0	
												008A00	10.6	13.8	20.5	25.0	19.0	60.0	
												009A00	12.9	16.8	24.3	25.0	22.0	60.0	
												NONE	—	—	—	—	—	—	
	575-3-60	STD HS Humidi- Mißer	YES	414	508	1	5.1	39.0	1	0.4	2.6	006A00	5.5	7.2	15.6	20.0	14.0	63.0	
												007A00	8.1	10.6	19.9	20.0	18.0	63.0	
												008A00	10.6	13.8	23.9	25.0	21.0	63.0	
												009A00	12.9	16.8	27.7	30.0	25.0	63.0	
												NONE	—	—	7.6	10	7	35	
												NONE	—	—	9.7	15	9	36	
575-3-60	HS	YES	518	632	1	4.2	31.0	1	0.4	2.0	NONE	—	—	7.7	10	8	40		
											NONE	—	—	—	—	—	—		
											NONE	—	—	9.8	15	10	42		
											NONE	—	—	7.7	10	8	48		
											NONE	—	—	9.8	15	10	49		
											NONE	—	—	—	—	—	—		

Table 3 — Electrical Data-50HE (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)		OUTDOOR FAN		IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT		POWER SUPPLY		DISCONNECT SIZE									
				Min	Max	QTY	RLA	LRA	QTY			FLA	FLA	MCA	MOCPS*	FLA	LRA	Actual kWt	FLA	MCA	MOCPS*	FLA	LRA		
005 (4 tons)	208/230-1-60	STD	NO	197	254	1	21.0	115.0	1	1.5	4.9	NONE	3.3/4.0	15.9/18.3	32.7/32.7	40/40	32/32	130/130							
																			001A00	3.3/4.0	15.9/18.3	32.7/32.7	40/40	32/32	130/130
																			003B00	6.5/8.0	31.4/36.3	45.4/51.4	50/60	42/47	130/130
																			002.002	9.8/11.6	46.9/54.2	64.8/73.8	70/80	60/68	130/130
																			003.003	13.1/16	62.8/72.5	84.7/96.8	90/100	78/89	130/130
																			004.004	16.0/19.3	75.8/87.5	100.9/115.5	110/125	93/106	130/130
																			NONE	—/—	—/—	—/—	—/—	—/—	—/—
																			001A00	3.3/4.0	15.9/18.3	38.7/38.7	45/45	37/37	135/135
																			003B00	6.5/8.0	31.4/36.3	50.4/56.4	60/60	47/53	135/135
																			002.002	9.8/11.6	46.9/54.2	69.8/78.8	70/80	65/73	135/135
																			003.003	13.1/16	62.8/72.5	89.7/101.8	90/110	83/95	135/135
																			004.004	16.0/19.3	75.8/87.5	105.9/120.5	110/125	98/112	135/135
																			NONE	—/—	—/—	—/—	—/—	—/—	—/—
																			002A00	4.9/5.8	13.6/15.6	24.0/25.7	30/30	24/24	110/110
																			003B00	6.5/8.0	18.1/20.9	28.8/32.3	30/35	26/30	110/110
																			005A00	12/14.7	33.4/38.5	47.8/54.2	50/60	44/50	110/110
004.004	16/19.3	43.8/50.5	60.8/69.3	70/70	56/64	110/110																			
NONE	—/—	—/—	—/—	—/—	—/—	—/—																			
002A00	4.9/5.8	13.6/15.6	30.0/30.0	35/35	29/29	115/115																			
003B00	6.5/8.0	18.1/20.9	33.8/37.3	35/40	32/35	115/115																			
005A00	12/14.7	33.4/38.5	52.8/59.2	60/60	50/55	115/115																			
004.004	16/19.3	43.8/50.5	65.8/74.3	70/80	62/69	115/115																			
NONE	—/—	—/—	—/—	—/—	—/—	—/—																			
002A00	4.9/5.8	13.6/15.6	24.9/24.9	30/30	25/25	140/140																			
003B00	6.5/8.0	18.1/20.9	29.9/33.4	35/35	25/25	140/140																			
005A00	12/14.7	33.4/38.5	48.9/55.4	50/60	45/51	140/140																			
004.004	16/19.3	43.8/50.5	62.0/70.4	70/80	57/65	140/140																			
NONE	—/—	—/—	—/—	—/—	—/—	—/—																			
002A00	4.9/5.8	13.6/15.6	30.9/30.9	35/35	25/25	145/145																			
003B00	6.5/8.0	18.1/20.9	34.9/38.4	40/40	33/36	145/145																			
005A00	12/14.7	33.4/38.5	53.9/60.4	60/70	51/56	145/145																			
004.004	16/19.3	43.8/50.5	67.0/75.4	70/80	63/70	145/145																			
NONE	—/—	—/—	—/—	—/—	—/—	—/—																			
006A00	5.5	7.2	11.9	15.0	12.0	53.0																			
008A00	10.6	20.0	25.0	33.8	18.0	53.0																			
009A00	12.9	23.8	28.0	38.0	22.0	53.0																			
008.008	21.1	27.7	37.3	40.0	34.0	53.0																			
NONE	—	—	—	—	—	—																			
006A00	5.5	7.2	14.6	20.0	14.0	55.0																			
008A00	10.6	13.8	23.4	25.0	21.0	55.0																			
009A00	12.9	16.8	27.2	30.0	24.0	55.0																			
008.008	21.1	27.7	40.7	45.0	37.0	55.0																			
NONE	—	—	—	—	—	—																			
006A00	5.5	7.2	12.3	15.0	12.0	67.0																			
008A00	10.6	13.8	20.5	25.0	19.0	67.0																			
009A00	12.9	16.8	24.3	25.0	22.0	67.0																			
008.008	21.1	27.7	37.8	40.0	35.0	67.0																			
NONE	—	—	—	—	—	—																			
006A00	5.5	7.2	15.1	20.0	15.0	69.0																			
008A00	10.6	13.8	23.9	25.0	21.0	70.0																			
009A00	12.9	16.8	27.7	30.0	25.0	70.0																			
008.008	21.1	27.7	41.2	45.0	37.0	70.0																			
NONE	—	—	—	—	—	—																			
006A00	5.5	7.2	12.3	15.0	10.1	44																			
008A00	10.6	13.8	20.5	25.0	12	45																			
009A00	12.9	16.8	24.3	25.0	10	50																			
008.008	21.1	27.7	37.8	40.0	12	52																			
NONE	—	—	—	—	—	—																			
006A00	5.5	7.2	12.5	15.0	10	55																			
008A00	10.6	13.8	20.5	25.0	12	57																			
009A00	12.9	16.8	24.3	25.0	10	57																			
008.008	21.1	27.7	37.8	40.0	12	57																			
NONE	—	—	—	—	—	—																			

Table 3 — Electrical Data-50HE (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN		IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT		POWER SUPPLY		DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA			Actual kWt	FLA	MCA	MOCPS*	FLA	LRA
006 (tons)	208/230-1-60	STD	NO	187	254	1	25.0	150.0	1	1.5	6.6	NONE	—/—	—/—	39.4/39.4	50/50	38/38	187/187
												002A00	4.9/5.8	23.5/27.1	39.4/42.1	50/50	38/38	187/187
												003B00	6.5/8.0	31.4/36.3	47.5/53.6	50/60	44/49	187/187
												02.002	8.7/11.6	46.9/64.2	66.9/76.0	70/80	62/70	187/187
												003.003	13.0/16.0	62.8/72.5	86.8/98.9	90/100	80/91	187/187
												004.004	15.8/19.3	75.8/87.5	103.0/117.6	60/50	95/108	187/187
	208/230-3-60	HS	YES	187	254	1	17.3	123.0	1	1.5	5.8	NONE	—/—	—/—	45.4/45.4	60/60	44/44	191/191
												002A00	4.9/5.8	23.5/27.1	45.4/47.1	60/60	44/44	191/191
												003B00	6.5/8.0	31.4/36.3	52.5/58.6	80/90	49/55	191/191
												02.002	8.7/11.6	46.9/64.2	71.9/81.0	100/110	67/75	191/191
												003.003	13.0/16.0	62.8/72.5	91.8/103.9	110/125	85/96	191/191
												004.004	15.8/19.3	75.8/87.5	108.0/122.6	90/100	100/114	191/191
006 (tons)	208/230-3-60	STD	NO	187	254	1	17.3	123.0	1	5.8	NONE	—/—	—/—	28.9/28.9	35/35	28/28	168/168	
											002A00	4.9/5.8	13.6/15.6	34.9/34.9	40/40	34/34	173/173	
											003B00	7.9/9.6	21.9/25.3	34.6/38.8	35/40	32/36	168/168	
											004B00	12.0/14.7	33.4/38.5	48.9/55.4	50/60	45/51	168/168	
											004.004	15.8/19.3	43.8/50.5	62.0/70.4	70/80	57/65	168/168	
											004.005	19.9/24.3	55.2/63.8	76.3/86.9	80/90	70/80	168/168	
	208/230-3-60	HS	YES	187	254	1	17.3	123.0	1	1.5	7.5	NONE	—/—	—/—	34.9/34.9	40/40	34/34	173/173
												002A00	4.9/5.8	13.6/15.6	30.6/30.6	35/35	30/30	187/187
												003B00	7.9/9.6	21.9/25.3	36.7/40.9	40/45	34/38	187/187
												004B00	12.0/14.7	33.4/38.5	51.1/57.5	60/60	47/53	187/187
												004.004	15.8/19.3	43.8/50.5	64.1/72.5	70/80	59/67	187/187
												004.005	19.9/24.3	55.2/63.8	78.4/89.1	80/90	72/82	187/187
208/230-3-60	HS	YES	187	254	1	17.3	123.0	1	1.5	7.5	NONE	—/—	—/—	36.6/36.6	40/40	36/36	192/192	
											002A00	4.9/5.8	13.6/15.6	36.6/36.6	40/40	36/36	192/192	
											003B00	7.9/9.6	21.9/25.3	41.7/45.9	45/50	39/43	192/192	
											004B00	12.0/14.7	33.4/38.5	56.1/62.5	60/70	53/58	192/192	
											004.004	15.8/19.3	43.8/50.5	69.1/77.5	70/80	65/72	192/192	
											004.005	19.9/24.3	55.2/63.8	83.4/94.1	90/100	78/87	192/192	

Table 3 — Electrical Data-50HE (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFIM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN		IFIM FLA	CR/HEATER --A00 or B00	ELECTRIC HEAT		POWER SUPPLY		DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA			Actual kW†	FLA	MCA	MOCPS**	FLA	LRA
006 (tons)	460-3-60	STD	NO	414	508	1	8.4	70.0	1	0.8	2.6	NONE	—	—	13.9	20.0	14.0	92.0
				414	508	1	8.4	70.0	1	0.8	2.6	008A00	5.5	7.2	13.9	20.0	14.0	92.0
				414	508	1	8.4	70.0	1	0.8	2.6	008A00	10.6	13.8	13.9	20.0	14.0	92.0
				414	508	1	8.4	70.0	1	0.8	2.6	008A00	12.9	16.8	20.5	25.0	19.0	92.0
				414	508	1	8.4	70.0	1	0.8	2.6	008A00	16.8	27.7	24.3	25.0	22.0	92.0
				414	508	1	8.4	70.0	1	0.8	2.6	008.008	21.1	27.7	37.8	40.0	35.0	92.0
				414	508	1	8.4	70.0	1	0.8	2.6	008.009	23.4	30.1	40.8	45	38	92
				414	508	1	8.4	70.0	1	0.8	2.6	NONE	—	—	16.6	20.0	16.0	94.0
				414	508	1	8.4	70.0	1	0.8	2.6	006A00	5.5	7.2	16.6	20.0	16.0	95.0
				414	508	1	8.4	70.0	1	0.8	2.6	008A00	10.6	13.8	23.9	25.0	21.0	95.0
				414	508	1	8.4	70.0	1	0.8	2.6	008A00	12.9	16.8	27.7	30.0	25.0	95.0
				414	508	1	8.4	70.0	1	0.8	2.6	008.008	21.1	27.7	41.2	45.0	37.0	95.0
006 (tons)	575-3-60	HS	NO	414	508	1	8.4	70.0	1	0.8	3.4	NONE	—	—	14.7	20.0	14.0	101.0
				414	508	1	8.4	70.0	1	0.8	3.4	006A00	5.5	7.2	14.7	20.0	14.0	102.0
				414	508	1	8.4	70.0	1	0.8	3.4	008A00	10.6	13.8	21.5	25.0	20.0	102.0
				414	508	1	8.4	70.0	1	0.8	3.4	008A00	12.9	16.8	25.3	30.0	23.0	102.0
				414	508	1	8.4	70.0	1	0.8	3.4	008.008	21.1	27.7	38.8	40.0	36.0	102.0
				414	508	1	8.4	70.0	1	0.8	3.4	008.009	23.4	30.1	41.8	45	38	102
				414	508	1	8.4	70.0	1	0.8	3.4	NONE	—	—	17.4	20.0	17.0	104.0
				414	508	1	8.4	70.0	1	0.8	3.4	006A00	5.5	7.2	17.4	20.0	17.0	104.0
				414	508	1	8.4	70.0	1	0.8	3.4	008A00	10.6	13.8	24.9	25.0	22.0	104.0
				414	508	1	8.4	70.0	1	0.8	3.4	009A00	12.9	16.8	28.7	30.0	26.0	104.0
				414	508	1	8.4	70.0	1	0.8	3.4	008.008	21.1	27.7	42.2	45.0	38.0	104.0
				414	508	1	8.4	70.0	1	0.8	3.4	008.009	23.4	30.1	45.2	50	41	104
006 (tons)	575-3-60	STD	NO	518	632	1	7.1	53.0	1	0.6	2.0	NONE	—	—	11.5	15	11	65
			YES	518	632	1	7.1	53.0	1	0.6	2.0	NONE	—	—	13.6	15	13	67
			NO	518	632	1	7.1	53.0	1	0.6	2.8	NONE	—	—	12.3	15	12	74
		YES	518	632	1	7.1	53.0	1	0.6	2.8	NONE	—	—	14.4	20	14	76	
		Humidif. MIsr	518	632	1	7.1	53.0	1	0.8	3.4	NONE	—	—	12.2	15	12	78	
		YES	518	632	1	7.1	53.0	1	0.8	3.4	NONE	—	—	14.4	20	14	80	

FLA – Full Load Amps
HACR – Heating, Air Conditioning and Refrigeration
IFIM – Indoor (Evaporator) Fan Motor
LRA – Locked Rotor Amps
MCA – Minimum Circuit Amps
MOCPS – Maximum Overcurrent Protection
NEC – National Electrical Code
OFM – Outdoor (Condenser) Fan Motor
RLA – Rated Load Amps

NOTES:
* The values listed in this table do not include power exhaust. See power exhaust table for power exhaust requirements.
** Fuse or HACR breaker
† Heater capacity (kW) is based on heater voltage of 240v, 480v or 575v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly

Table 4—Electrical Data-50HJ

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN		IFM FLA	ELECTRIC HEAT			POWER SUPPLY *		DISCONNECT SIZE		
				Min	Max	QTY	RLA	LRA	FLA	QTY		FLA	Actual kW/H	FLA	MCA	MOCp**	FLA	LRA	
004 (3 tons)	208/230-1-60	STD	NO	187	254	1	16	88	1	0.7	4.9	CRHEATER --A00 or B00	001	3.3/4.0	15.9/18.3	25.6/25.6	30/30	25/25	101/101
													002	4.9/5.8	23.5/27.1	26.0/29.0	30/30	25/27	101/101
													003	6.5/8.0	31.4/36.3	35.5/40.0	40/40	33/37	101/101
													004	7.9/9.6	37.9/43.1	45.4/51.4	50/50	42/47	101/101
													002+002	9.8/11.6	46.9/54.2	53.5/60.0	60/60	49/55	101/101
													001	3.3/4.0	15.9/18.3	25.6/25.6	30/30	25/25	101/101
													002	4.9/5.8	23.5/27.1	26.0/29.0	40/40	33/37	101/101
													003	6.5/8.0	31.4/36.3	35.5/40.0	50/50	42/47	101/101
													004	7.9/9.6	37.9/43.1	45.4/51.4	60/60	49/55	101/101
													002+002	9.8/11.6	46.9/54.2	53.5/60.0	70/80	60/68	101/101
													001	3.3/4.0	15.9/18.3	25.6/25.6	35/35	30/30	106/106
													002	4.9/5.8	23.5/27.1	26.0/29.0	45/45	38/42	106/106
	003	6.5/8.0	31.4/36.3	35.5/40.0	60/60	47/53	106/106												
	004	7.9/9.6	37.9/43.1	45.4/51.4	70/80	55/61	106/106												
	002+002	9.8/11.6	46.9/54.2	53.5/60.0	80/90	65/73	106/106												
	208/230-3-60	STD	NO	187	254	1	10.3	77	1	0.7	4.9	CRHEATER --A00 or B00	001	3.3/4.0	9.2/10.6	18.5/18.5	25/25	18/18	90/90
													002	4.9/5.8	13.6/15.6	23.1/25.7	25/30	21/24	90/90
													003	6.5/8.0	18.1/20.9	28.8/32.3	30/35	26/30	90/90
													004	7.9/9.6	21.9/25.3	33.5/37.7	35/40	31/35	90/90
													002+002	9.8/14.7	33.4/38.5	47.8/54.2	50/60	44/50	90/90
													001	3.3/4.0	9.2/10.6	18.5/18.5	30/30	24/24	95/95
													002	4.9/5.8	13.6/15.6	23.1/25.7	30/30	24/24	95/95
													003	6.5/8.0	18.1/20.9	28.8/32.3	30/35	27/29	95/95
													004	7.9/9.6	21.9/25.3	33.5/37.7	35/40	32/35	95/95
002+002													9.8/14.7	33.4/38.5	47.8/54.2	50/60	50/55	95/95	
001													3.3/4.0	9.2/10.6	19.4/19.4	25/25	19/19	120/120	
002													4.9/5.8	13.6/15.6	24.2/26.8	30/30	22/25	120/120	
003	6.5/8.0	18.1/20.9	29.9/33.4	35/35	28/31	120/120													
004	7.9/9.6	21.9/25.3	34.6/38.8	35/40	32/36	120/120													
002+002	9.8/14.7	33.4/38.5	48.9/55.4	50/60	45/51	120/120													
208/230-3-60	HS	YES	187	254	1	10.3	77	1	0.7	5.8	CRHEATER --A00 or B00	001	3.3/4.0	9.2/10.6	25.4/25.4	30/30	25/25	124/124	
												002	4.9/5.8	13.6/15.6	29.2/31.8	30/30	25/25	124/124	
												003	6.5/8.0	18.1/20.9	34.9/38.4	40/40	28/30	124/124	
												004	7.9/9.6	21.9/25.3	39.6/43.8	40/45	33/36	124/124	
002+002	9.8/14.7	33.4/38.5	53.9/60.4	60/70	37/41	124/124													

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN		IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT		POWER SUPPLY *		DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA			Actual kWt	FLA	MCA	MOCp**	FLA	LRA
004 (3 tons)	460-3-60	STD	NO	414	508	1	5.1	39	0.4	2.2	006	—	—	9.0	20	9	46	
											007	5.5	7.2	11.8	20	11	46	
											008	8.1	10.6	16.0	20	15	46	
		009	10.6	13.8	20.0	25	18	46										
		006	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
		007	5.5	7.2	11.7	20	11	48										
	008	8.1	10.6	15.1	20	13	48											
	009	10.6	13.8	18.7	20	17	48											
	HS	414	508	1	5.1	39	0.4	2.6	006	—	—	—	—	—	—	—	—	—
									007	5.5	7.2	12.3	20	11	60			
									008	8.1	10.6	16.5	20	15	60			
		009	10.6	13.8	20.5	25	19	60										
006		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
007		5.5	7.2	12.1	20	12	62											
008	8.1	10.6	15.6	20	14	63												
009	10.6	13.8	19.2	20	18	63												
575-3-60	STD	NO	518	632	1	4.2	31	0.4	1.9	006	—	—	—	—	—	—	—	
										007	5.5	7.2	9.5	20	9	30		
										008	8.1	10.6	13.8	25	15	40		
	009	10.6	13.8	16.8	30	25	42											
	006	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	007	5.5	7.2	7.3	20	7	36											
008	8.1	10.6	9.5	20	8	40												
009	10.6	13.8	11.7	25	10	42												
Humidi-Miser	518	632	1	4.2	31	0.4	2.6	006	—	—	—	—	—	—	—	—	—	
								007	5.5	7.2	7.7	10	8	48				
008	8.1	10.6	9.8	15	10	48												
009	10.6	13.8	11.7	15	10	48												

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (EACH)			OUTDOOR FAN			IFM FLA	CRHEATER -- A00 or B00	ELECTRIC HEAT		POWER SUPPLY			DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA	Actual kW†			FLA	MCA	MOCPS**	FLA	LRA		
005 (4 ton)	208/230-1-60	STD	NO	197	254	23.7	126	1	0.7	4.9	001	3.3/4.0	15.9/18.3	35.2/35.2	45/45	34/34	139/139			
												6.5/8.0	31.4/36.3	35.2/35.2	45/45	34/34	139/139			
												9.8/11.6	46.8/54.2	45.4/51.4	50/60	42/47	139/139			
												13.1/16	62.8/72.5	84.7/96.8	90/100	60/68	139/139			
												16.0/19.3	75.8/87.5	100.9/115.5	110/125	78/89	139/139			
												—	—	41.2/41.2	50/50	93/106	139/139			
												003	6.5/8.0	31.4/36.3	50.4/56.4	60/60	39/39	144/144		
												002+002	9.8/11.6	46.9/54.2	68.8/78.8	70/80	47/53	144/144		
												003+003	13.1/16	62.8/72.5	89.7/101.8	90/100	65/73	144/144		
												004+004	16.0/19.3	75.8/87.5	105.9/120.5	110/125	98/112	144/144		
												—	—	—	—	—	—			
												002	4.9/5.8	13.6/15.6	23.1/25.7	30/30	22/22	106/106		
003	6.5/8	18.1/20.9	28.8/32.3	30/35	26/30	106/106														
005	12/14.7	33.4/38.5	47.8/54.2	50/60	44/50	106/106														
004+004	16/19.3	43.8/50.5	60.8/59.3	70/70	56/64	106/106														
—	—	—	—	—	—															
002	4.9/5.8	13.6/15.6	26.5/30.7	35/35	27/27	111/111														
003	6.5/8	18.1/20.9	35.8/37.3	35/40	32/35	111/111														
005	12/14.7	33.4/38.5	52.8/59.2	60/60	50/55	111/111														
004+004	16/19.3	43.8/50.5	65.8/74.3	70/80	62/69	111/111														
—	—	—	—	—	—															
002	4.9/5.8	13.6/15.6	24.2/28.8	30/30	23/25	136/136														
003	6.5/8	18.1/20.9	29.9/33.4	35/35	28/31	136/136														
005	12/14.7	33.4/38.5	48.9/55.4	50/60	45/51	136/136														
004+004	16/19.3	43.8/50.5	62.0/70.4	70/80	57/65	136/136														
—	—	—	—	—	—															
002	4.9/5.8	13.6/15.6	29.4/31.8	35/35	29/29	140/140														
003	6.5/8	18.1/20.9	34.9/38.4	40/40	33/36	140/140														
005	12/14.7	33.4/38.5	53.9/60.4	60/70	51/56	140/140														
004+004	16/19.3	43.8/50.5	67.0/75.4	70/80	63/70	140/140														
—	—	—	—	—	—															
006	5.5	7.2	11.8	20	11	53														
008	10.6	13.8	20.0	25	18	54														
009	12.9	16.8	23.8	25	22	54														
008+008	21.1	27.7	37.3	40	34	54														
—	—	—	—	—	—															
006	5.5	7.2	15.1	20	13	55														
008	10.6	13.8	22.7	25	21	56														
009	12.9	16.8	26.5	30	24	56														
008+008	21.1	27.7	40.0	45	37	56														
—	—	—	—	—	—															
006	5.5	7.2	12.3	20	11	66														
008	10.6	13.8	20.5	25	19	68														
009	12.9	16.8	24.3	25	22	68														
008+008	21.1	27.7	37.8	40	35	68														
—	—	—	—	—	—															
006	5.5	7.2	15.6	20	14	70														
008	10.6	13.8	23.2	25	21	70														
009	12.9	16.8	27.0	30	25	70														
008+008	21.1	27.7	40.5	45	37	70														
—	—	—	—	—	—															
006	5.5	7.2	10.3	15	10	45														
008	10.6	13.8	12.5	15	12	47														
009	12.9	16.8	15.1	15	10	52														
008+008	21.1	27.7	12.6	15	12	53														
—	—	—	—	—	—															
006	5.5	7.2	10.4	15	10	57														
008	10.6	13.8	12.6	15	10	57														
009	12.9	16.8	15.1	15	10	57														
008+008	21.1	27.7	12.6	15	10	57														
—	—	—	—	—	—															
006	5.5	7.2	12.6	15	10	59														

50HE,HJ

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (EACH)			OUTDOOR FAN			IFM FLA	CR HEATER -- A00 or B00	ELECTRIC HEAT		POWER SUPPLY			DISCONNECT SIZE										
				Min	Max	QTY	RLA	LRA	QTY	FLA	Actual kW†			FLA	MCA	MOCp**	FLA	LRA											
208/230-1-60		STD	NO	187	254	1	28.8	169	1	1.5	8.8																		
																							4.9/5.8	28.5/27.1	46.3/46.3	607.60	457.45	216/216	
																							6.5/8.0	31.4/36.3	50.3/56.3	607.60	457.45	216/216	
																							8.7/11.6	48.9/54.2	69.7/78.7	707.80	647.52	216/216	
																							13.0/16.0	62.8/72.5	49.5/101.6	907.110	827.93	216/216	
																							15.8/19.3	75.8/87.5	105.8/120.4	1107.125	977.11	216/216	
																							4.9/5.8	23.5/27.1	52.3/52.3	607.60	507.50	221/221	
																							6.5/8.0	31.4/36.3	55.3/61.3	607.70	527.57	221/221	
																							8.7/11.6	46.9/54.2	74.7/83.7	807.90	707.78	221/221	
																							13.0/16.0	62.8/72.5	94.5/106.6	1007.110	887.99	221/221	
																							15.8/19.3	75.8/87.5	110.8/125.4	1257.150	1037.116	221/221	
																							208/230-3-60		STD	YES	187	254	1
4.9/5.8	13.6/15.6	28.9/28.9	357.35	287.28	168/168																								
7.9/9.6	21.9/25.3	34.6/38.8	357.35	327.36	168/168																								
12.0/14.7	33.4/38.5	48.9/55.4	507.50	457.51	168/168																								
15.8/19.3	43.8/50.5	62/70.4	707.70	577.65	168/168																								
19.9/24.3	55.2/63.8	76.3/86.9	807.80	707.80	168/168																								
4.9/5.8	13.6/15.6	34.9/34.9	407.40	347.34	173/173																								
7.9/9.6	21.9/25.3	39.6/43.8	407.40	377.41	173/173																								
12.0/14.7	33.4/38.5	53.9/60.4	607.70	517.56	173/173																								
15.8/19.3	43.8/50.5	67/75.4	707.80	637.70	173/173																								
19.9/24.3	55.2/63.8	81.3/91.9	907.100	767.86	173/173																								
460-3-60		HS	YES	187	254	1	17.3	123	1	1.5	7.5																		
																							4.9/5.8	13.6/15.6	36.6/36.6	407.40	367.36	192/192	
																							7.9/9.6	21.9/25.3	41.7/43.9	457.50	397.43	192/192	
																							12.0/14.7	33.4/38.5	56.6/62.5	607.70	537.58	192/192	
																							15.8/19.3	43.8/50.5	69.1/77.5	707.80	657.72	192/192	
																							19.9/24.3	55.2/63.8	83.4/94.1	907.100	787.87	192/192	
																							5.5	7.2	14.7	20	14	84	
																							10.6	13.8	20.5	25	19	84	
																							12.9	16.8	24.3	25	22	84	
																							21.1	27.7	37.8	40	35	84	
																							23.4	30.1	40.8	45	38	84	
																							5.5	7.2	17.4	20	17	86	
575-3-60		STD	YES	414	508	1	9	62	1	0.8	2.6																		
																							10.6	13.8	23.2	25	21	87	
																							12.9	16.8	27.0	30	25	87	
																							21.1	27.7	40.5	45	37	87	
																							23.4	30.1	43.5	45	40	87	
																							5.5	7.2	15.5	20	15	93	
																							10.6	13.8	21.5	20	15	94	
																							12.9	16.8	25.3	20	20	94	
																							21.1	27.7	38.8	40	33	94	
																							23.4	30.1	41.8	45	36	94	
																							5.5	7.2	18.2	20	18	96	
																							10.6	13.8	24.2	25	22	96	
12.9	16.8	28.0	30	26	96																								
21.1	27.7	41.5	45	38	96																								
23.4	30.1	44.5	45	41	96																								
575-3-60		HS	YES	414	508	1	9	62	1	0.8	3.4																		
																								5.5	7.2	18.2	20	18	96
																								10.6	13.8	24.2	25	22	96
																								12.9	16.8	28.0	30	26	96
																								21.1	27.7	41.5	45	38	96
																								23.4	30.1	44.5	45	41	96
575-3-60		HUMIDIZ-ER	YES	414	508	1	7.1	50	1	0.6	2.0																		
																								7.1	0.6	13.6	15	13	64
																								7.1	0.6	12.3	15	12	72
																								7.1	0.6	14.4	15	14	72
																								7.1	0.6	12.2	15	12	76
																								7.1	0.6	14.4	20	14	77

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN		IFM FLA	ELECTRIC HEAT			POWER SUPPLY *		DISCONNECT SIZE												
				Min	Max	QTY	RLA	LRA	FLA	FLA		Actual kWt	FLA	MCA	MOCp**	FLA	LRA												
007 (6 ton)	208/230-3-60	STD	NO	187	254	1	20.5	156	1.4	5.8	---	CRHEATER	---	---	---	---	---	---											
												---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
												002	4.9/5.8	13.6/15.6	32.8/32.8	40/40	32.8/32.8	40/40	32.8/32.8	40/40	32.8/32.8	40/40	32.8/32.8	40/40	32.8/32.8	40/40	32.8/32.8	40/40	200/200
												004	7.9/9.6	21.9/25.3	34.6/38.8	40/40	34.6/38.8	40/40	34.6/38.8	40/40	34.6/38.8	40/40	34.6/38.8	40/40	34.6/38.8	40/40	34.6/38.8	40/40	200/200
												005	12.0/14.7	33.4/38.5	48.9/55.4	50/50	48.9/55.4	50/50	48.9/55.4	50/50	48.9/55.4	50/50	48.9/55.4	50/50	48.9/55.4	50/50	48.9/55.4	50/50	200/200
												004+004	15.8/19.3	43.8/50.5	62.0/70.4	70/80	62.0/70.4	70/80	62.0/70.4	70/80	62.0/70.4	70/80	62.0/70.4	70/80	62.0/70.4	70/80	62.0/70.4	70/80	200/200
												004+005	19.9/24.3	55.2/63.8	76.3/86.9	80/90	76.3/86.9	80/90	76.3/86.9	80/90	76.3/86.9	80/90	76.3/86.9	80/90	76.3/86.9	80/90	76.3/86.9	80/90	200/200
												---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
												002	4.9/5.8	13.6/15.6	38.8/38.8	45/45	38.8/38.8	45/45	38.8/38.8	45/45	38.8/38.8	45/45	38.8/38.8	45/45	38.8/38.8	45/45	38.8/38.8	45/45	205/205
												004	7.9/9.6	21.9/25.3	39.6/43.8	45/45	39.6/43.8	45/45	39.6/43.8	45/45	39.6/43.8	45/45	39.6/43.8	45/45	39.6/43.8	45/45	39.6/43.8	45/45	205/205
												005	12.0/14.7	33.4/38.5	53.9/60.4	60/70	53.9/60.4	60/70	53.9/60.4	60/70	53.9/60.4	60/70	53.9/60.4	60/70	53.9/60.4	60/70	53.9/60.4	60/70	205/205
												004+004	15.8/19.3	43.8/50.5	67.0/75.4	70/80	67.0/75.4	70/80	67.0/75.4	70/80	67.0/75.4	70/80	67.0/75.4	70/80	67.0/75.4	70/80	67.0/75.4	70/80	205/205
												004+005	19.9/24.3	55.2/63.8	76.3/86.9	90/100	76.3/86.9	90/100	76.3/86.9	90/100	76.3/86.9	90/100	76.3/86.9	90/100	76.3/86.9	90/100	76.3/86.9	90/100	205/205
												---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
												002	4.9/5.8	13.6/15.6	34.5/34.5	40/40	34.5/34.5	40/40	34.5/34.5	40/40	34.5/34.5	40/40	34.5/34.5	40/40	34.5/34.5	40/40	34.5/34.5	40/40	219/219
004	7.9/9.6	21.9/25.3	36.7/40.9	40/45	36.7/40.9	40/45	36.7/40.9	40/45	36.7/40.9	40/45	36.7/40.9	40/45	36.7/40.9	40/45	36.7/40.9	40/45	219/219												
005	12.0/14.7	33.4/38.5	51.1/57.5	60/60	51.1/57.5	60/60	51.1/57.5	60/60	51.1/57.5	60/60	51.1/57.5	60/60	51.1/57.5	60/60	51.1/57.5	60/60	219/219												
004+004	15.8/19.3	43.8/50.5	64.1/72.5	70/80	64.1/72.5	70/80	64.1/72.5	70/80	64.1/72.5	70/80	64.1/72.5	70/80	64.1/72.5	70/80	64.1/72.5	70/80	219/219												
004+005	19.9/24.3	55.2/63.8	78.4/89.1	80/90	78.4/89.1	80/90	78.4/89.1	80/90	78.4/89.1	80/90	78.4/89.1	80/90	78.4/89.1	80/90	78.4/89.1	80/90	219/219												
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002	4.9/5.8	13.6/15.6	40.5/40.5	45/45	40.5/40.5	45/45	40.5/40.5	45/45	40.5/40.5	45/45	40.5/40.5	45/45	40.5/40.5	45/45	40.5/40.5	45/45	224/224												
004	7.9/9.6	21.9/25.3	41.7/45.9	45/50	41.7/45.9	45/50	41.7/45.9	45/50	41.7/45.9	45/50	41.7/45.9	45/50	41.7/45.9	45/50	41.7/45.9	45/50	224/224												
005	12.0/14.7	33.4/38.5	56.1/62.5	60/70	56.1/62.5	60/70	56.1/62.5	60/70	56.1/62.5	60/70	56.1/62.5	60/70	56.1/62.5	60/70	56.1/62.5	60/70	224/224												
004+004	15.8/19.3	43.8/50.5	69.1/77.5	70/80	69.1/77.5	70/80	69.1/77.5	70/80	69.1/77.5	70/80	69.1/77.5	70/80	69.1/77.5	70/80	69.1/77.5	70/80	224/224												
004+005	19.9/24.3	55.2/63.8	83.4/94.1	90/100	83.4/94.1	90/100	83.4/94.1	90/100	83.4/94.1	90/100	83.4/94.1	90/100	83.4/94.1	90/100	83.4/94.1	90/100	224/224												
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006	5.5	7.2	15.2	20	15.2	20	15.2	20	15.2	20	15.2	20	15.2	20	15.2	20	97												
008	10.6	13.8	20.5	25	20.5	25	20.5	25	20.5	25	20.5	25	20.5	25	20.5	25	97												
009	12.9	16.8	24.3	25	24.3	25	24.3	25	24.3	25	24.3	25	24.3	25	24.3	25	97												
008+008	21.1	27.7	37.8	40	37.8	40	37.8	40	37.8	40	37.8	40	37.8	40	37.8	40	97												
008+009	23.4	30.7	41.6	45	41.6	45	41.6	45	41.6	45	41.6	45	41.6	45	41.6	45	97												
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006	5.5	7.2	17.9	20	17.9	20	17.9	20	17.9	20	17.9	20	17.9	20	17.9	20	99												
008	10.6	13.8	23.2	25	23.2	25	23.2	25	23.2	25	23.2	25	23.2	25	23.2	25	99												
009	12.9	16.8	27.0	30	27.0	30	27.0	30	27.0	30	27.0	30	27.0	30	27.0	30	99												
008+008	21.1	27.7	40.5	45	40.5	45	40.5	45	40.5	45	40.5	45	40.5	45	40.5	45	99												
008+009	23.4	30.7	44.3	45	44.3	45	44.3	45	44.3	45	44.3	45	44.3	45	44.3	45	99												
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006	5.5	7.2	16.0	20	16.0	20	16.0	20	16.0	20	16.0	20	16.0	20	16.0	20	106												
008	10.6	13.8	21.5	25	21.5	25	21.5	25	21.5	25	21.5	25	21.5	25	21.5	25	107												
009	12.9	16.8	25.3	30	25.3	30	25.3	30	25.3	30	25.3	30	25.3	30	25.3	30	107												
008+008	21.1	27.7	38.8	40	38.8	40	38.8	40	38.8	40	38.8	40	38.8	40	38.8	40	107												
008+009	23.4	30.7	42.6	45	42.6	45	42.6	45	42.6	45	42.6	45	42.6	45	42.6	45	107												
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006	5.5	7.2	18.7	25	18.7	25	18.7	25	18.7	25	18.7	25	18.7	25	18.7	25	108												
008	10.6	13.8	24.2	25	24.2	25	24.2	25	24.2	25	24.2	25	24.2	25	24.2	25	109												
009	12.9	16.8	28.0	30	28.0	30	28.0	30	28.0	30	28.0	30	28.0	30	28.0	30	109												
008+008	21.1	27.7	41.5	45	41.5	45	41.5	45	41.5	45	41.5	45	41.5	45	41.5	45	109												
008+009	23.4	30.7	45.3	50	45.3	50	45.3	50	45.3	50	45.3	50	45.3	50	45.3	50	109												
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006	5.5	7.2	11.5	15	11.5	15	11.5	15	11.5	15	11.5	15	11.5	15	11.5	15	63												
008	10.6	13.8	13.6	15	13.6	15	13.6	15	13.6	15	13.6	15	13.6	15	13.6	15	64												
009	12.9	16.8	12.3	15	12.3	15	12.3	15	12.3	15	12.3	15	12.3	15	12.3	15	72												
008+008	21.1	27.7	14.4	20	14.4	20	14.4	20	14.4	20	14.4	20	14.4	20	14.4	20	73												
008+009	23.4	30.7	12.2	15	12.2	15	12.2	15	12.2	15	12.2	15	12.2	15	12.2	15	76												
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006	5.5	7.2	14.4	20	14.4	20	14.4	20	14.4	20	14.4	20	14.4	20	14.4	20	77												

50HE,HJ

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN			IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT			POWER SUPPLY*			DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA	Actual kW†			FLA	MCA	MOCPS**	FLA	LRA			
008 (7.5 ton)	208/230-3-60	STD	NO	187	254	2	12.4	88	2	1.4	7.5		017	7.8/9.6	21.7/ 25.0	38.2/ 38.2	45/ 45	40/ 40	242/ 242		
													010	12.0/14.7	33.4/ 38.5	38.2/ 40.6	45/ 45	40/ 40	242/ 242		
													011	18.6/22.8	51.7/ 59.7	51.1/ 57.5	60/ 60	47/ 53	242/ 242		
													012	24.0/29.4	66.7/ 77.0	74.0/ 84.0	80/ 90	68/ 77	242/ 242		
													012+017	31.8/38.9	88.4/102.0	92.8/105.6	100/110	85/ 97	242/ 242		
																	125/ 150	110/126	242/ 242		
																	44.2/ 44.2	46/ 46	247/ 247		
																	44.1/ 45.6	50/ 50	247/ 247		
		HS	254	2	12.4	88	2	1.4	7.5		010	12.0/14.7	33.4/ 38.5	56.1/ 62.5	60/ 70	53/ 58	247/ 247				
											011	18.6/22.8	51.7/ 59.7	79.0/ 89.0	80/ 90	74/ 83	247/ 247				
											012	24.0/29.4	66.7/ 77.0	97.8/ 110.6	100/ 125	91/ 103	247/ 247				
											012+017	31.8/38.9	88.4/102.0	124.9/141.9	125/ 150	116/131	247/ 247				
															41.3/ 41.3	45/ 45	44/ 44	267/ 267			
															41.3/ 44.5	50/ 50	44/ 44	267/ 267			
															54.9/ 61.4	60/ 70	51/ 56	267/ 267			
															77.9/ 87.8	80/ 90	72/ 81	267/ 267			
008 (7.5 ton)	460-3-60	STD	NO	414	508	2	6.4	44	2	0.7	3.4		016	7.8/9.6	21.7/ 25.0	47.3/ 47.3	50/ 50	49/ 49	271/ 271		
													010	12.0/14.7	33.4/ 38.5	47.3/ 49.5	60/ 60	49/ 49	271/ 271		
													011	18.6/22.8	51.7/ 59.7	59.9/ 66.4	70/ 70	56/ 62	271/ 271		
													012	24.0/29.4	66.7/ 77.0	82.9/ 92.8	90/ 100	77/ 86	271/ 271		
													012+017	31.8/38.9	88.4/102.0	101.6/114.5	110/ 125	94/ 106	271/ 271		
																	128.7/ 145.8	150/ 150	119/135	271/ 271	
																	19.2	20	20	121	
																	25.1	20	20	121	
		HS	508	2	6.4	44	2	0.7	4.8		013	15.2	19.8	29.1	20	27	121				
											014	25.5	33.4	46.0	50	42	121				
											015	30.3	39.7	53.9	60	50	121				
											014+016	38.3	50.2	66.9	70	62	121				
															21.9	20	23	123			
															28.5	20	26	123			
															31.8	35	29	123			
															48.7	50	45	123			
008 (7.5 ton)	460-3-60	STD	YES	414	508	2	6.4	44	2	0.7	3.4		016	12.8	16.7	26.9	20	25	134		
													013	15.2	19.8	30.8	35	28	134		
													014	25.5	33.4	47.8	50	44	134		
													015	30.3	39.7	55.6	60	51	134		
													014+016	38.3	50.2	68.7	70	63	134		
																	20.6	20	22	133	
																	26.9	20	25	134	
																	30.8	35	28	134	
		HS	508	2	6.4	44	2	0.7	4.8		016	12.8	16.7	30.3	20	24	135				
											013	15.2	19.8	33.5	35	27	136				
											014	25.5	33.4	50.5	60	46	136				
											015	30.3	39.7	58.3	60	54	136				
											014+016	38.3	50.2	71.4	80	66	136				
															23.3	20	24	135			
															30.3	35	27	136			
															33.5	35	31	136			

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN			IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT		POWER SUPPLY*			DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA	Actual kW†			FLA	MCA	MOCPS**	FLA	LRA		
008 (7.5 ton)	575-3-60	STD	NO	518	632	2	4.8	34	2	0.6	2.8	018	17.0	16.4	14.8	20	16	91		
				519	34.0	32.7	44.4	45	41	91										
			YES	518	632	2	4.8	34	2	0.6	2.8	018	17.0	16.4	26.6	30	24	93		
				519	34.0	32.7	44.4	45	43	93										
			NO	518	632	2	4.8	34	2	0.6	3.3	018	17.0	16.4	24.6	25	23	101		
				519	34.0	32.7	45.0	50	42	101										
		YES	518	632	2	4.8	34	2	0.6	3.3	018	17.0	16.4	27.2	30	25	103			
			519	34.0	32.7	45.0	50	44	103											
		NO	HUMI-DIMIZ-ER	518	632	2	4.8	34	2	0.7	4.8	018	17.0	16.4	25.5	30	23	104		
												019	34.0	32.7	45.7	50	42	104		
		YES	518	632	2	4.8	34	2	0.7	4.8	018	17.0	16.4	17.9	20	19	106			
											019	34.0	32.7	45.7	50	44	106			

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)				OUTDOOR FAN			IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT		POWER SUPPLY			DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA	Actual kW†	FLA			MCA	MOCp**	FLA	LRA			
009 (8.5 ton)	208/230-3-60	STD	NO	187	254	2	13.4	105	2	1.4	7.5	017	7.8/9.6	21.7/ 25.0	40.2/ 40.2	45/ 45	42/ 42	276/ 276			
												010	18.6/ 22.8	51.7/ 59.7	40.2/ 40.6	45/ 45	42/ 42	276/ 276			
												011	18.6/ 22.8	51.7/ 59.7	74.0/ 84.0	60/ 60	47/ 53	276/ 276			
												012	24.0/ 29.4	66.7/ 77.0	92.8/ 105.6	80/ 90	66/ 77	276/ 276			
												012+017	31.8/ 38.9	88.4/ 102.0	119.9/ 136.9	100/ 110	85/ 97	276/ 276			
												—	—/ —	—/ —	46.2/ 46.2	110/ 150	110/ 126	276/ 276			
												017	7.8/ 9.6	21.7/ 25.0	46.2/ 46.2	50/ 50	48/ 48	281/ 281			
												010	12.0/ 14.7	33.4/ 38.5	56.1/ 62.5	60/ 70	53/ 58	281/ 281			
												011	18.6/ 22.8	51.7/ 59.7	79.0/ 89.0	80/ 90	74/ 83	281/ 281			
												012	24.0/ 29.4	66.7/ 77.0	97.8/ 110.6	100/ 125	91/ 103	281/ 281			
												012+017	31.8/ 38.9	88.4/ 102.0	124.9/ 141.9	125/ 150	116/ 131	281/ 281			
												—	—/ —	—/ —	43.3/ 43.3	50/ 50	46/ 46	301/ 301			
												017	7.8/ 9.6	21.7/ 25.0	43.3/ 44.5	50/ 50	46/ 46	301/ 301			
												010	12.0/ 14.7	33.4/ 38.5	54.9/ 61.4	60/ 70	51/ 56	301/ 301			
												011	18.6/ 22.8	51.7/ 59.7	77.9/ 87.8	80/ 90	72/ 81	301/ 301			
												012	24.0/ 29.4	66.7/ 77.0	96.6/ 109.5	100/ 110	89/ 101	301/ 301			
												012+017	31.8/ 38.9	88.4/ 102.0	123.7/ 140.8	125/ 150	114/ 129	301/ 301			
—	—/ —	—/ —	49.3/ 49.3	60/ 60	51/ 51	305/ 305															
017	7.8/ 9.6	21.7/ 25.0	49.3/ 49.5	60/ 60	51/ 51	305/ 305															
010	12.0/ 14.7	33.4/ 38.5	59.9/ 66.4	70/ 70	56/ 62	305/ 305															
011	18.6/ 22.8	51.7/ 59.7	82.9/ 92.8	90/ 100	77/ 86	305/ 305															
012	24.0/ 29.4	66.7/ 77.0	101.6/ 114.5	110/ 125	94/ 106	305/ 305															
012+017	31.8/ 38.9	88.4/ 102.0	128.7/ 145.8	150/ 150	119/ 135	305/ 305															
—	—/ —	—/ —	21.5	30	23	143															
016	12.8	16.7	25.1	30	23	143															
013	15.2	19.8	29.1	30	27	143															
014	25.5	33.4	46.0	50	42	143															
015	30.3	39.7	53.9	60	50	143															
014+016	38.3	50.2	66.9	70	62	143															
—	—/ —	—/ —	24.2	30	25	145															
016	12.8	16.7	28.5	30	26	145															
013	15.2	19.8	31.8	35	29	145															
014	25.5	33.4	48.7	50	45	145															
015	30.3	39.7	56.6	60	52	145															
014+016	38.3	50.2	69.6	70	64	145															
—	—/ —	—/ —	22.9	30	24	155															
016	12.8	16.7	26.9	30	25	156															
013	15.2	19.8	30.8	35	28	156															
014	25.5	33.4	47.8	50	44	156															
015	30.3	39.7	55.6	60	51	156															
014+016	38.3	50.2	68.7	70	63	156															
—	—/ —	—/ —	25.6	30	27	157															
016	12.8	16.7	30.3	35	27	158															
013	15.2	19.8	33.5	35	31	158															
014	25.5	33.4	50.5	60	46	158															
015	30.3	39.7	58.3	60	54	158															
014+016	38.3	50.2	71.4	80	66	158															

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN			IFM FLA	CRHEATER --A00 or B00	ELECTRIC HEAT		POWER SUPPLY			DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA	Actual kW†			FLA	MCA	MOCPS**	FLA	LRA		
009 (8.5 ton)	575-3-60	STD	NO	518	632	2	6.4	44	2	0.6	2.8	018	17.0	16.4	18.4	25	19	111		
				518	632	2	6.4	44	2	0.6	2.8	019	34.0	32.7	23.9	25	22	111		
			YES	518	632	2	6.4	44	2	0.6	2.8	018	17.0	16.4	20.6	25	21	113		
				518	632	2	6.4	44	2	0.6	2.8	019	34.0	32.7	26.6	30	24	113		
			NO	518	632	2	6.4	44	2	0.6	3.3	018	17.0	16.4	18.9	25	20	121		
				518	632	2	6.4	44	2	0.6	3.3	019	34.0	32.7	24.6	25	20	121		
		YES	518	632	2	6.4	44	2	0.6	3.3	018	17.0	16.4	21.1	25	22	123			
			518	632	2	6.4	44	2	0.6	3.3	019	34.0	32.7	27.9	30	25	123			
		NO	518	632	2	6.4	44	2	0.7	3.3	018	17.0	16.4	19.4	25	20	124			
			518	632	2	6.4	44	2	0.7	3.3	019	34.0	32.7	25.2	30	23	124			
		YES	518	632	2	6.4	44	2	0.7	3.3	018	17.0	16.4	21.5	25	22	126			
			518	632	2	6.4	44	2	0.7	3.3	019	34.0	32.7	27.9	30	25	126			

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUT-LET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN		IFM FLA	ELECTRIC HEAT			POWER SUPPLY		DISCONNECT SIZE								
				Min	Max	QTY	RLA	LRA	FLA	FLA		FLA	MCA	MOCPS**	FLA	LRA									
012 (10 ton)	208/230-3-60	STD	NO	187	254	2	17.6	125	2	1.4	10.6	—/—	7.8/9.6	21.7/ 25.0	53.0/ 53.0	60/ 60	56/ 56	341/ 341							
																			017	12.0/ 14.7	33.4/ 38.5	54.9/ 61.4	60/ 70	56/ 56	341/ 341
																			010	24.0/ 29.4	66.7/ 77.0	96.6/ 109.5	100/ 110	89/ 101	341/ 341
																			012	31.8/ 38.9	88.4/ 102.0	123.7/ 140.8	125/ 150	114/ 129	341/ 341
																			012+017	37.5/ 45.9	104.2/ 120.3	143.5/ 133.5	150/ 150	132/ 151	341/ 341
																			012+010	—/—	—/—	—/—	70/ 70	61/ 61	345/ 345
																			—	7.8/ 9.6	21.7/ 25.0	59.0/ 59.0	70/ 70	61/ 61	345/ 345
																			017	12.0/ 14.7	33.4/ 38.5	59.9/ 66.4	70/ 70	61/ 62	345/ 345
																			010	24.0/ 29.4	66.7/ 77.0	101.6/ 114.5	110/ 125	94/ 106	345/ 345
																			012	31.8/ 38.9	88.4/ 102.0	128.7/ 145.8	150/ 150	119/ 135	345/ 345
																			012+017	37.5/ 45.9	104.2/ 120.3	148.5/ 137.5	150/ 150	138/ 156	345/ 345
																			012+010	—/—	—/—	—/—	70/ 70	61/ 61	364/ 364
																			—	7.8/ 9.6	21.7/ 25.0	57.4/ 57.4	70/ 70	62/ 62	364/ 364
																			017	12.0/ 14.7	33.4/ 38.5	60.4/ 66.9	70/ 80	61/ 62	364/ 364
																			010	24.0/ 29.4	66.7/ 77.0	102.1/ 115.0	110/ 125	94/ 106	364/ 364
																			012	31.8/ 38.9	88.4/ 102.0	129.2/ 146.3	150/ 150	119/ 135	364/ 364
																			012+017	37.5/ 45.9	104.2/ 120.3	149.0/ 139.0	150/ 175	137/ 156	364/ 364
																			012+010	—/—	—/—	—/—	70/ 70	66/ 66	369/ 369
—	7.8/ 9.6	21.7/ 25.0	63.4/ 63.4	70/ 70	66/ 66	369/ 369																			
017	12.0/ 14.7	33.4/ 38.5	65.4/ 71.9	80/ 80	66/ 67	369/ 369																			
010	24.0/ 29.4	66.7/ 77.0	107.1/ 120.0	110/ 125	99/ 111	369/ 369																			
012	31.8/ 38.9	88.4/ 102.0	134.2/ 151.3	150/ 175	124/ 140	369/ 369																			
012+017	37.5/ 45.9	104.2/ 120.3	154.0/ 143.0	175/ 175	143/ 161	369/ 369																			
012+010	—/—	—/—	—/—	30	26	170																			
—	12.8	16.7	26.9	30	26	171																			
016	15.2	19.8	30.8	35	28	171																			
013	30.3	39.7	55.6	60	51	171																			
015	38.3	50.2	68.7	70	63	171																			
014+016	45.9	60.1	66.1	80	75	171																			
015+013	—	—	—	30	29	172																			
—	12.8	16.7	30.3	35	29	173																			
016	15.2	19.8	33.5	35	31	173																			
013	30.3	39.7	56.3	60	54	173																			
015	38.3	50.2	71.9	80	66	173																			
014+016	45.9	60.1	69.4	80	78	173																			
015+013	—	—	—	35	32	184																			
—	12.8	16.7	33.5	40	32	184																			
016	15.2	19.8	36.8	40	34	184																			
013	30.3	39.7	61.6	70	57	184																			
015	38.3	50.2	74.6	80	69	184																			
014+016	45.9	60.1	73.4	80	80	184																			
015+013	—	—	—	80	80	184																			

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUT-LET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN		IFM FLA	CRHEATER -- A00 or B00	ELECTRIC HEAT		POWER SUPPLY		DISCONNECT SIZE		
				Min	Max	QTY	RLA	LRA	QTY	FLA			Actual kWt	FLA	MCA	MOCP**	FLA	LRA	
012 (10 ton)	575-3-60	STD	NO	518	632	2	6.3	50	2	0.6	3.3	--	--	18.7	25	20	133		
				518	632	2	6.3	50	2	0.6	3.3	18	17.0	16.4	24.6	25	23	133	
			YES	518	632	2	6.3	50	2	0.6	5.6	019	34.0	32.7	45.0	50	41	133	
				518	632	2	6.3	50	2	0.6	5.6	018+019	51.0	49.1	53.2	60	60	133	
			NO	518	632	2	6.3	50	2	0.6	5.6	--	--	--	20.8	25	22	135	
				518	632	2	6.3	50	2	0.6	5.6	018	17.0	16.4	27.2	30	25	135	
		HS	575-3-60	NO	518	632	2	6.3	50	2	0.6	5.6	019	34.0	32.7	47.9	50	44	139
					518	632	2	6.3	50	2	0.6	5.6	018	17.0	16.4	27.4	30	25	139
				YES	518	632	2	6.3	50	2	0.6	5.6	018+019	51.0	49.1	56.1	70	63	139
					518	632	2	6.3	50	2	0.6	5.6	--	--	--	23.1	25	24	141
				NO	518	632	2	6.3	50	2	0.6	7.4	019	34.0	32.7	47.9	60	46	141
					518	632	2	6.3	50	2	0.6	7.4	018+019	51.0	49.1	58.7	70	65	141
HUMI-DIMIZ-ER	575-3-60	NO	518	632	2	6.3	50	2	0.7	7.4	018	17.0	16.4	27.8	30	26	146		
			518	632	2	6.3	50	2	0.7	7.4	019	34.0	32.7	48.3	50	44	146		
		YES	518	632	2	6.3	50	2	0.7	7.4	018+019	51.0	49.1	56.5	70	63	146		
			518	632	2	6.3	50	2	0.7	7.4	--	--	--	23.4	25	25	148		
		NO	518	632	2	6.3	50	2	0.7	7.4	018	17.0	16.4	30.5	50	28	148		
			518	632	2	6.3	50	2	0.7	7.4	019	34.0	32.7	50.9	60	46	148		
YES	518	632	2	6.3	50	2	0.7	7.4	018+019	51.0	49.1	59.1	70	65	148				

Table 4 — Electrical Data-50HJ (cont)

UNIT SIZE	NOMINAL V-PH-Hz	IFM TYPE	CONV OUTLET	VOLTAGE RANGE		COMPRESSOR (each)			OUTDOOR FAN		IFM FLA	CRHEATER --A00 OR B00	ELECTRIC HEAT		POWER SUPPLY			DISCONNECT SIZE	
				Min	Max	QTY	RLA	LRA	QTY	FLA			Actual kW†	FLA	MCA	MOCp**	FLA	LRA	
014 (12.5 tons)	208/230-3-60	STD	NO	187	254	2	19	156	2	1.4	15	---	---	---	---	60.6/ 60.6	70/ 70	64/ 64	426/426
												017	7.8/ 9.6	21.7/ 25.0	60.6/ 60.6	70/ 70	64/ 64	426/426	
												010	12.0/ 14.7	33.4/ 38.5	60.4/ 66.9	70/ 70	64/ 64	426/426	
												012	24.0/ 29.4	66.7/ 77.0	102.1/ 115.0	110/ 125	94/ 106	426/426	
												012+017	31.8/ 38.9	88.4/ 102.0	129.2/ 146.3	150/ 150	119/ 135	426/426	
												012+010	37.5/ 45.9	104.2/ 120.3	149.0/ 198.0	150/ 175	137/ 156	426/426	
	460-3-60	STD	YES	187	254	2	19	156	2	1.4	15	---	---	---	---	66.6/ 66.6	70/ 70	70/ 70	431/431
												016	7.8/ 9.6	21.7/ 25.0	66.6/ 66.6	70/ 70	70/ 70	431/431	
												013	12.0/ 14.7	33.4/ 38.5	65.4/ 71.9	80/ 80	70/ 70	431/431	
												015	24.0/ 29.4	66.7/ 77.0	107.1/ 120.0	110/ 125	99/ 111	431/431	
												014+016	31.8/ 38.9	88.4/ 102.0	134.2/ 151.3	150/ 175	124/ 140	431/431	
												015+013	37.5/ 45.9	104.2/ 120.3	154.0/ 143.0	175/ 175	143/ 161	431/431	
575-3-60	STD	NO	414	508	2	9	70	2	0.7	7.4	016	12.8	16.7	30.1	35	31	197		
											013	15.2	19.8	34.1	40	31	197		
											015	30.3	39.7	58.9	60	54	197		
											014+016	38.3	50.2	71.9	80	66	197		
											015+013	45.9	60.1	69.4	80	78	197		
											---	---	---	---	---	---	---		
	HUMI- DIMIZ- ER	YES	414	508	2	9	70	2	0.7	7.4	5.6	016	12.8	16.7	33.5	40	33	199	
												013	15.2	19.8	36.8	40	34	199	
												015	30.3	39.7	61.6	70	57	199	
												014+016	38.3	50.2	74.6	80	69	199	
												015+013	45.9	60.1	73.4	80	80	199	
												---	---	---	---	---	---	---	
STD	NO	518	632	2	7.4	54	2	0.6	5.6	5.6	018	17.0	16.4	30.1	35	27	149		
											019	34.0	32.7	47.9	50	46	149		
											018+019	51.0	49.1	58.7	70	65	149		
											---	---	---	---	---	---	---		
											---	---	---	---	---	---	---		
											---	---	---	---	---	---	---		
HUMI- DIMIZ- ER	YES	518	632	2	7.4	54	2	0.7	7.4	7.4	18	17.0	16.4	27.8	35	28	154		
											019	34.0	32.7	48.3	50	44	154		
											018+019	51.0	49.1	56.5	70	63	154		
											---	---	---	---	---	---	---		
											---	---	---	---	---	---	---		
											---	---	---	---	---	---	---		

FLA - Full Load Amps
HACR - Heating, Air Conditioning and Refrigeration
IFM - Indoor (Evaporator) Fan Motor
LRA - Locked Rotor Amps
MCA - Minimum Circuit Amps
MOCp - Maximum Overcurrent Protection
NEC - National Electrical Code
OFM - Outdoor (Condenser) Fan Motor
RLA - Rated Load Amps

NOTES:
* The values listed in this table do not include power exhaust. See power exhaust table for power exhaust requirements.
** Fuse or HACR breaker
† Heater capacity (kW) is based on heater voltage of 240v, 480v or 575v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly

Step 6 —Adjust Factory-Installed Options

Cobra™ Energy Recovery Units

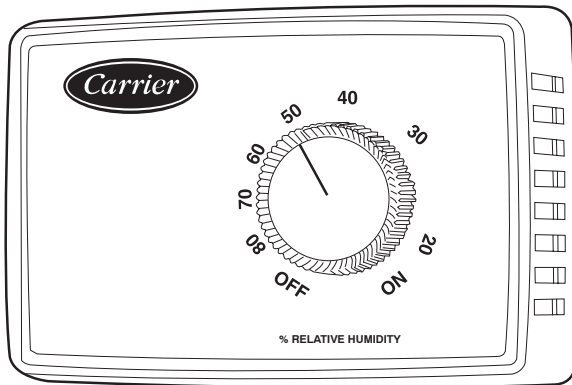
Please refer to the supplement provided for information on installing and operating the factory optional COBRA Energy Recovery Units. These units are equipped with a factory-installed energy recovery unit and have different installation and operation procedures than the standard unit.

Humidi-Mizer™ Adaptive Dehumidification

System

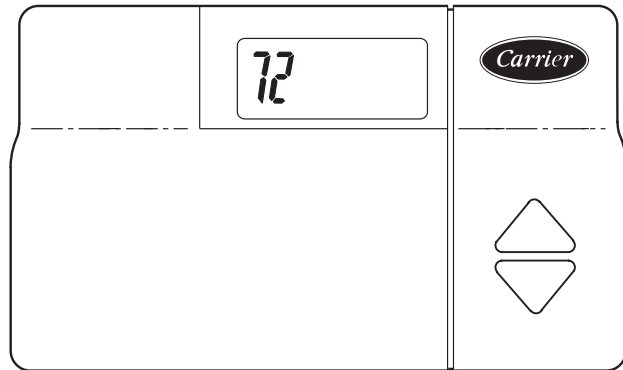
Humidi-MiZer system operation can be controlled by field installation of a Carrier-approved humidistat. (See Fig. 14.)

NOTE: A light commercial Thermidstat™ device (Fig. 15) can be used instead of the humidistat if desired. The Thermidstat device includes a thermostat and a humidistat. The humidistat is normally used in applications where a temperature sensor is already provided (units with PremierLink™ control).



C06126

Fig. 14 – Accessory Field-Installed Humidistat



C06127

Fig. 15 – Light Commercial thermidstat Device

To install the humidistat:

1. Route humidistat cable through hole provided in unit control box.
2. Some models may be equipped with a raceway built into the corner post on the left side of control box (See Fig. 13.) This raceway provides the required clearance between high-voltage and low voltage wiring. For models without a raceway, ensure to provide the NEC required clearance between high-voltage and low-voltage wiring.
3. Use a wire nut to connect humidistat cable into low-voltage wiring as shown in Fig. 16.

To install Thermidstat device:

1. Route Thermidstat cable through hole provided in unit control box.
2. Some models may be equipped with a raceway built into the corner post on the left side of control box (See Fig. 13.) This raceway provides the required clearance between high-voltage and low voltage wiring. For models without a raceway, ensure to provide the NEC required clearance between high-voltage and low-voltage wiring.
3. A field-supplied relay must be installed between the thermidstat and the Humidi-Mizer circuit (recommended relay: HN612KK324). (See Fig. 17.) The relay coil is connected between the DEHUM output and C (common) of the unit. The relay controls the Humidi-MiZer solenoid valve and must be wired between the Humidi-MiZer fuse and the low-pressure switch. Refer to the installation instructions included with the Carrier Light Commercial Thermidstat device for more information.

Disconnect Switch

The optional disconnect switch is non-fused. The switch has the capability of being locked in place for safety purposes.

Manual Outdoor Damper

The outdoor-air hood and screen are attached to the basepan at the bottom of the unit for shipping.

Assembly:

1. Determine quantity of ventilation required for building. Record amount for use in Step 8.
2. Remove and save outdoor air opening panel and screws. (See Fig. 18.)
3. Remove evaporator coil access panel. Separate hood and screen from basepan by removing the 4 screws securing them. Save all screws.
4. Replace evaporator coil access panel.
5. Place hood on front of outdoor air opening panel. See Fig. 19 for hood details. Secure top of hood with the 4 screws removed in Step 3. (See Fig. 20.)
6. Remove and save 6 screws (3 on each side) from sides of the manual outdoor-air damper.
7. Align screw holes on hood with screw holes on side of manual outdoor-air damper. (See Fig. 19 and 20.) Secure hood with 6 screws from Step 6.
8. Adjust minimum position setting of the damper blade by adjusting the manual outdoor-air adjustment screws on the front of the damper blade. (See Fig. 18.) Slide blade vertically until it is in the appropriate position determined by Fig. 21. Tighten screws.
9. Remove and save screws currently on sides of hood. Insert screen. Secure screen to hood using the screws. (See Fig. 20.)

Convenience Outlet

An optional convenience outlet provides power for rooftop use. For maintenance personnel safety, the convenience outlet power is off when the unit disconnect is off. Adjacent unit outlets may be used for service tools.

Novar Controls

Optional Novar controls (ETM 3051) are available for replacement or new construction jobs.

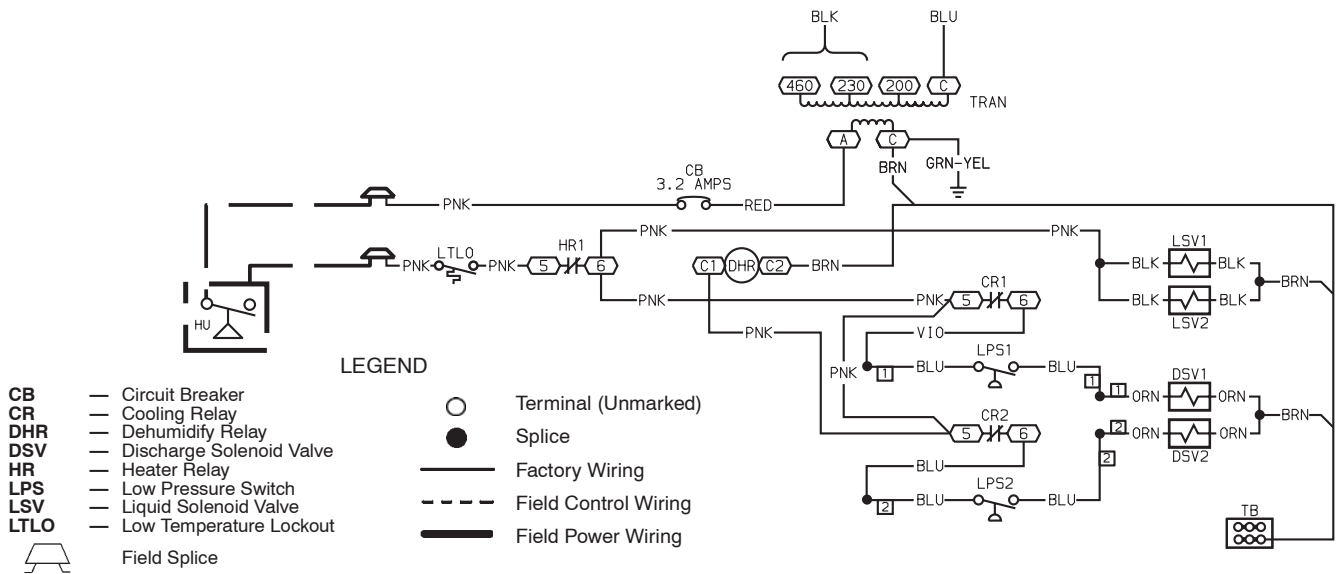


Fig. 16 – Typical Humidi-MiZer™ Adaptive Dehumidification System Humidistat Wiring (208/230-V Unit Shown)

C06128

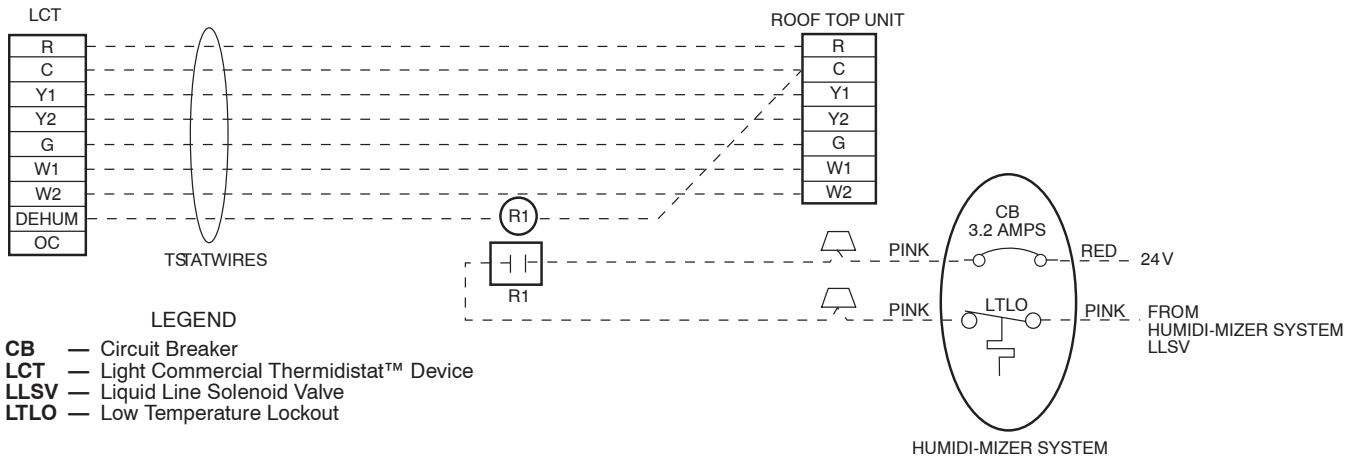


Fig. 17 – Typical Rooftop Unit with Humidi-MiZer Adaptive Dehumidification System with Thermidistat Device

C06129

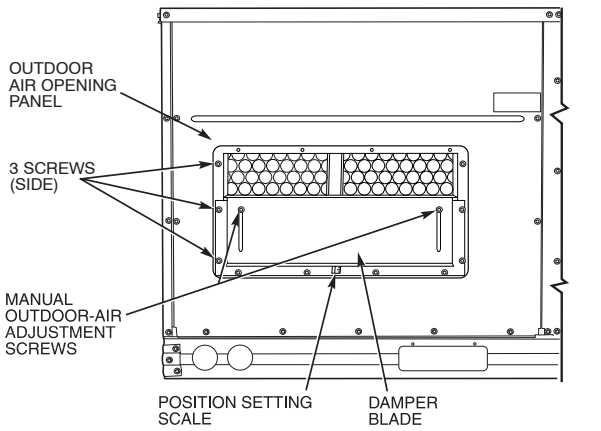


Fig. 18 – Damper Panel with Manual Outdoor-Air Damper Installed

C06130

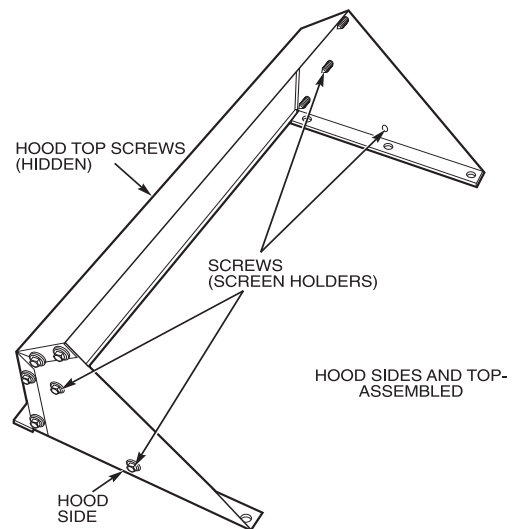


Fig. 19 – Outdoor-Air Hood Details

C06013

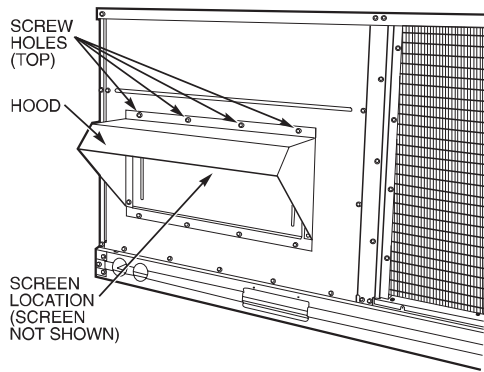


Fig. 20 – Outdoor-Air Damper With Hood Attached

C06131

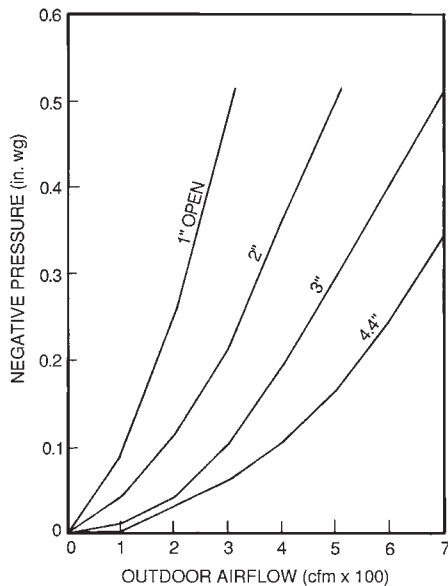


Fig. 21 – Outdoor-Air Damper Position Setting

C06132

Premierlink™ Control

The PremierLink controller is compatible with Carrier Comfort Network® (CCN) devices. This control is designed to allow users the access and ability to change factory-defined settings, thus expanding the function of the standard unit control board. Carrier’s diagnostic standard tier display tools such as Navigator™ or Scrolling Marquee can be used with the PremierLink controller.

The PremierLink controller (see Fig. 22 and 23) requires the use of a Carrier electronic thermostat or a CCN connection for time broadcast to initiate its internal timeclock. This is necessary for broadcast of time of day functions (occupied/unoccupied). No sensors are supplied with the field-mounted PremierLink control. The factory-installed PremierLink control includes only the supply-air temperature (SAT) sensor and the outdoor air temperature (OAT) sensor as standard. An indoor air quality (CO2) sensor can be added as an option. Refer to Table 5 for sensor usage. Refer to Fig. 24 for PremierLink controller wiring. The PremierLink control may be mounted in the control panel or an area below the control panel.

NOTE: PremierLink controller versions 1.3 and later are shipped in Sensor mode. If used with a thermostat, the PremierLink controller must be configured to Thermostat mode.

Install the Supply Air Temperature (SAT) Sensor

When the unit is supplied with a factory-mounted PremierLink control, the supply-air temperature (SAT) sensor (33ZCSENSAT) is factory-supplied and wired. The wiring is routed from the PremierLink control over the control box, through a grommet, into the fan section, down along the back side of the fan, and along the fan deck over to the supply-air opening.

The SAT probe is wire-tied to the supply-air opening (on the horizontal opening end) in its shipping position. Remove the sensor for installation. Re-position the sensor in the flange of the supply-air opening or in the supply air duct (as required by local codes). Drill or punch a 1/2-in. hole in the flange or duct. Use two field-supplied, self-drilling screws to secure the sensor probe in a horizontal orientation.

NOTE: The sensor must be mounted in the discharge airstream downstream of the cooling coil and any heating devices. Be sure the probe tip does not come in contact with any of the unit or heat surfaces.

Outdoor Air Temperature Sensor (OAT)

When the unit is supplied with a factory-mounted PremierLink control, the outdoor-air temperature sensor (OAT) is factory-supplied and wired.

Install the Indoor Air Quality (CO2) Sensor

Mount the optional indoor air quality (CO2) sensor according to manufacturer specifications.

A separate field-supplied transformer must be used to power the CO2 sensor.

Wire the CO2 sensor to the COM and IAQI terminals of J5 on the PremierLink controller. Refer to the PremierLink Installation, Start-up, and Configuration Instructions for detailed wiring and configuration information.

Enthalpy Sensors and Control

The enthalpy control (HH57AC077) is supplied as a field-installed accessory to be used with the EconoMi\$er2 damper control option. The outdoor air enthalpy sensor is part of the enthalpy control. The separate field-installed accessory return air enthalpy sensor (HH57AC078) is required for differential enthalpy control.

NOTE: The enthalpy control must be set to the “D” setting for differential enthalpy control to work properly.

The enthalpy control receives the indoor and return enthalpy from the outdoor and return air enthalpy sensors and provides a dry contact switch input to the PremierLink controller. Locate the controller in place of an existing economizer controller or near the actuator. The mounting plate may not be needed if existing bracket is used.

A closed contact indicates that outside air is preferred to the return air. An open contact indicates that the economizer should remain at minimum position.

Outdoor Air Enthalpy Sensor/Enthalpy Controller (HH57AC077)

To wire the outdoor air enthalpy sensor, perform the following (See Fig. 25 and 26):

NOTE: The outdoor air sensor can be removed from the back of the enthalpy controller and mounted remotely.

50HE, HJ

Table 5—PremierLink™ Sensor Usage

APPLICATION	OUTDOOR AIR TEMPERATURE SENSOR	RETURN AIR TEMPERATURE SENSOR	OUTDOOR AIR ENTHALPY SENSOR	RETURN AIR ENTHALPY SENSOR
Dry Bulb Temperature with PremierLink* (PremierLink requires 4-20 mA Actuator)	Included – CRTEMPSN001A00	—	—	—
Differential Dry Bulb Temperature with PremierLink* (PremierLink requires 4-20 mA Actuator)	Included – CRTEMPSN001A00	Required – 33ZCT55SPT or Equivalent	—	—
Single Enthalpy with PremierLink* (PremierLink requires 4-20 mA Actuator)	Included – Not Used	—	Required – HH57AC077 or Equivalent	—
Differential Enthalpy with PremierLink* (PremierLink requires 4-20 mA Actuator)	Included – Not Used	—	Required – HH57AC077 or Equivalent	Required – HH57AC078 or Equivalent

50HE, HJ

*PremierLink control requires Supply Air Temperature sensor 33ZCSENSAT and Outdoor Air Temperature sensor CRTEMPSN001A00 — Included with factory-installed PremierLink control; field-supplied and field-installed with field-installed PremierLink control.

NOTES:

- CO₂ Sensors (Optional):
 - 33ZCSENSCO2 — Room sensor (adjustable). Aspirator box is required for duct mounting of the sensor.
 - 33ZCASPCO2 — Aspirator box used for duct-mounted CO₂ room sensor.
 - 33ZCT55CO2 — Space temperature and CO₂ room sensor with override.
 - 33ZCT56CO2 — Space temperature and CO₂ room sensor with override and set point.
- All units include the following Standard Sensors:
 - Outdoor-Air Sensor — 50HJ540569 — Opens at 67°F, closes at 52°F, not adjustable.
 - Mixed-Air Sensor — HH97AZ001 — (PremierLink control requires Supply Air Temperature sensor 33ZCSENSAT and Outdoor Air Temperature Sensor CRTEMPSN001A00)
 - Compressor Lockout Sensor — 50HJ540570 — Opens at 35°F, closes at 50°F.

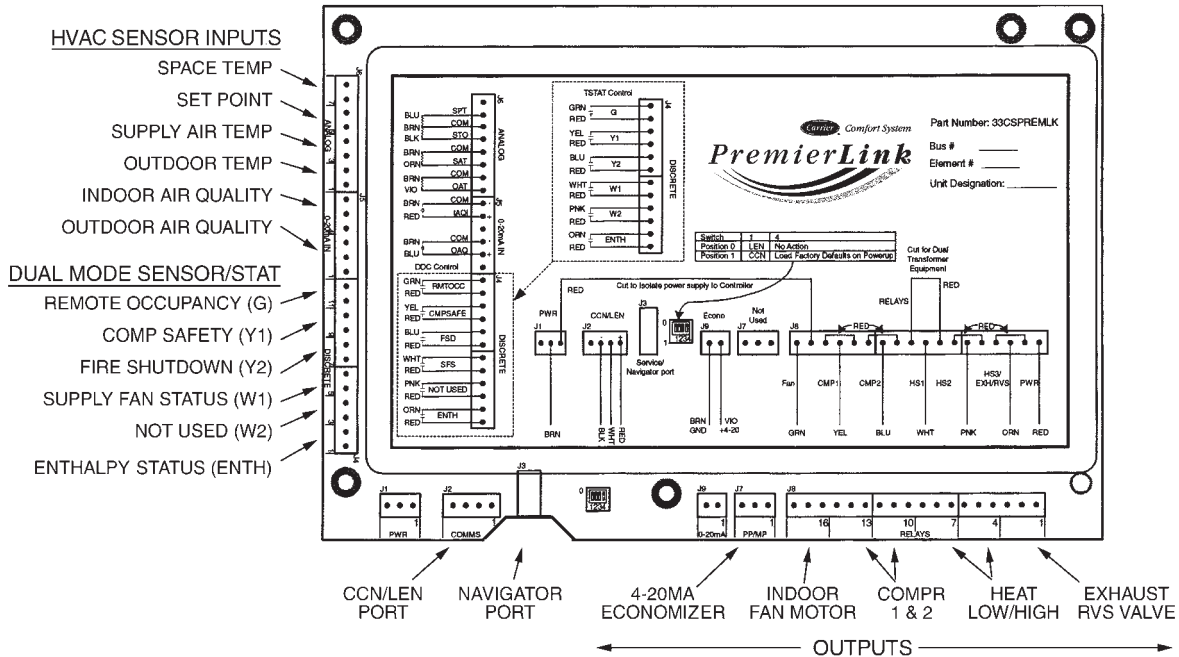


Fig. 22 – PremierLink Controller

C06016

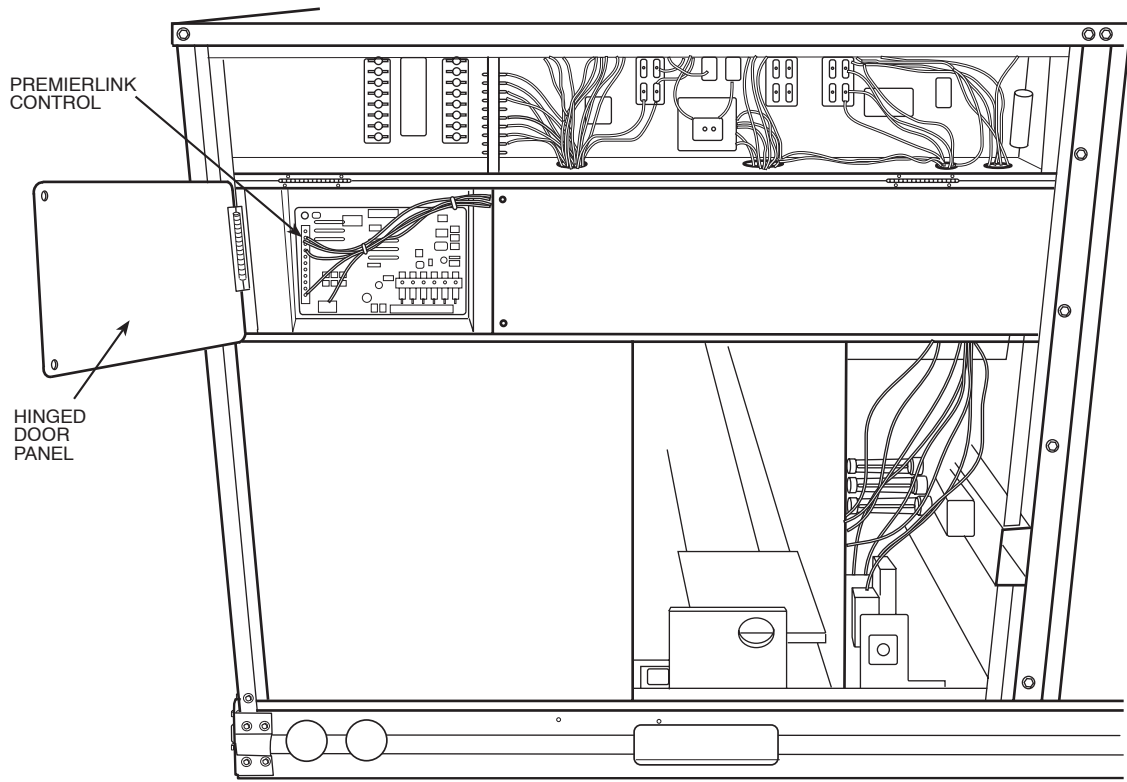


Fig. 23 – PremierLink™ Controller (Installed)

C06017

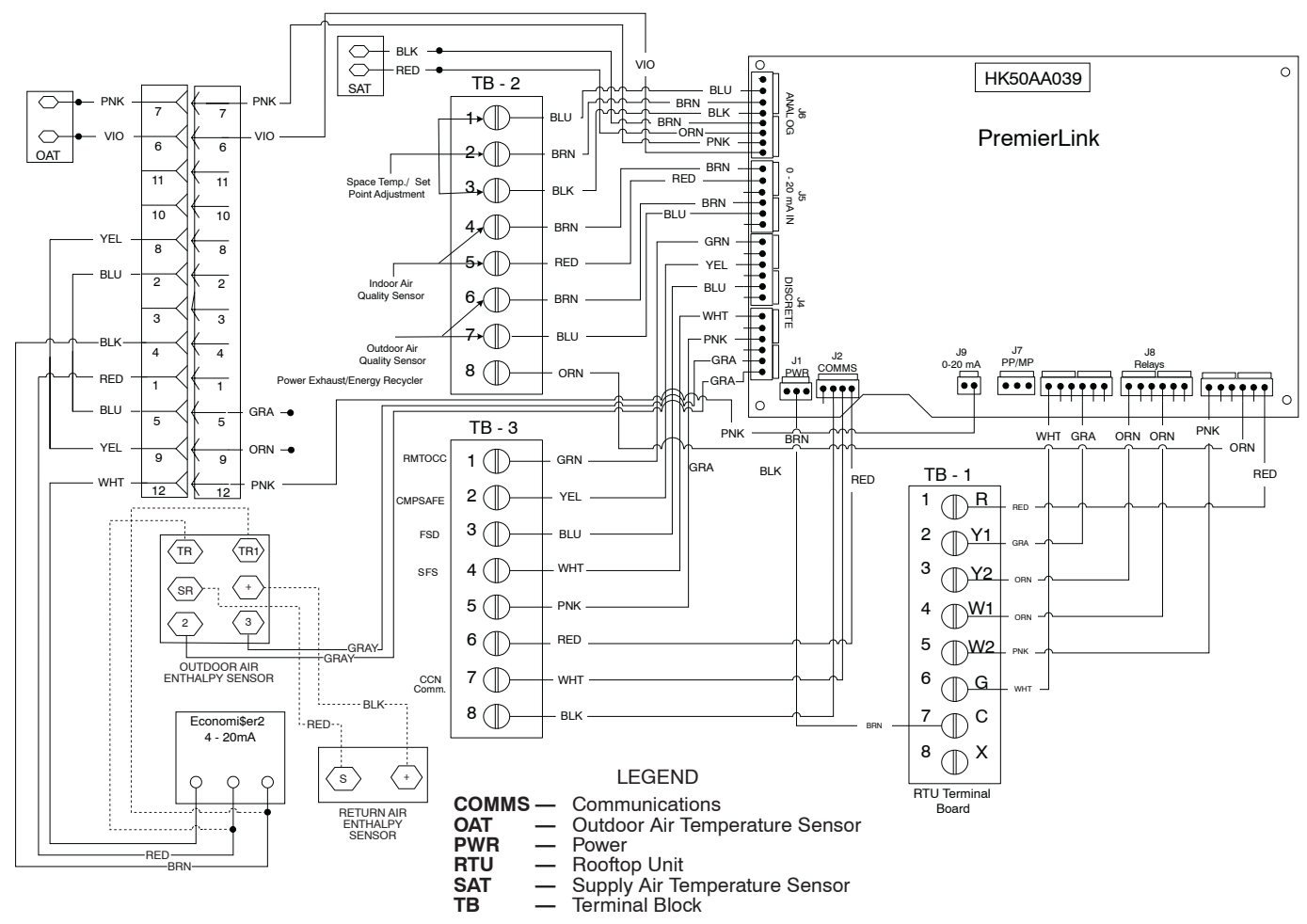


Fig. 24 – Typical PremierLink Control Wiring

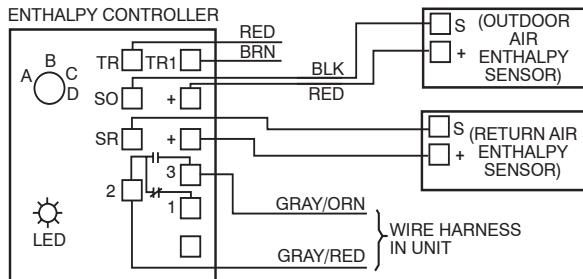
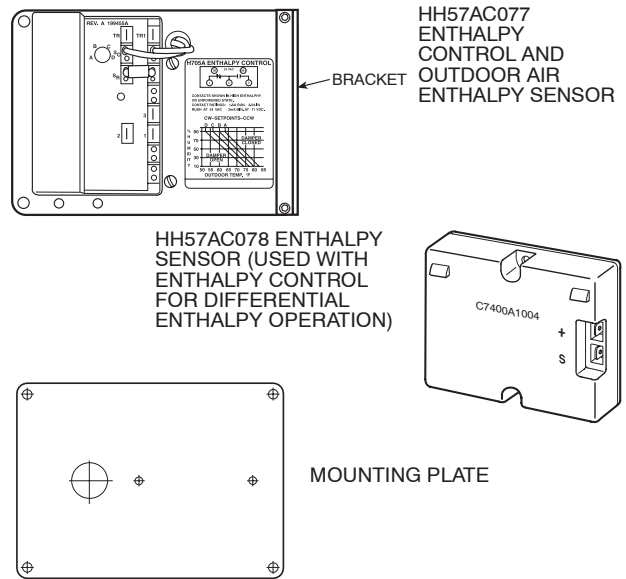
C06018

1. Use a 4-conductor, 18 or 20 AWG cable to connect the enthalpy control to the PremierLink™ controller and power transformer.
2. Connect the following 4 wires from the wire harness located in rooftop unit to the enthalpy controller:
 - a. Connect the BRN wire to the 24 vac terminal (TR1) on enthalpy control and to pin 1 on 12-pin harness.
 - b. Connect the RED wire to the 24 vac GND terminal (TR) on enthalpy sensor and to pin 4 on 12-pin harness.
 - c. Connect the GRAY/ORN wire to J4-2 on PremierLink controller and to terminal (3) on enthalpy sensor.
 - d. Connect the GRAY/RED wire to J4-1 on PremierLink controller and to terminal (2) on enthalpy sensor.

NOTE: If installing in a Carrier rooftop, use the two gray wires provided from the control section to the economizer to connect PremierLink controller to terminals 2 and 3 on enthalpy sensor.

Return Air Enthalpy Sensor

Mount the return-air enthalpy sensor (HH57AC078) in the return-air duct. The return air sensor is wired to the enthalpy controller (HH57AC077). The outdoor enthalpy changeover set point is set at the controller.



- NOTES:**
1. Remove factory-installed jumper across SR and + before connecting wires from return air sensor.
 2. Switches shown in high outdoor air enthalpy state. Terminals 2 and 3 close on low outdoor air enthalpy relative to indoor air enthalpy.
 3. Remove sensor mounted on back of control and locate in outside air-stream.

Fig. 25 – Outdoor and Return Air Sensor Wiring Connections for Differential Enthalpy Control

C06019

To wire the return air enthalpy sensor, perform the following (See Fig. 25):

1. Use a 2-conductor, 18 or 20 AWG, twisted pair cable to connect the return air enthalpy sensor to the enthalpy controller.
2. At the enthalpy control remove the factory-installed resistor from the (SR) and (+) terminals.
3. Connect the field-supplied RED wire to (+) spade connector on the return air enthalpy sensor and the (SR+) terminal on the enthalpy controller. Connect the BLK wire to (S) spade connector on the return air enthalpy sensor and the (SR) terminal on the enthalpy controller.

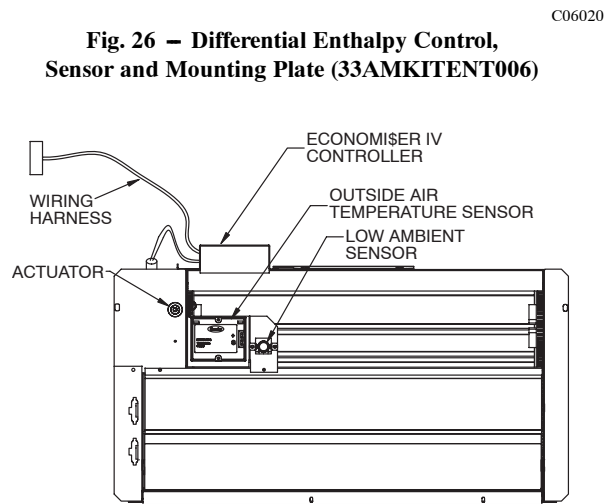


Fig. 27 – EconoMiSer IV Component Locations

C06021

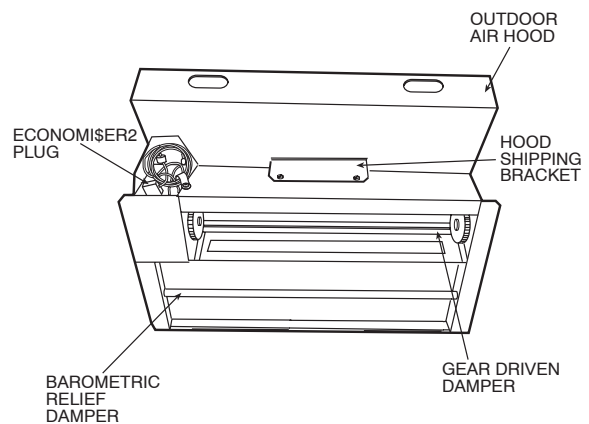


Fig. 28 – EconoMiSer2 Component Locations

C06022

Optional EconoMiSer IV and EconoMiSer2

See Fig. 27 for EconoMiSer IV component locations. See Fig. 28 for EconoMiSer2 component locations.

NOTE: These instructions are for installing the optional EconoMi\$er IV and EconoMi\$er2 only. Refer to the accessory EconoMi\$er IV or EconoMi\$er2 installation instructions when field installing an EconoMi\$er IV or EconoMi\$er2 accessory.

1. To remove the existing unit filter access panel, raise the panel and swing the bottom outward. The panel is now disengaged from the track and can be removed. (See Fig. 29.)
2. The box with the economizer hood components is shipped in the compartment behind the economizer. The EconoMi\$er IV controller is mounted on top of the EconoMi\$er IV in the position shown in Fig. 24. The optional EconoMi\$er2 with 4 to 20 mA actuator signal control does not include the EconoMi\$er IV controller. To remove the component box from its shipping position, remove the screw holding the hood box bracket to the top of the economizer. Slide the hood box out of the unit. (See Fig. 30.)

IMPORTANT: If the power exhaust accessory is to be installed on the unit, the hood shipped with the unit will not be used and must be discarded. Save the aluminum filter for use in the power exhaust hood assembly.

3. The indoor coil access panel will be used as the top of the hood. Remove the screws along the sides and bottom of the indoor coil access panel. (See Fig. 31.)
4. Swing out indoor coil access panel and insert the hood sides under the panel (hood top). Use the screws provided to attach the hood sides to the hood top. Use screws provided to attach the hood sides to the unit. (See Fig. 32.)
5. Remove the shipping tape holding the economizer barometric relief damper in place.
6. Insert the hood divider between the hood sides. (See Fig. 32 and 33.) Secure hood divider with 2 screws on each hood side. The hood divider is also used as the bottom filter rack for the aluminum filter.
7. Open the filter clips which are located underneath the hood top. Insert the aluminum filter into the bottom filter rack (hood divider). Push the filter into position past the open filter clips. Close the filter clips to lock the filter into place. (See Fig. 33.)
8. Caulk the ends of the joint between the unit top panel and the hood top. (See Fig. 31.)
9. Replace the filter access panel.
10. Install all EconoMi\$er IV accessories. EconoMi\$er IV wiring is shown in Fig. 34. EconoMi\$er2 wiring is shown in Fig. 35.

Barometric flow capacity is shown in Fig. 36. Outdoor air leakage is shown in Fig. 37. Return air pressure drop is shown in Fig. 38.

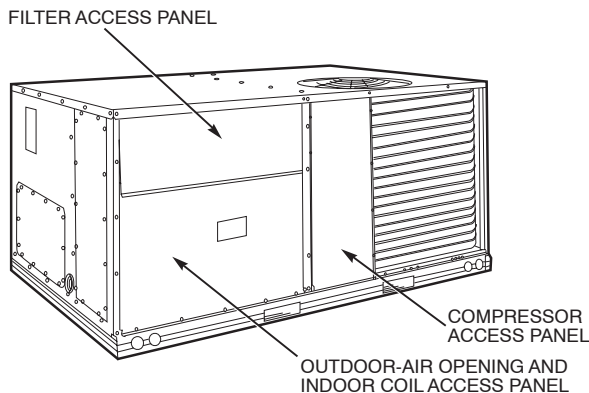


Fig. 29 – Typical Access Panel Locations

C06023

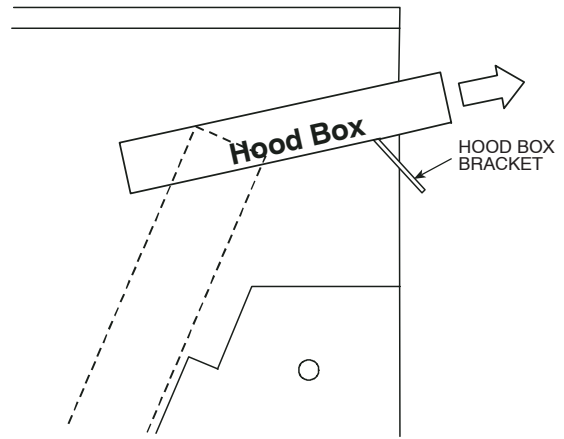


Fig. 30 – Hood Box Removal

C06024

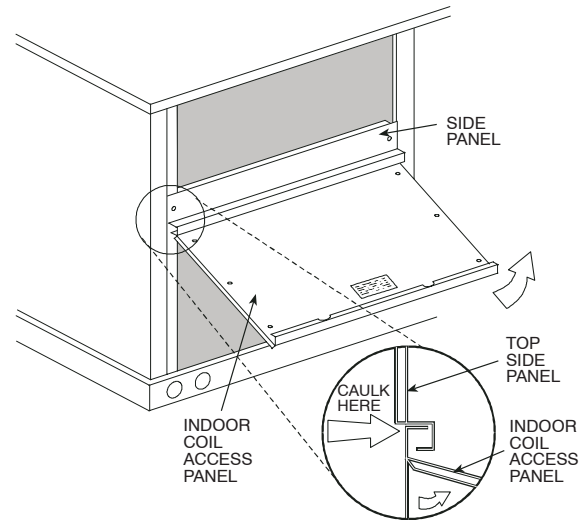


Fig. 31 – Indoor Coil Access Panel Relocation

C06025

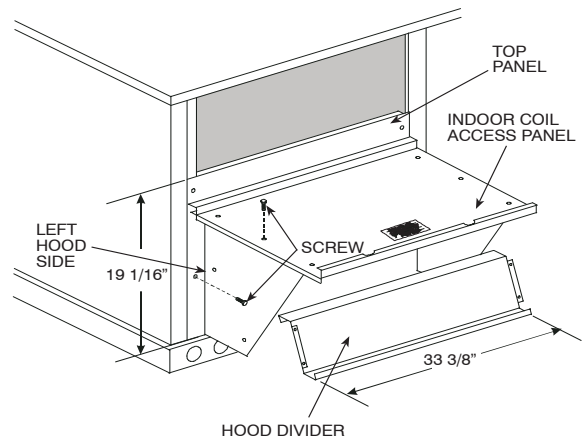


Fig. 32 – Outdoor-Air Hood Construction

C06026

EconoMi\$er IV Standard Sensors

Outdoor Air Temperature (OAT) Sensor

The outdoor air temperature sensor (HH57AC074) is a 10 to 20 mA device used to measure the outdoor-air temperature. The outdoor-air temperature is used to determine when the EconoMi\$er IV can be used for free cooling. The sensor is factory-installed on the EconoMi\$er IV in the outdoor airstream. (See Fig. 27.) The operating range of temperature measurement is 40° to 100°F.

Supply Air Temperature (SAT) Sensor

The supply air temperature sensor is a 3 K thermistor located at the inlet of the indoor fan. (See Fig. 39.) This sensor is factory installed. The operating range of temperature measurement is 0° to 158°F. See Table 6 for sensor temperature/resistance values.

Table 6—Supply Air Sensor Temperature/Resistance Values

TEMPERATURE (F)	RESISTANCE (ohms)
-58	200,250
-40	100,680
-22	53,010
-4	29,091
14	16,590
32	9,795
50	5,970
68	3,747
77	3,000
86	2,416
104	1,597
122	1,080
140	746
158	525
176	376
185	321
194	274
212	203
230	153
248	116
257	102
266	89
284	70
302	55

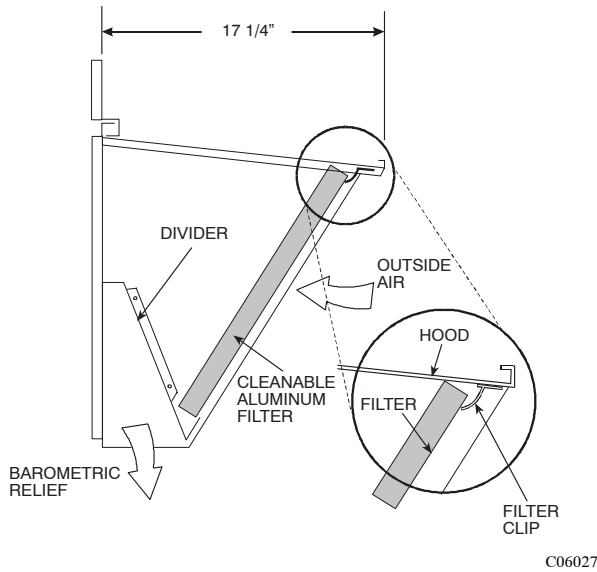


Fig. 33 – Filter Installation

The temperature sensor looks like an eyelet terminal with wires running to it. The sensor is located in the “crimp end” and is sealed from moisture.

Outdoor Air Lockout Sensor

The EconoMi\$er IV is equipped with an ambient temperature lockout switch located in the outdoor air stream which is used to lockout the compressors below a 42°F ambient temperature. (See Fig. 27.)

EconoMi\$er IV Control Modes

IMPORTANT: The optional EconoMi\$er2 does not include a controller. The EconoMi\$er2 is operated by a 4 to 20 mA_{signal} from an existing field-supplied controller (such as PremierLink™ control). See Fig. 35 for wiring information.

Determine the EconoMi\$er IV control mode before set up of the control. Some modes of operation may require different sensors. Refer to Table 7. The EconoMi\$er IV is supplied from the factory with a supply-air temperature sensor and an outdoor-air temperature sensor. This allows for operation of the EconoMi\$er IV with outdoor air dry bulb changeover control. Additional accessories can be added to allow for different types of changeover control and operation of the EconoMi\$er IV and unit.

Table 7—EconoMi\$er IV Sensor Usage

APPLICATION	ECONOMI\$ER IV WITH OUTDOOR AIR DRY BULB SENSOR		
	Accessories Required		
Outdoor Air Dry Bulb	None. The outdoor air dry bulb sensor is factory installed.		
Differential Dry Bulb	CRTEMPSN002A00*		
Single Enthalpy	HH57AC078		
Differential Enthalpy	HH57AC078 and CRENTDIF004A00*		
CO ₂ for DCV Control using a Wall-Mounted CO ₂ Sensor	33ZCSENCO2		
CO ₂ for DCV Control using a Duct-Mounted CO ₂ Sensor	33ZCSENCO2† and 33ZCASPCO2**	O R	CRCBDIOX005A00††

*CRENTDIF004A00 and CRTEMPSN002A00 accessories are used on many different base units. As such, these kits may contain parts that will not be needed for installation.

† 33ZCSENCO2 is an accessory CO₂ sensor.

** 33ZCASPCO2 is an accessory aspirator box required for duct-mounted applications.

†† CRCBDIOX005A00 is an accessory that contains both 33ZCSENCO2 and 33ZCASPCO2 accessories.

Outdoor Dry Bulb Changeover

The standard controller is shipped from the factory configured for outdoor dry bulb changeover control. The outdoor-air and supply-air temperature sensors are included as standard. For this control mode, the outdoor temperature is compared to an adjustable set point selected on the control. If the outdoor-air temperature is above the set point, the EconoMi\$er IV will adjust the outdoor-air dampers to minimum position. If the outdoor air temperature is below the set point, the position of the outdoor air dampers will be controlled to provide free cooling using outdoor air. When in this mode, the LED next to the free cooling set point potentiometer will be on. The changeover temperature set point is controlled by the free cooling set point potentiometer located on the control. (See Fig. 40.) The scale on the potentiometer is A, B, C, and D. See Fig. 41 for the corresponding temperature changeover values.

Differential Dry Bulb Control

For differential dry bulb control the standard outdoor dry bulb sensor is used in conjunction with an additional accessory dry bulb sensor (part number CRTEMPSN002A00). The accessory sensor must be mounted in the return airstream. (See Fig. 42.) Wiring is provided in the EconoMi\$er IV wiring harness. (See Fig. 33.)

In this mode of operation, the outdoor-air temperature is compared to the return-air temperature and the lower temperature airstream is used for cooling. When using this mode of changeover control, turn the enthalpy setpoint potentiometer fully clockwise to the D setting. (See Fig. 40.)

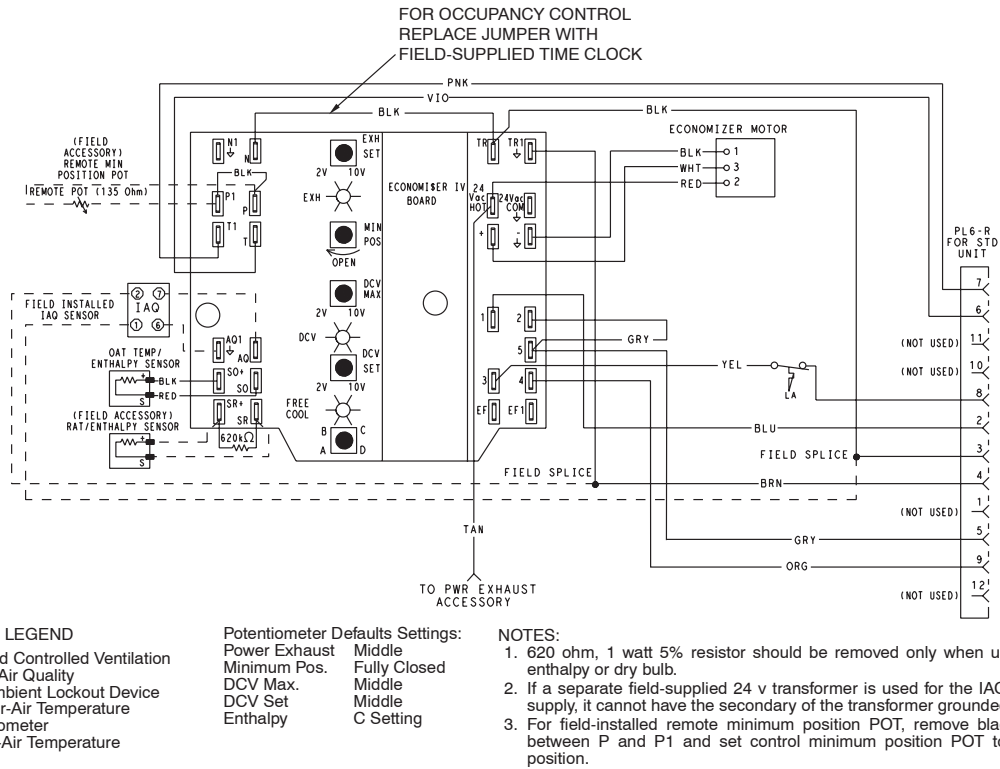


Fig. 34 – EconoMi\$er IV Wiring

C06028

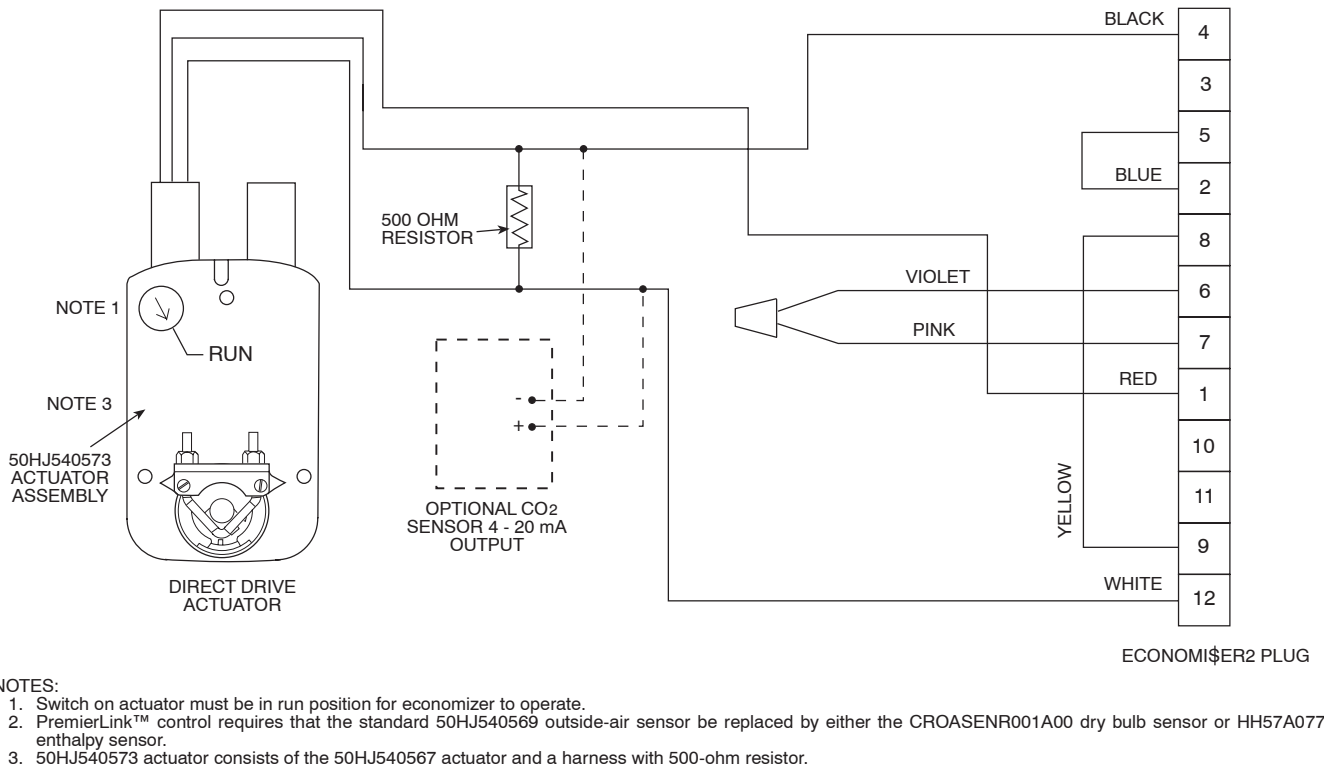


Fig. 35 – EconoMi\$er2 with 4 to 20 mA Control Wiring

C06029

Outdoor Enthalpy Changeover

For enthalpy control, accessory enthalpy sensor (part number HH57AC078) is required. Replace the standard outdoor dry bulb temperature sensor with the accessory enthalpy sensor in the same mounting location. (See Fig. 27.) When the outdoor air enthalpy rises above the outdoor enthalpy changeover set point, the outdoor-air damper moves to its minimum position. The outdoor

enthalpy changeover set point is set with the outdoor enthalpy set point potentiometer on the EconoMi\$er IV controller. The set points are A, B, C, and D. (See Fig. 43.) The factory-installed 620-ohm jumper must be in place across terminals SR and SR+ on the EconoMi\$er IV controller. (See Fig. 27 and 44.)

Differential Enthalpy Control

For differential enthalpy control, the EconoMiSer IV controller uses two enthalpy sensors (HH57AC078 and CRENTDIF004A00), one in the outside air and one in the return air duct. The EconoMiSer IV controller compares the outdoor air enthalpy to the return air enthalpy to determine EconoMiSer IV use. The controller selects the lower enthalpy air (return or outdoor) for cooling. For example, when the outdoor air has a lower enthalpy than the return air, the EconoMiSer IV opens to bring in outdoor air for free cooling.

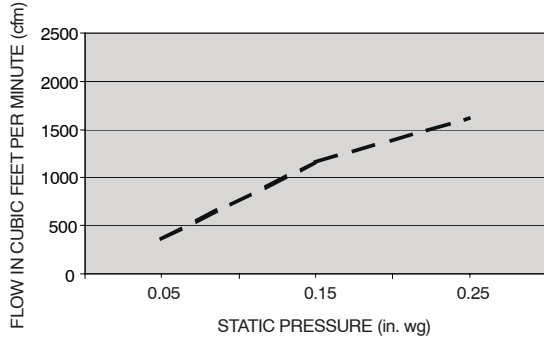


Fig. 36 – Barometric Flow Capacity

C06030

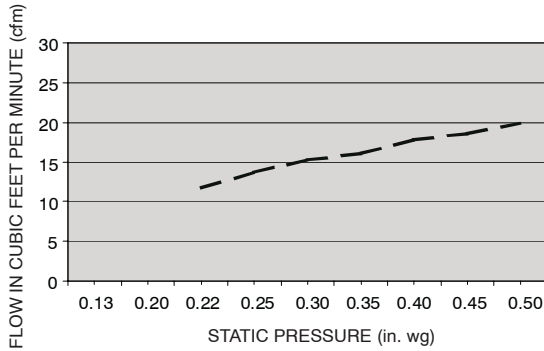


Fig. 37 – Outdoor-Air Damper Leakage

C06031

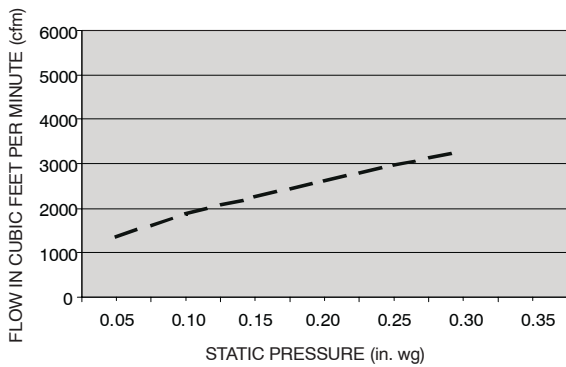


Fig. 38 – Return-Air Pressure Drop

C06032

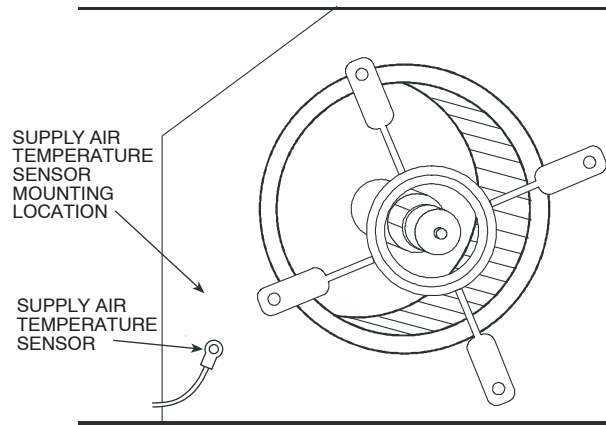


Fig. 39 – Supply Air Sensor Location

C06033

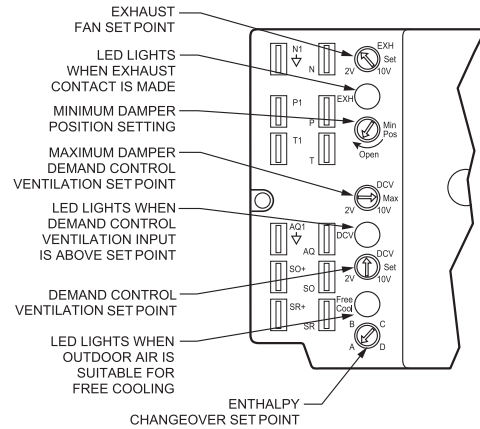


Fig. 40 – EconoMiSer IV Controller Potentiometer and LED Locations

C06034

Replace the standard outside air dry bulb temperature sensor with the accessory enthalpy sensor in the same mounting location. (See Fig. 27.) Mount the return air enthalpy sensor in the return air duct. (See Fig. 42.) Wiring is provided in the EconoMiSer IV wiring harness. (See Fig. 34.) The outdoor enthalpy changeover set point is set with the outdoor enthalpy set point potentiometer on the EconoMiSer IV controller. When using this mode of changeover control, turn the enthalpy setpoint potentiometer fully clockwise to the D setting.

Indoor Air Quality (IAQ) Sensor Input

The IAQ input can be used for demand control ventilation control based on the level of CO₂ measured in the space or return air duct.

Mount the accessory IAQ sensor according to manufacturer specifications. The IAQ sensor should be wired to the AQ and AQ1 terminals of the controller. Adjust the DCV potentiometers to correspond to the DCV voltage output of the indoor air quality sensor at the user-determined set point. (See Fig. 45.)

If a separate field-supplied transformer is used to power the IAQ sensor, the sensor must not be grounded or the EconoMiSer IV control board will be damaged.

Exhaust Set Point Adjustment

The exhaust set point will determine when the exhaust fan runs based on damper position (if accessory power exhaust is installed). The set point is modified with the Exhaust Fan Set Point (EXH SET) potentiometer. (See Fig. 40.) The set point represents the damper position above which the exhaust fans will be turned on. When there is a call for exhaust, the EconoMiSer IV controller provides a 45 ± 15 second delay before exhaust fan

activation to allow the dampers to open. This delay allows the damper to reach the appropriate position to avoid unnecessary fan overload.

Minimum Position Control

There is a minimum damper position potentiometer on the EconoMi\$er IV controller. (See Fig. 40.) The minimum damper position maintains the minimum airflow into the building during the occupied period.

When using demand ventilation, the minimum damper position represents the minimum ventilation position for VOC (volatile organic compound) ventilation requirements. The maximum demand ventilation position is used for fully occupied ventilation.

When demand ventilation control is not being used, the minimum position potentiometer should be used to set the occupied ventilation position. The maximum demand ventilation position should be turned fully clockwise.

Adjust the minimum position potentiometer to allow the minimum amount of outdoor air, as required by local codes, to enter the building. Make minimum position adjustments with at least 10°F temperature difference between the outdoor and return-air temperatures.

To determine the minimum position setting, perform the following procedure:

1. Calculate the appropriate mixed air temperature using the following formula:

$$(T_O \times \frac{OA}{100}) + (T_R \times \frac{RA}{100}) = T_M$$

T_O = Outdoor-Air Temperature

OA = Percent of Outdoor Air

T_R = Return-Air Temperature

RA = Percent of Return Air

T_M = Mixed-Air Temperature

As an example, if local codes require 10% outdoor air during occupied conditions, outdoor-air temperature is 60°F, and return-air temperature is 75°F.

$$(60 \times .10) + (75 \times .90) = 73.5^\circ\text{F}$$

2. Disconnect the supply air sensor from terminals T and T1.
3. Ensure that the factory-installed jumper is in place across terminals P and P1. If remote damper positioning is being used, make sure that the terminals are wired according to Fig. 34 and that the minimum position potentiometer is turned fully clockwise.
4. Connect 24 vac across terminals TR and TR1.
5. Carefully adjust the minimum position potentiometer until the measured supply air temperature matches the calculated value.
6. Reconnect the mixed air sensor to terminals T and T1.

Remote control of the EconoMi\$er IV damper is desirable when requiring additional temporary ventilation. If a field-supplied remote potentiometer (Honeywell part number S963B1128) is wired to the EconoMi\$er IV controller, the minimum position of the damper can be controlled from a remote location.

To control the minimum damper position remotely, remove the factory-installed jumper on the P and P1 terminals on the EconoMi\$er IV controller. Wire the field-supplied potentiometer to the P and P1 terminals on the EconoMi\$er IV controller. (See Fig. 44.)

Damper Movement

Damper movement from full open to full closed (or vice versa) takes 2½ minutes.

Thermostats

The EconoMi\$er IV control works with conventional thermostats that have a Y1 (cool stage 1), Y2 (cool stage 2), W1 (heat stage 1), W2 (heat stage 2), and G (fan). The EconoMi\$er IV control does not support space temperature sensors. Connections are made at the thermostat terminal connection board located in the main control box.

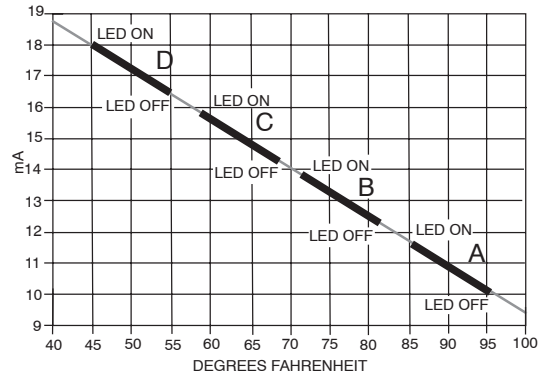


Fig. 41 – Outside Air Temperature Changeover Set Points

C06035

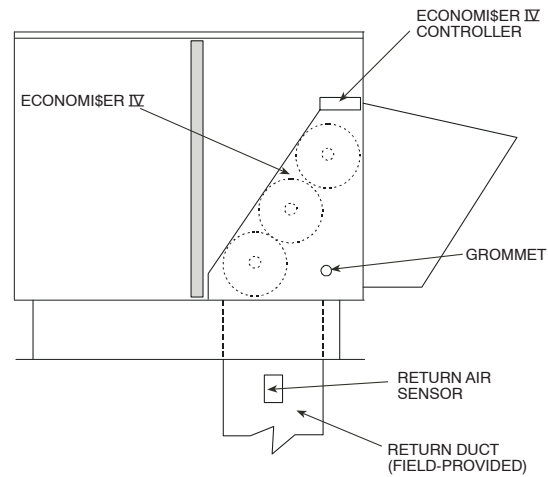


Fig. 42 – Return Air Temperature or Enthalpy Sensor Mounting Location

C06036

Occupancy Control

The factory default configuration for the EconoMi\$er IV control is occupied mode. Occupied mode is provided by the black jumper from terminal TR to terminal N. When unoccupied mode is desired, install a field-supplied timeclock function in place of the jumper between TR and N. (See Fig. 34.) When the timeclock contacts are closed, the EconoMi\$er IV control will be in occupied mode. When the timeclock contacts are open (removing the 24-v signal from terminal N), the EconoMi\$er IV will be in unoccupied mode.

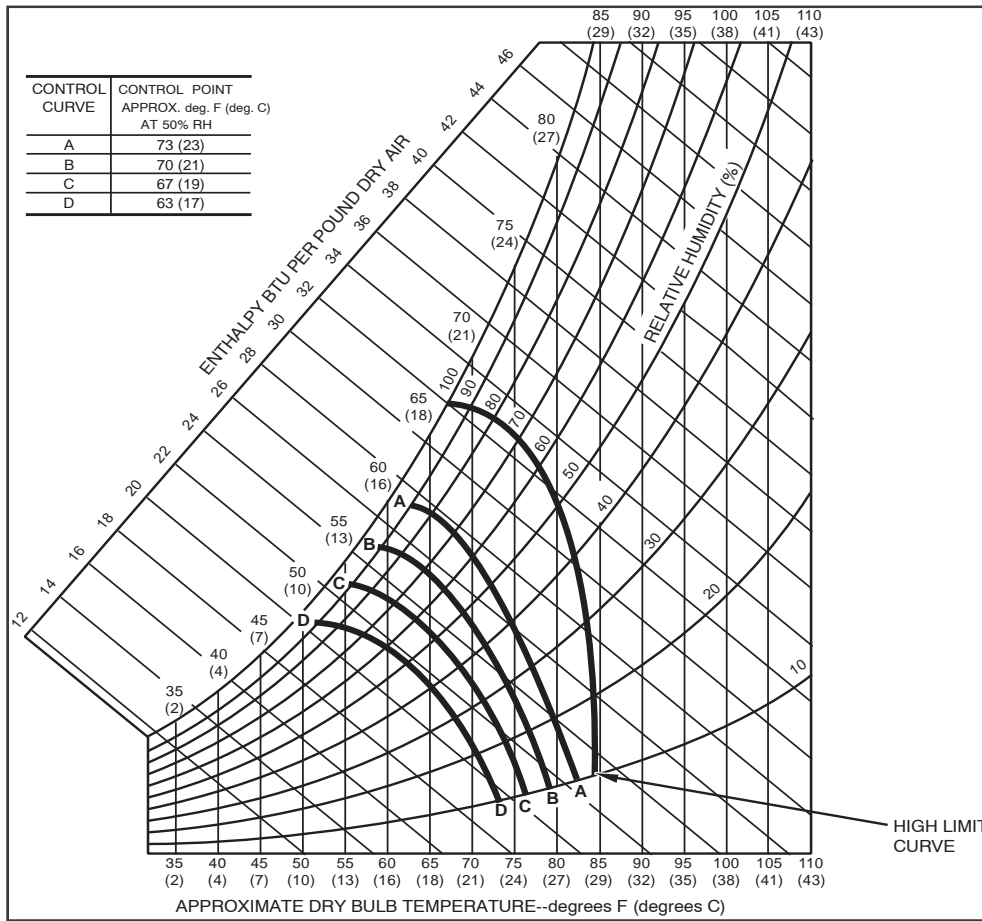


Fig. 43 – Enthalpy Changeover Set Points

C06037

Demand Controlled Ventilation (DCV)

When using the EconoMiSer IV for demand controlled ventilation, there are some equipment selection criteria which should be considered. When selecting the heat capacity and cool capacity of the equipment, the maximum ventilation rate must be evaluated for design conditions. The maximum damper position must be calculated to provide the desired fresh air.

Typically the maximum ventilation rate will be about 5 to 10% more than the typical cfm required per person, using normal outside air design criteria.

A proportional anticipatory strategy should be taken with the following conditions: a zone with a large area, varied occupancy, and equipment that cannot exceed the required ventilation rate at design conditions. Exceeding the required ventilation rate means the equipment can condition air at a maximum ventilation rate that is greater than the required ventilation rate for maximum occupancy. A proportional-anticipatory strategy will cause the fresh air supplied to increase as the room CO₂ level increases even though the CO₂ set point has not been reached. By the time the CO₂ level reaches the set point, the damper will be at maximum ventilation and should maintain the set point.

In order to have the CO₂ sensor control the economizer damper in this manner, first determine the damper voltage output for minimum or base ventilation. Base ventilation is the ventilation required to remove contaminants during unoccupied periods. The following equation may be used to determine the percent of outside-air entering the building for a given damper position. For best results there should be at least a 10 degree difference in outside and return-air temperatures.

$$(T_O \times \frac{OA}{100}) + (T_R \times \frac{RA}{100}) = T_M$$

- T_O = Outdoor-Air Temperature
- OA = Percent of Outdoor Air
- T_R = Return-Air Temperature
- RA = Percent of Return Air
- T_M = Mixed-Air Temperature

Once base ventilation has been determined, set the minimum damper position potentiometer to the correct position.

The same equation can be used to determine the occupied or maximum ventilation rate to the building. For example, an output of 3.6 volts to the actuator provides a base ventilation rate of 5% and an output of 6.7 volts provides the maximum ventilation rate of 20% (or base plus 15 cfm per person). Use Fig. 42 to determine the maximum setting of the CO₂ sensor. For example, a 1100 ppm set point relates to a 15 cfm per person design. Use the 1100 ppm curve on Fig. 45 to find the point when the CO₂ sensor output will be 6.7 volts. Line up the point on the graph with the left side of the chart to determine that the range configuration for the CO₂ sensor should be 1800 ppm. The EconoMiSer IV controller will output the 6.7 volts from the CO₂ sensor to the actuator when the CO₂ concentration in the space is at 1100 ppm. The DCV set point may be left at 2 volts since the CO₂ sensor voltage will be ignored by the EconoMiSer IV controller until it rises above the 3.6 volt setting of the minimum position potentiometer.

Once the fully occupied damper position has been determined, set the maximum damper demand control ventilation potentiometer to this position. Do not set to the maximum position as this can result in over-ventilation to the space and potential high-humidity levels.

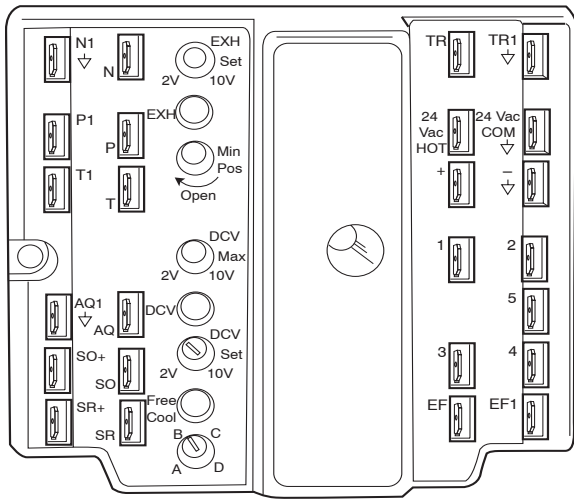


Fig. 44 – EconoMiSer IV Control

C06038

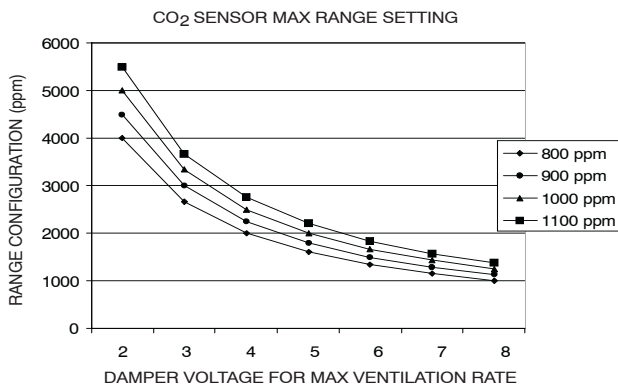


Fig. 45 – CO₂ Sensor Maximum Range Setting

C06039

CO₂ Sensor Configuration

The CO₂ sensor has preset standard voltage settings that can be selected anytime after the sensor is powered up. (See Table 8.)

Use setting 1 or 2 for Carrier equipment. (See Table 8.)

1. Press Clear and Mode buttons. Hold at least 5 seconds until the sensor enters the Edit mode.
2. Press Mode twice. The STDSET Menu will appear.
3. Use the Up/Down button to select the preset number. (See Table 8.)
4. Press Enter to lock in the selection.
5. Press Mode to exit and resume normal operation.

The custom settings of the CO₂ sensor can be changed anytime after the sensor is energized. Follow the steps below to change the non-standard settings:

1. Press Clear and Mode buttons. Hold at least 5 seconds until the sensor enters the Edit mode.
2. Press Mode twice. The STDSET Menu will appear.
3. Use the Up/Down button to toggle to the NONSTD menu and press Enter.
4. Use the Up/Down button to toggle through each of the nine variables, starting with Altitude, until the desired setting is reached.
5. Press Mode to move through the variables.
6. Press Enter to lock in the selection, then press Mode to continue to the next variable.

Dehumidification of Fresh Air with DCV Control

Information from ASHRAE indicates that the largest humidity load on any zone is the fresh air introduced. For some applications, a device such as a 62AQ energy recovery unit is added to reduce the moisture content of the fresh air being brought into the building when the enthalpy is high. In most cases, the normal heating and cooling processes are more than adequate to remove the humidity loads for most commercial applications.

If normal rooftop heating and cooling operation is not adequate for the outdoor humidity level, an energy recovery unit and/or a dehumidification option should be considered.

Step 7 —Adjust Evaporator-Fan Speed

Adjust evaporator-fan speed to meet jobsite conditions.

Tables 9 and 10 show fan rpm at motor pulley settings for the 50HE003-006 and 50HJ004-007 units. Tables 11 and 14 show maximum amp draw of belt-drive motor. Table 13 shows sound data. Refer to Tables 15-34 for performance data. See Table 35 for accessory static pressure drop. See Fig. 47 for the Humidi-MiZer™ system static pressure drops.

For units with electric heating, required minimum cfm is 900 for 50HJ004; 1200 for 50HJ005; 1500 for 50HJ006 and 1800 for 50HJ007.

Belt Drive Motors

Fan motor pulleys are factory set for speed shown in Table 1. Check pulley alignment and belt tension prior to start-up.

To change fan speed:

1. Shut off the unit power supply and tag disconnect.
2. Loosen the belt by loosening the fan motor mounting nuts. (See Fig. 47.)
3. Loosen movable pulley flange setscrew (See Fig. 48).
4. Screw movable flange toward fixed flange to increase speed and away from fixed flange to decrease speed. Increasing fan speed increases load on motor. Do not exceed maximum speed specified in Table 1.
5. Set movable flange at nearest keyway of pulley hub and tighten setscrew. (See Table 1 for speed change for each full turn of pulley flange.)
6. Adjust belt tension and align fan and motor pulleys per guidance below.

NOTE: Once the required flange position is determined for the correct blower rpm, it is recommended (but not required) that the variable pitch pulley be replaced with a corresponding size fixed sheave pulley.

To align fan and motor pulleys:

1. Loosen fan pulley setscrews.
2. Slide fan pulley along fan shaft.
3. Make angular alignment by loosening motor from mounting.

To adjust belt tension:

1. Loosen fan motor mounting nuts.
2. Slide motor mounting plate away from fan scroll for proper belt tension (1/2-in. deflection with 7 to 10 lb of force).
3. Tighten motor mounting nuts.
4. Adjust bolt and tighten nut to secure motor in fixed position.

Table 8—CO₂ Sensor Standard Settings

SETTING	EQUIPMENT	OUTPUT	VENTILATION RATE (cfm/Person)	ANALOG OUTPUT	CO ₂ CONTROL RANGE (ppm)	OPTIONAL RELAY SETPOINT (ppm)	RELAY HYSTERESIS (ppm)
1	Interface w/Standard Building Control System	Proportional	Any	0-10V 4-20 mA	0-2000	1000	50
2		Proportional	Any	2-10V 7-20 mA	0-2000	1000	50
3		Exponential	Any	0-10V 4-20 mA	0-2000	1100	50
4	Economizer	Proportional	15	0-10V 4-20 mA	0-1100	1100	50
5		Proportional	20	0-10V 4-20 mA	0- 900	900	50
6		Exponential	15	0-10V 4-20 mA	0-1100	1100	50
7		Exponential	20	0-10V 4-20 mA	0- 900	900	50
8	Health & Safety	Proportional	—	0-10V 4-20 mA	0-9999	5000	500
9	Parking/Air Intakes/ Loading Docks	Proportional	—	0-10V 4-20 mA	0-2000	700	50

LEGEND
ppm — Parts Per Million

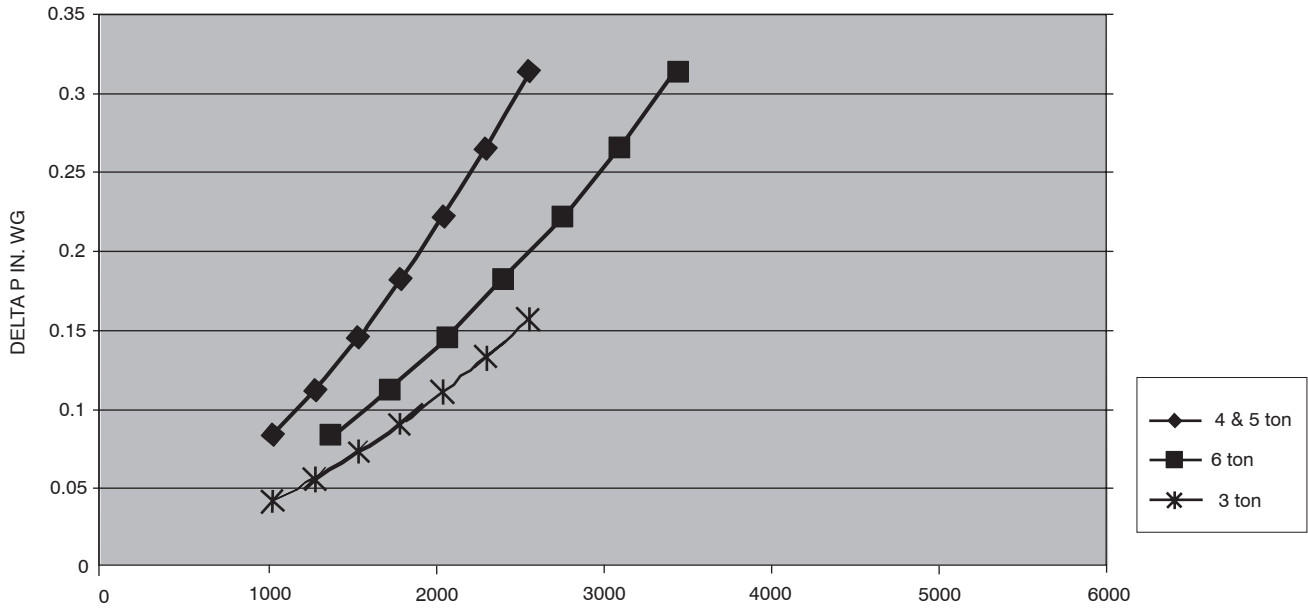


Fig. 46 – Humidi-MiZer™ Adaptive Dehumidification System Static Pressure Drop (in. wg)

C06133

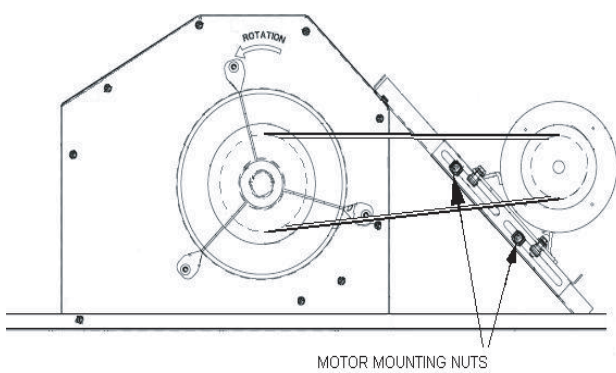


Fig. 47 – Belt Drive Motor Mounting

C06134

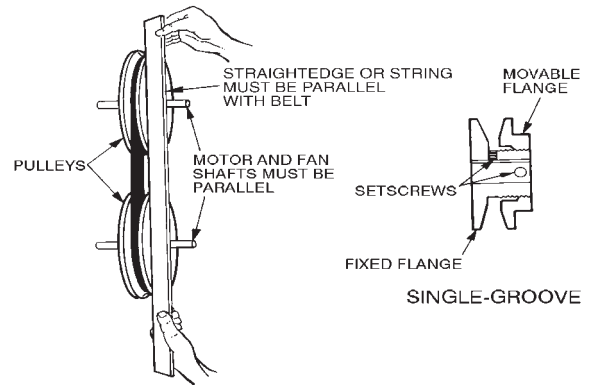


Fig. 48 – Evaporator-Fan Pulley Adjustment

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Table 9—50HJ and 50he Fan Rpm at Motor Pulley Setting With Standard Motor*

UNIT 50HJ 50HE	MOTOR PULLEY TURNS OPEN												
	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6
003	936	906	876	846	816	786	756	726	696	666	639	—	—
004	1044	1008	971	935	898	862	826	789	753	716	680	—	—
005	1185	1144	1102	1061	1019	978	936	895	853	812	770	—	—
006	1460	1425	1389	1354	1318	1283	1248	1212	1177	1141	1106	1070	1035
007	1585	1538	1492	1445	1399	1352	1305	1259	1212	1166	1119	—	—

*Approximate fan rpm shown (standard motor/drive).

Table 10—50HJ, 50HE Fan Rpm at Motor Pulley Setting With High-Static Motor*

UNIT	MOTOR PULLEY TURNS OPEN												
	0	1/2	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5	5 1/2	6
004	1455	1423	1392	1360	1328	1297	1265	1233	1202	1170	1138	1107	1075
005	1455	1423	1392	1360	1328	1297	1265	1233	1202	1170	1138	1107	1075
006	1685	1589	1557	1525	1493	1460	1428	1396	1364	1332	1300	—	—
007	1685	1589	1557	1525	1493	1460	1428	1396	1364	1332	1300	—	—

*Approximate fan rpm shown (high-static motor/drive).

50HE, HJ

Table 11—Evaporator-Fan Motor Data — Standard Motor

UNIT 50HJ 50HE	UNIT PHASE	MAXIMUM CONTINUOUS BHP*	MAXIMUM OPERATING WATTS*	UNIT VOLTAGE	MAXIMUM AMP DRAW
003	ALL	0.58	580	2.0	75.0
	Single	1.20	1000	208/230	4.9
004	Three	1.20	1000	208/230	4.9
				460	2.2
				575	2.2
005	Single	1.20	1000	208/230	4.9
				208/230	4.9
				460	2.2
005	Three	1.20	1000	460	2.2
				575	2.2
				208/230	9.2
006	Single	1.30	1650	208/230	6.7
				208/230	6.7
				460	3.0
006	Three	2.40	2120	575	3.0
				208/230	6.7
				460	3.0
007	Three	2.40	2120	208/230	6.7
				460	3.0
				575	3.0

LEGEND

Bhp — Brake Horsepower

*Extensive motor and electrical testing on these units ensures that the full horsepower and watts range of the motors can be utilized with confidence. Using the fan motors up to the ratings shown in this table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

Table 12—Evaporator-Fan Motor Data — High-Static Motors

UNIT 50HJ 50HE	UNIT PHASE	MAXIMUM CONTINUOUS BHP*	MAXIMUM OPERATING WATTS*	UNIT VOLTAGE	MAXIMUM AMP DRAW
004	Three	2.40	2120	208/230	6.7
				460	3.0
				575	3.0
005	Three	2.40	2120	208/230	6.7
				460	3.0
				575	3.0
006	Three	2.90	2615	208/230	8.6
				460	3.9
				575	3.9
007	Three	2.90	2615	208/230	8.6
				460	3.9
				575	3.9

LEGEND

Bhp — Brake Horsepower

*Extensive motor and electrical testing on these units ensures that the full horsepower and watts range of the motors can be utilized with confidence. Using the fan motors up to the ratings shown in this table will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

Table 13—Accessory/FIOP Electric Heaters Static Pressure Drop (in. wg) — 50HJ004-007 and 50HE003-006

COMPONENT	CFM									
	600	900	1200	1400	1600	1800	2000	2200	2400	2600
1 Heater Module	0.03	0.05	0.07	0.09	0.09	0.10	0.11	0.11	0.12	0.13
2 Heater Modules	0.14	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.18	0.18

Table 14—Accessory/FIOP EconoMiSer IV and EconoMiSer2 Static Pressure* (in. wg) — 50HJ004-007 and 50HE003-006

COMPONENT	CFM											
	600	800	1000	1250	1500	1750	2000	2250	2500	2750	3000	
Vertical EconoMiSer IV and EconoMiSer2	0.01	0.02	0.035	0.045	0.065	0.08	0.12	0.145	0.175	0.22	0.255	
Horizontal EconoMiSer IV and EconoMiSer2	—	—	—	—	—	0.1	0.125	0.15	0.18	0.225	0.275	

LEGEND

FIOP – Factory–Installed Option

*The static pressure must be added to external static pressure. The sum and the indoor entering-air cfm should be used in conjunction with the Fan Performance tables to determine indoor blower rpm and watts.

Table 14 — Evaporator-Fan Motor Efficiency

MOTOR 50HJ	EFFICIENCY
003,004,005	75
006	74/84*
007	84

*Single-phase/3-phase.

NOTE: Convert watts to bhp using the following formula:

$$\text{bhp} = \frac{\text{watts input} \times \text{motor efficiency}}{746}$$

GENERAL FAN PERFORMANCE NOTES

1. Values include losses for filters, unit casing, and wet coils. See Table 13 and 14 and Fig. 46 for accessory/FIOP static pressure information.
2. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using the fan motors up to the ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 11 and 12 on this page for additional information.
3. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative to verify.
4. Interpolation is permissible. Do not extrapolate.
5. Performance includes clean filter and wet coil.

Table 15—Fan Performance 50HE003 — Vertical Discharge Units; Standard Motor (Belt Drive)**

AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)											
	0.1		0.2		0.4		0.6		0.8		1.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
600	500	0.08	531	0.08	607	0.14	713	0.21	788	0.29	878	0.37
700	529	0.09	567	0.09	633	0.16	739	0.24	816	0.32	902	0.41
800	547	0.1	592	0.12	660	0.19	761	0.27	845	0.37	937	0.47
900	570	0.13	620	0.14	691	0.22	793	0.32	870	0.42	957	0.53
1000	599	0.15	650	0.16	717	0.26	818	0.36	894	0.47	981	0.58

50HE, HJ

Table 16—Fan Performance 50HJ004, 50HE004 — Vertical Discharge Units; Standard Motor
(Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	566	0.14	142	690	0.23	228	791	0.32	320	879	0.42	418	957	0.52	522
1000	598	0.17	173	718	0.27	267	817	0.37	366	903	0.47	471	981	0.58	581
1100	632	0.21	210	748	0.31	311	844	0.42	418	929	0.53	530	1006	0.65	646
1200	666	0.25	252	778	0.36	361	873	0.48	476	956	0.60	594	1031	0.72	718
1300	701	0.30	300	809	0.42	418	902	0.54	540	983	0.67	665	1057	0.80	796
1400	737	0.36	355	842	0.48	481	932	0.61	610	1012	0.75	744	1085	0.89	881
1500	774	0.42	417	875	0.55	551	962	0.69	689	1041	0.83	830	1112	0.98	974

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	1029	0.63	630	1095	0.75	742	1157	0.86	859	1216	0.99	980	1272	1.11	1105
1000	1052	0.70	695	1118	0.82	814	1179	0.94	937	1237	1.07	1064	1293	1.20	1195
1100	1076	0.77	767	1141	0.90	892	1202	1.03	1021	1260	1.16	1154	—	—	—
1200	1100	0.85	845	1165	0.98	977	1225	1.12	1112	—	—	—	—	—	—
1300	1126	0.94	930	1189	1.07	1069	—	—	—	—	—	—	—	—	—
1400	1152	1.03	1023	1215	1.17	1168	—	—	—	—	—	—	—	—	—
1500	1179	1.13	1123	—	—	—	—	—	—	—	—	—	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 1.20.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 680 to 1044 rpm. All other rpms require field-supplied drive.

50HE, HJ

Table 17—Fan Performance 50HJ004, 50he004 — Vertical Discharge Units; High-Static Motor
(Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	566	0.14	142	690	0.23	228	791	0.32	320	879	0.42	418	957	0.52	522
1000	598	0.17	173	718	0.27	267	817	0.37	366	903	0.47	471	981	0.58	581
1100	632	0.21	210	748	0.31	311	844	0.42	418	929	0.53	530	1006	0.65	646
1200	666	0.25	252	778	0.36	361	873	0.48	476	956	0.60	594	1031	0.72	718
1300	701	0.30	300	809	0.42	418	902	0.54	540	983	0.67	665	1057	0.80	796
1400	737	0.36	355	842	0.48	481	932	0.61	610	1012	0.75	744	1085	0.89	881
1500	774	0.42	417	875	0.55	551	962	0.69	689	1041	0.83	830	1112	0.98	974

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	1029	0.63	630	1095	0.75	742	1157	0.86	859	1216	0.99	980	1272	1.11	1105
1000	1052	0.70	695	1118	0.82	814	1179	0.94	937	1237	1.07	1064	1293	1.20	1195
1100	1076	0.77	767	1141	0.90	892	1202	1.03	1021	1260	1.16	1154	1314	1.30	1291
1200	1100	0.85	845	1165	0.98	977	1225	1.12	1112	1282	1.26	1252	1337	1.40	1395
1300	1126	0.94	930	1189	1.07	1069	1249	1.22	1211	1306	1.36	1356	1360	1.51	1506
1400	1152	1.03	1023	1215	1.17	1168	1274	1.32	1317	1330	1.48	1469	1384	1.63	1625
1500	1179	1.13	1123	1241	1.28	1275	1300	1.44	1431	1355	1.60	1590	1408	1.76	1752

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 1.20.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 680 to 1044 rpm. All other rpms require field-supplied drive.

Table 18—Fan Performance 50HJ005, 50HE005 — Vertical Discharge Units; Standard Motor
(Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	666	0.25	252	778	0.36	361	873	0.48	476	956	0.60	594	1031	0.72	718
1300	701	0.30	300	809	0.42	418	902	0.54	540	983	0.67	665	1057	0.80	796
1400	737	0.36	355	842	0.48	481	932	0.61	610	1012	0.75	744	1085	0.89	881
1500	774	0.42	417	875	0.55	551	962	0.69	689	1041	0.83	830	1112	0.98	974
1600	811	0.49	487	909	0.63	629	994	0.78	774	1071	0.93	923	1141	1.08	1076
1700	849	0.57	565	943	0.72	715	1026	0.87	869	1101	1.03	1025	1170	1.19	1185
1800	887	0.65	651	978	0.81	810	1059	0.98	972	1133	1.14	1136	—	—	—
1900	926	0.75	746	1014	0.92	914	1092	1.09	1084	—	—	—	—	—	—
2000	965	0.86	852	1050	1.03	1028	—	—	—	—	—	—	—	—	—

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1100	0.85	845	1165	0.98	977	1225	1.12	1112	—	—	—	—	—	—
1300	1126	0.94	930	1189	1.07	1069	—	—	—	—	—	—	—	—	—
1400	1152	1.03	1023	1215	1.17	1168	—	—	—	—	—	—	—	—	—
1500	1179	1.13	1123	—	—	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 1.20.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 770 to 1185 rpm. All other rpms require field-supplied drive.

Table 19—Fan Performance 50HJ005, 50HE005 — Vertical Discharge Units; High-Static Motor
(Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	666	0.25	252	778	0.36	361	873	0.48	476	956	0.60	594	1031	0.72	718
1300	701	0.30	300	809	0.42	418	902	0.54	540	983	0.67	665	1057	0.80	796
1400	737	0.36	355	842	0.48	481	932	0.61	610	1012	0.75	744	1085	0.89	881
1500	774	0.42	417	875	0.55	551	962	0.69	689	1041	0.83	830	1112	0.98	974
1600	811	0.49	487	909	0.63	629	994	0.78	774	1071	0.93	923	1141	1.08	1076
1700	849	0.57	565	943	0.72	715	1026	0.87	869	1101	1.03	1025	1170	1.19	1185
1800	887	0.65	651	978	0.81	810	1059	0.98	972	1133	1.14	1136	1200	1.31	1304
1900	926	0.75	746	1014	0.92	914	1092	1.09	1084	1164	1.26	1257	1231	1.44	1432
2000	965	0.86	852	1050	1.03	1028	1127	1.21	1206	1197	1.39	1387	1262	1.58	1570

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1100	0.85	845	1165	0.98	977	1225	1.12	1112	1282	1.26	1252	1337	1.40	1395
1300	1126	0.94	930	1189	1.07	1069	1249	1.22	1211	1306	1.36	1356	1360	1.51	1506
1400	1152	1.03	1023	1215	1.17	1168	1274	1.32	1317	1330	1.48	1469	1384	1.63	1625
1500	1179	1.13	1123	1241	1.28	1275	1300	1.44	1431	1355	1.60	1590	1408	1.76	1752
1600	1206	1.24	1231	1268	1.40	1391	1326	1.56	1553	1381	1.73	1719	1433	1.90	1888
1700	1235	1.36	1349	1295	1.52	1515	1352	1.69	1685	1407	1.87	1858	1459	2.04	2034
1800	1264	1.48	1475	1323	1.66	1649	1380	1.84	1826	1434	2.02	2006	1485	2.20	2189
1900	1293	1.62	1611	1352	1.80	1792	1408	1.99	1976	1461	2.17	2163	1512	2.37	2353
2000	1324	1.77	1756	1381	1.96	1945	1436	2.15	2137	1489	2.34	2332	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.40.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1075 to 1455 rpm. All other rpms require field-supplied drive.

50HE, HJ

Table 20—Fan Performance 50HJ006, 50HE006 Single-Phase — Vertical Discharge Units; Standard Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	790	0.40	353	897	0.53	471	991	0.68	600	1075	0.83	739	1152	1.00	888
1600	828	0.46	412	931	0.60	536	1022	0.75	670	1104	0.92	813	1180	1.09	966
1700	866	0.54	478	966	0.68	608	1054	0.84	747	1134	1.01	895	1208	1.19	1053
1800	905	0.62	551	1001	0.77	687	1087	0.94	832	1165	1.11	985	1238	1.29	1148
1900	944	0.71	633	1037	0.87	774	1120	1.04	925	1197	1.22	1084	—	—	—
2000	983	0.81	723	1073	0.98	870	1154	1.16	1026	—	—	—	—	—	—
2100	1023	0.92	821	1110	1.10	975	1189	1.28	1137	—	—	—	—	—	—
2200	1063	1.05	929	1147	1.23	1089	—	—	—	—	—	—	—	—	—
2300	1104	1.18	1046	—	—	—	—	—	—	—	—	—	—	—	—
2400	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1224	1.18	1045	—	—	—	—	—	—	—	—	—	—	—	—
1600	1250	1.27	1128	—	—	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2400	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

50HE, HJ

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 1.30.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1035 to 1460 rpm. All other rpms require field-supplied drive.

Table 21—Fan Performance 50HJ006, 50he006 Three-Phase — Vertical Discharge Units; Standard Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	790	0.40	353	897	0.53	471	991	0.68	600	1075	0.83	739	1152	1.00	888
1600	828	0.46	412	931	0.60	536	1022	0.75	670	1104	0.92	813	1180	1.09	966
1700	866	0.54	478	966	0.68	608	1054	0.84	747	1134	1.01	895	1208	1.19	1053
1800	905	0.62	551	1001	0.77	687	1087	0.94	832	1165	1.11	985	1238	1.29	1148
1900	944	0.71	633	1037	0.87	774	1120	1.04	925	1197	1.22	1084	1268	1.41	1251
2000	983	0.81	723	1073	0.98	870	1154	1.16	1026	1229	1.34	1190	1299	1.53	1362
2100	1023	0.92	821	1110	1.10	975	1189	1.28	1137	1262	1.47	1306	1330	1.67	1483
2200	1063	1.05	929	1147	1.23	1089	1224	1.41	1256	1295	1.61	1431	1362	1.82	1614
2300	1104	1.18	1046	1185	1.37	1212	1260	1.56	1386	1329	1.76	1567	1395	1.98	1754
2400	1145	1.32	1174	1223	1.52	1346	1296	1.72	1526	1364	1.93	1712	1428	2.15	1905
2500	1185	1.48	1311	1262	1.68	1490	1333	1.89	1676	1399	2.10	1868	1462	2.33	2067

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1224	1.18	1045	1291	1.36	1212	1354	1.56	1387	1414	1.77	1570	1472	1.98	1761
1600	1250	1.27	1128	1316	1.46	1299	1379	1.66	1478	1438	1.87	1664	1495	2.09	1858
1700	1278	1.37	1219	1343	1.57	1394	1405	1.77	1576	1463	1.99	1766	1520	2.21	1964
1800	1306	1.48	1318	1370	1.69	1497	1431	1.90	1683	1489	2.11	1877	1545	2.34	2078
1900	1335	1.61	1426	1398	1.81	1609	1458	2.03	1799	1515	2.25	1997	—	—	—
2000	1364	1.74	1542	1427	1.95	1730	1486	2.17	1925	1542	2.39	2126	—	—	—
2100	1395	1.88	1668	1456	2.09	1860	1514	2.32	2060	—	—	—	—	—	—
2200	1426	2.03	1804	1486	2.25	2001	—	—	—	—	—	—	—	—	—
2300	1457	2.19	1949	—	—	—	—	—	—	—	—	—	—	—	—
2400	1489	2.37	2106	—	—	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.40.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1035 to 1460 rpm. All other rpms require field-supplied drive.

50HE,HJ

Table 22—Fan Performance 50HJ006, 50HE006 — Vertical Discharge Units; High-Static Motor
(Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	790	0.40	353	897	0.53	471	991	0.68	600	1075	0.83	739	1152	1.00	888
1600	828	0.46	412	931	0.60	536	1022	0.75	670	1104	0.92	813	1180	1.09	966
1700	866	0.54	478	966	0.68	608	1054	0.84	747	1134	1.01	895	1208	1.19	1053
1800	905	0.62	551	1001	0.77	687	1087	0.94	832	1165	1.11	985	1238	1.29	1148
1900	944	0.71	633	1037	0.87	774	1120	1.04	925	1197	1.22	1084	1268	1.41	1251
2000	983	0.81	723	1073	0.98	870	1154	1.16	1026	1229	1.34	1190	1299	1.53	1362
2100	1023	0.92	821	1110	1.10	975	1189	1.28	1137	1262	1.47	1306	1330	1.67	1483
2200	1063	1.05	929	1147	1.23	1089	1224	1.41	1256	1295	1.61	1431	1362	1.82	1614
2300	1104	1.18	1046	1185	1.37	1212	1260	1.56	1386	1329	1.76	1567	1395	1.98	1754
2400	1145	1.32	1174	1223	1.52	1346	1296	1.72	1526	1364	1.93	1712	1428	2.15	1905
2500	1185	1.48	1311	1262	1.68	1490	1333	1.89	1676	1399	2.10	1868	1462	2.33	2067

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1224	1.18	1045	1291	1.36	1212	1354	1.56	1387	1414	1.77	1570	1472	1.98	1761
1600	1250	1.27	1128	1316	1.46	1299	1379	1.66	1478	1438	1.87	1664	1495	2.09	1858
1700	1278	1.37	1219	1343	1.57	1394	1405	1.77	1576	1463	1.99	1766	1520	2.21	1964
1800	1306	1.48	1318	1370	1.69	1497	1431	1.90	1683	1489	2.11	1877	1545	2.34	2078
1900	1335	1.61	1426	1398	1.81	1609	1458	2.03	1799	1515	2.25	1997	1570	2.48	2202
2000	1364	1.74	1542	1427	1.95	1730	1486	2.17	1925	1542	2.39	2126	1596	2.63	2335
2100	1395	1.88	1668	1456	2.09	1860	1514	2.32	2060	1570	2.55	2265	1623	2.79	2478
2200	1426	2.03	1804	1486	2.25	2001	1543	2.48	2204	1598	2.72	2415	—	—	—
2300	1457	2.19	1949	1516	2.42	2151	1573	2.66	2360	1627	2.90	2574	—	—	—
2400	1489	2.37	2106	1547	2.60	2312	1603	2.84	2526	—	—	—	—	—	—
2500	1522	2.56	2272	1579	2.80	2484	—	—	—	—	—	—	—	—	—

50HE,HJ

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.90.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1300 to 1685 rpm. All other rpms require field-supplied drive.

Table 23—Fan Performance 50HJ007 — Vertical Discharge Units; Standard Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	907	0.63	558	1006	0.80	708	1092	0.97	860	1169	1.14	1015	1239	1.32	1174
1900	945	0.72	638	1042	0.90	796	1126	1.08	956	1201	1.26	1119	1271	1.45	1285
2000	984	0.82	727	1078	1.00	892	1160	1.19	1060	1235	1.39	1230	1303	1.58	1403
2100	1024	0.93	823	1115	1.12	997	1195	1.32	1173	1268	1.52	1350	1335	1.72	1531
2200	1063	1.05	929	1152	1.25	1111	1230	1.46	1294	1302	1.67	1480	1368	1.88	1668
2300	1103	1.18	1044	1189	1.39	1234	1266	1.60	1425	1337	1.82	1618	1402	2.04	1814
2400	1143	1.32	1168	1227	1.54	1367	1302	1.76	1566	1371	1.99	1767	1435	2.22	1970
2500	1183	1.47	1303	1265	1.70	1510	1339	1.93	1717	1406	2.17	1926	—	—	—
2600	1224	1.63	1448	1303	1.87	1663	1375	2.12	1878	1442	2.36	2095	—	—	—
2700	1264	1.81	1604	1342	2.06	1828	1412	2.31	2051	—	—	—	—	—	—
2800	1305	1.99	1772	1381	2.26	2003	—	—	—	—	—	—	—	—	—
2900	1346	2.20	1951	—	—	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1304	1.51	1337	1365	1.69	1503	1422	1.88	1674	1477	2.08	1848	1528	2.28	2025
1900	1335	1.64	1454	1395	1.83	1627	1452	2.03	1804	1506	2.23	1984	—	—	—
2000	1366	1.78	1580	1426	1.98	1760	1482	2.19	1943	1535	2.40	2130	—	—	—
2100	1398	1.93	1715	1457	2.14	1901	1512	2.35	2091	—	—	—	—	—	—
2200	1430	2.09	1858	1488	2.31	2052	—	—	—	—	—	—	—	—	—
2300	1462	2.27	2012	—	—	—	—	—	—	—	—	—	—	—	—
2400	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2600	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.40.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1120 to 1585 rpm. All other rpms require field-supplied drive.

50HE,HJ

Table 24—Fan Performance 50HJ007 — Vertical Discharge Units; High-Static Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	907	0.63	558	1006	0.80	708	1092	0.97	860	1169	1.14	1015	1239	1.32	1174
1900	945	0.72	638	1042	0.90	796	1126	1.08	956	1201	1.26	1119	1271	1.45	1285
2000	984	0.82	727	1078	1.00	892	1160	1.19	1060	1235	1.39	1230	1303	1.58	1403
2100	1024	0.93	823	1115	1.12	997	1195	1.32	1173	1268	1.52	1350	1335	1.72	1531
2200	1063	1.05	929	1152	1.25	1111	1230	1.46	1294	1302	1.67	1480	1368	1.88	1668
2300	1103	1.18	1044	1189	1.39	1234	1266	1.60	1425	1337	1.82	1618	1402	2.04	1814
2400	1143	1.32	1168	1227	1.54	1367	1302	1.76	1566	1371	1.99	1767	1435	2.22	1970
2500	1183	1.47	1303	1265	1.70	1510	1339	1.93	1717	1406	2.17	1926	1470	2.41	2136
2600	1224	1.63	1448	1303	1.87	1663	1375	2.12	1878	1442	2.36	2095	1504	2.60	2313
2700	1264	1.81	1604	1342	2.06	1828	1412	2.31	2051	1478	2.56	2275	1539	2.82	2501
2800	1305	1.99	1772	1381	2.26	2003	1450	2.52	2235	1514	2.78	2467	—	—	—
2900	1346	2.20	1951	1420	2.47	2191	1488	2.74	2431	—	—	—	—	—	—
3000	1387	2.41	2142	1459	2.69	2391	—	—	—	—	—	—	—	—	—

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1304	1.51	1337	1365	1.69	1503	1422	1.88	1674	1477	2.08	1848	1528	2.28	2025
1900	1335	1.64	1454	1395	1.83	1627	1452	2.03	1804	1506	2.23	1984	1557	2.44	2168
2000	1366	1.78	1580	1426	1.98	1760	1482	2.19	1943	1535	2.40	2130	1586	2.61	2319
2100	1398	1.93	1715	1457	2.14	1901	1512	2.35	2091	1565	2.57	2284	1616	2.79	2481
2200	1430	2.09	1858	1488	2.31	2052	1543	2.53	2249	1596	2.76	2449	—	—	—
2300	1462	2.27	2012	1520	2.49	2212	1574	2.72	2416	—	—	—	—	—	—
2400	1495	2.45	2175	1552	2.68	2383	—	—	—	—	—	—	—	—	—
2500	1529	2.64	2349	1585	2.89	2564	—	—	—	—	—	—	—	—	—
2600	1562	2.85	2533	—	—	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

50HE,HJ

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.90.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1300 to 1685 rpm. All other rpms require field-supplied drive.

Table 25—Fan Performance 50HE003 — Horizontal Discharge Units; Standard Motor (Belt Drive)**

AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)													
	0.1		0.2		0.4		0.6		0.8		1.0			
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp		
600	490	0.08	521	0.08	597	0.14	703	0.21	788	0.29	868	0.37		
700	519	0.09	557	0.09	623	0.16	729	0.24	816	0.32	892	0.41		
800	537	0.1	582	0.12	650	0.19	751	0.27	845	0.37	927	0.47		
900	560	0.13	610	0.14	681	0.22	783	0.32	870	0.42	947	0.53		
1000	589	0.15	640	0.16	707	0.26	808	0.36	894	0.47	971	0.58		

Table 26—Fan Performance 50HJ004, 50HE004 — Horizontal Discharge Units; Standard Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	554	0.14	134	681	0.22	222	783	0.32	316	870	0.42	416	947	0.53	523
1000	583	0.16	163	707	0.26	257	808	0.36	358	894	0.47	465	971	0.58	578
1100	612	0.20	195	735	0.30	298	834	0.41	406	919	0.52	519	995	0.64	638
1200	643	0.23	233	762	0.35	344	860	0.46	459	944	0.58	579	1020	0.71	705
1300	674	0.28	276	791	0.40	395	887	0.52	517	970	0.65	645	1045	0.78	777
1400	706	0.33	324	820	0.45	451	914	0.59	582	997	0.72	717	1071	0.86	857
1500	738	0.38	379	849	0.52	515	942	0.66	653	1024	0.80	796	1097	0.95	942

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	1017	0.64	635	1082	0.76	753	1143	0.88	876	1200	1.01	1004	1254	1.14	1136
1000	1041	0.70	696	1105	0.82	820	1166	0.95	948	1223	1.09	1081	—	—	—
1100	1065	0.77	763	1129	0.90	892	1189	1.03	1026	1245	1.17	1165	—	—	—
1200	1089	0.84	835	1153	0.98	971	1212	1.12	1111	—	—	—	—	—	—
1300	1114	0.92	915	1177	1.06	1056	—	—	—	—	—	—	—	—	—
1400	1139	1.01	1000	1202	1.15	1149	—	—	—	—	—	—	—	—	—
1500	1164	1.10	1093	—	—	—	—	—	—	—	—	—	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 1.20.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 680 to 1044 rpm. All other rpms require field-supplied drive.

Table 27—Fan Performance 50HJ004, 50HE004 — Horizontal Discharge Units; High-Static Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	554	0.14	134	681	0.22	222	783	0.32	316	870	0.42	416	947	0.53	523
1000	583	0.16	163	707	0.26	257	808	0.36	358	894	0.47	465	971	0.58	578
1100	612	0.20	195	735	0.30	298	834	0.41	406	919	0.52	519	995	0.64	638
1200	643	0.23	233	762	0.35	344	860	0.46	459	944	0.58	579	1020	0.71	705
1300	674	0.28	276	791	0.40	395	887	0.52	517	970	0.65	645	1045	0.78	777
1400	706	0.33	324	820	0.45	451	914	0.59	582	997	0.72	717	1071	0.86	857
1500	738	0.38	379	849	0.52	515	942	0.66	653	1024	0.80	796	1097	0.95	942

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
900	1017	0.64	635	1082	0.76	753	1143	0.88	876	1200	1.01	1004	1254	1.14	1136
1000	1041	0.70	696	1105	0.82	820	1166	0.95	948	1223	1.09	1081	1276	1.23	1219
1100	1065	0.77	763	1129	0.90	892	1189	1.03	1026	1245	1.17	1165	1299	1.32	1308
1200	1089	0.84	835	1153	0.98	971	1212	1.12	1111	1269	1.26	1256	1322	1.41	1404
1300	1114	0.92	915	1177	1.06	1056	1236	1.21	1202	1292	1.36	1353	1346	1.52	1508
1400	1139	1.01	1000	1202	1.15	1149	1261	1.31	1301	1316	1.47	1457	1369	1.63	1618
1500	1164	1.10	1093	1227	1.25	1248	1285	1.41	1407	1341	1.58	1570	1394	1.75	1736

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.40.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1075 to 1455 rpm. All other rpms require field-supplied drive.

50HE,HJ

Table 28—Fan Performance 50HJ005, 50he005 — Horizontal Discharge Units; Standard Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	643	0.23	233	762	0.35	344	860	0.46	459	944	0.58	579	1020	0.71	705
1300	674	0.28	276	791	0.40	395	887	0.52	517	970	0.65	645	1045	0.78	777
1400	706	0.33	324	820	0.45	451	914	0.59	582	997	0.72	717	1071	0.86	857
1500	738	0.38	379	849	0.52	515	942	0.66	653	1024	0.80	796	1097	0.95	942
1600	771	0.44	440	879	0.59	584	971	0.74	731	1051	0.89	881	1124	1.04	1035
1700	804	0.51	507	910	0.66	661	1000	0.82	816	1079	0.98	974	1151	1.14	1136
1800	837	0.59	582	941	0.75	745	1029	0.91	909	1107	1.08	1075	—	—	—
1900	871	0.67	665	972	0.84	837	1059	1.02	1010	1136	1.19	1184	—	—	—
2000	906	0.76	756	1004	0.94	938	1089	1.12	1119	—	—	—	—	—	—

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1089	0.84	835	1153	0.98	971	1212	1.12	1111	—	—	—	—	—	—
1300	1114	0.92	915	1177	1.06	1056	—	—	—	—	—	—	—	—	—
1400	1139	1.01	1000	1202	1.15	1149	—	—	—	—	—	—	—	—	—
1500	1164	1.10	1093	—	—	—	—	—	—	—	—	—	—	—	—
1600	1190	1.20	1193	—	—	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 1.20.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 770 to 1185 rpm. All other rpms require field-supplied drive.

50HE,HJ

Table 29—Fan Performance 50HJ005, 50HE005 — Horizontal Discharge Units; High-Static Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	643	0.23	233	762	0.35	344	860	0.46	459	944	0.58	579	1020	0.71	705
1300	674	0.28	276	791	0.40	395	887	0.52	517	970	0.65	645	1045	0.78	777
1400	706	0.33	324	820	0.45	451	914	0.59	582	997	0.72	717	1071	0.86	857
1500	738	0.38	379	849	0.52	515	942	0.66	653	1024	0.80	796	1097	0.95	942
1600	771	0.44	440	879	0.59	584	971	0.74	731	1051	0.89	881	1124	1.04	1035
1700	804	0.51	507	910	0.66	661	1000	0.82	816	1079	0.98	974	1151	1.14	1136
1800	837	0.59	582	941	0.75	745	1029	0.91	909	1107	1.08	1075	1178	1.25	1244
1900	871	0.67	665	972	0.84	837	1059	1.02	1010	1136	1.19	1184	1206	1.37	1361
2000	906	0.76	756	1004	0.94	938	1089	1.12	1119	1165	1.31	1301	1234	1.49	1486

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1200	1089	0.84	835	1153	0.98	971	1212	1.12	1111	1269	1.26	1256	1322	1.41	1404
1300	1114	0.92	915	1177	1.06	1056	1236	1.21	1202	1292	1.36	1353	1346	1.52	1508
1400	1139	1.01	1000	1202	1.15	1149	1261	1.31	1301	1316	1.47	1457	1369	1.63	1618
1500	1164	1.10	1093	1227	1.25	1248	1285	1.41	1407	1341	1.58	1570	1394	1.75	1736
1600	1190	1.20	1193	1252	1.36	1355	1311	1.53	1520	1366	1.70	1690	1418	1.87	1863
1700	1217	1.31	1301	1278	1.48	1470	1336	1.65	1642	1391	1.83	1818	1443	2.01	1998
1800	1244	1.42	1417	1305	1.60	1593	1362	1.78	1772	1416	1.97	1955	1468	2.15	2141
1900	1271	1.55	1541	1331	1.73	1724	1388	1.92	1911	1442	2.11	2101	1494	2.31	2294
2000	1298	1.68	1674	1358	1.87	1865	1415	2.07	2059	1468	2.27	2256	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.40.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1075 to 1455 rpm. All other rpms require field-supplied drive.

**Table 30—Fan Performance 50HJ006, 50HE006 Single-Phase — Horizontal Discharge Units;
Standard Motor (Belt Drive)***

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	724	0.33	295	837	0.45	402	937	0.59	524	1028	0.74	660	1111	0.91	808
1600	757	0.39	343	866	0.51	455	962	0.65	580	1050	0.81	719	1132	0.98	870
1700	790	0.45	398	894	0.58	514	988	0.72	643	1074	0.88	784	1154	1.06	938
1800	823	0.52	458	924	0.65	579	1015	0.80	712	1099	0.96	857	1177	1.14	1013
1900	857	0.59	525	955	0.73	650	1043	0.89	787	1125	1.05	936	1201	1.23	1096
2000	892	0.67	599	986	0.82	729	1072	0.98	870	1151	1.15	1022	—	—	—
2100	927	0.77	680	1017	0.92	815	1101	1.08	960	1178	1.26	1116	—	—	—
2200	962	0.87	769	1050	1.02	909	1131	1.19	1059	—	—	—	—	—	—
2300	997	0.97	865	1082	1.14	1010	—	—	—	—	—	—	—	—	—
2400	1033	1.09	970	1115	1.26	1120	—	—	—	—	—	—	—	—	—
2500	1069	1.22	1084	—	—	—	—	—	—	—	—	—	—	—	—

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1188	1.09	970	1261	1.29	1143	—	—	—	—	—	—	—	—	—
1600	1208	1.16	1033	—	—	—	—	—	—	—	—	—	—	—	—
1700	1229	1.24	1103	—	—	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2100	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2300	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2400	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 1.30.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1035 to 1460 rpm. All other rpms require field-supplied drive.

50HE, HJ

Table 31—Fan Performance 50HJ006, 50HE006 Three-Phase — Horizontal Discharge Units;
Standard Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	724	0.33	295	837	0.45	402	937	0.59	524	1028	0.74	660	1111	0.91	808
1600	757	0.39	343	866	0.51	455	962	0.65	580	1050	0.81	719	1132	0.98	870
1700	790	0.45	398	894	0.58	514	988	0.72	643	1074	0.88	784	1154	1.06	938
1800	823	0.52	458	924	0.65	579	1015	0.80	712	1099	0.96	857	1177	1.14	1013
1900	857	0.59	525	955	0.73	650	1043	0.89	787	1125	1.05	936	1201	1.23	1096
2000	892	0.67	599	986	0.82	729	1072	0.98	870	1151	1.15	1022	1226	1.33	1185
2100	927	0.77	680	1017	0.92	815	1101	1.08	960	1178	1.26	1116	1251	1.44	1283
2200	962	0.87	769	1050	1.02	909	1131	1.19	1059	1206	1.37	1218	1277	1.56	1389
2300	997	0.97	865	1082	1.14	1010	1161	1.31	1165	1235	1.50	1329	1304	1.69	1503
2400	1033	1.09	970	1115	1.26	1120	1192	1.44	1279	1264	1.63	1448	1332	1.83	1625
2500	1069	1.22	1084	1149	1.39	1239	1223	1.58	1403	1293	1.77	1576	1360	1.98	1757

AIRFLOW CFM	EXTERNAL STTIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1188	1.09	970	1261	1.29	1143	1330	1.49	1327	1395	1.71	1523	1457	1.95	1729
1600	1208	1.16	1033	1279	1.36	1208	1347	1.57	1394	1412	1.79	1590	1474	2.02	1797
1700	1229	1.24	1103	1299	1.44	1280	1366	1.65	1468	1429	1.88	1665	1490	2.11	1873
1800	1250	1.33	1181	1319	1.53	1360	1385	1.74	1549	1448	1.97	1748	1508	2.20	1957
1900	1273	1.43	1266	1341	1.63	1447	1405	1.84	1638	1467	2.07	1839	1527	2.31	2050
2000	1296	1.53	1359	1363	1.74	1542	1427	1.95	1736	1488	2.18	1939	—	—	—
2100	1320	1.64	1459	1386	1.85	1646	1448	2.07	1842	1508	2.30	2047	—	—	—
2200	1345	1.77	1568	1409	1.98	1758	1471	2.20	1956	—	—	—	—	—	—
2300	1371	1.90	1686	1434	2.11	1878	1494	2.34	2080	—	—	—	—	—	—
2400	1397	2.04	1812	1459	2.26	2008	—	—	—	—	—	—	—	—	—
2500	1424	2.19	1948	—	—	—	—	—	—	—	—	—	—	—	—

50HE,HJ

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.40.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1035 to 1460 rpm. All other rpms require field-supplied drive.

**Table 32—Fan Performance 50HJ006, 50HE006 — Horizontal Discharge Units;
HIGH-STATIC Motor (Belt Drive)***

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	724	0.33	295	837	0.45	402	937	0.59	524	1028	0.74	660	1111	0.91	808
1600	757	0.39	343	866	0.51	455	962	0.65	580	1050	0.81	719	1132	0.98	870
1700	790	0.45	398	894	0.58	514	988	0.72	643	1074	0.88	784	1154	1.06	938
1800	823	0.52	458	924	0.65	579	1015	0.80	712	1099	0.96	857	1177	1.14	1013
1900	857	0.59	525	955	0.73	650	1043	0.89	787	1125	1.05	936	1201	1.23	1096
2000	892	0.67	599	986	0.82	729	1072	0.98	870	1151	1.15	1022	1226	1.33	1185
2100	927	0.77	680	1017	0.92	815	1101	1.08	960	1178	1.26	1116	1251	1.44	1283
2200	962	0.87	769	1050	1.02	909	1131	1.19	1059	1206	1.37	1218	1277	1.56	1389
2300	997	0.97	865	1082	1.14	1010	1161	1.31	1165	1235	1.50	1329	1304	1.69	1503
2400	1033	1.09	970	1115	1.26	1120	1192	1.44	1279	1264	1.63	1448	1332	1.83	1625
2500	1069	1.22	1084	1149	1.39	1239	1223	1.58	1403	1293	1.77	1576	1360	1.98	1757

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1500	1188	1.09	970	1261	1.29	1143	1330	1.49	1327	1395	1.71	1523	1457	1.95	1729
1600	1208	1.16	1033	1279	1.36	1208	1347	1.57	1394	1412	1.79	1590	1474	2.02	1797
1700	1229	1.24	1103	1299	1.44	1280	1366	1.65	1468	1429	1.88	1665	1490	2.11	1873
1800	1250	1.33	1181	1319	1.53	1360	1385	1.74	1549	1448	1.97	1748	1508	2.20	1957
1900	1273	1.43	1266	1341	1.63	1447	1405	1.84	1638	1467	2.07	1839	1527	2.31	2050
2000	1296	1.53	1359	1363	1.74	1542	1427	1.95	1736	1488	2.18	1939	1546	2.42	2151
2100	1320	1.64	1459	1386	1.85	1646	1448	2.07	1842	1508	2.30	2047	1566	2.55	2262
2200	1345	1.77	1568	1409	1.98	1758	1471	2.20	1956	1530	2.44	2164	1587	2.68	2380
2300	1371	1.90	1686	1434	2.11	1878	1494	2.34	2080	1553	2.58	2290	1609	2.83	2509
2400	1397	2.04	1812	1459	2.26	2008	1518	2.49	2213	1576	2.73	2425	—	—	—
2500	1424	2.19	1948	1484	2.42	2147	1543	2.65	2355	1599	2.89	2571	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.90.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1300 to 1685 rpm. All other rpms require field-supplied drive.

Table 33—Fan Performance 50HJ007 — Horizontal Discharge Units; Standard Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	822	0.51	455	927	0.66	589	1018	0.82	728	1100	0.98	873	1174	1.15	1024
1900	855	0.59	520	957	0.74	659	1046	0.91	805	1127	1.08	956	1200	1.25	1113
2000	889	0.66	591	988	0.83	737	1075	1.00	888	1154	1.18	1045	1226	1.36	1208
2100	923	0.75	668	1019	0.92	821	1104	1.10	979	1182	1.29	1142	1253	1.48	1310
2200	957	0.85	753	1051	1.03	912	1134	1.21	1077	1210	1.40	1245	1280	1.60	1419
2300	992	0.95	845	1083	1.14	1011	1164	1.33	1182	1239	1.53	1357	1308	1.73	1537
2400	1026	1.06	945	1115	1.26	1118	1195	1.46	1295	1268	1.66	1476	1336	1.87	1662
2500	1061	1.19	1053	1148	1.39	1233	1226	1.59	1416	1297	1.81	1604	1364	2.02	1796
2600	1097	1.32	1169	1181	1.53	1356	1257	1.74	1546	1327	1.96	1740	1393	2.18	1938
2700	1132	1.46	1294	1214	1.67	1487	1289	1.90	1684	1358	2.12	1885	1422	2.35	2089
2800	1168	1.61	1428	1247	1.83	1629	1320	2.06	1832	1388	2.30	2039	—	—	—
2900	1204	1.77	1572	1281	2.00	1779	1353	2.24	1989	—	—	—	—	—	—
3000	1240	1.94	1725	1315	2.18	1939	—	—	—	—	—	—	—	—	—

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1244	1.33	1182	1308	1.51	1345	1369	1.70	1513	1427	1.90	1687	1483	2.10	1867
1900	1268	1.44	1275	1332	1.63	1443	1393	1.82	1617	1450	2.02	1796	1505	2.23	1979
2000	1294	1.55	1376	1357	1.74	1549	1417	1.95	1727	1474	2.15	1911	1528	2.36	2100
2100	1320	1.67	1483	1382	1.87	1662	1441	2.08	1845	1498	2.29	2034	—	—	—
2200	1346	1.80	1598	1408	2.01	1782	1466	2.22	1971	—	—	—	—	—	—
2300	1372	1.94	1721	1434	2.15	1911	1491	2.37	2105	—	—	—	—	—	—
2400	1400	2.09	1852	1460	2.31	2047	—	—	—	—	—	—	—	—	—
2500	1427	2.24	1992	—	—	—	—	—	—	—	—	—	—	—	—
2600	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2800	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2900	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.40.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1120 to 1585 rpm. All other rpms require field-supplied drive.

50HE, HJ

Table 34—Fan Performance 50HJ007 — Horizontal Discharge Units; High-Static Motor (Belt Drive)*

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	822	0.51	455	927	0.66	589	1018	0.82	728	1100	0.98	873	1174	1.15	1024
1900	855	0.59	520	957	0.74	659	1046	0.91	805	1127	1.08	956	1200	1.25	1113
2000	889	0.66	591	988	0.83	737	1075	1.00	888	1154	1.18	1045	1226	1.36	1208
2100	923	0.75	668	1019	0.92	821	1104	1.10	979	1182	1.29	1142	1253	1.48	1310
2200	957	0.85	753	1051	1.03	912	1134	1.21	1077	1210	1.40	1245	1280	1.60	1419
2300	992	0.95	845	1083	1.14	1011	1164	1.33	1182	1239	1.53	1357	1308	1.73	1537
2400	1026	1.06	945	1115	1.26	1118	1195	1.46	1295	1268	1.66	1476	1336	1.87	1662
2500	1061	1.19	1053	1148	1.39	1233	1226	1.59	1416	1297	1.81	1604	1364	2.02	1796
2600	1097	1.32	1169	1181	1.53	1356	1257	1.74	1546	1327	1.96	1740	1393	2.18	1938
2700	1132	1.46	1294	1214	1.67	1487	1289	1.90	1684	1358	2.12	1885	1422	2.35	2089
2800	1168	1.61	1428	1247	1.83	1629	1320	2.06	1832	1388	2.30	2039	1452	2.53	2249
2900	1204	1.77	1572	1281	2.00	1779	1353	2.24	1989	1419	2.48	2202	1482	2.72	2419
3000	1240	1.94	1725	1315	2.18	1939	1385	2.43	2156	1451	2.68	2376	—	—	—

AIRFLOW CFM	EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts	Rpm	Bhp	Watts
1800	1244	1.33	1182	1308	1.51	1345	1369	1.70	1513	1427	1.90	1687	1483	2.10	1867
1900	1268	1.44	1275	1332	1.63	1443	1393	1.82	1617	1450	2.02	1796	1505	2.23	1979
2000	1294	1.55	1376	1357	1.74	1549	1417	1.95	1727	1474	2.15	1911	1528	2.36	2100
2100	1320	1.67	1483	1382	1.87	1662	1441	2.08	1845	1498	2.29	2034	1552	2.51	2227
2200	1346	1.80	1598	1408	2.01	1782	1466	2.22	1971	1522	2.44	2165	1575	2.66	2363
2300	1372	1.94	1721	1434	2.15	1911	1491	2.37	2105	1547	2.59	2304	1600	2.82	2507
2400	1400	2.09	1852	1460	2.31	2047	1517	2.53	2247	1572	2.76	2451	—	—	—
2500	1427	2.24	1992	1487	2.47	2192	1543	2.70	2398	—	—	—	—	—	—
2600	1455	2.41	2140	1514	2.64	2346	1570	2.88	2557	—	—	—	—	—	—
2700	1483	2.59	2297	1541	2.83	2509	—	—	—	—	—	—	—	—	—
2800	1512	2.77	2463	—	—	—	—	—	—	—	—	—	—	—	—
2900	1541	2.97	2640	—	—	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

50HE,HJ

NOTES:

1. **Bold cells** indicate field-supplied drive is required.
2. Maximum continuous bhp is 2.90.
3. See general fan performance notes.

LEGEND

Bhp — Brake Horsepower
Watts — Input Watts to Motor

*Motor drive range: 1300 to 1685 rpm. All other rpms require field-supplied drive.

PRE-START-UP

WARNING

FIRE, EXPLOSION, ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury, death, and/or property damage.

1. Follow recognized safety practices and wear protective goggles when checking or servicing a refrigerant system.
2. Do not operate the compressor or provide any electric power to the unit unless the compressor terminal cover is in place and secured.
3. Do not remove the compressor terminal cover until all electrical sources are disconnected and tagged with lockout tags.
4. Relieve all pressure from the system before touching or disturbing anything inside the terminal box if a refrigerant leak is suspected around the compressor terminals. Use accepted methods to recover the refrigerant.
5. Never attempt to repair a soldered connection while the refrigerant system is under pressure.
6. Do not use a torch to remove any component. The system contains oil and refrigerant under pressure. To remove a component, wear protective goggles and proceed as follows:
 - a. Shut off electrical power to the unit and tag disconnect.
 - b. Recover refrigerant to relieve all pressure from the system using both high-pressure and low-pressure ports.
 - c. Cut component connection tubing with a tubing cutter, and remove the component from the unit.
 - d. Carefully unsweat the remaining tubing stubs when necessary. Oil can ignite when exposed to a torch flame.

Proceed as follows to inspect and prepare the unit for initial start-up:

1. Remove all access panels.
2. Read and follow instructions on all **WARNING**, **CAUTION**, and **INFORMATION** labels attached to, or shipped with, unit.
3. Make the following inspections:
 - a. Inspect for shipping and handling damages such as broken lines, loose parts, or disconnected wires, etc.
 - b. Inspect for oil at all refrigerant tubing connections and on unit base. Detecting oil generally indicates a refrigerant leak. Leak-test all refrigerant tubing connections using electronic leak detector, halide torch, or liquid-soap solution.
 - c. Inspect all field-wiring and factory-wiring connections. Be sure that connections are completed and tight. Be sure that wires are not in contact with refrigerant tubing or sharp edges.
 - d. Inspect coil fins. If damaged during shipping and handling, carefully straighten fins with a fin comb.
4. Verify the following conditions:
 - a. Make sure that condenser-fan blade are correctly positioned in fan orifice. See Condenser-Fan Adjustment section for more details.
 - b. Make sure that air filter(s) is in place.
 - c. Make sure that condensate drain trap is filled with water to ensure proper drainage.

- d. Make sure that all tools and miscellaneous loose parts have been removed.

START-UP

Step 1 —Unit Preparation

Make sure that the unit has been installed in accordance with installation instructions and applicable codes.

Step 2 —Return-Air Filters

Make sure the correct filters are installed in the unit (See Table 1). Do not operate the unit without return-air filters.

Step 3 —Outdoor-Air Inlet Screens

Outdoor-air inlet screen(s) must be in place before operating the unit.

Step 4 —Compressor Mounting

Compressors are internally spring mounted. Do not loosen or remove the compressor holddown bolts.

Step 5 —Internal Wiring

Check all electrical connections in unit control boxes; tighten them as required.

Step 6 —Refrigerant Service Ports

Each unit system has 4 Schrader-type service ports: one on the suction line, one on the liquid line, and 2 on the compressor discharge line. Be sure that caps on the ports are tight.

Step 7 —High Flow Valves

Two high flow refrigerant valves are located on the hot gas tube coming out of the compressor and the suction tubes. Large black plastic caps distinguish these valves with O-rings located inside the caps. No field access to these valves is available at this time. Ensure the plastic caps are in place and tight or the possibility of refrigerant leakage could occur.

Step 8 —Compressor Rotation

On 3-phase units be certain that the compressor is rotating in the proper direction. To determine whether or not compressor is rotating in the proper direction:

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

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

1. Note that the indoor fan (006 and 007 three-phase units only) is probably also rotating in the wrong direction.
2. Turn off power to the unit and tag disconnect.
3. Reverse any two of the unit power leads.
4. Turn on power to the unit and energize the compressor.

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

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

Step 9 —Cooling

Set the space thermostat to the OFF position. Set the system selector switch at COOL position and the fan switch at AUTO position. Adjust the thermostat to a setting below room temperature. The compressor starts when contactor closes.

Check cooling effects at a setting below room temperature. Check the unit charge. Refer to Refrigerant Charge section.

Reset the thermostat at a position above room temperature. The compressor will shut off.

To Shut Off Unit - Set the system selector switch at OFF position. Resetting the thermostat at a position above room temperature shuts off the unit temporarily until the space temperature exceeds the thermostat setting. Units are equipped

with a Cycle-LOC™ protection device. The unit shuts down on any safety trip and remains off; an indicator light on the thermostat comes on. Check the reason for the safety trip.

Compressor restart is accomplished by manual reset at the thermostat by turning the selector switch to OFF position and then to ON position.

Step 10 —Heating

To start unit, turn on main power supply.

Set system selector switch at HEAT position and set thermostat at a setting above room temperature. Set fan at AUTO position.

First stage of thermostat energizes the first-stage electric heater elements; second stage energizes second-stage electric heater elements, if installed. Check heating effects at air supply grille(s).

If electric heaters do not energize, reset limit switch (located on evaporator-fan scroll) by pressing button located between terminals on the switch.

TO SHUT OFF UNIT - Set system selector switch at OFF position. Resetting thermostat at a position below room temperature temporarily shuts unit off until space temperature falls below thermostat setting.

Step 11 —Safety Relief

A soft solder joint at the suction line fitting provides pressure relief under abnormal temperature and pressure conditions.

Step 12 —Ventilation (Continuous Fan)

Set fan and system selector switches at ON and OFF positions, respectively. Evaporator fan operates continuously to provide constant air circulation.

Step 13 —Operating Sequence

Cooling - Units Without Economizer

When thermostat calls for cooling, terminals G and Y1 are energized. The indoor-fan contactor (IFC), reversing valve solenoid (RVS) and compressor contactor are energized and indoor-fan motor, compressor, and outdoor fan starts. The outdoor fan motor runs continuously while unit is cooling.

Heating - Units Without Economizer

When the thermostat calls for heating, terminal W1 will be energized with 24v. The IFC and heater contactor no. 1 (HC1) are energized.

Cooling - Units With Economizer IV

When free cooling is not available, the compressors will be controlled by the zone thermostat. When free cooling is available, the outdoor-air damper is modulated by the EconoMiSer IV control to provide a 50° to 55°F supply-air temperature into the zone. As the supply-air temperature fluctuates above 55° or below 50°F, the dampers will be modulated (open or close) to bring the supply-air temperature back within the set point limits.

Integrated EconoMiSer IV operation on single-stage units requires a 2-stage thermostat (Y1 and Y2).

For EconoMiSer IV operation, there must be a thermostat call for the fan (G). This will move the damper to its minimum position during the occupied mode.

If the increase in cooling capacity causes the supply-air temperature to drop below 45°F, then the outdoor-air damper position will be fully closed. If the supply-air temperature continues to fall, the outdoor-air damper will close. Control returns to normal once the supply-air temperature rises above 48°F.

If optional power exhaust is installed, as the outdoor-air damper opens and closes, the power exhaust fans will be energized and deenergized.

If field-installed accessory CO₂ sensors are connected to the EconoMiSer IV control, a demand controlled ventilation strategy will begin to operate. As the CO₂ level in the zone increases above the CO₂ set point, the minimum position of the damper will be increased proportionally. As the CO₂ level decreases

because of the increase in fresh air, the outdoor-air damper will be proportionally closed. Damper position will follow the higher demand condition from DCV mode or free cooling mode.

Damper movement from full closed to full open (or vice versa) will take between 1-1/2 and 2-1/2 minutes.

If free cooling can be used as determined from the appropriate changeover command (switch, dry bulb, enthalpy curve, differential dry bulb, or differential enthalpy), a call for cooling (Y1 closes at the thermostat) will cause the control to modulate the dampers open to maintain the supply air temperature set point at 50° to 55° F.

As the supply air temperature drops below the set point range of 50° to 55° F, the control will modulate the outdoor-air dampers closed to maintain the proper supply-air temperature.

Heating - Units With Economizer IV

When the room temperature calls for heat, the heating controls are energized as described in the Heating, Units Without Economizer section. When the thermostat is satisfied, the economizer damper moves to the minimum position.

Cooling - Units With Economizer2, Premierlink™ Control and a Thermostat

When free cooling is not available, the compressors will be controlled by the PremierLink control in response to the Y1 and Y2 inputs from the thermostat.

The PremierLink control will use the following information to determine if free cooling is available:

- Indoor fan has been on for at least 30 seconds.
- The SPT, SAT, and OAT inputs must have valid readings.
- OAT must be less than 75°F.
- OAT must be less than SPT.
- Enthalpy must be LOW (may be jumpered if an enthalpy sensor not available).
- Economizer position is NOT forced.

Pre-cooling occurs when there is no call from the thermostat except G. Pre-cooling is defined as the economizer modulates to provide 70°F supply air.

When free cooling is available the PremierLink control will control the compressors and economizer to provide a supply-air temperature determined to meet the Y1 and Y2 calls from the thermostat using the following three routines. The three control routines are based on OAT.

The 3 routines are based on OAT where:

SASP = Supply Air Set Point

DXCTLO = Direct Expansion Cooling Lockout Set Point

PID = Proportional Integral

Routine 1 (OAT < DXCTLO)

- Y1 energized – economizer maintains a SASP = (SATLO1 + 3).
- Y2 energized – economizer maintains a SASP = (SATLO2 + 3).

Routine 2 (DXCTLO < OAT < 68°F)

- If only Y1 energized, the economizer maintains a SASP = (SATLO1 + 3).
- If SAT > SASP + 5 and economizer position > 80%, economizer will go to minimum position for 3 minutes or until SAT > 68°F.
- First stage of mechanical cooling will be energized.
- Integrator resets.
- Economizer opens again and controls to current SASP after stage one on for 90 seconds.

- With Y1 and Y2 energized Economizer maintains an SASP = SATLO2 + 3.
- If SAT > SASP + 5 and economizer position >80%, economizer will go to minimum position for 3 minutes or until SAT > 68°F.
- If compressor one is on then second stage of mechanical cooling will be energized; otherwise the first stage will be energized.
- Integrator resets.
- Economizer opens again and controls to SASP after stage one on for 90 seconds.

Routine 3 (OAT > 68)

- Economizer is opened 100%.
- Compressors 1 and 2 are cycled based on Y1 and Y2 using minimum on and off times and watching the supply air temperature as compared to SATLO1 and SATLO2 set points.

If optional power exhaust is installed, as the outdoor-air damper opens and closes, the power exhaust fans will be energized and deenergized.

If field-installed accessory CO₂ sensors are connected to the PremierLink™ control, a PID-controlled demand ventilation strategy will begin to operate. As the CO₂ level in the zone increases above the CO₂ set point, the minimum position of the damper will be increased proportionally. As the CO₂ level decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed.

Heating - Units With Economizer Premierlink Control and a Thermostat

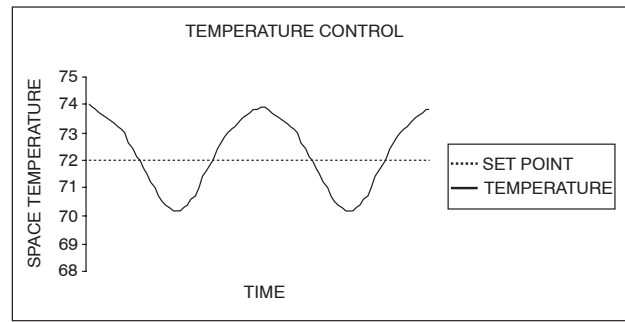
When the thermostat calls for heating, terminal W1 is energized. The PremierLink control will move the economizer damper to the minimum position if there is a call for G and closed if there is a call for W1 without G. The IFC and heater contactor no. 1 (HC1) are energized. When the thermostat is satisfied and W1 is deenergized, the IFM stops after a 45-second time-off delay unless G is still maintained.

Cooling - Units With Economizer Premierlink Control and a Room Sensor

When free cooling is not available, the compressors will be controlled by the PremierLink controller using a PID Error reduction calculation as indicated by Fig 49.

The PremierLink controller will use the following information to determine if free cooling is available:

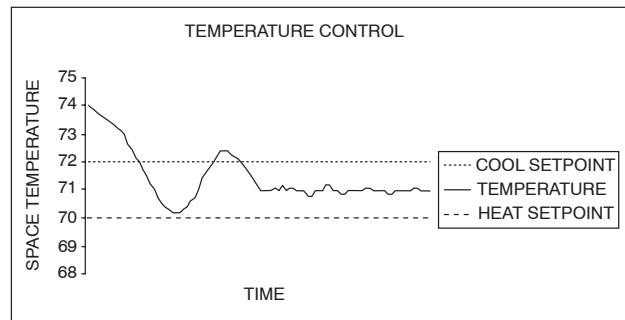
- Indoor fan has been on for at least 30 seconds.
- The SPT, SAT, and OAT inputs must have valid readings.
- OAT must be less than 75°F.
- OAT must be less than SPT.
- Enthalpy must be LOW (may be jumpered if and enthalpy sensor is not available).
- Economizer position is NOT forced.



NOTE: PremierLink control performs smart staging of 2 stages of DX cooling and up to 3 stages of heat.

C06042

Fig. 49 – DX Cooling Temperature Control Example



C06043

Fig. 50 – Economizer Temperature Control Example

When free cooling is available, the outdoor-air damper is positioned through the use of a Proportional Integral (PID) control process to provide a calculated supply-air temperature into the zone. The supply air will maintain the space temperature between the heating and cooling set points as indicated in Fig. 50. The PremierLink control will integrate the compressors stages with the economizer based on similar logic as the three routines listed in the previous section. The SASP will float up and down based on the error reduction calculations that compare space temperature and space set point.

When outside-air temperature conditions require the economizer to close for a compressor stage-up sequence, the economizer control integrator is reset to zero after the stage-up sequence is completed. This prevents the supply-air temperature from dropping too quickly and creating a freeze condition that would make the compressor turn off prematurely.

The high space set point is used for DX (direct expansion) cooling control, while the economizer space set point is a calculated value between the heating and cooling set points. The economizer set point will always be at least one degree below the cooling set point, allowing for a smooth transition from mechanical cooling with economizer assist, back to economizer cooling as the cooling set point is achieved. The compressors may be used for initial cooling then the PremierLink controller will modulate the economizer using an error reduction calculation to hold the space temperature between the heating and cooling set points. (See Fig. 50.)

The controller uses the following conditions to determine economizer cooling:

- Enthalpy is Low
- SAT reading is available
- OAT reading is available

- SPT reading is available
- $OAT \leq SPT$
- Economizer Position is NOT forced

If any of the above conditions are **not** met, the economizer submaster reference (ECSR) is set to maximum limit and the damper moves to minimum position. The operating sequence is complete. The ECSR is recalculated every 30 seconds.

If an optional power exhaust is installed, as the outdoor-air damper opens and closes, the power exhaust fans will be energized and deenergized.

If field-installed accessory CO₂ sensors are connected to the PremierLink™ control, a PID-controlled demand ventilation strategy will begin to operate. As the CO₂ level in the zone increases above the CO₂ set point, the minimum position of the damper will be increased proportionally. As the CO₂ level decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed.

Heating - Unit With Economizer, Premierlink Control and a Room Sensor

Every 40 seconds the controller will calculate the required heat stages (maximum of 3) to maintain Supply-Air Temperature (SAT) if the following qualifying conditions are met:

- Indoor fan has been on for at least 30 seconds.
- COOL mode is not active.
- OCCUPIED, TEMP. COMPENSATED START or HEAT mode is active.
- SAT reading is available.
- Fire shutdown mode is not active.

If all of the above conditions are met, the number of heat stages is calculated; otherwise the required number of heat stages will be set to 0.

If the PremierLink controller determines that heat stages are required, the economizer damper will be moved to minimum position if occupied and closed if unoccupied.

Staging should be as follows:

If Heating PID STAGES=2

- HEAT STAGES=1 (50% capacity) will energize HS1
- HEAT STAGES=2 (100% capacity) will energize HS2

If Heating PID STAGES=3 and AUXOUT = HS3

- HEAT STAGES=1 (33% capacity) will energize HS1
- HEAT STAGES=2 (66% capacity) will energize HS2
- HEAT STAGES=3 (100% capacity) will energize HS3

Units With Humidi-Mizer™ Adaptive Dehumidification System

Normal Design Operation

When the rooftop operates under the normal sequence of operation, the compressors will cycle to maintain indoor conditions. (See Fig. 51.)

The Humidi-MiZer adaptive dehumidification system includes a factory-installed Motormaster® low ambient control to keep the head and suction pressure high, allowing normal design cooling mode operation down to 0° F.

Subcooling Mode

When subcooling mode is initiated, this will energize (close) the liquid line solenoid valve (LLSV) forcing the hot liquid refrigerant to enter into the subcooling coil. (See Fig. 52.)

As the hot liquid refrigerant passes through the subcooling/reheat dehumidification coil, it is exposed to the cold supply airflow coming through the evaporator coil. The liquid is further

subcooled to a temperature approaching the evaporator leaving-air temperature. The liquid then enters a thermostatic expansion valve (TXV) where the liquid drops to a lower pressure. The TXV does not have a pressure drop great enough to change the liquid to a 2-phase fluid, so the liquid then enters the Acutrol™ device at the evaporator coil.

The liquid enters the evaporator coil at a temperature lower than in standard cooling operation. This lower temperature increases the latent capacity of the rooftop unit. The refrigerant passes through the evaporator and is turned into a vapor. The air passing over the evaporator coil will become colder than during normal operation. However, as this same air passes over the subcooling coil, it will be slightly warmed, partially reheating the air.

Subcooling mode operates only when the outside air temperature is warmer than 40°F. A factory-installed temperature switch located in the condenser section will lock out subcooling mode when the outside temperature is cooler than 40°F.

The scroll compressors are equipped with crankcase heaters to provide protection for the compressors due to the additional refrigerant charge required by the subcooling/reheat coil.

When in subcooling mode, there is a slight decrease in system total gross capacity (5% less), a lower gross sensible capacity (20% less), and a greatly increased latent capacity (up to 40% more).

50HE, HJ

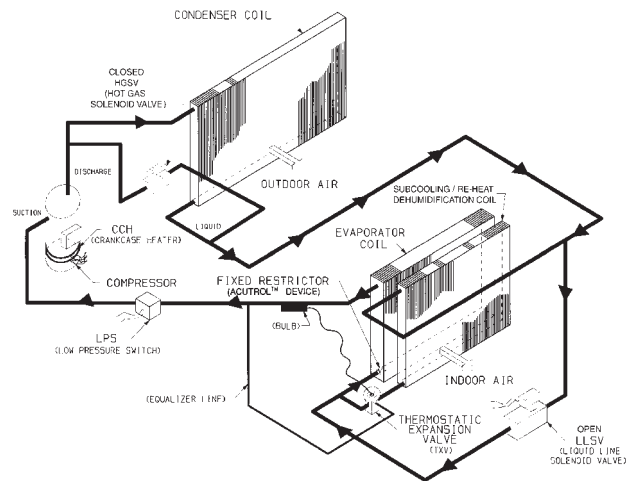


Fig. 51 – Humidi-MiZer Normal Design Cooling Operation

C06135

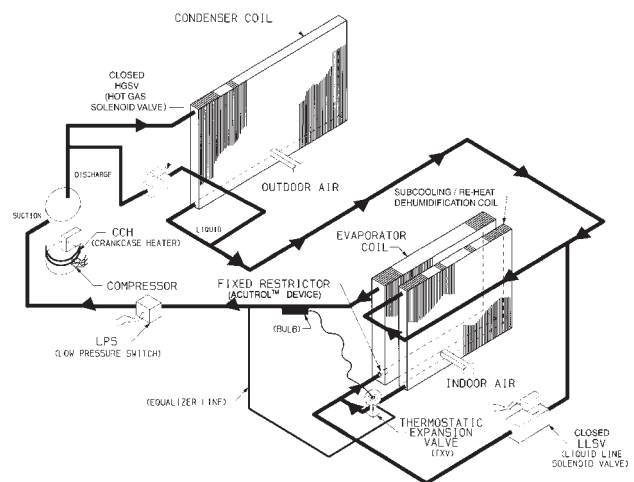


Fig. 52 – Humidi-MiZer Subcooling Mode Operation

C06136

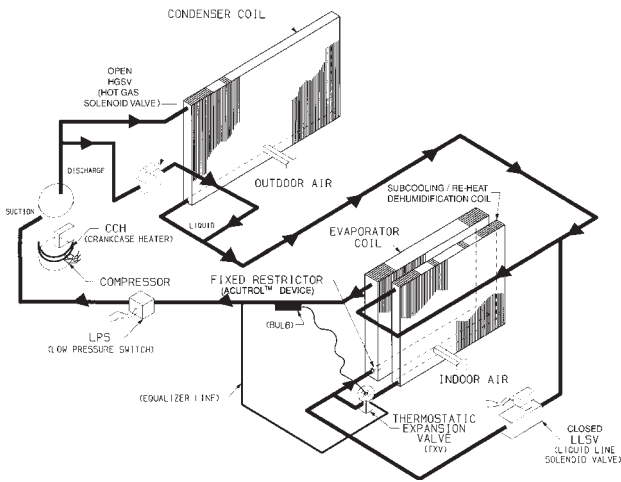


Fig. 53 – Humidi-Mizer™ Hot Gas Reheat Mode Operation

C06137

Hot Gas Reheat Mode

When the humidity levels in the space require humidity control, a hot gas solenoid valve (specific to hot gas reheat mode only) will open to bypass a portion of hot gas refrigerant around the condenser coil. (See Fig. 53.)

This hot gas will mix with liquid refrigerant leaving the condenser coil and flow to the subcooling/reheat dehumidification coil. Now the conditioned air coming off the evaporator will be cooled and dehumidified, but will be warmed to neutral conditions (72°F to 75°F) by the subcooling/reheat dehumidification coil.

The net effect of the rooftop when in hot gas reheat mode is to provide nearly all latent capacity removal from the space when sensible loads diminish (when outdoor temperature conditions are moderate). When in hot gas reheat mode, the unit will operate to provide mostly latent capacity and extremely low sensible heat ratio capability.

Similar to the subcooling mode of operation, hot gas reheat mode operates only when the outside air temperature is warmer than 40°F. Below this temperature, a factory installed outside air temperature switch will lockout this mode of operation.

See Table 36 for the Humidi-Mizer adaptive dehumidification system sequence of operation.

SERVICE

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could cause personal injury or death.

When servicing unit, shut off all electrical power to unit and install lockout tag.

Step 1 —Cleaning

Inspect unit interior at the beginning of heating and cooling season and as operating conditions require.

Evaporator Coil

1. Turn unit power off, tag disconnect. Remove evaporator coil access panel.
2. If economizer or two-position damper is installed, remove economizer by disconnecting Molex plug and removing mounting screws.
3. Slide filters out of unit.

4. Clean coil using a commercial coil cleaner or dishwasher detergent in a pressurized spray canister. Wash both sides of coil and flush with clean water. For best results, back-flush toward return-air section to remove foreign material. Flush condensate pan after completion.
5. Reinstall economizer and filters.
6. Reconnect wiring.
7. Replace access panels.

Condenser Coil

Inspect coil monthly. Clean condenser coil annually, and as required by location and outdoor air conditions.

One-Row Coil

Wash coil with commercial coil cleaner. It is not necessary to remove top panel.

2-Row Coils

Clean coil as follows:

1. Turn off unit power and tag disconnect.
2. Remove top panel screws on condenser end of unit.
3. Remove condenser coil corner post. (See Fig. 54.) To hold top panel open, place coil corner post between top panel and center post. (See Fig. 55.)

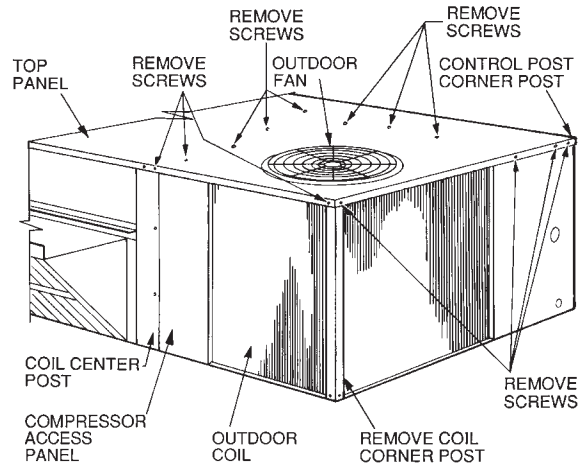


Fig. 54 – Cleaning Condenser Coil

C06044

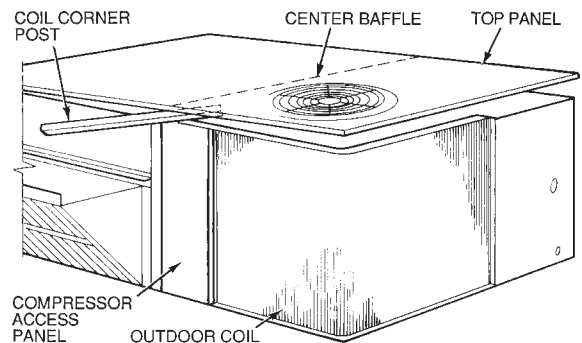


Fig. 55 – Propping Up Top Panel

C06045

Table 35—Humidi-Mizer Adaptive Dehumidification System Sequence of Operation and System Response — Single Compressor Unit (50HE003-006, 50HJ004-007)

THERMOSTAT INPUT			ECONOMIZER FUNCTION		48HE, HJ UNIT OPERATION			
H	Y1	Y2	OAT. < Economizer Set Point	Economizer	Comp. 1	Subcooling Mode	Hot Gas Reheat Mode	
Off	—	—	Normal Operation					
On	On	On	No	Off	On	Yes	No	
On	On	Off	No	Off	On	Yes	No	
On	On	On	Yes	On	On	Yes	No	
On	On	Off	Yes	On	On	No	Yes	
On	Off	Off	No	Off	On	No	Yes	

NOTE: On a thermostat call for W1, all cooling and dehumidification will be off.

LEGEND

OAT – Outdoor Air Temperature

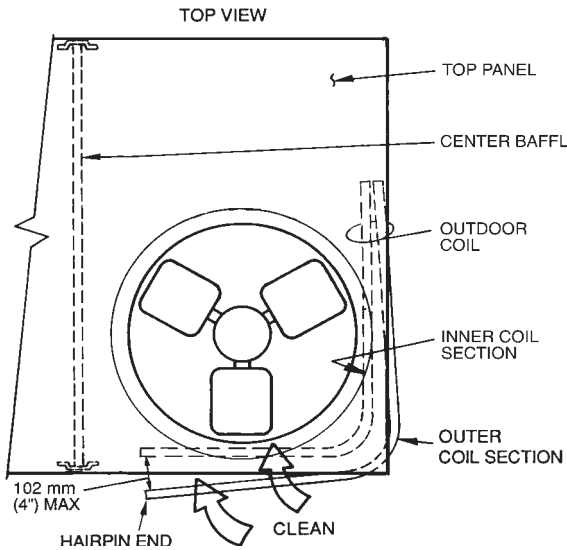


Fig. 56 – Separating Coil Sections

C06046

- Remove device holding coil sections together at return end of condenser coil. Carefully separate the outer coil section 3 to 4 in. from the inner coil section. (See Fig. 57.)
- Use a water hose or other suitable equipment to flush down between the 2 coil sections to remove dirt and debris. Clean the outer surfaces with a stiff brush in the normal manner.
- Secure the sections together. Reposition the outer coil section and remove the coil corner post from between the top panel and center post. Install the coil corner and center posts. Replace all screws.

Condensate Drain

Check and clean each year at the start of the cooling season. In winter, keep the drain dry or protect it against freeze-up.

Filters

Clean or replace at the start of each heating and cooling season, or more often if operating conditions require it. Replacement filters must be the same dimensions as the original filters.

Outdoor-Air Inlet Screen

Clean the screen with steam or hot water and a mild detergent. Do not use disposable filters in place of screens.

Step 2 —Lubrication

Compressor

The compressor is charged with the correct amount of oil at the factory.

Fan Motor Bearings

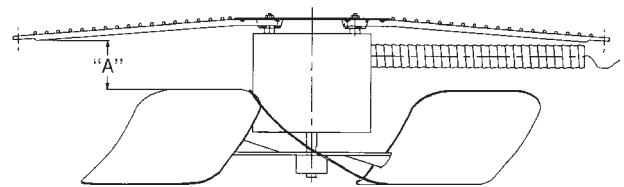
Fan motor bearings are permanently lubricated. No further lubrication is required. No lubrication of condenser-fan or evaporator-fan motors is required.

Evaporator Fan Belt Adjustment

Inspect evaporator fan belt for wear, proper belt tension, and pulley alignment as conditions require or at the beginning of each heating and air conditioning season. Refer to Step 7 - Adjust Evaporator Fan Speed for adjustment and alignment procedures.

Step 3 —Condenser-Fan Adjustment

Shut off unit power supply. Remove condenser-fan assembly (grille, motor, motor cover, and fan) and loosen fan hub setscrews. Adjust fan height as shown in Fig. 57. Tighten setscrews and replace condenser-fan assembly.



UNIT	FAN HEIGHT (in.) — "A"
003-006 AND 007 (208/230 v)	2.75
007 (460 v)	3.50

Fig. 57 – Condenser-Fan Adjustment

C06138

Step 4 —EconoMiSer IV Adjustment

Refer to Optional EconoMiSer IV and EconoMiSer2 section.

Step 5 —Refrigerant Charge

Amount of refrigerant charge is listed on unit nameplate (also refer to Table 1). Refer to HVAC Servicing Procedures literature available at your local distributor and the following procedures.

Unit panels must be in place when unit is operating during charging procedure. Unit must operate a minimum of 10 minutes before checking or adjusting refrigerant charge.

No Charge

Use standard evacuating techniques. After evacuating system to 500 microns, weigh in the specified amount of refrigerant. (Refer to Table 1 and unit information plate.)

50HE, HJ

Low Charge Cooling

Using Cooling Charging Charts, Fig. 58-61, vary refrigerant until the conditions of the charts are met. Note the charging charts are different from type normally used. Charts are based on charging the units to the correct superheat for the various operating conditions. Accurate pressure gage and temperature sensing device are required. Connect the pressure gauge to the service port on the suction line. Mount the temperature sensing device on the suction line and insulate it so that outdoor ambient temperature does not affect the reading. Indoor-air cfm must be within the normal operating range of the unit. An accurate superheat, thermocouple-type or thermistor-type thermometer, and a gauge manifold are required when using the superheat charging method for evaluating the unit charge. Do not use mercury or small dial-type thermometers because they are not adequate for this type of measurement.

50HE,HJ

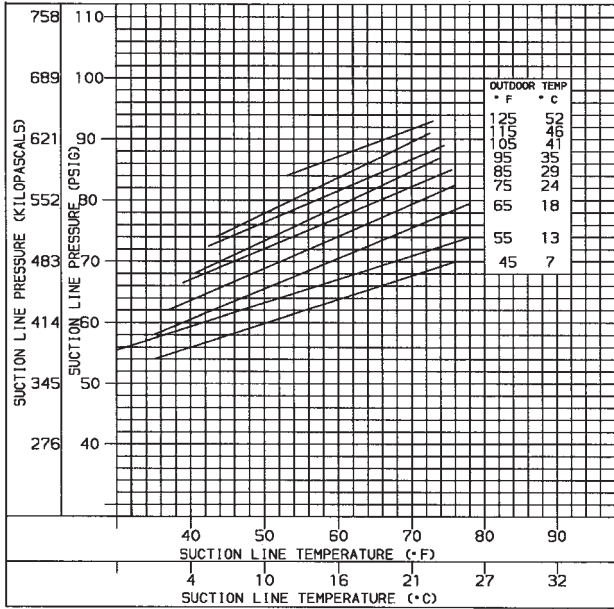


Fig. 58 – Cooling Charging Chart, Standard 50HJ004

C06139

Humidi-Mizer™ System Charging

The system charge for units with the Humidi-MiZer adaptive dehumidification system is greater than that of the standard unit alone. The charge for units with this option is indicated on the unit nameplate drawing. Also refer to Fig. 62-65. To charge systems using the Humidi-MiZer adaptive dehumidification system, fully evacuate, recover, and recharge the system to the nameplate specified charge level. To check or adjust refrigerant charge on systems using the Humidi-MiZer adaptive dehumidification system, charge per Fig. 62-65.

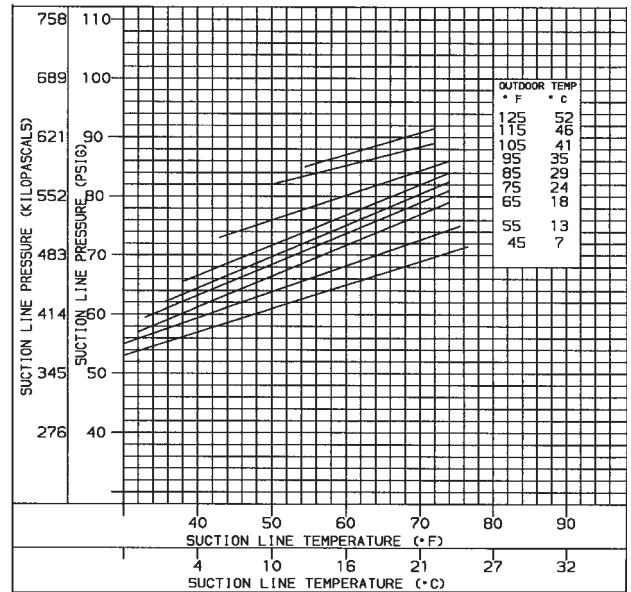


Fig. 59 – Cooling Charging Chart, Standard 50HJ005

C06140

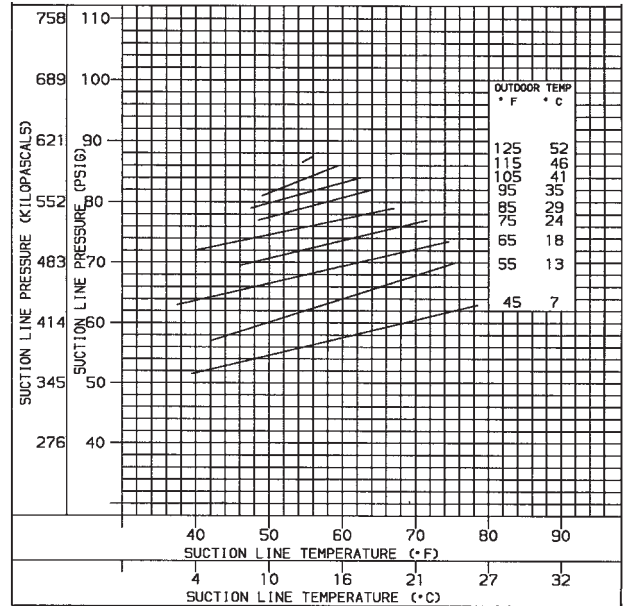


Fig. 60 – Cooling Charging Chart, Standard 50HJ006

C06141

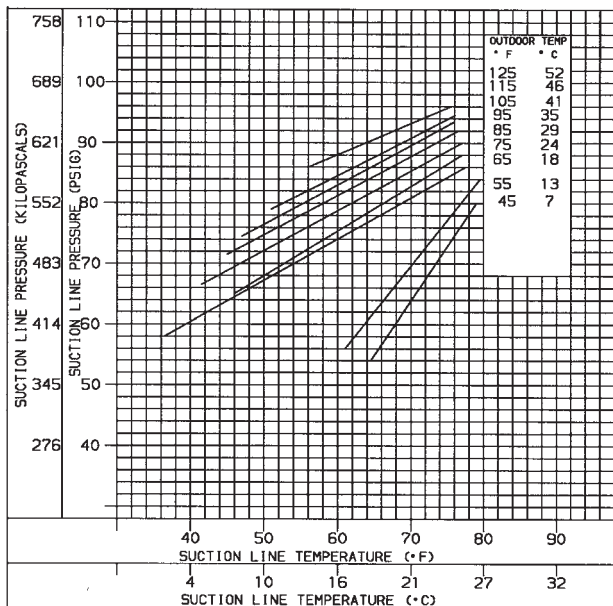


Fig. 61 – Cooling Charging Chart, Standard 50HJ007

C06142

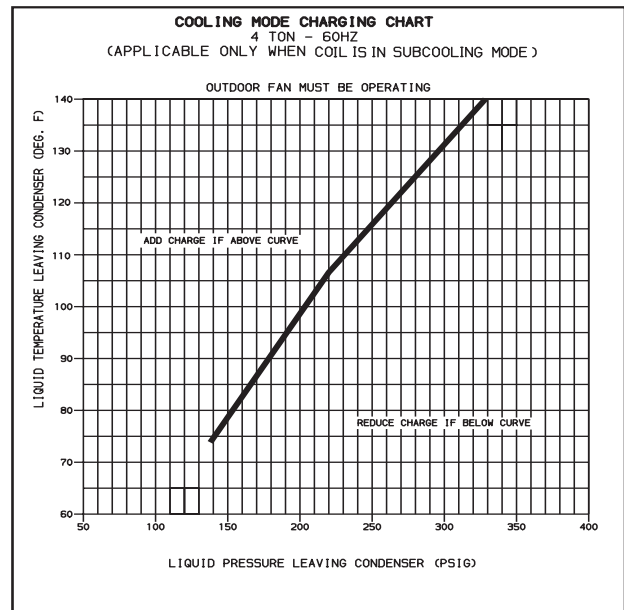


Fig. 63 – Cooling Charging Chart, 50HJ005 with Optional Humidi-MiZer Adaptive Dehumidification System

C06144

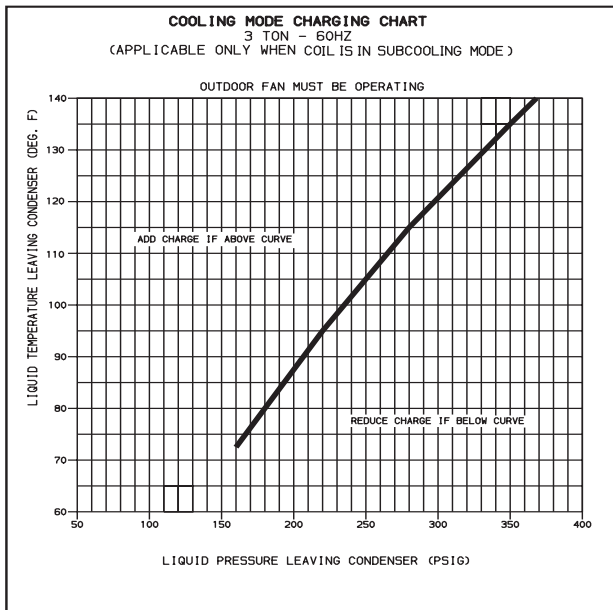


Fig. 62 – Cooling Charging Chart, 50HJ004 with Optional Humidi-MiZer Adaptive Dehumidification System

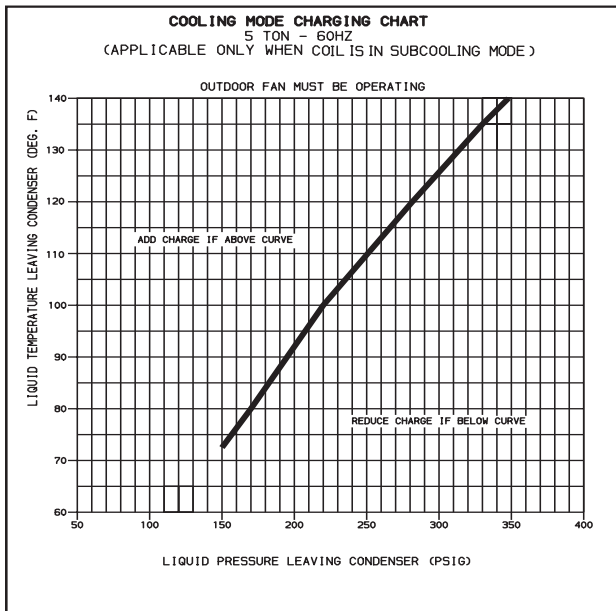
C06143

NOTE: When using the charging charts, it is important that only the subcooling/reheat dehumidification coil liquid line solenoid valve be energized. The subcooling/reheat dehumidification coil liquid line solenoid valve **MUST** be energized to use the charging charts and the outdoor motor speed controller jumpered to run the fan at full speed.

The charts reference a liquid pressure (psig) and temperature at a point between the condenser coil and the subcooling/reheat dehumidification coil. A tap is provided on the unit to measure liquid pressure entering the subcooling/reheat dehumidification coil.

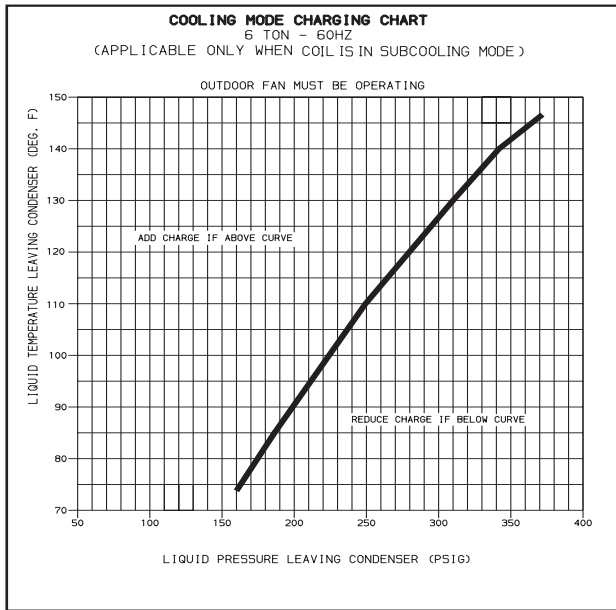
IMPORTANT: The subcooling mode charging charts (Fig. 62-65) are to be used **ONLY** with units having the Humidi-MiZer adaptive dehumidification system. **DO NOT** use standard charge (Fig. 58-61) for units with Humidi-MiZer system, and **DO NOT** use Fig. 62-65 for standard units.

50HE, HJ



C06145

Fig. 64 – Cooling Charging Chart, 50HJ005 with Optional Humidi-MiZer Adaptive Dehumidification System



C06146

Fig. 65 – Cooling Charging Chart, 50HJ007 with Optional Humidi-MiZer Adaptive Dehumidification System

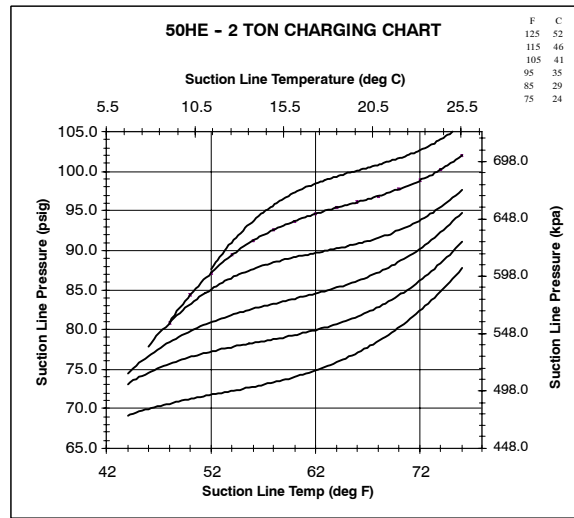
To Use Cooling Charging Chart, Standard Unit

Take the outdoor ambient temperature and read the suction pressure gage. Refer to charts to determine what suction temperature should be. If suction temperature is high, add refrigerant. If suction temperature is low, carefully recover some of the charge. Recheck the suction pressure as charge is adjusted.

Example (Fig. 57):

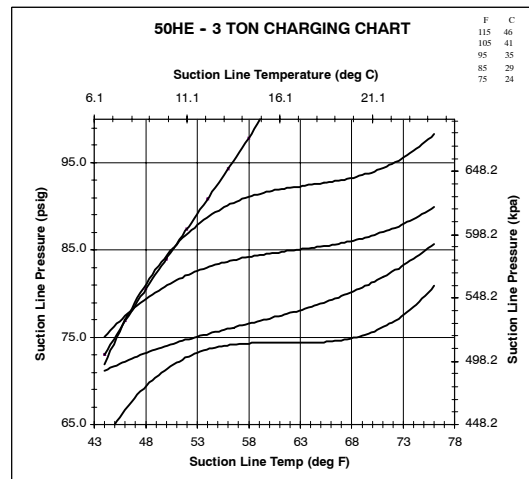
- Outdoor Temperature 75°F
 - Suction Pressure 70 psig
 - Suction Temperature should be 48°F
- (Suction temperature may vary $\pm 5^\circ\text{F}$.)

If a charging device is used, temperature and pressure readings must be accomplished using the charging charts.



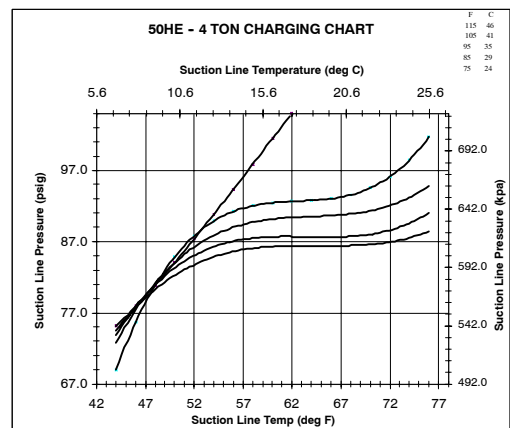
C06148

Fig. 66 – Cooling Charging Chart, Standard 50HE003



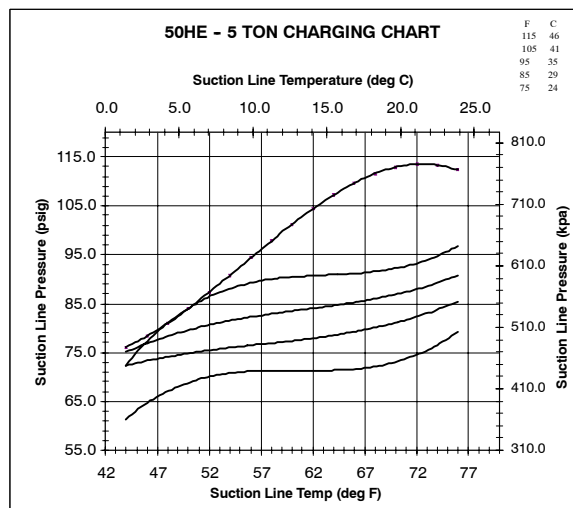
C06149

Fig. 67 – Cooling Charging Chart, Standard 50HE004



C06150

Fig. 68 – Cooling Charging Chart, Standard 50HE005



C06151

Fig. 69 – Cooling Charging Chart, Standard 50HE006

To Use Cooling Charging Charts, Units With Humidi-Mizer™ Adaptive Dehumidification System

Refer to charts (Fig. 62-65) to determine the proper leaving condenser pressure and temperature.

Example (Fig. 62):

Leaving Condenser Pressure 250 psig

Leaving Condenser Temperature 105°F

NOTE: When using the charging charts, it is important that only the subcooling/reheat dehumidification coil liquid line solenoid valve be energized. The subcooling/reheat dehumidification coil liquid line solenoid valve **MUST** be energized to use the charging charts and the outdoor motor speed controller jumpered to run the fan at full speed.

IMPORTANT: Refer to Troubleshooting Tables for additional information.

Step 6 —Replacement Parts

A complete list of replacement parts may be obtained from any Carrier distributor upon request.

TROUBLESHOOTING

Step 1 —Unit Troubleshooting

Refer to Tables 34-38 for unit troubleshooting details.

Step 2 —EconoMi\$er IV Troubleshooting

See Table 39 for EconoMi\$er IV logic.

A functional view of the EconoMi\$er IV is shown in Fig. 67. Typical settings, sensor ranges, and jumper positions are also shown. An EconoMi\$er IV simulator program is available from Carrier to help with EconoMi\$er IV training and troubleshooting.

EconoMi\$er IV Preparation

This procedure is used to prepare the EconoMi\$er IV for troubleshooting. No troubleshooting or testing is done by performing the following procedure.

NOTE: This procedure requires a 9-v battery, 1.2 kilo-ohm resistor, and a 5.6 kilo-ohm resistor which are not supplied with the EconoMi\$er IV.

IMPORTANT: Be sure to record the positions of all potentiometers before starting troubleshooting.

1. Disconnect power at TR and TR1. All LEDs should be off. Exhaust fan contacts should be open.
2. Disconnect device at P and P1.
3. Jumper P to P1.

4. Disconnect wires at T and T1. Place 5.6 kilo-ohm resistor across T and T1.
5. Jumper TR to 1.
6. Jumper TR to N.
7. If connected, remove sensor from terminals S_O and +. Connect 1.2 kilo-ohm 4074EJM checkout resistor across terminals S_O and +.
8. Put 620-ohm resistor across terminals S_R and +.
9. Set minimum position, DCV set point, and exhaust potentiometers fully CCW (counterclockwise).
10. Set DCV maximum position potentiometer fully CW (clockwise).
11. Set enthalpy potentiometer to D.
12. Apply power (24 vac) to terminals TR and TR1.

Differential Enthalpy

To check differential enthalpy:

1. Make sure EconoMi\$er IV preparation procedure has been performed.
2. Place 620-ohm resistor across S_O and +.
3. Place 1.2 kilo-ohm resistor across S_R and +. The Free Cool LED should be lit.
4. Remove 620-ohm resistor across S_O and +. The Free Cool LED should turn off.
5. Return EconoMi\$er IV settings and wiring to normal after completing troubleshooting.

Single Enthalpy

To check single enthalpy:

1. Make sure EconoMi\$er IV preparation procedure has been performed.
2. Set the enthalpy potentiometer to A (fully CCW). The Free Cool LED should be lit.
3. Set the enthalpy potentiometer to D (fully CW). The Free Cool LED should turn off.
4. Return EconoMi\$er IV settings and wiring to normal after completing troubleshooting.

DCV (Demand Controlled Ventilation) and Power Exhaust

To check DCV and Power Exhaust:

1. Make sure EconoMi\$er IV preparation procedure has been performed.
2. Ensure terminals AQ and AQ1 are open. The LED for both DCV and Exhaust should be off. The actuator should be fully closed.
3. Connect a 9-v battery to AQ (positive node) and AQ1 (negative node). The LED for both DCV and Exhaust should turn on. The actuator should drive to between 90 and 95% open.
4. Turn the Exhaust potentiometer CW until the Exhaust LED turns off. The LED should turn off when the potentiometer is approximately 90%. The actuator should remain in position.
5. Turn the DCV set point potentiometer CW until the DCV LED turns off. The DCV LED should turn off when the potentiometer is approximately 9 v. The actuator should drive fully closed.
6. Turn the DCV and Exhaust potentiometers CCW until the Exhaust LED turns on. The exhaust contacts will close 30 to 120 seconds after the Exhaust LED turns on.
7. Return EconoMi\$er IV settings and wiring to normal after completing troubleshooting.

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DCV Minimum and Maximum Position

To check the DCV minimum and maximum position:

1. Make sure EconoMiSer IV preparation procedure has been performed.
2. Connect a 9-v battery to AQ (positive node) and AQ1 (negative node). The DCV LED should turn on. The actuator should drive to between 90 and 95% open.
3. Turn the DCV Maximum Position potentiometer to midpoint. The actuator should drive to between 20 and 80% open.
4. Turn the DCV Maximum Position potentiometer to fully CCW. The actuator should drive fully closed.
5. Turn the Minimum Position potentiometer to midpoint. The actuator should drive to between 20 and 80% open.
6. Turn the Minimum Position Potentiometer fully CW. The actuator should drive fully open.
7. Remove the jumper from TR and N. The actuator should drive fully closed.
8. Return EconoMiSer IV settings and wiring to normal after completing troubleshooting.

Supply-Air Input

To check supply-air input:

1. Make sure EconoMiSer IV preparation procedure has been performed.
2. Set the Enthalpy potentiometer to A. The Free Cool LED turns on. The actuator should drive to between 20 and 80% open.
3. Remove the 5.6 kilo-ohm resistor and jumper T to T1. The actuator should drive fully open.
4. Remove the jumper across T and T1. The actuator should drive fully closed.
5. Return EconoMiSer IV settings and wiring to normal after completing troubleshooting.

EconoMiSer IV Troubleshooting Completion

This procedure is used to return the EconoMiSer IV to operation. No troubleshooting or testing is done by performing the following procedure.

1. Disconnect power at TR and TR1.
2. Set enthalpy potentiometer to previous setting.
3. Set DCV maximum position potentiometer to previous setting.
4. Set minimum position, DCV set point, and exhaust potentiometers to previous settings.
5. Remove 620-ohm resistor from terminals S_R and +.
6. Remove 1.2 kilo-ohm checkout resistor from terminals S_O and +. If used, reconnect sensor from terminals S_O and +.
7. Remove jumper from TR to N.
8. Remove jumper from TR to 1.
9. Remove 5.6 kilo-ohm resistor from T and T1. Reconnect wires at T and T1.
10. Remove jumper from P to P1. Reconnect device at P and P1.
11. Apply power (24 vac) to terminals TR and TR1.

Table 36—Cooling Service Analysis

PROBLEM	CAUSE	REMEDY
Compressor and Condenser Fan Will Not Start.	Power failure.	Call power company.
	Fuse blown or circuit breaker tripped.	Replace fuse or reset circuit breaker.
	Defective thermostat, contactor, transformer, or control relay.	Replace component.
	Insufficient line voltage.	Determine cause and correct.
	Incorrect or faulty wiring.	Check wiring diagram and rewire correctly.
Compressor Will Not Start But Condenser Fan Runs.	Thermostat setting too high.	Lower thermostat setting below room temperature.
	Faulty wiring or loose connections in compressor circuit.	Check wiring and repair or replace.
	Compressor motor burned out, seized, or internal overload open.	Determine cause. Replace compressor.
	Defective run/start capacitor, overload, start relay.	Determine cause and replace.
Compressor Cycles (Other Than Normally Satisfying Thermostat).	One leg of 3-phase power dead.	Replace fuse or reset circuit breaker. Determine cause.
	Refrigerant overcharge or undercharge.	Recover refrigerant, evacuate system, and recharge to nameplate.
	Defective compressor.	Replace and determine cause.
	Insufficient line voltage.	Determine cause and correct.
	Blocked condenser.	Determine cause and correct.
	Defective run/start capacitor, overload, or start relay.	Determine cause and replace.
	Defective thermostat.	Replace thermostat.
Compressor Operates Continuously.	Faulty condenser-fan motor or capacitor.	Replace.
	Restriction in refrigerant system.	Locate restriction and remove.
	Dirty air filter.	Replace filter.
	Unit undersized for load.	Decrease load or increase unit size.
	Thermostat set too low.	Reset thermostat.
	Low refrigerant charge.	Locate leak, repair, and recharge.
	Leaking valves in compressor.	Replace compressor.
Excessive Head Pressure.	Air in system.	Recover refrigerant, evacuate system, and recharge.
	Condenser coil dirty or restricted.	Clean coil or remove restriction.
	Dirty air filter.	Replace filter.
	Dirty condenser coil.	Clean coil.
	Refrigerant overcharged.	Recover excess refrigerant.
Head Pressure Too Low.	Air in system.	Recover refrigerant, evacuate system, and recharge.
	Condenser air restricted or air short-cycling.	Determine cause and correct.
	Low refrigerant charge.	Check for leaks, repair, and recharge.
Excessive Suction Pressure.	Compressor valves leaking.	Replace compressor.
	Restriction in liquid tube.	Remove restriction.
	High heat load.	Check for source and eliminate.
Suction Pressure Too Low.	Refrigerant overcharged.	Recover excess refrigerant.
	Dirty air filter.	Replace filter.
	Low refrigerant charge.	Check for leaks, repair, and recharge.
	Metering device or low side restricted.	Remove source of restriction.
	Insufficient evaporator airflow.	Increase air quantity. Check filter and replace if necessary.
Evaporator Fan Will Not Shut Off.	Temperature too low in conditioned area.	Reset thermostat.
	Outdoor ambient below 25 F.	Install low-ambient kit.
	Time off delay not finished.	Wait for 30-second off delay.

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Table 37—Humidi-MiZer™ Adaptive Dehumidification System Subcooling Mode Service Analysis

PROBLEM	CAUSE	REMEDY
Subcooling Mode (Liquid Reheat) Will Not Energize.	No power to control transformer from evaporator-fan motor.	Check power source and evaporator-fan relay. Ensure all wire connections are tight.
	No power from control transformer to liquid line solenoid valve.	1. Fuse open; check fuse. Ensure continuity of wiring. 2. Low-pressure switch open. Cycle unit off and allow low-pressure switch to reset. Replace switch if it will not close. 3. Transformer bad; check transformer.
	Liquid line solenoid valve will not operate.	1. Solenoid coil defective; replace. 2. Solenoid valve stuck open; replace.
	Liquid line solenoid valve will not open.	Valve is stuck closed; replace valve.
Low System Capacity.	Low refrigerant charge or frosted evaporator coil.	1. Check charge amount. Charge per Fig. 59-62. 2. Evaporator coil frosted; check and replace low-pressure switch if necessary.
Loss of Compressor Superheat Conditions with Subcooling/Reheat Dehumidification Coil Energized.	Thermostatic expansion valve (TXV).	1. Check TXV bulb mounting, and secure tightly to suction line. 2. Replace TXV if stuck open or closed.

Table 38—Humidi-MiZer™ Adaptive Dehumidification System Hot Gas Reheat Mode Service Analysis

PROBLEM	CAUSE	REMEDY
Reheat Mode Will Not Energize.	No power to control transformer from evaporator-fan motor.	Check power source and evaporator-fan relay. Ensure all wire connections are tight.
	No power from control transformer to hot gas line solenoid valve	1. Fuse open; check fuse. Ensure continuity of wiring. 2. Low-pressure switch open. Cycle unit off and allow low-pressure switch to reset. Replace switch if it will not close. 3. Transformer bad; check transformer.
	Hot gas line solenoid valve will not operate.	1. Solenoid coil defective; replace. 2. Solenoid valve stuck closed; replace.
	Low refrigerant charge or frosted evaporator coil.	1. Check charge amount. Charge per Fig. 59-62. 2. Evaporator coil frosted; check and replace low-pressure switch if necessary.
Loss of Compressor Superheat Conditions with Subcooling/Reheat Dehumidification Coil Energized.	Thermostatic expansion valve (TXV).	1. Check TXV bulb mounting, and secure tightly to suction line. 2. Replace TXV if stuck open or closed.
Excessive Superheat.	Liquid line solenoid valve will not operate.	Valve is stuck, replace valve.
	Hot gas line solenoid valve will not close.	Valve is stuck; replace valve.

Table 39—EconoMi\$er IV Input/Output Logic

Demand Control Ventilation (DCV)	INPUTS				OUTPUTS			
	Enthalpy*		Y1	Y2	Compressor		N Terminal†	
	Outdoor	Return			Stage 1	Stage 2	Occupied	Unoccupied
							Damper	
Below set (DCV LED Off)	High (Free Cooling LED Off)	Low	On	On	On	On	Minimum position	Closed
			On	Off	On	Off		
			Off	Off	Off	Off		
	Low (Free Cooling LED On)	High	On	On	On	Off	Modulating** (between min. position and full-open)	Modulating** (between closed and full-open)
			On	Off	Off	Off		
			Off	Off	Off	Off		
Above set (DCV LED On)	High (Free Cooling LED Off)	Low	On	On	On	On	Modulating†† (between min. position and DCV maximum)	Modulating†† (between closed and DCV maximum)
			On	Off	On	Off		
			Off	Off	Off	Off		
	Low (Free Cooling LED On)	High	On	On	On	Off	Modulating***	Modulating†††
			On	Off	Off	Off		
			Off	Off	Off	Off		

*For single enthalpy control, the module compares outdoor enthalpy to the ABCD set point.

†Power at N terminal determines Occupied/Unoccupied setting: 24 vac (Occupied), no power (Unoccupied).

**Modulation is based on the supply-air sensor signal.

††Modulation is based on the DCV signal.

***Modulation is based on the greater of DCV and supply-air sensor signals, between minimum position and either maximum position (DCV) or fully open (supply-air signal).

†††Modulation is based on the greater of DCV and supply-air sensor signals, between closed and either maximum position (DCV) or fully open (supply-air signal).

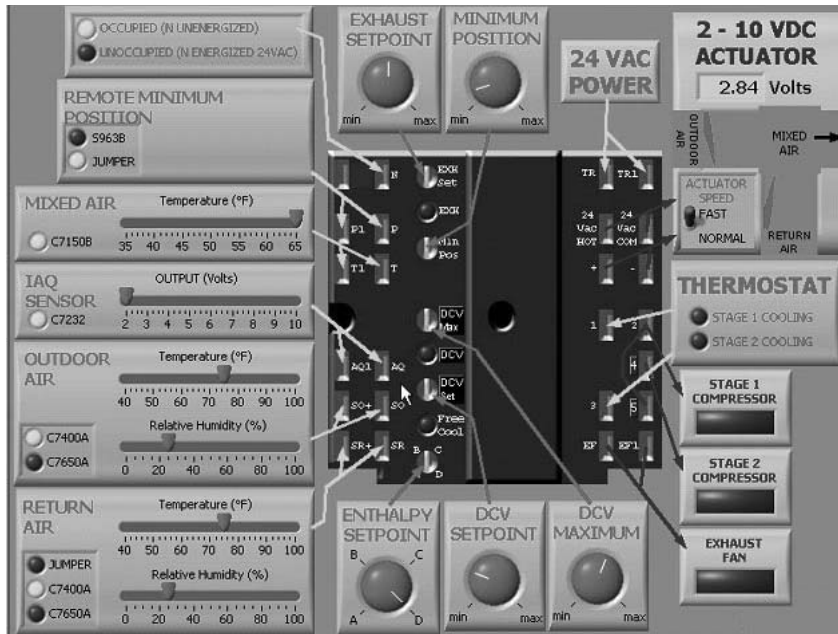


Fig. 70 – EconoMiSer IV Functional View

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START-UP CHECKLIST (Remove and Store in Job File)

I. PRELIMINARY INFORMATION

MODEL NO.: _____

SERIAL NO.: _____

DATE: _____

TECHNICIAN: _____

II. PRE-START-UP (insert checkmark in box as each item is completed)

- VERIFY THAT JOBSITE VOLTAGE AGREES WITH VOLTAGE LISTED ON RATING PLATE
- VERIFY THAT ALL PACKAGING MATERIALS HAVE BEEN REMOVED FROM UNIT
- REMOVE ALL SHIPPING HOLDDOWN BOLTS AND BRACKETS PER INSTALLATION INSTRUCTIONS
- VERIFY THAT CONDENSATE CONNECTION IS INSTALLED PER INSTALLATION INSTRUCTIONS
- CHECK ALL ELECTRICAL CONNECTIONS AND TERMINALS FOR TIGHTNESS
- CHECK GAS PIPING FOR LEAKS
- CHECK THAT RETURN (INDOOR) AIR FILTERS ARE CLEAN AND IN PLACE
- VERIFY THAT UNIT INSTALLATION IS LEVEL
- CHECK FAN WHEELS AND PROPELLER FOR LOCATION IN HOUSING/ORIFICE AND SETSCREW TIGHTNESS
- CHECK TO ENSURE THAT ELECTRICAL WIRING IS NOT IN CONTACT WITH REFRIGERANT LINES OR SHARP METAL EDGES
- CHECK PULLEY ALIGNMENT AND BELT TENSION PER INSTALLATION INSTRUCTIONS

III. START-UP

ELECTRICAL

SUPPLY VOLTAGE	L1-L2	L2-L3	-	L3-L1	-
COMPRESSOR AMPS	L1	-	L2	-	L3
INDOOR-FAN AMPS	L1	-	L2	-	L3

TEMPERATURES

OUTDOOR-AIR TEMPERATURE	-	DB	
RETURN-AIR TEMPERATURE	-	DB	WB
COOLING SUPPLY AIR	-	DB	WB

PRESSURES (Cooling Mode)

REFRIGERANT SUCTION	-	PSIG	-	F
REFRIGERANT DISCHARGE	-	PSIG	-	F

- VERIFY THAT 3-PHASE FAN MOTOR AND BLOWER ARE ROTATING IN CORRECT DIRECTION. IF THEY ARE NOT ROTATING IN CORRECT DIRECTION, LOCKING COLLAR MUST BE RE-TIGHTENED AFTER CORRECTING DIRECTION OF ROTATION
- VERIFY THAT 3-PHASE SCROLL COMPRESSOR IS ROTATING IN THE CORRECT DIRECTION
- VERIFY REFRIGERANT CHARGE USING CHARGING CHARTS

GENERAL

- SET ECONOMIZER MINIMUM VENT AND CHANGEOVER SETTINGS TO MATCH JOB REQUIREMENTS (IF EQUIPPED)

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