Installation, Start-Up and Service Instructions

CONTENTS

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 the basic maintenance functions of 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.

⚠ WARNING

Before performing service or maintenance operations on unit, turn off main power switch to unit. Electrical shock could cause personal injury.

IMPORTANT: Units have high ambient operating limits. If limits are exceeded, the units will automatically lock the compressor out of operation. Manual reset will be required to restart the compressor.

INSTALLATION

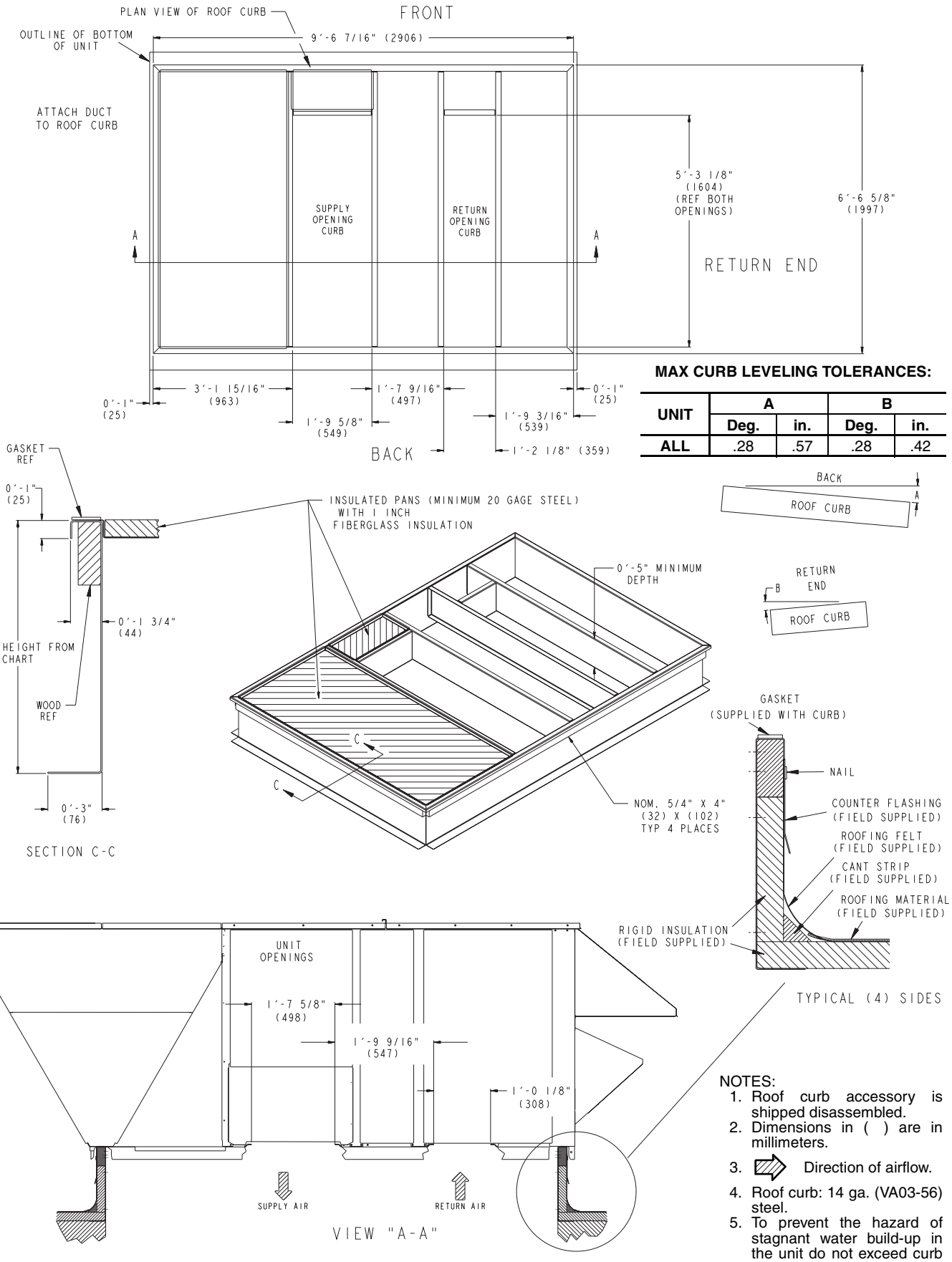
Step 1 — Provide Unit Support

ROOF CURB — Assemble or install accessory roof curb in accordance with instructions shipped with this accessory. See Fig. 1. Install insulation, cant strips, roofing, and counter flashing as shown. Ductwork can be installed to roof curb before unit is set in place. Curb must be level. This is necessary to permit unit drain to function properly. Unit leveling tolerance is $\pm 1/16$ in. per linear ft in any direction. Refer to Accessory Roof Curb Installation Instructions for additional information as required. When accessory roof curb is used, unit may be installed on class A, B, or C roof covering material.

IMPORTANT: The gasketing of the unit to the roof curb is critical for a watertight seal. Install gasket with the roof curb as shown in Fig. 1. Improperly applied gasket can also result in air leaks and poor unit performance.

ALTERNATE UNIT SUPPORT — When a curb cannot be used, install unit on a noncombustible surface. Support unit with sleepers, using unit curb support area. If sleepers cannot be used, support long sides of unit with a minimum of 3 equally spaced 4-in. x 4-in. pads on each side.

Instructions continued on page 3.



MAX CURB LEVELING TOLERANCES:

UNIT	A		B	
	Deg.	in.	Deg.	in.
ALL	.28	.57	.28	.42

ROOF CURB ACCESSORY	CURB HEIGHT	DESCRIPTION
CRRFCURB018A00	1′-2″ [356]	Roof Curb 14″ High
CRRFCURB019A00	2′-0″ [610]	Roof Curb 24″ High

NOTES:
1. Roof curb accessory is shipped disassembled.
2. Dimensions in ( ) are in millimeters.
3. Direction of airflow.
4. Roof curb: 14 ga. (VA03-56) steel.
5. To prevent the hazard of stagnant water build-up in the unit do not exceed curb leveling tolerances.
6. Clearance between unit base rail and curb flange is 1/4-in. (6 mm) on each side.

Fig. 1 — Roof Curb Details

Step 2 — Remove Shipping Rails — Remove shipping rails prior to lowering unit onto roof curb. See Fig. 2. The rails are attached to the unit at both the return end and condenser end. Remove the screws from both ends of each rail. Be careful not to drop the rails onto any surface that could be damaged. Discard the rails. It is important to replace the screws into the unit to avoid any air or water leakage.

⚠ CAUTION

Do not allow the shipping rail to drop on the roof surface. Damage to the roof surface may result.

Step 3 — Rig and Place Unit — Inspect unit for transportation damage. See Table 1 for physical data. File any claim with transportation agency.

⚠ CAUTION

All panels must be in place when rigging. Unit is not designed for handling by fork truck. Damage to unit can result.

Do not drop unit; keep upright. Use spreader bars over unit to prevent sling or cable damage. Rollers may be used to move unit across a roof. Level by using unit frame as a reference; leveling tolerance is ± $^1/_{16}$ in. per linear ft in any direction. See Fig. 3 for additional information. Unit rigging weight is shown in Fig. 3.

Four lifting holes are provided in the unit base rails as shown in Fig. 3. Refer to rigging instructions on unit.

POSITIONING — Maintain clearance, per Fig. 4, around and above unit to provide minimum distance from combustible materials, proper airflow, and service access.

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

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

ROOF MOUNT — Check building codes for weight distribution requirements. Unit operating weight is shown in Table 1.

INSTALLATION ONTO CURB — The 50HG units are designed to fit on either the accessory full perimeter curb or onto existing 48/50TJ,HJ or 48/50DP,DR curbs. In either case, correct placement of the unit onto the curb is critical to operating performance. To aid in correct positioning, $^3/_8$-in. diameter locating holes have been added to the unit base rails. When placing the unit, these holes should line up with the roof curb edge as shown in Fig. 5 and 6, to assure proper duct opening alignment. Select the alignment holes suited for the curb being used. For installation on the HJ/TJ/DP/DR curb use the alignment holes located approximately 20 in. from the end of the base rail on the return end of the unit. For placement on the HG curb, use the alignment holes located approximately 2-in. from the end of the base rail on the return end of the unit. See labels on the side of the unit for more details.

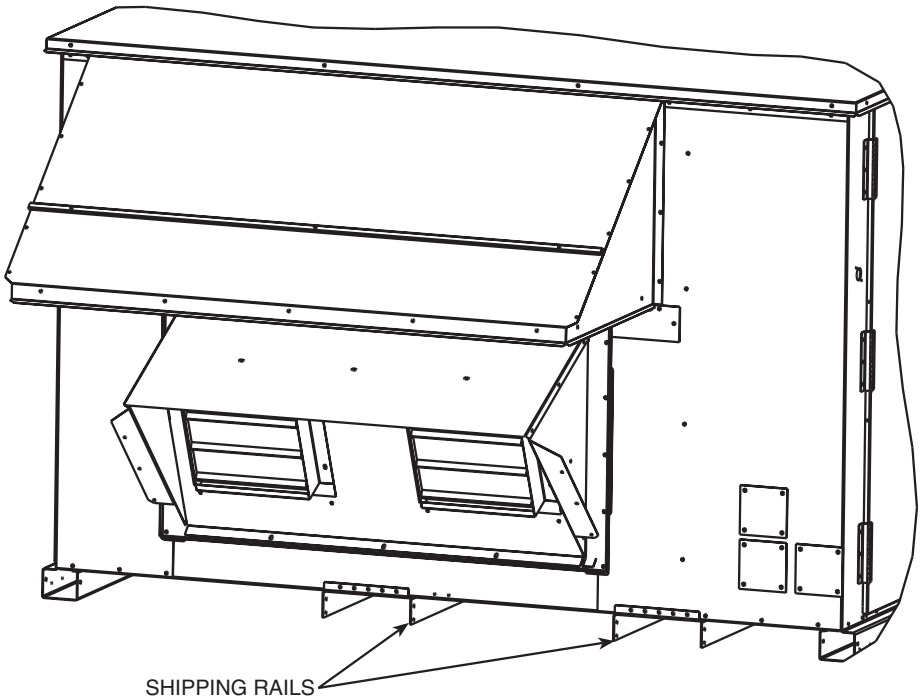


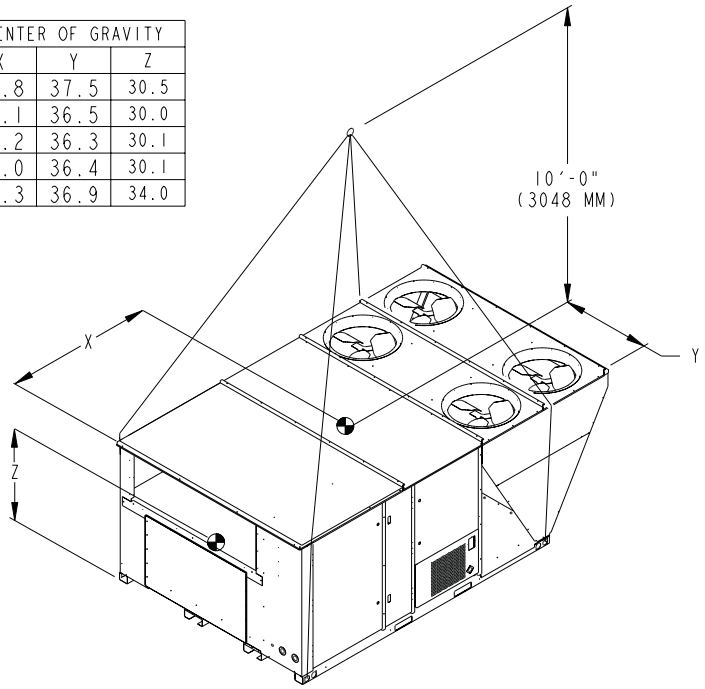
Fig. 2 — Shipping Rail Removal

CAUTION - NOTICE TO RIGGERS:

ALL PANELS MUST BE IN PLACE WHEN RIGGING.

NOTICE TO RIGGERS: Rig by inserting hooks into unit base rails as shown. Maintain a distance of 120 inches (3048 MM) from top of unit to eyehook. Leave coil cover attached to unit while rigging to protect coil of unit from damage.

48/50 UNIT SIZE	MAX WEIGHT	CENTER OF GRAVITY		
		X	Y	Z
HG014	2792	61.8	37.5	30.5
HG016	2915	61.1	36.5	30.0
HG020	2943	61.2	36.3	30.1
HG024	2991	61.0	36.4	30.1
HG028	3211	65.3	36.9	34.0



NOTE:
SEE LABEL FOR UNIT LOCATION ON ROOF CURB

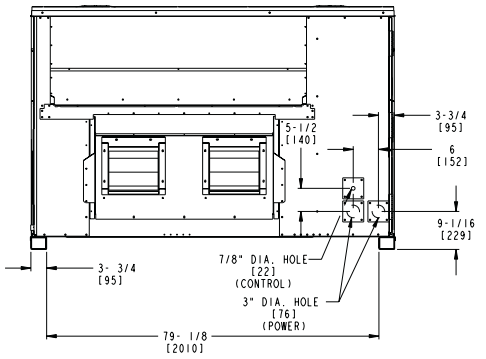
NOTE:
Add 150lb (68kg) for domestic crating.

50TG500606 | -

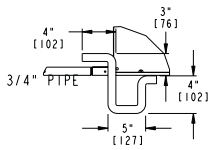
Fig. 3 — Rigging Details

UNIT SIZE	OPERATING WT. WITHOUT HEAT (50HG)	UNIT HEIGHT	CENTER OF GRAVITY LOCATION			CORNER WEIGHT LBS. [KG]			
		W	X	Y	Z				
	LBS. [KG]	IN [MM]	IN [MM]	IN [MM]	IN [MM]	A	B	C	D
HG028	2446 [1109]	70-1/8 [1781]	68 [1727]	35 [889]	35 [889]	634 [288]	823 [374]	430 [195]	559 [254]

UNIT SIZE	OPERATING WT. WITHOUT HEAT (50HG)	UNIT HEIGHT	CENTER OF GRAVITY LOCATION			CORNER WEIGHT LBS. [KG]			
		W	X	Y	Z				
	LBS. [KG]	IN [MM]	IN [MM]	IN [MM]	IN [MM]	A	B	C	D
HG014	2017 [917]	58-1/8 [1476]	65 [1651]	35-1/2 [902]	31 [787]	523 [237]	666 [302]	364 [165]	464 [210]
HG016	2111 [960]	58-1/8 [1476]	64 [1626]	34-1/2 [876]	30 [762]	573 [260]	700 [318]	377 [171]	461 [209]
HG020	2139 [972]	58-1/8 [1476]	64 [1626]	34 [864]	30-1/2 [775]	583 [264]	714 [324]	378 [171]	464 [210]
HG024	2187 [994]	58-1/8 [1476]	64 [1626]	34-1/2 [876]	30-1/2 [775]	598 [271]	723 [328]	392 [178]	474 [215]

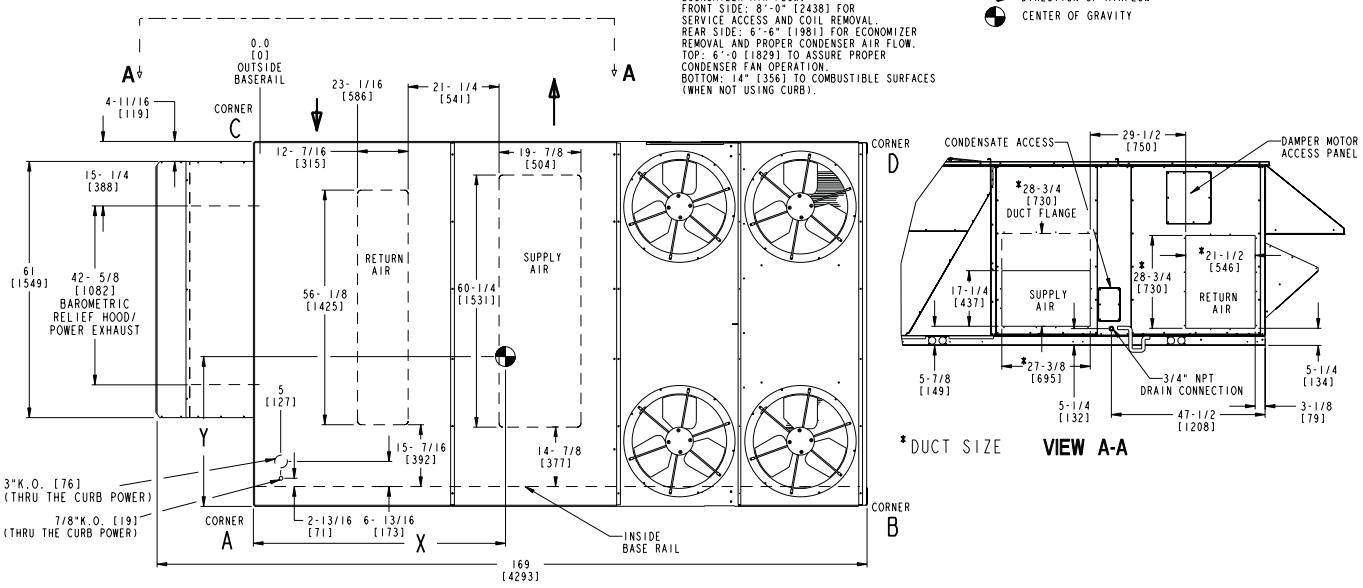


LEFT SIDE

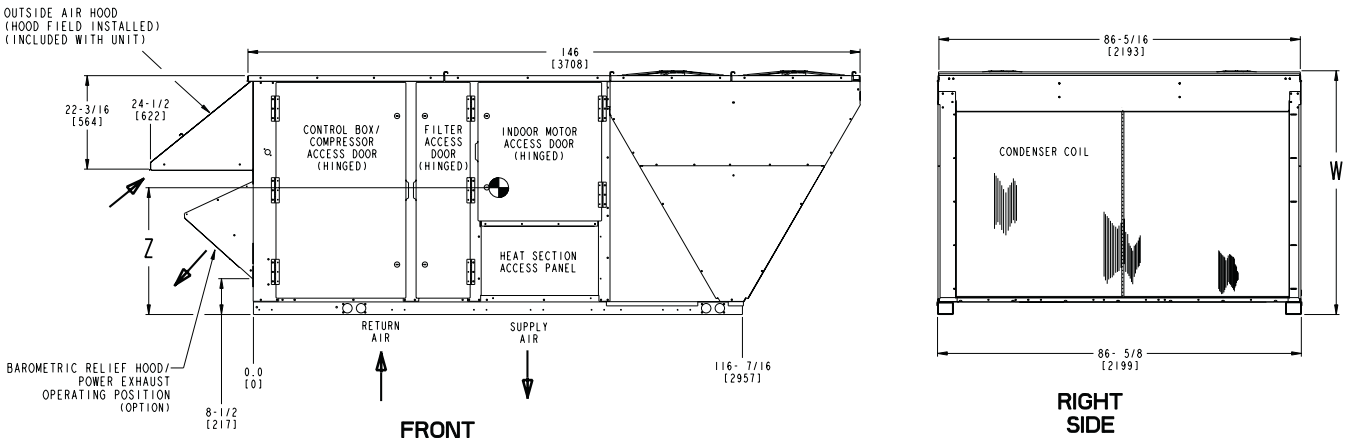


NOTES:
1. WEIGHTS SHOWN ARE FOR 50HG COOLING ONLY UNIT WITH MANUAL 25% OUTDOOR AIR OPTION, ALUMINUM COILS, AND STANDARD DRIVE. FOR WEIGHTS OF OPTIONAL EQUIPMENT CONSULT PRODUCT DATA BOOK.
2. DO NOT LOCATE ADJACENT UNITS WITH FLUE DISCHARGE FACING ECONOMIZER INLET. MIN. CLEARANCES TO BE :
   ADJACENT UNITS: 15'-0" [4572]
   RIGHT SIDE: 6'-0" [3048] FOR PROPER CONDENSER AIR FLOW. 4'-0" [1219] TO COMBUSTIBLE SURFACES. ALL FOUR SIDES (INCLUDES BETWEEN UNITS)
   LEFT SIDE: 10'-0" [1830] FOR PROPER ECONOMIZER AIR FLOW.
   FRONT SIDE: 8'-0" [2438] FOR SERVICE ACCESS AND COIL REMOVAL.
   REAR SIDE: 6'-6" [1981] FOR ECONOMIZER REMOVAL AND PROPER CONDENSER AIR FLOW.
   TOP: 6'-0 [1829] TO ASSURE PROPER CONDENSER FAN OPERATION.
   BOTTOM: 14" [356] TO COMBUSTIBLE SURFACES (WHEN NOT USING CURB).
3. FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES, CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT.
4. DOWN SHOT DUCTS DESIGNED TO BE ATTACHED TO ACCESSORY ROOF CURB ONLY. IF UNIT IS MOUNTED SIDE SUPPLY, IT IS RECOMMENDED THE DUCTS MUST BE SUPPORTED BY CROSS BRACES AS DONE ON ACCESSORY ROOF CURB.
5. DIMENSIONS IN [ ] ARE IN MILLIMETERS OR KILOGRAMS.
6. WITH THE EXCEPTION OF CLEARANCE FOR THE CONDENSER COIL AND THE DAMPER/POWER EXHAUST AS STATED IN NOTE #2, A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.
7. DIMENSIONS ARE FROM OUTSIDE OF BASE RAIL. ALLOW 0- 5/16 [8] ON EACH SIDE FOR TOP COVER DRIP EDGE.

DIRECTION OF AIRFLOW
CENTER OF GRAVITY



VIEW A-A



FRONT

RIGHT SIDE

Fig. 4 — Base Unit Dimensions

Table 1 — Physical Data

UNIT 50HG		014		016		020	
VOLTAGE		208/230 and 460	575	208/230 and 460	575	208/230 and 460	575
NOMINAL CAPACITY (Tons)		12.5	12.5	15	15	17.5	17.5
OPERATING WEIGHT (lbs) 50 SERIES (Cooling Only)		2017	2017	2111	2111	2139	2139
COMPRESSOR							
Quantity		2	2	3	3	3	3
Number of Refrigerant Circuits		2	2	3	3	3	3
Oil (ounces) Ckt A...Ckt B...Ckt C		72...72...NA	72...72...NA	68...68...68	68...68...68	68...68...72	68...68...72
REFRIGERANT TYPE		R-22					
Expansion Device		TXV	TXV	TXV	TXV	TXV	TXV
Operating Charge (lbs)							
Circuit A		19.6	19.6	13.2	13.2	13.1	13.1
Circuit B		18.3	18.3	12.2	12.2	12.7	12.7
Circuit C		NA	NA	15.4	15.4	15.2	15.2
CONDENSER COIL							
Rows...Fins/inch		2...17	2...17	2...17	2...17	2...17	2...17
Total Face area (sq. ft)		57.78	57.78	57.78	57.78	57.78	57.78
CONDENSER FAN							
Nominal CFM (Total, all fans)		14,000	14,000	14,000	14,000	14,000	14,000
Quantity...Diameter (in.)		4...22	4...22	4...22	4...22	4...22	4...22
Motor HP...RPM		1/4...1100	1/4...1100	1/4...1100	1/4...1100	1/4...1100	1/4...1100
Watts input (Total)		1400	1400	1400	1400	1400	1400
EVAPORATOR COIL							
Rows...Fins/inch		3...15	3...15	3...15	3...15	3...15	3...15
Total Face area (sq. ft)		23.33	23.33	23.33	23.33	23.33	23.33
EVAPORATOR FAN							
Quantity...Size		2...15x11	2...15x11	2...15x11	2...15x11	2...15x11	2...15x11
Type Drive		Belt	Belt	Belt	Belt	Belt	Belt
Nominal CFM		5000	5000	6000	6000	7000	7000
Std Motor HP		3.7	3	3.7	3	5	5
Alt Motor HP		5	5	5	5	7 1/2	7 1/2
Motor Nominal RPM		1725	1725	1725	1725	1725	1725
Std Maximum Continuous BHP		4.25	3.45	4.25	3.45	5.75	5.75
Std Maximum Continuous Watts		3171	2574	3171	2574	4290	4290
Alt Maximum Continuous BHP		5.75	5.75	5.75	5.75	8.63	8.63
Alt Maximum Continuous Watts		4290	4290	4290	4290	6438	6438
Motor Frame Size	Standard	56HZ	56H	56HZ	56H	S184T	184T
Motor Frame Size	Alternate	S184T	184T	S184T	184T	S213T	S213T
Fan Drive RPM Range	Std motor/Std drive	485-613	472-619	618-789	609-778	658-808	658-808
	Std motor/Alt drive	618-789	609-778	485-613	472-619	794-974	794-974
	Alt motor/Std drive	778-1021	778-1021	778-1021	778-1021	949-1145	949-1145
	Alt motor/Alt drive	1000-1227	1000-1227	1000-1227	1000-1227	1126-1328	1126-1328
Motor Bearing Type		Ball	Ball	Ball	Ball	Ball	Ball
Maximum Allowable RPM		1400	1400	1400	1400	1400	1400
Motor Pulley Pitch Diameter	Std motor/Std drive	3.7-4.7	3.1-4.1	3.4-4.4	3.4-4.4	4.3-5.3	4.3-5.3
	Std motor/Alt drive	3.4-4.4	3.4-4.4	3.7-4.7	3.1-4.1	4.3-5.3	4.3-5.3
	Alt motor/Std drive	3.1-4.1	3.1-4.1	3.1-4.1	3.1-4.1	5.4-6.6	5.4-6.6
	Alt motor/Alt drive	4.3-5.3	4.3-5.3	4.3-5.3	4.3-5.3	5.5-6.5	5.5-6.5
Motor Shaft Diameter (in.)	Standard	7/8	7/8	7/8	7/8	1 1/8	1 1/8
Motor Shaft Diameter (in.)	Alternate	1 1/8	1 1/8	1 1/8	1 1/8	1 3/8	1 3/8
Belt, Quantity...Type...Length (in.)	Std motor/Std drive	1...BX...51	1...BX...48	1...A...45	1...A...45	1...BX...46	1...BX...46
	Std motor/Alt drive	1...A...45	1...A...45	1...BX...51	1...BX...48	1...BX...42	1...BX...42
	Alt motor/Std drive	1...BX...38	1...BX...38	1...BX...38	1...BX...38	1...BX...46	1...BX...46
	Alt motor/Alt drive	1...B...38	1...B...38	1...B...38	1...B...38	1...BX...42	1...BX...42
Pulley center line distance (in.)		11.3-12.3	11.3-12.3	11.3-12.3	11.3-12.3	10.0-12.2	10.0-12.2
Speed change per full turn of moveable pulley flange (RPM)	Std motor/Std drive	21	25	29	28	25	25
	Std motor/Alt drive	29	28	21	25	30	30
	Alt motor/Std drive	41	41	41	41	33	33
	Alt motor/Alt drive	38	38	38	38	34	34
Moveable pulley maximum (full turns from closed position)		6	6	6	6	6	6
Factory Pulley Setting (turns from closed position)		3	3	3	3	3	3
Fan Shaft Diameter (in.)		1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16
Factory Speed Setting (RPM)		549	546	704	694	733	733
HIGH PRESSURE SWITCHES (psig)							
Cutout		426	426	426	426	426	426
Reset (Auto)		320	320	320	320	320	320
OUTDOOR AIR INLET SCREENS							
Quantity...Size (in.)		3...20x25	3...20x25	3...20x25	3...20x25	3...20x25	3...20x25
RETURN AIR FILTERS							
Quantity...Size (in.)		9...16x25	9...16x25	9...16x25	9...16x25	9...16x25	9...16x25

LEGEND

Al — Aluminum
Bhp — Brake Horsepower
TXV — Thermostatic Expansion Valve

Table 1 — Physical Data (cont)

UNIT 50HG		024		028
VOLTAGE		208/230 and 460	575	ALL
NOMINAL CAPACITY (Tons)		20	20	25
OPERATING WEIGHT (lbs)				
50 SERIES (Cooling Only)		2187	2187	2446
COMPRESSOR				
Quantity		3	3	2
Number of Refrigerant Circuits		3	3	2
Oil (ounces) Ckt A...Ckt B...Ckt C		72...72...72	72...72...72	110...110...NA
REFRIGERANT TYPE			R-22	
Expansion Device		TXV	TXV	TXV
Operating Charge (lbs)				
Circuit A		13.8	13.8	23.9
Circuit B		13.9	13.9	21.5
Circuit C		15.5	15.5	NA
CONDENSER COIL				
Rows...Fins/inch		2...17	2...17	2...17
Total Face Area (sq. ft)		57.78	57.78	66.67
CONDENSER FAN				
Nominal CFM (Total, all fans)		14,000	14,000	21,000
Quantity...Diameter (in.)		4...22	4...22	6...22
Motor HP...RPM		1/4...1100	1/4...1100	1/4...1100
Watts input (Total)		1400	1400	2100
EVAPORATOR COIL				
Rows...Fins/inch		4...15	4...15	4...15
Total Face Area (sq. ft)		23.33	23.33	27.22
EVAPORATOR FAN				
Quantity...Size		2...15x11	2...15x11	2...15x11
Type Drive		Belt	Belt	Belt
Nominal CFM		8000	8000	10,000
Std Motor HP		5	5	7 1/2
Alt Motor HP		7 1/2	7 1/2	10
Motor Nominal RPM		1725	1725	1725
Std Maximum Continuous BHP		5.75	5.75	8.63
Std Maximum Continuous Watts		4290	4290	6438
Alt Maximum Continuous BHP		8.63	8.63	11.50
Alt Maximum Continuous Watts		6438	6438	8579
Motor Frame Size	Standard	S184T	184T	S213T
Motor Frame Size	Alternate	S213T	S213T	S215T
Fan Drive RPM Range	Std motor/Std drive	658-808	658-808	799-965
	Std motor/Alt drive	794-974	794-974	939-1152
	Alt motor/Std drive	949-1145	949-1145	945-1187
	Alt motor/Alt drive	1126-1328	1126-1328	1152-1366
Motor Bearing Type		Ball	Ball	Ball
Maximum Allowable RPM		1400	1400	1400
Motor Pulley Pitch Diameter	Std motor/Std drive	4.3-5.3	4.3-5.3	5.4-6.6
	Std motor/Alt drive	4.3-5.3	4.3-5.3	4.2-5.2
	Alt motor/Std drive	5.4-6.6	5.4-6.6	4.2-5.2
	Alt motor/Alt drive	5.5-6.5	5.5-6.5	5.2-6.2
Motor Shaft Diameter (in.)	Standard	1 1/8	1 1/8	1 3/8
Motor Shaft Diameter (in.)	Alternate	1 3/8	1 3/8	1 3/8
Belt, Quantity...Type...Length (in.)	Std motor/Std drive	1...BX...46	1...BX...46	1...BX...50
	Std motor/Alt drive	1...BX...42	1...BX...42	2...AX...38
	Alt motor/Std drive	1...BX...46	1...BX...46	2...BX...38
	Alt motor/Alt drive	1...BX...42	1...BX...42	2...AX...38
Pulley center line distance (in.)		10.0-12.2	10.0-12.2	9.6-12.0
Speed change per full turn of moveable pulley flange (RPM)	Std motor/Std drive	25	25	28
	Std motor/Alt drive	30	30	36
	Alt motor/Std drive	33	33	40
	Alt motor/Alt drive	34	34	36
Moveable pulley maximum (full turns from closed position)		6	6	6
Factory Pulley Setting (turns from closed position)		3	3	3
Fan Shaft Diameter (in.)		1 3/16	1 3/16	1 3/16
Factory Speed Setting (RPM)		733	733	882
HIGH PRESSURE SWITCHES (psig)				
Cutout		426	426	426
Reset (Auto)		320	320	320
OUTDOOR AIR INLET SCREENS				
Quantity...Size (in.)		3...20x25	3...20x25	3...20x25
RETURN AIR FILTERS				
Quantity...Size (in.)		9...16x25	9...16x25	9...18x24

LEGEND

Al — Aluminum
Bhp — Brake Horsepower
TXV — Thermostatic Expansion Valve

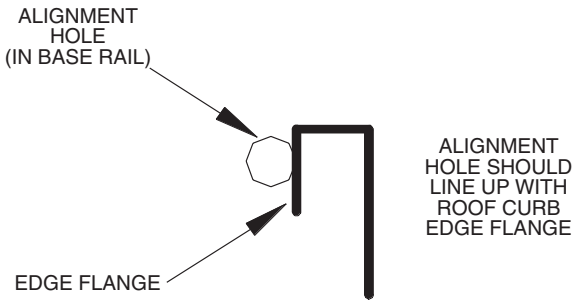


Fig. 5 — Alignment Hole Details

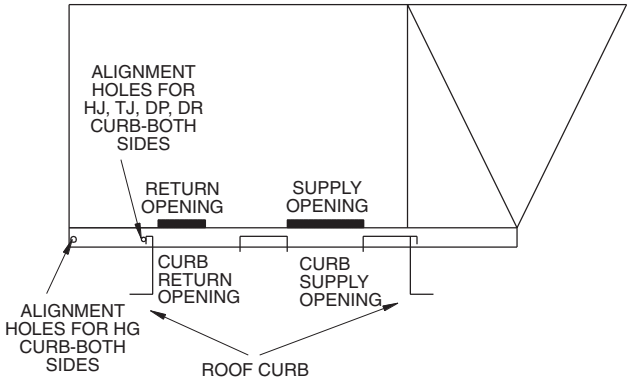


Fig. 6 — Alignment Hole Location

Step 4 — Field Fabricate Ductwork — Secure all ducts to building structure. Use flexible duct connectors between unit and ducts as required. 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.

Step 5 — Make Unit Duct Connections

DOWNSHOT CONFIGURATION — Unit is shipped for thru-the-bottom duct connections. Ductwork openings are shown in Fig. 1 and 4. Duct connections for downshot configuration are shown in Fig. 7. Field fabricated concentric ductwork may be connected as shown in Fig. 8 and 9. The unit is designed to attach the ductwork to the roof curb. Do not attach duct directly to the unit basepans.

Unit basepans must be supported under the unit and around duct openings in order to prevent air leakage.

⚠ WARNING

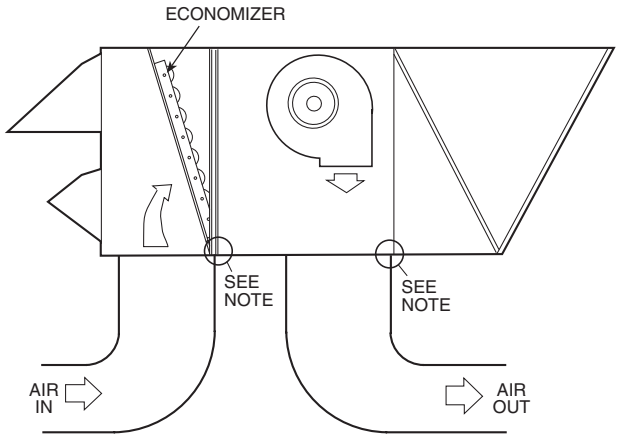
For vertical supply and return units, tools or parts could drop into ductwork and cause an injury. Install a 90-degree turn in the return ductwork between the unit and the conditioned space. If a 90-degree elbow cannot be installed, then a grille of sufficient strength and density should be installed to prevent objects from falling into the conditioned space.

Units with electric heat require a 1-in. clearance for the first 24 in. of ductwork. Outlet grilles must not lie directly below unit discharge.

NOTE: A 90-degree elbow must be provided in the supply ductwork to comply with UL (Underwriters' Laboratories) codes for use with electric heat.

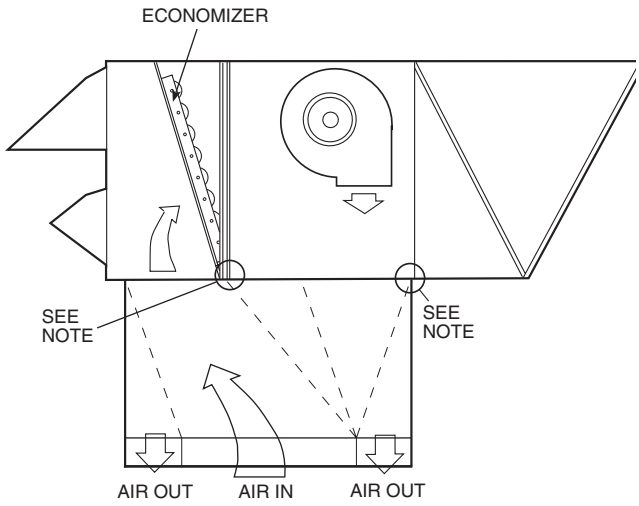
SIDE SHOT APPLICATIONS (HORIZONTAL) — Horizontal units are shipped with outer panels that allow for side by side horizontal duct connections. If specified during ordering, the unit will be shipped with the downshot duct openings blocked off from the factory, ready for side supply installation. If the side shot option was not specified at time of ordering the unit, a field-installed accessory kit is required to convert the downshot unit into a side supply configuration.

Installation of the duct block-off covers should be completed prior to placing the unit unless sufficient side clearance is available. A minimum of 66-in. is required between the unit and any obstruction to install the duct block-off covers. Side supply duct dimensions and locations are shown on Fig. 4. Connect ductwork to horizontal duct flange connections on side of unit.



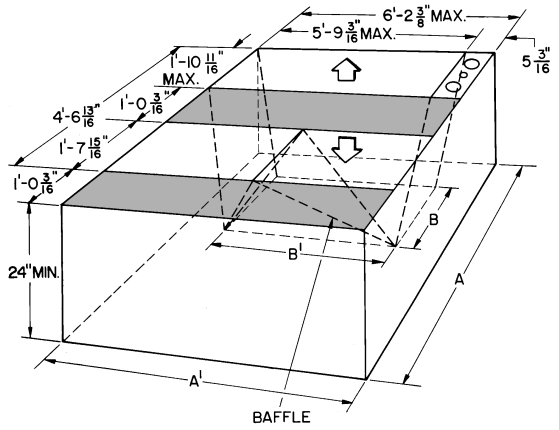
NOTE: Do not drill in this area; damage to basepan may result in water leak.

Fig. 7 — Air Distribution — Thru-the-Bottom



NOTE: Do not drill in this area; damage to basepan may result in water leak.

Fig. 8 — Air Distribution — Concentric Duct



NOTE: Dimensions A, A′, B, and B′ are obtained from field-supplied ceiling diffuser.

Shaded areas indicate block-off pans.

Fig. 9 — Concentric Duct Details

Step 6 — Trap Condensate Drain — See Fig. 10 for drain location. One 3/4-in. half coupling is provided outside unit evaporator section for condensate drain connection. A trap at least 4-in. deep must be used. See Fig. 11.

Step 7 — Make Electrical Connections

FIELD POWER SUPPLY — Unit is factory wired for voltage shown on unit nameplate.

When installing units, provide disconnect per NEC (National Electrical Code) of adequate size (MOCP [Maximum Overcurrent protection] of unit is on the informative plate). See Tables 2A and 2B. All field wiring must comply with NEC and local codes. Size wire based on MCA (Minimum Circuit Amps) on the unit informative plate. See Fig. 12 for power wiring connections to the unit power terminal block and equipment grounds.

Route power and ground lines through control box end panel or unit basepan (see Fig. 4) to connections as shown on unit wiring diagram and Fig. 12.

⚠ CAUTION

The correct power phasing is critical to the operation of the scroll compressors. An incorrect phasing will result in an alarm being generated and compressor operation lockout. Should this occur, power phase correction must be made to the incoming power.

⚠ WARNING

The unit must be electrically grounded in accordance with local codes and NEC ANSI/NFPA 70 (American National Standards Institute/National Fire Protection Association).

Field wiring must conform to temperature limitations for type "T" wire. All field wiring must comply with NEC and local requirements.

Operating voltage to compressor must be within voltage range indicated on unit nameplate. On 3-phase units, voltages between phases must be balanced within 2%.

Unit failure as a result of operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components.

FIELD CONTROL WIRING — Unit can be controlled with either a Carrier-approved accessory thermostat or a Carrier-approved space temperature sensor. Install thermostat according to the installation instructions included with accessory. Locate thermostat assembly or space temperature sensor on a solid interior wall in the conditioned space to sense average temperature.

Route thermostat or space temperature sensor cable or equivalent single leads of colored wire from subbase terminals through conduit into unit to low-voltage connections as shown on unit label wiring diagram and in Fig. 13 or 14.

NOTE: For wire runs up to 50 ft, use no. 18 AWG (American Wire Gage) 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 at the thermostat and will require a junction box and splice at the thermostat.

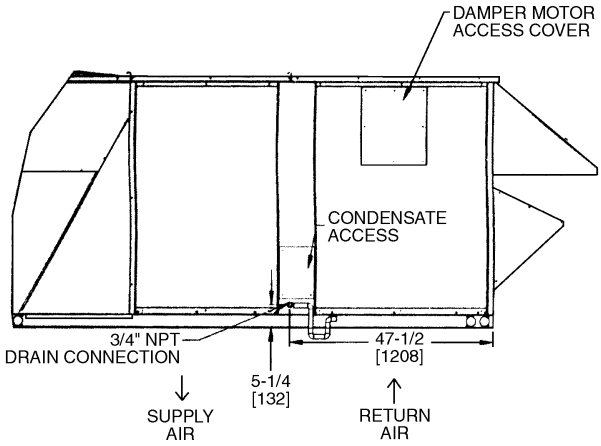


Fig. 10 — Condensate Drain Details

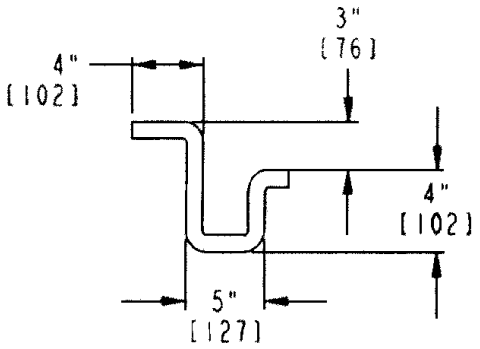


Fig. 11 — Condensate Drain Piping Details

Table 2A — Electrical Data (Units Without Optional Convenience Outlet)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR No. 1		COMPRESSOR No. 2		COMPRESSOR No. 3		OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
014	208/230	187	253	19.2	146.0	19.2	146.0	—	—	4.0	1/4	1.5	—	—	3.7	10.6/ 9.6	—	—	—	60/ 59	70/ 70	70/ 70
																	2	1.0	5.9	72/ 71	90/ 80	80/ 80
															5.0	16.7/15.2	—	—	—	66/ 64	80/ 80	80/ 70
																	2	1.0	5.9	78/ 76	90/ 90	90/ 90
													12/16	33/ 38	3.7	10.6/ 9.6	—	—	—	60/ 60	70/ 70	70/ 70
																	2	1.0	5.9	72/ 74	90/ 80	80/ 80
															5.0	16.7/15.2	—	—	—	66/ 67	80/ 80	80/ 70
																	2	1.0	5.9	78/ 81	90/ 90	90/ 90
													19/25	52/ 60	3.7	10.6 /9.6	—	—	—	78/ 87	80/ 90	80/ 90
																	2	1.0	5.9	93/102	100/110	90/100
															5.0	16.7/15.2	—	—	—	86/ 94	90/100	80/ 90
																	2	1.0	5.9	101/109	110/110	100/110
													38/50	104/120	3.7	10.6/ 9.6	—	—	—	143/132	150/150	150/150
																	2	1.0	5.9	158/147	175/150	150/175
															5.0	16.7/15.2	—	—	—	151/139	175/150	150/175
																	2	1.0	5.9	166/154	175/175	175/175
	460	414	506	9.5	73.0	9.5	73.0	—	—	4.0	1/4	0.7	—	—	3.7	4.8	—	—	—	29	35	35
																	2	1.0	3.1	35	40	40
															5.0	7.6	—	—	—	32	40	35
																	2	1.0	3.1	38	45	45
													15	18	3.7	4.8	—	—	—	29	35	35
																	2	1.0	3.1	36	40	40
															5.0	7.6	—	—	—	32	40	35
																	2	1.0	3.1	40	45	45
													25	30	3.7	4.8	—	—	—	44	45	45
																	2	1.0	3.1	51	60	50
															5.0	7.6	—	—	—	47	50	45
																	2	1.0	3.1	55	60	60
													50	60	3.7	4.8	—	—	—	66	80	80
																	2	1.0	3.1	74	80	90
															5.0	7.6	—	—	—	70	80	80
																	2	1.0	3.1	77	80	90
	575	518	633	7.6	58.4	7.6	58.4	—	—	4.0	1/4	0.7	—	—	3.0	3.9	—	—	—	24	30	30
																	2	1.0	3.1	30	35	35
															5.0	6.1	—	—	—	26	30	30
																	2	1.0	3.1	32	35	35
													16	15	3.0	3.9	—	—	—	24	30	30
																	2	1.0	3.1	31	35	35
															5.0	6.1	—	—	—	26	30	30
																	2	1.0	3.1	34	35	35
													25	24	3.0	3.9	—	—	—	35	35	35
																	2	1.0	3.1	43	45	40
															5.0	6.1	—	—	—	38	40	35
																	2	1.0	3.1	45	50	45
													48	46	3.0	3.9	—	—	—	62	70	60
																	2	1.0	3.1	70	80	70
															5.0	6.1	—	—	—	65	70	60
																	2	1.0	3.1	73	80	70

LEGEND AND NOTES FOR TABLES 2A AND 2B

LEGEND

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

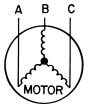
*Fuse or HACR circuit breaker.
†208/230 v 75-kW Electric Heat units must use dual-point wiring. The main table lists the branch circuit values for the refrigeration part of the system. The following two tables list the branch circuit values for the electric heat and values for a feeder circuit for both branch circuits.

NOTES:
1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percent of voltage imbalance.

   % Voltage Imbalance

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

   Example: Supply voltage is 460-3-60.

   AB = 452 v
   BC = 464 v
   AC = 455 v

   $$\text{Average Voltage} = \frac{452 + 464 + 455}{3}$$

   $$= \frac{1371}{3}$$

   $$= 457$$

   Determine maximum deviation from average voltage.
   (AB) 457 – 452 = 5 v
   (BC) 464 – 457 = 7 v
   (AC) 457 – 455 = 2 v

   Maximum deviation is 7 v.

   Determine percent of voltage imbalance.

   $$\text{\% Voltage Imbalance} = 100 \times \frac{7}{457}$$

   $$= 1.53\%$$

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

   IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.
3. The 75-kW 208/240-v electric heat can be factory installed but it must be wired separately in the field.
4. The convenience outlet full load amps (FLA) are 5, 3 and 3 for 208/230, 460, 575-v units, respectively.
5. The FLA load amps provided in the table for electric heaters are based on 208/240, 480 and 600 v.
6. MCA calculation for 50HG014-028 units with electric heaters over 50 kW is = 1.25 x (IFM + Power Exhaust + Convenience Outlet FLA amps) + 1.00 x (Electric Heater FLA).

Table 2A — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
016	208/230	187	253	16.7	130.0	16.7	130.0	16.7	130.0	4.0	1/4	1.5	—	—	3.7	10.6/ 9.6	—	—	—	71/ 70	80/ 80	80/ 80
																	2	1.0	5.9	83/ 82	90/ 90	100/ 90
															5.0	16.7/15.2	—	—	—	77/ 75	90/ 90	90/ 90
																	2	1.0	5.9	89/ 87	100/100	100/100
													19/25	52/ 60	3.7	10.6/ 9.6	—	—	—	78/ 87	80/ 90	80/ 90
																	2	1.0	5.9	93/102	100/110	100/100
															5.0	16.7/15.2	—	—	—	86/ 94	90/100	90/ 90
																	2	1.0	5.9	101/109	110/110	100/110
													38/50	104/120	3.7	10.6/ 9.6	—	—	—	143/132	150/150	150/150
																	2	1.0	5.9	158/147	175/150	150/175
															5.0	16.7/15.2	—	—	—	151/139	175/150	150/175
																	2	1.0	5.9	166/154	175/175	175/175
													56/75†	156/180	3.7	10.6/ 9.6	—	—	—	71/ 70†	80/ 80†	80/ 80†
																	2	1.0	5.9	83/ 82†	90/ 90†	100/ 90†
															5.0	16.7/15.2	—	—	—	77/ 75†	90/ 90†	90/ 90†
																	2	1.0	5.9	89/ 87†	100/100†	100/100†
													—	—	3.7	4.8	—	—	—	37	45	40
																	2	1.0	3.1	43	50	50
															5.0	7.6	—	—	—	40	45	45
																	2	1.0	3.1	46	50	60
													25	30	3.7	4.8	—	—	—	44	45	45
																	2	1.0	3.1	51	60	50
															5.0	7.6	—	—	—	47	50	45
016	460	414	506	9.0	70.0	9.0	70.0	9.0	70.0	4.0	1/4	0.7					2	1.0	3.1	55	60	60
													50	60	3.7	4.8	—	—	—	66	80	80
																	2	1.0	3.1	74	80	90
															5.0	7.6	—	—	—	70	80	80
																	2	1.0	3.1	77	80	90
													75	90	3.7	4.8	—	—	—	96	110	110
																	2	1.0	3.1	104	110	125
															5.0	7.6	—	—	—	100	110	125
																	2	1.0	3.1	107	125	125
													—	—	3.0	3.9	—	—	—	29	35	35
																	2	1.0	3.1	36	40	40
															5.0	6.1	—	—	—	32	35	35
																	2	1.0	3.1	38	40	45
													25	24	3.0	3.9	—	—	—	35	35	35
																	2	1.0	3.1	43	45	40
															5.0	6.1	—	—	—	38	40	35
	575	518	633	7.0	55.0	7.0	55.0	7.0	55.0	4.0	1/4	0.7					2	1.0	3.1	45	50	45
													48	46	3.0	3.9	—	—	—	62	70	60
																	2	1.0	3.1	70	80	70
															5.0	6.1	—	—	—	65	70	60
																	2	1.0	3.1	73	80	70
													78	75	3.0	3.9	—	—	—	80	90	100
																	2	1.0	3.1	88	100	100
															5.0	6.1	—	—	—	83	90	100
																	2	1.0	3.1	90	100	110

ELECTRIC HEAT BRANCH CIRCUIT FOR 208/240 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
016	208/240	187	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	56/75	156/180	NA	NA	NA	NA	NA	156/180	175/200	200/225

FEEDER CIRCUIT FOR 208/230 UNIT WITH 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
016	208/230	187	253	16.7	130.0	16.7	130.0	16.7	130.0	4.0	1/4	1.5	56/75	156/180	3.7	10.6/ 9.6	—	—	—	169/192	200/225	200/225
																	2	1.0	5.9	184/207	200/225	225/250
															5.0	16.7/15.2	—	—	—	177/199	200/225	200/225
																	2	1.0	5.9	192/214	200/225	225/250

See Legend and Notes on page 10.

Table 2A — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
020	208/230	187	253	16.7	130.0	16.7	130.0	22.4	184.0	4.0	1/4	1.5	—	—	5.0	16.7/15.2	—	—	—	84/ 83	100/100	100/ 90
																	2	1.0	5.9	96/ 94	110/110	110/110
															7.5	24.2/22.0	—	—	—	92/ 89	110/110	100/100
																	2	1.0	5.9	104/101	125/110	125/110
													19/25	52/ 60	5.0	16.7/15.2	—	—	—	86/ 94	100/100	100/ 90
																	2	1.0	5.9	101/109	110/110	110/110
															7.5	24.2/22.0	—	—	—	95/103	110/110	100/100
																	2	1.0	5.9	110/117	125/125	125/110
													38/50	104/120	5.0	16.7/15.2	—	—	—	151/139	175/150	150/175
																	2	1.0	5.9	166/154	175/175	175/175
															7.5	24.2/22.0	—	—	—	160/148	175/150	150/175
																	2	1.0	5.9	175/162	200/175	175/200
													56/75†	156/180	5.0	16.7/15.2	—	—	—	84/ 83†	100/100†	100/ 90†
																	2	1.0	5.9	96/ 94†	110/110†	110/110†
															7.5	24.2/22.0	—	—	—	92/ 89†	110/110†	100/100†
																	2	1.0	5.9	104/101†	125/110†	125/110†
	460	414	506	9.0	70.0	9.0	70.0	10.7	90.0	4.0	1/4	0.7	—	—	5.0	7.6	—	—	—	42	50	45
																	2	1.0	3.1	48	50	60
															7.5	11.0	—	—	—	45	50	50
																	2	1.0	3.1	51	60	60
													25	30	5.0	7.6	—	—	—	47	50	45
																	2	1.0	3.1	55	60	60
															7.5	11.0	—	—	—	51	60	50
																	2	1.0	3.1	59	60	60
													50	60	5.0	7.6	—	—	—	70	80	80
																	2	1.0	3.1	77	80	90
															7.5	11.0	—	—	—	74	80	90
																	2	1.0	3.1	82	90	90
													75	90	5.0	7.6	—	—	—	100	110	125
																	2	1.0	3.1	107	125	125
															7.5	11.0	—	—	—	104	125	125
																	2	1.0	3.1	112	125	125
	575	518	633	7.0	55.0	7.0	55.0	9.3	73.0	4.0	1/4	0.7	—	—	5.0	6.1	—	—	—	35	40	40
																	2	1.0	3.1	41	50	45
															7.5	9.0	—	—	—	37	45	45
																	2	1.0	3.1	44	50	50
													25	24	5.0	6.1	—	—	—	38	40	40
																	2	1.0	3.1	45	50	45
															7.5	9.0	—	—	—	41	45	45
																	2	1.0	3.1	49	50	50
													48	46	5.0	6.1	—	—	—	65	70	60
																	2	1.0	3.1	73	80	70
															7.5	9.0	—	—	—	69	70	70
																	2	1.0	3.1	77	80	80
													78	75	5.0	6.1	—	—	—	83	90	100
																	2	1.0	3.1	90	100	110
															7.5	9.0	—	—	—	86	100	100
																	2	1.0	3.1	94	100	110

ELECTRIC HEAT BRANCH CIRCUIT FOR 208/240 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
020	208/240	187	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	56/75	156/180	NA	NA	NA	NA	NA	156/180	175/200	200/225

FEEDER CIRCUIT FOR 208/230 UNIT WITH 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
020	208/230	187	253	16.7	130.0	16.7	130.0	22.4	184.0	4.0	1/4	1.5	56/75	156/180	5.0	16.7/15.2	—	—	—	177/199	200/225	200/225
																	2	1.0	5.9	192/214	200/225	225/250
															7.5	24.2/22.0	—	—	—	186/208	200/225	225/250
																	2	1.0	5.9	201/222	225/225	225/250

See Legend and Notes on page 10.

Table 2A — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
024	208/230	187	253	22.4	184.0	22.4	184.0	22.4	184.0	4.0	1/4	1.5	—	—	5.0	16.7/15.2	—	—	—	96/ 94	110/110	110/110
																	2	1.0	5.9	107/106	125/125	125/125
															7.5	24.2/22.0	—	—	—	104/101	125/110	125/110
																	2	1.0	5.9	115/113	125/125	150/125
													19/25	52/ 60	5.0	16.7/15.2	—	—	—	96/ 94	110/110	110/110
																	2	1.0	5.9	107/109	125/125	125/125
															7.5	24.2/22.0	—	—	—	104/103	125/110	125/110
																	2	1.0	5.9	115/117	125/125	150/125
													38/50	104/120	5.0	16.7/15.2	—	—	—	151/139	175/150	150/175
																	2	1.0	5.9	166/154	175/175	175/175
															7.5	24.2/22.0	—	—	—	160/148	175/150	150/175
																	2	1.0	5.9	175/162	200/175	175/200
													56/75†	156/180	5.0	16.7/15.2	—	—	—	96/ 94†	110/110†	110/110†
																	2	1.0	5.9	107/106†	125/125†	125/125†
															7.5	24.2/22.0	—	—	—	104/101†	125/110†	125/110†
																	2	1.0	5.9	115/113†	125/125†	150/125†
024	460	414	506	10.7	90.0	10.7	90.0	10.7	90.0	4.0	1/4	0.7	—	—	5.0	7.6	—	—	—	45	50	50
																	2	1.0	3.1	51	60	60
															7.5	11.0	—	—	—	49	50	60
																	2	1.0	3.1	55	60	60
													25	30	5.0	7.6	—	—	—	47	50	50
																	2	1.0	3.1	55	60	60
															7.5	11.0	—	—	—	51	60	60
																	2	1.0	3.1	59	60	60
													50	60	5.0	7.6	—	—	—	70	80	80
																	2	1.0	3.1	77	80	90
															7.5	11.0	—	—	—	74	80	90
																	2	1.0	3.1	82	90	90
													75	90	5.0	7.6	—	—	—	100	110	125
																	2	1.0	3.1	107	125	125
															7.5	11.0	—	—	—	104	125	125
																	2	1.0	3.1	112	125	125
	575	518	633	9.3	73.0	9.3	73.0	9.3	73.0	4.0	1/4	0.7	—	—	5.0	6.1	—	—	—	39	45	45
																	2	1.0	3.1	45	50	50
															7.5	9.0	—	—	—	42	50	50
																	2	1.0	3.1	48	50	60
													25	24	5.0	6.1	—	—	—	39	45	45
																	2	1.0	3.1	45	50	50
															7.5	9.0	—	—	—	42	50	50
																	2	1.0	3.1	49	50	60
													48	46	5.0	6.1	—	—	—	65	70	60
																	2	1.0	3.1	73	80	70
															7.5	9.0	—	—	—	69	70	70
																	2	1.0	3.1	77	80	80
													78	75	5.0	6.1	—	—	—	83	90	100
																	2	1.0	3.1	90	100	110
															7.5	9.0	—	—	—	86	100	100
																	2	1.0	3.1	94	100	110

ELECTRIC HEAT BRANCH CIRCUIT FOR 208/240 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
024	208/240	187	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	56/75	156/180	NA	NA	NA	NA	NA	156/180	175/200	200/225

FEEDER CIRCUIT FOR 208/230 UNIT WITH 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
024	208/230	187	253	22.4	184.0	22.4	184.0	22.4	184.0	4.0	1/4	1.5	56/75	156/180	5.0	16.7/15.2	—	—	—	177/199	200/225	200/225
																	2	1.0	5.9	192/214	200/225	225/250
															7.5	24.2/22	—	—	—	186/208	200/225	225/250
																	2	1.0	5.9	201/222	225/225	225/250

See Legend and Notes on page 10.

Table 2A — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
028	208/230	187	253	47.1	245.0	47.1	245.0	—	—	6.0	1/4	1.5	—	—	7.5	24.2/22.0	—	—	—	139/137	175/175	150/150
																	2	1.0	5.9	151/149	175/175	175/175
															10.0	30.8/28.0	—	—	—	146/143	175/175	175/175
																	2	1.0	5.9	158/155	200/200	175/175
													19/25	52/ 60	7.5	24.2/22.0	—	—	—	139/137	175/175	150/150
																	2	1.0	5.9	151/149	175/175	175/175
															10.0	30.8/28.0	—	—	—	146/143	175/175	175/175
																	2	1.0	5.9	158/155	200/200	175/175
													38/50	104/120	7.5	24.2/22.0	—	—	—	160/148	175/175	150/175
																	2	1.0	5.9	175/162	200/175	175/200
															10.0	30.8/28.0	—	—	—	169/155	175/175	175/175
																	2	1.0	5.9	183/170	200/200	175/200
													56/75†	156/180	7.5	24.2/22.0	—	—	—	139/137†	175/175†	150/150†
																	2	1.0	5.9	151/149†	175/175†	175/175†
															10.0	30.8/28.0	—	—	—	146/143†	175/175†	175/175†
																	2	1.0	5.9	158/155†	200/200†	175/175†
	460	414	506	19.6	125.0	19.6	125.0	—	—	6.0	1/4	0.7	—	—	7.5	11.0	—	—	—	59	70	70
																	2	1.0	3.1	66	80	70
															10.0	14.0	—	—	—	62	80	70
																	2	1.0	3.1	69	80	80
													25	30	7.5	11.0	—	—	—	59	70	70
																	2	1.0	3.1	66	80	70
															10.0	14.0	—	—	—	62	80	70
																	2	1.0	3.1	69	80	80
													50	60	7.5	11.0	—	—	—	74	80	90
																	2	1.0	3.1	82	90	90
															10.0	14.0	—	—	—	78	90	90
																	2	1.0	3.1	85	90	100
													75	90	7.5	11.0	—	—	—	104	125	125
																	2	1.0	3.1	112	125	125
															10.0	14.0	—	—	—	108	125	125
																	2	1.0	3.1	115	125	150
	575	518	633	15.8	100.0	15.8	100.0	—	—	6.0	1/4	0.7	—	—	7.5	9.0	—	—	—	49	60	60
																	2	1.0	3.1	55	70	60
															10.0	11.0	—	—	—	51	60	60
																	2	1.0	3.1	57	70	70
													25	24	7.5	9.0	—	—	—	49	60	60
																	2	1.0	3.1	55	70	60
															10.0	11.0	—	—	—	51	60	60
																	2	1.0	3.1	57	70	70
													48	46	7.5	9.0	—	—	—	69	70	70
																	2	1.0	3.1	77	80	80
															10.0	11.0	—	—	—	71	80	70
																	2	1.0	3.1	79	80	80
													78	75	7.5	9.0	—	—	—	86	100	100
																	2	1.0	3.1	94	100	110
															10.0	11.0	—	—	—	89	100	100
																	2	1.0	3.1	97	100	110

ELECTRIC HEAT BRANCH CIRCUIT FOR 208/240 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
028	208/240	187	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	56/75	156/180	NA	NA	NA	NA	NA	156/180	175/200	200/225

FEEDER CIRCUIT FOR 208/230 UNIT WITH 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
028	208/230	187	253	47.1	245.0	47.1	245.0	—	—	6.0	1/4	1.5	56/75	156/180	7.5	24.2/22.0	—	—	—	186/208	200/225	225/250
																	2	1.0	5.9	201/222	225/225	225/250
															10.0	30.8/28.0	—	—	—	195/215	225/225	225/250
																	2	1.0	5.9	209/230	225/250	250/300

See Legend and Notes on page 10.

Table 2B — Electrical Data (Units With Optional Convenience Outlet)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
014	208/230	187	253	19.2	146.0	19.2	146.0	—	—	4.0	1/4	1.5	—	—	3.7	10.6/ 9.6	—	—	—	65/ 64	80/ 80	70/ 70
																	2	1.0	5.9	77/ 76	90/ 90	80/ 80
															5.0	16.7/15.2	—	—	—	71/ 69	90/ 80	80/ 70
																	2	1.0	5.9	83/ 81	100/100	90/ 90
													12/16	33/ 38	3.7	10.6/ 9.6	—	—	—	65/ 66	80/ 80	70/ 70
																	2	1.0	5.9	77/ 81	90/ 90	80/ 80
															5.0	16.7/15.2	—	—	—	71/ 73	90/ 80	80/ 70
																	2	1.0	5.9	83/ 88	100/100	90/ 90
													19/25	52/ 60	3.7	10.6/ 9.6	—	—	—	85/ 93	90/100	80/ 90
																	2	1.0	5.9	99/108	100/110	90/100
															5.0	16.7/15.2	—	—	—	92/100	100/110	80/ 90
																	2	1.0	5.9	107/115	110/125	100/110
													38/50	104/120	3.7	10.6/ 9.6	—	—	—	150/138	150/150	150/150
																	2	1.0	5.9	164/153	175/175	150/175
															5.0	16.7/15.2	—	—	—	157/145	175/150	150/175
																	2	1.0	5.9	172/160	175/175	175/175
	460	414	506	9.5	73.0	9.5	73.0	—	—	4.0	1/4	0.7	—	—	3.7	4.8	—	—	—	32	40	35
																	2	1.0	3.1	38	45	40
															5.0	7.6	—	—	—	35	40	35
																	2	1.0	3.1	41	50	45
													15	18	3.7	4.8	—	—	—	32	40	35
																	2	1.0	3.1	40	45	40
															5.0	7.6	—	—	—	36	40	35
																	2	1.0	3.1	44	50	45
													25	30	3.7	4.8	—	—	—	47	50	45
																	2	1.0	3.1	55	60	50
															5.0	7.6	—	—	—	51	60	45
																	2	1.0	3.1	59	60	60
													50	60	3.7	4.8	—	—	—	70	80	80
																	2	1.0	3.1	78	80	90
															5.0	7.6	—	—	—	73	80	80
																	2	1.0	3.1	81	90	90
	575	518	633	7.6	58.4	7.6	58.4	—	—	4.0	1/4	0.7	—	—	3.0	3.9	—	—	—	27	30	30
																	2	1.0	3.1	33	40	35
															5.0	6.1	—	—	—	29	35	30
																	2	1.0	3.1	36	40	35
													16	15	3.0	3.9	—	—	—	27	30	30
																	2	1.0	3.1	35	40	35
															5.0	6.1	—	—	—	30	35	30
																	2	1.0	3.1	38	40	35
													25	24	3.0	3.9	—	—	—	39	40	35
																	2	1.0	3.1	46	50	40
															5.0	6.1	—	—	—	41	45	35
																	2	1.0	3.1	49	50	45
													48	46	3.0	3.9	—	—	—	66	70	60
																	2	1.0	3.1	74	80	70
															5.0	6.1	—	—	—	69	70	60
																	2	1.0	3.1	77	80	70

See Legend and Notes on page 10.

Table 2B — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
016	208/230	187	253	16.7	130.0	16.7	130.0	16.7	130.0	4.0	1/4	1.5	—	—	3.7	10.6/ 9.6	—	—	—	76/ 75	90/ 90	80/ 80
																	2	1.0	5.9	88/ 87	100/100	100/ 90
															5.0	16.7/15.2	—	—	—	82/ 80	90/ 90	90/ 90
																	2	1.0	5.9	94/ 92	110/100	100/100
													19/25	52/ 60	3.7	10.6/ 9.6	—	—	—	85/ 93	90/100	80/ 90
																	2	1.0	5.9	99/108	100/110	100/100
															5.0	16.7/15.2	—	—	—	92/100	100/110	90/ 90
																	2	1.0	5.9	107/115	110/125	100/110
													38/50	104/120	3.7	10.6/ 9.6	—	—	—	150/138	150/150	150/150
																	2	1.0	5.9	164/153	175/175	150/175
															5.0	16.7/15.2	—	—	—	157/145	175/150	150/175
																	2	1.0	5.9	172/160	175/175	175/175
													56/75†	156/180	3.7	10.6/ 9.6	—	—	—	76/ 75†	90/ 90†	80/ 80†
																	2	1.0	5.9	88/ 87†	100/100†	100/ 90†
															5.0	16.7/15.2	—	—	—	82/ 80†	90/ 90†	90/ 90†
																	2	1.0	5.9	94/ 92†	110/100†	100/100†
016	460	414	506	9.0	70.0	9.0	70.0	9.0	70.0	4.0	1/4	0.7	—	—	3.7	4.8	—	—	—	40	45	40
																	2	1.0	3.1	46	50	50
															5.0	7.6	—	—	—	43	50	45
																	2	1.0	3.1	49	50	60
													25	30	3.7	4.8	—	—	—	47	50	45
																	2	1.0	3.1	55	60	50
															5.0	7.6	—	—	—	51	60	45
																	2	1.0	3.1	59	60	60
													50	60	3.7	4.8	—	—	—	70	80	80
																	2	1.0	3.1	78	80	90
															5.0	7.6	—	—	—	73	80	80
																	2	1.0	3.1	81	90	90
													75	90	3.7	4.8	—	—	—	100	110	110
																	2	1.0	3.1	108	125	125
															5.0	7.6	—	—	—	103	125	125
																	2	1.0	3.1	111	125	125
	575	518	633	7.0	55.0	7.0	55.0	7.0	55.0	4.0	1/4	0.7	—	—	3.0	3.9	—	—	—	32	35	35
																	2	1.0	3.1	39	45	40
															5.0	6.1	—	—	—	35	40	35
																	2	1.0	3.1	41	50	45
													25	24	3.0	3.9	—	—	—	39	40	35
																	2	1.0	3.1	46	50	40
															5.0	6.1	—	—	—	41	45	35
																	2	1.0	3.1	49	50	45
													48	46	3.0	3.9	—	—	—	66	70	60
																	2	1.0	3.1	74	80	70
															5.0	6.1	—	—	—	69	70	60
																	2	1.0	3.1	77	80	70
													78	75	3.0	3.9	—	—	—	84	90	100
																	2	1.0	3.1	91	100	100
															5.0	6.1	—	—	—	86	100	100
																	2	1.0	3.1	94	100	110

ELECTRIC HEAT BRANCH CIRCUIT FOR 208/240 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
016	208/240	187	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	56/75	156/180	NA	NA	NA	NA	NA	156/180	175/200	200/225

FEEDER CIRCUIT FOR 208/230 UNIT WITH 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
016	208/230	187	253	16.7	130.0	16.7	130.0	16.7	130.0	4.0	1/4	1.5	56/75	156/180	3.7	10.6/ 9.6	—	—	—	176/198	200/225	200/225
																	2	1.0	5.9	190/213	200/225	225/250
															5.0	16.7/15.2	—	—	—	183/205	200/225	200/225
																	2	1.0	5.9	198/220	200/225	225/250

See Legend and Notes on page 10.

Table 2B — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
020	208/230	187	253	16.7	130.0	16.7	130.0	22.4	184.0	4.0	1/4	1.5	—	—	5.0	16.7/15.2	—	—	—	89/ 88	110/110	100/ 90
																	2	1.0	5.9	101/ 99	110/110	110/110
															7.5	24.2/22.0	—	—	—	97/ 94	110/110	100/100
																	2	1.0	5.9	109/106	125/125	125/110
													19/25	52/ 60	5.0	16.7/15.2	—	—	—	92/100	110/110	100/ 90
																	2	1.0	5.9	107/115	110/125	110/110
															7.5	24.2/22.0	—	—	—	102/109	110/110	100/100
																	2	1.0	5.9	116/124	125/125	125/110
													38/50	104/120	5.0	16.7/15.2	—	—	—	157/145	175/150	150/175
																	2	1.0	5.9	172/160	175/175	175/175
															7.5	24.2/22.0	—	—	—	167/154	175/175	150/175
																	2	1.0	5.9	181/169	200/175	175/200
													56/75†	156/180	5.0	16.7/15.2	—	—	—	89/ 88†	110/110†	100/ 90†
																	2	1.0	5.9	101/ 99†	110/110†	110/110†
															7.5	24.2/22.0	—	—	—	97/ 94†	110/110†	100/100†
																	2	1.0	5.9	109/106†	125/125†	125/110†
	460	414	506	9.0	70.0	9.0	70.0	10.7	90.0	4.0	1/4	0.7	—	—	5.0	7.6	—	—	—	45	50	45
																	2	1.0	3.1	51	60	60
															7.5	11.0	—	—	—	48	50	50
																	2	1.0	3.1	54	60	60
													25	30	5.0	7.6	—	—	—	51	60	45
																	2	1.0	3.1	59	60	60
															7.5	11.0	—	—	—	55	60	50
																	2	1.0	3.1	63	70	60
													50	60	5.0	7.6	—	—	—	73	80	80
																	2	1.0	3.1	81	90	90
															7.5	11.0	—	—	—	78	80	90
																	2	1.0	3.1	85	90	90
													75	90	5.0	7.6	—	—	—	103	125	125
																	2	1.0	3.1	111	125	125
															7.5	11.0	—	—	—	108	125	125
																	2	1.0	3.1	115	125	125
	575	518	633	7.0	55.0	7.0	55.0	9.3	73.0	4.0	1/4	0.7	—	—	5.0	6.1	—	—	—	38	45	40
																	2	1.0	3.1	44	50	45
															7.5	9.0	—	—	—	40	45	45
																	2	1.0	3.1	47	50	50
													25	24	5.0	6.1	—	—	—	41	45	40
																	2	1.0	3.1	49	50	45
															7.5	9.0	—	—	—	45	45	45
																	2	1.0	3.1	53	60	50
													48	46	5.0	6.1	—	—	—	69	70	60
																	2	1.0	3.1	77	80	70
															7.5	9.0	—	—	—	73	80	70
																	2	1.0	3.1	80	90	80
													78	75	5.0	6.1	—	—	—	86	100	100
																	2	1.0	3.1	94	100	110
															7.5	9.0	—	—	—	90	100	100
																	2	1.0	3.1	98	100	110

ELECTRIC HEAT BRANCH CIRCUIT FOR 208/240 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
020	208/240	187	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	56/75	156/180	NA	NA	NA	NA	NA	156/180	175/200	200/225

FEEDER CIRCUIT FOR 208/230 UNIT WITH 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
020	208/230	187	253	16.7	130.0	16.7	130.0	22.4	184.0	4.0	1/4	1.5	56/75	156/180	5.0	16.7/15.2	—	—	—	183/205	200/225	200/225
																	2	1.0	5.9	198/220	200/225	225/250
															7.5	24.2/22.0	—	—	—	193/214	200/225	225/250
																	2	1.0	5.9	207/229	225/250	225/250

See Legend and Notes on page 10.

Table 2B — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
024	208/230	187	253	22.4	184.0	22.4	184.0	22.4	184.0	4.0	1/4	1.5	—	—	5.0	16.7/15.2	—	—	—	101/ 99	110/110	110/110
																	2	1.0	5.9	112/111	125/125	125/125
															7.5	24.2/22.0	—	—	—	109/106	125/125	125/110
																	2	1.0	5.9	120/118	125/125	150/125
													19/25	52/ 60	5.0	16.7/15.2	—	—	—	101/100	110/110	110/110
																	2	1.0	5.9	112/115	125/125	125/125
															7.5	24.2/22.0	—	—	—	109/109	125/125	125/110
																	2	1.0	5.9	120/124	125/125	150/125
													38/50	104/120	5.0	16.7/15.2	—	—	—	157/145	175/150	150/175
																	2	1.0	5.9	172/160	175/175	175/175
															7.5	24.2/22.0	—	—	—	167/154	175/175	150/175
																	2	1.0	5.9	181/169	200/175	175/200
													56/75†	156/180	5.0	16.7/15.2	—	—	—	101/ 99†	110/110†	110/110†
																	2	1.0	5.9	112/111†	125/125†	125/125†
															7.5	24.2/22.0	—	—	—	109/106†	125/125†	125/110†
																	2	1.0	5.9	120/118†	125/125†	150/125†
024	460	414	506	10.7	90.0	10.7	90.0	10.7	90.0	4.0	1/4	0.7	—	—	5.0	7.6	—	—	—	48	50	50
																	2	1.0	3.1	54	60	60
															7.5	11.0	—	—	—	52	60	60
																	2	1.0	3.1	58	60	60
													25	30	5.0	7.6	—	—	—	51	60	50
																	2	1.0	3.1	59	60	60
															7.5	11.0	—	—	—	55	60	60
																	2	1.0	3.1	63	70	60
													50	60	5.0	7.6	—	—	—	73	80	80
																	2	1.0	3.1	81	90	90
															7.5	11.0	—	—	—	78	80	90
																	2	1.0	3.1	85	90	90
													75	90	5.0	7.6	—	—	—	103	125	125
																	2	1.0	3.1	111	125	125
															7.5	11.0	—	—	—	108	125	125
																	2	1.0	3.1	115	125	125
	575	518	633	9.3	73.0	9.3	73.0	9.3	73.0	4.0	1/4	0.7	—	—	5.0	6.1	—	—	—	42	50	45
																	2	1.0	3.1	48	50	50
															7.5	9.0	—	—	—	45	50	50
																	2	1.0	3.1	51	60	60
													25	24	5.0	6.1	—	—	—	42	50	45
																	2	1.0	3.1	49	50	50
															7.5	9.0	—	—	—	45	50	50
																	2	1.0	3.1	53	60	60
													48	46	5.0	6.1	—	—	—	69	70	60
																	2	1.0	3.1	77	80	70
															7.5	9.0	—	—	—	73	80	70
																	2	1.0	3.1	80	90	80
													78	75	5.0	6.1	—	—	—	86	100	100
																	2	1.0	3.1	94	100	110
															7.5	9.0	—	—	—	90	100	100
																	2	1.0	3.1	98	100	110

ELECTRIC HEAT BRANCH CIRCUIT FOR 208/240 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
024	208/240	187	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	56/75	156/180	NA	NA	NA	NA	NA	156/180	175/200	200/225

FEEDER CIRCUIT FOR 208/230 UNIT WITH 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
024	208/230	187	253	22.4	184.0	22.4	184.0	22.4	184.0	4.0	1/4	1.5	56/75	156/180	5.0	16.7/15.2	—	—	—	183/205	200/225	200/225
																	2	1.0	5.9	198/220	200/225	225/250
															7.5	24.2/22.0	—	—	—	193/214	200/225	225/250
																	2	1.0	5.9	207/229	225/250	225/250

See Legend and Notes on page 10.

Table 2B — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
028	208/230	187	253	47.1	245.0	47.1	245.0	—	—	6.0	1/4	1.5	—	—	7.5	24.2/22.0	—	—	—	144/142	175/175	150/150
																	2	1.0	5.9	156/154	200/200	175/175
															10.0	30.8/28.0	—	—	—	151/148	175/175	175/175
																	2	1.0	5.9	163/160	200/200	175/175
													19/25	52/ 60	7.5	24.2/22.0	—	—	—	144/142	175/175	150/150
																	2	1.0	5.9	156/154	200/200	175/175
															10.0	30.8/28.0	—	—	—	151/148	175/175	175/175
																	2	1.0	5.9	163/160	200/200	175/175
													38/50	104/120	7.5	24.2/22.0	—	—	—	167/154	175/175	150/175
																	2	1.0	5.9	181/169	200/200	175/200
															10.0	30.8/28.0	—	—	—	175/161	175/175	175/175
																	2	1.0	5.9	190/176	200/200	175/200
													56/75†	156/180	7.5	24.2/22.0	—	—	—	144/142†	175/175†	150/150†
																	2	1.0	5.9	156/154†	200/200†	175/175†
															10.0	30.8/28.0	—	—	—	151/148†	175/175†	175/175†
																	2	1.0	5.9	163/160†	200/200†	175/175†
	460	414	506	19.6	125.0	19.6	125.0	—	—	6.0	1/4	0.7	—	—	7.5	11.0	—	—	—	62	80	70
																	2	1.0	3.1	69	80	70
															10.0	14.0	—	—	—	65	80	70
																	2	1.0	3.1	72	90	80
													25	30	7.5	11.0	—	—	—	62	80	70
																	2	1.0	3.1	69	80	70
															10.0	14.0	—	—	—	65	80	70
																	2	1.0	3.1	72	90	80
													50	60	7.5	11.0	—	—	—	78	80	90
																	2	1.0	3.1	85	90	90
															10.0	14.0	—	—	—	81	90	90
																	2	1.0	3.1	89	100	100
													75	90	7.5	11.0	—	—	—	108	125	125
																	2	1.0	3.1	115	125	125
															10.0	14.0	—	—	—	111	125	125
																	2	1.0	3.1	119	125	150
	575	518	633	15.8	100.0	15.8	100.0	—	—	6.0	1/4	0.7	—	—	7.5	9.0	—	—	—	52	60	60
																	2	1.0	3.1	58	70	60
															10.0	11.0	—	—	—	54	60	60
																	2	1.0	3.1	60	70	70
													25	24	7.5	9.0	—	—	—	52	60	60
																	2	1.0	3.1	58	70	60
															10.0	11.0	—	—	—	54	60	60
																	2	1.0	3.1	60	70	70
													48	46	7.5	9.0	—	—	—	73	80	70
																	2	1.0	3.1	80	90	80
															10.0	11.0	—	—	—	75	80	70
																	2	1.0	3.1	83	90	80
													78	75	7.5	9.0	—	—	—	90	100	100
																	2	1.0	3.1	98	100	110
															10.0	11.0	—	—	—	93	100	100
																	2	1.0	3.1	100	110	110

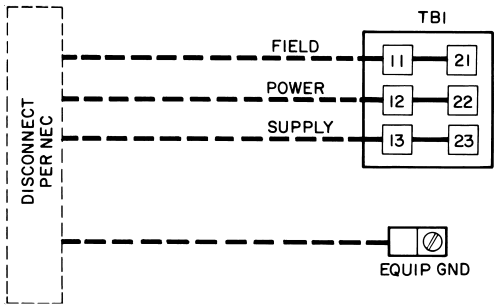
ELECTRIC HEAT BRANCH CIRCUIT FOR 208/240 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
028	208/240	187	253	NA	NA	NA	NA	NA	NA	NA	NA	NA	56/75	156/180	NA	NA	NA	NA	NA	156/180	175/200	200/225

FEEDER CIRCUIT FOR 208/230 UNIT WITH 75-kW ELECTRIC HEAT

UNIT SIZE 50HG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		DISCONNECT SIZE
				No. 1		No. 2		No. 3														
		Min	Max	RLA	LRA	RLA	LRA	RLA	LRA	Qty	Hp	FLA (ea)	kW	FLA	Hp	FLA	Qty	Hp	FLA (ea)	MCA	MOCP*	FLA
028	208/230	187	253	47.1	245.0	47.1	245.0	—	—	6.0	1/4	1.5	56/75	156/180	7.5	24.2/22.0	—	—	—	193/214	200/225	225/250
																	2	1.0	5.9	207/229	225/250	225/250
															10.0	30.8/28.0	—	—	—	201/221	225/225	225/250
																	2	1.0	5.9	216/236	225/250	250/300

See Legend and Notes on page 10.



LEGEND

EQUIP — Equipment
GND — Ground
NEC — National Electrical Code
TB — Terminal Board

NOTE: The maximum wire size for TB1 is 2/0.

Fig. 12 — Field Power Wiring Connections

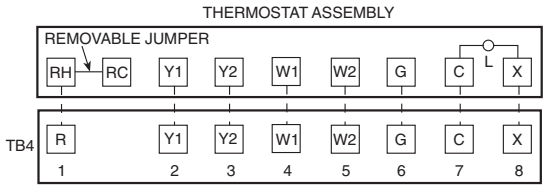
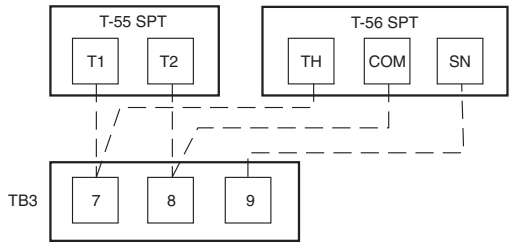


Fig. 13 — Field Control Thermostat Wiring



SPT — Space Temperature Sensor

Fig. 14 — Field Control Space Temperature Sensor Wiring

Set heat anticipator settings as shown in Table 3.

Table 3 — Heat Anticipator Settings

UNIT SIZE 50HG	ELECTRIC HEAT (kW)	STAGE 1 (W1) ON			STAGES 1 AND 2 (W1 and W2) ON		
		Voltage			Voltage		
		208/240	480	600	208/240	480	600
014	15	0.2	0.2	0.2	0.2	0.2	0.2
	25	0.2	0.2	0.2	0.4	0.4	0.4
	50	0.4	0.2	0.2	0.8	0.4	0.4
016-028	25	0.2	0.2	0.2	0.4	0.4	0.4
	50	0.4	0.2	0.2	0.8	0.4	0.4
	75	0.4	0.2	0.2	0.8	0.4	0.4

Settings may be changed slightly to provide a greater degree of comfort for a particular installation.

Step 8 — Install Outdoor Air Hood — Perform the following procedure to install the outdoor-air hood:

1. Remove blank panel from return end of unit (hood section). Save the screws. See Fig. 15 for shipping location of components.
2. Hood sides are fastened to sides of outdoor air opening. Remove the hood sides and save the screws (3 each side).
3. Remove the bracket holding the bottom half of the hood in the shipping position. Remove the hood bottom half and filters (or manual dampers on units so equipped) from outdoor section.

   NOTE: On units without economizers, the components are attached to the unit basepan. To access the components, remove the panel below the outdoor air intake section.
4. Remove inner filter track from shipping position in outdoor section. Position inner filter track so the track is facing outward from the unit. Install the filter track with 4 screws provided.
5. Apply seal strip (provided) to back flange of both hood sides where hood side connects to the unit back panel. See Fig. 16.
6. Apply seal strip (provided) to top flange of both hood sides where hood sides connect to the hood top panels. See Fig. 16.
7. Install hood sides to the back panels using the screws from Step 2. The sloped flanges point outward. The drip edges of the side panels should face outward as well. The filter guides should face inward to hold the filters in place. See Fig. 16.
8. Apply seal strip along the entire length of the bottom flange of the hood top. See Fig. 16.
9. Install the bottom part of the hood top using 4 screws provided. See Fig. 16.
10. Remove the packaging from filters (3) and install into the filter tracks. Slide the filters to the sides then place the last filter into the center of the filter track.

NOTE: For units with manual dampers, replace the end filters with the manual dampers. Install the filter in the center between the manual dampers.

11. Install the filter retainer track along the bottom edge of the outdoor air hood using 4 screws provided. See Fig. 16.
12. Install top section of the outdoor air hood using 9 screws provided. See Fig. 16. See Fig. 17 for a picture of the assembled outdoor air hood.

NOTE: For filter removal, remove the four screws holding the filter retainer. The filters can then be removed, cleaned, or replaced. Install the filters by reversing the procedure.

MANUAL DAMPER ASSEMBLY — For units equipped with manual dampers, the assembly process is similar to the outdoor air hood for units with economizers. There are two slide dampers shipped with the unit to allow for manual setting of the outside air volume. When assembling the hood, place one of the manual slide dampers in each of the end positions and the remaining filter in the center position. The manual dampers can then be moved to the appropriate position and then locked into place using the screws mounted in the adjustment slots. See Fig. 18.

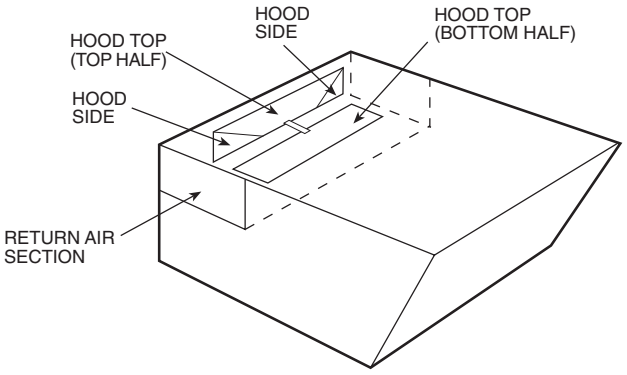
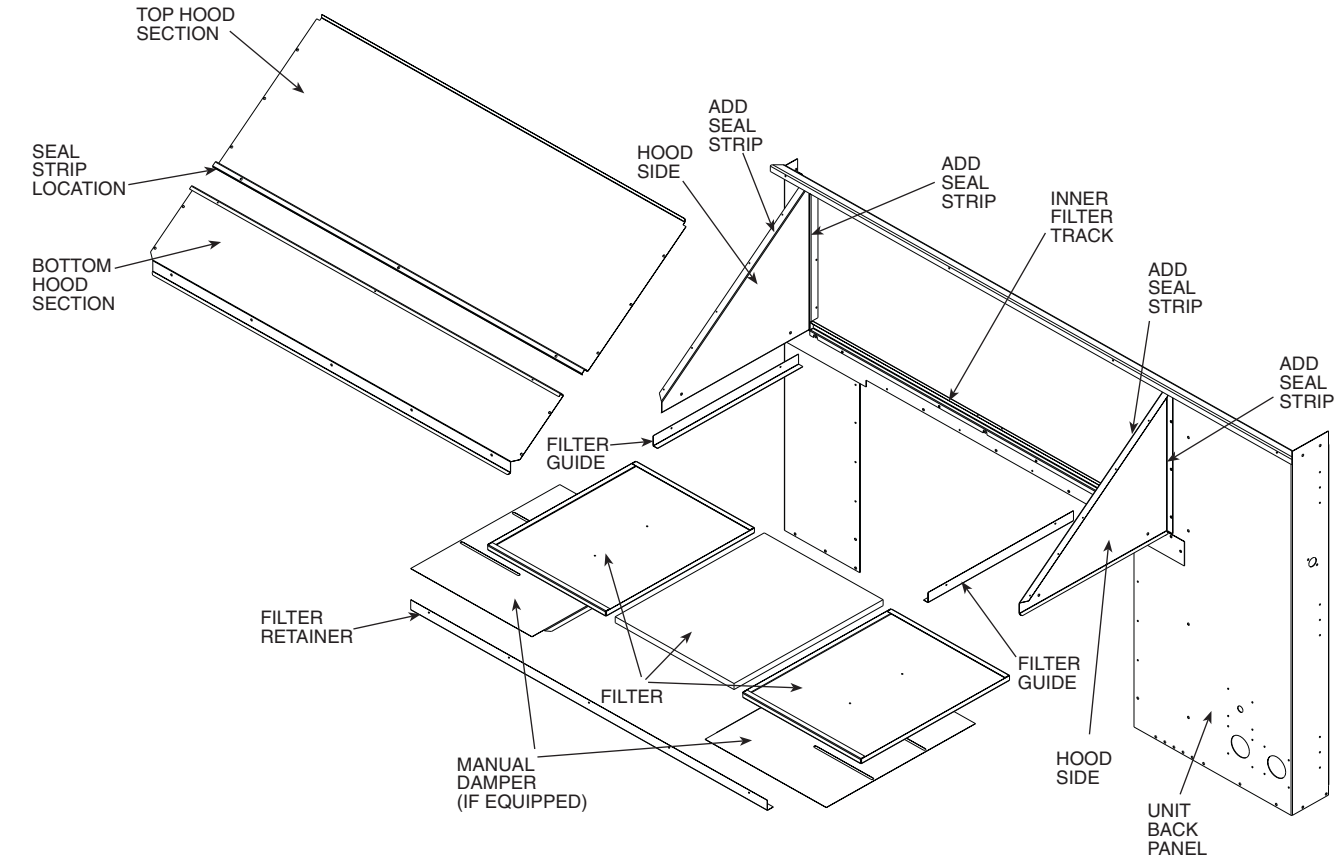


Fig. 15 — Outdoor-Air Hood Compartment Shipping Location



NOTE: Units with manual damper only use one filter.

Fig. 16 — Outdoor Air Hood Details

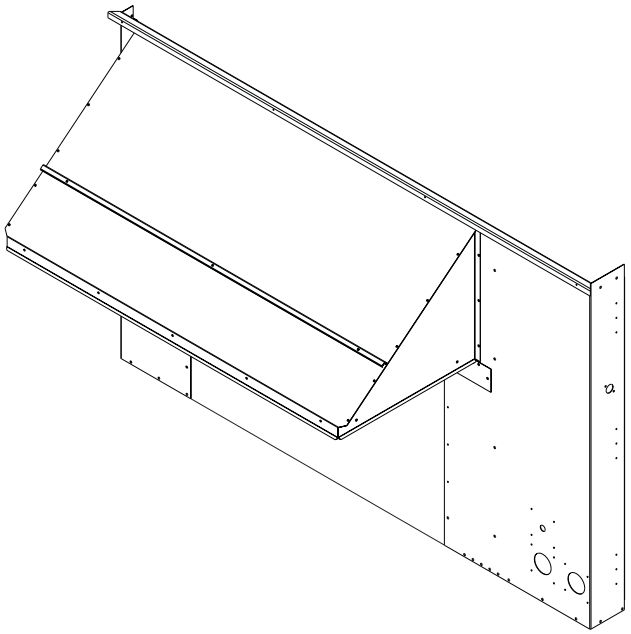


Fig. 17 — Outdoor Air Hood Assembled

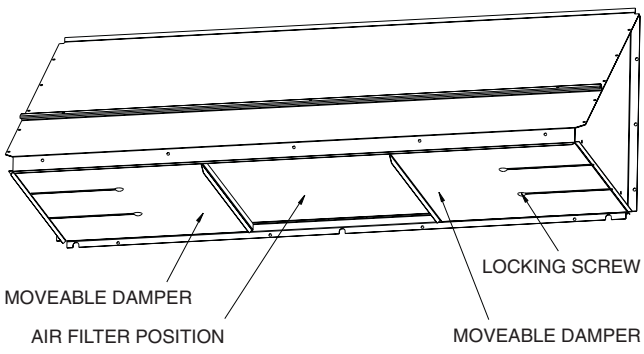


Fig. 18 — Manual Damper Details

Step 9 — Make Outdoor-Air Inlet Adjustments — A configuration within the unit software specifies the minimum economizer position when the indoor fan is operating. The factory default is set to 30% of the damper opening. This does not equal 30% fresh air (outdoor air) but 30% of the damper position. The damper moves from 0% (fully closed) to 100% (fully open). If it is determined that the customer requires more or less outdoor air, then the factory default can be changed. The following steps specify how to adjust the position of the economizer damper using the *Comfort*Link™ Scrolling Marquee. Refer to the *Comfort*Link Display Usage section on page 37 for more information.

1. Using the *Comfort*Link control, at the main menu level, use the arrow buttons to move to the Configuration menu. Press ENTER .
2. Using the down arrow button, scroll to the "Econo" menu and press ENTER .
3. Using the arrow buttons, move to the MIN.P configuration.
4. The value that is displayed is the current configuration value. Press ENTER to change this value.
5. Use the arrow buttons to specify the new value. Press ENTER to save the value.
6. Press ESCAPE twice to return to the main menu.

Step 10 — Position Optional Power Exhaust or Barometric Relief Damper Hood — The optional power exhaust or barometric relief dampers are shipped assembled and tilted back into the unit for shipping. Brackets and extra screws are shipped in shrink wrap around the dampers.

1. Remove 9 screws holding each damper assembly in place. See Fig. 19. Each damper assembly is secured with 3 screws on each side and 3 screws along the bottom. Save screws.

⚠ CAUTION

Be careful when tilting blower assembly. Hoods and blowers are heavy and can cause injury if dropped.

2. Pivot the damper assembly outward until top edge of damper assembly rests against inside wall of unit.
3. Secure each damper assembly to unit with 6 screws across top (3 screws provided) and bottom (3 screws from Step 1) of damper.
4. With screws saved from Step 1, install brackets on each side of damper assembly. See Fig. 20.
5. Remove tape from damper blades.

Step 11 — Non-Fused Disconnect — The handle for the factory-installed non-fused disconnect is shipped inside the unit to prevent the handle from damage during shipping. Follow these steps to complete installation of the handle.

⚠ WARNING

BE SURE POWER IS SHUT OFF TO THE UNIT FROM THE BUILDING POWER SUPPLY.

1. Open the control box access door.
2. Remove the small cover plate located on the unit corner post near the control section.
3. Remove the inner control box cover. The handle and shaft are located in a plastic bag at the bottom of the control box.
4. Insert the square shaft into the disconnect with the pins vertical. On the 100 amp disconnect the shaft is keyed into the disconnect and can only be installed one way with the pins vertical.
5. Insert the handle through the corner post and onto the shaft with the handle positioned so that "OFF" is on top.
6. Rotate the handle to the "ON" position to lock the pins into the handle.
7. From the inside of the corner post, attach the handle mounting screws to the handle. Slide the shaft fully into the handle and tighten the set screws(s) on the disconnect to lock the shaft. Tighten the screws that attach the handle to the corner post.
8. Rotate the handle back to the "OFF" position.
9. Replace all panels and doors.
10. Restore power to unit.

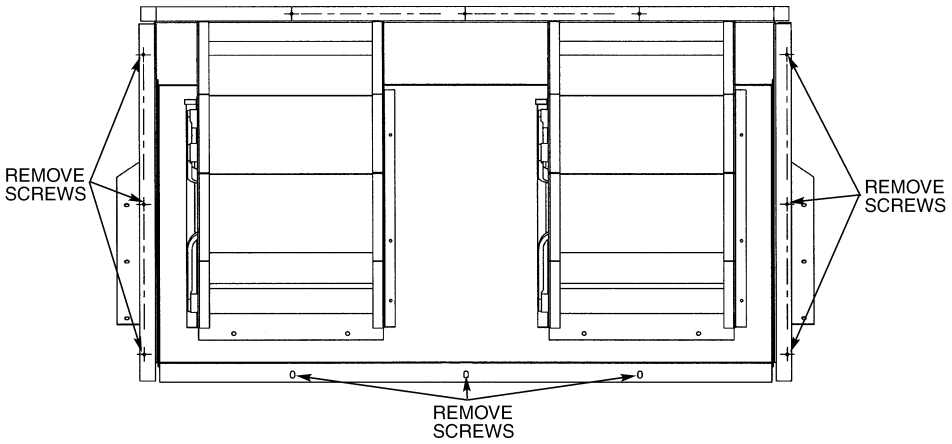


Fig. 19 — Power Exhaust or Barometric Relief Damper Mounting Details

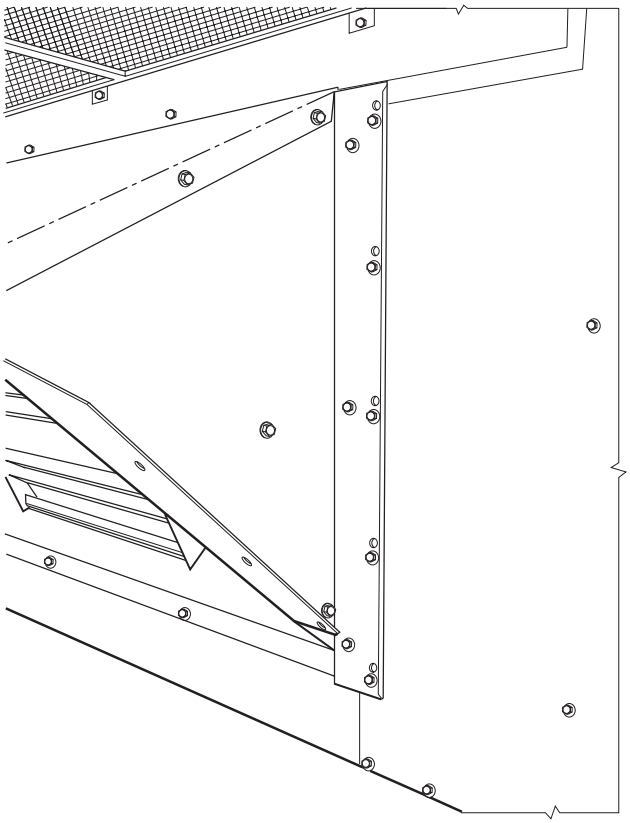


Fig. 20 — Bracket and Hood Positioning

Step 12 — Install All Accessories — After all of the factory-installed options have been adjusted, install all field-installed accessories. Refer to the accessory installation instructions included with each accessory. Consult the Carrier Price Pages for accessory package numbers for particular applications. The available field-installed accessories for the Centurion units are:

- economizer
- power exhaust
- barometric relief damper
- 14-in. roof curb
- 24-in. roof curb
- electric heaters
- enthalpy control
- differential enthalpy control
- plugged filter indicator
- carbon dioxide detector
- smoke detector
- filter status switch
- fan status switch
- condenser hail guard
- horizontal duct accessory
- thermostats
- two-position damper

START-UP

Use the following information and Start-Up Checklist on page CL-1 to check out unit PRIOR to start-up.

Unit Preparation — Check that unit has been installed in accordance with these installation instructions and all applicable codes.

Compressor Mounting — Compressors are internally spring mounted. Do not loosen or remove compressor hold-down bolts.

Refrigerant Service Ports — Each refrigerant system has a total of 3 Schrader-type service gage ports per circuit. One port is located on the suction line, one on the compressor discharge line, and one on the liquid line. Be sure that caps on the ports are tight.

Crankcase Heaters — Crankcase heaters are energized as long as there is power to the unit and the compressor is not operating.

IMPORTANT: Unit power must be on for 24 hours prior to start-up. Otherwise, damage to compressor may result.

Compressor Rotation

⚠ CAUTION

Improper wiring will cause compressor stoppage and alarm. Correct wiring by switching leads as indicated below.

It is important to be certain the compressors are rotating in the proper direction. To determine whether or not compressors are rotating in the proper direction perform the following procedure:

1. Use the Service Test feature to energize a compressor (see Controls and Troubleshooting literature for details).
2. If the compressor is rotating in the wrong direction, the control will stop the compressor and an alarm will be displayed.

   NOTE: The evaporator fan is probably also rotating in the wrong direction.
3. Turn off power to the unit and lock out the power.
4. Reverse any two of the incoming power leads.
5. Turn on power to the unit.
6. Repeat the procedure to energize each compressor and check the evaporator fan rotation.

Internal Wiring — Check all electrical connections in unit control boxes; tighten as required.

Evaporator Fan — Fan belt and variable pulleys are factory-installed. Remove tape from the fan pulley. See Tables 4-14 for Fan Performance Data. Be sure that fans rotate in the proper direction. See Table 15 for air quantity limits. See Table 16 for Evaporator Fan Motor Specifications. See Table 17 for fan rpm at various motor pulley settings. See Tables 18 and 19 for electric heater information. See Tables 20 and 21 for FIOP/accessory static pressure. To alter fan performance, see Evaporator Fan Performance Adjustment section on page 39.

Condenser-Fans and Motors — Condenser fans and motors are factory set. Refer to Condenser-Fan Adjustment section (page 40) as required.

Return-Air Filters — Check that correct filters are installed in filter tracks (see Table 1). Do not operate unit without return-air filters.

NOTE: For units with 4-in. filter option, these units are shipped with standard 2-in. filters. To install 4-in. filters, the filter spacers must be removed and discarded.

Outdoor-Air Inlet Screens — Outdoor-air inlet screens must be in place before operating unit.

Table 4 — Fan Performance — 50HG014 — Vertical Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	423	522	0.60	521	715	0.82	605	906	1.04	679	1093	1.26	747	1278	1.47
4000	454	675	0.78	545	884	1.02	625	1093	1.26	697	1299	1.49	762	1502	1.73
4500	487	859	0.99	572	1082	1.24	648	1307	1.50	717	1529	1.76	780	1750	2.01
5000	522	1077	1.24	601	1311	1.51	673	1550	1.78	739	1789	2.06	800	2026	2.33
5500	559	1330	1.53	632	1573	1.81	700	1826	2.10	763	2080	2.39	822	2332	2.68
6000	598	1621	1.86	664	1873	2.15	729	2137	2.46	789	2405	2.77	846	2671	3.07
6500	637	1953	2.25	698	2212	2.54	759	2486	2.86	817	2766	3.18	871	3046	3.50
7000	677	2327	2.68	734	2593	2.98	791	2876	3.31	846	3167	3.64	898	3459	3.98
7500	718	2745	3.16	770	3018	3.47	824	3309	3.81	876	3609	4.15	926	3913	4.50
8000	759	3209	3.69	808	3489	4.01	858	3787	4.36	907	4095	4.71	956	4410	5.07
8500	801	3722	4.28	846	4007	4.61	893	4311	4.96	940	4628	5.32	986	4952	5.69

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	810	1461	1.68	868	1642	1.89	923	1821	2.09	975	1999	2.30	1024	2176	2.50
4000	823	1703	1.96	880	1902	2.19	934	2100	2.42	985	2296	2.64	1034	2490	2.86
4500	839	1969	2.26	894	2185	2.51	947	2400	2.76	997	2613	3.01	1045	2826	3.25
5000	857	2261	2.60	911	2494	2.87	962	2726	3.14	1011	2956	3.40	1058	3185	3.66
5500	877	2583	2.97	930	2832	3.26	979	3080	3.54	1027	3326	3.83	1073	3570	4.11
6000	899	2937	3.38	950	3202	3.68	999	3465	3.98	1045	3726	4.29	1090	3986	4.58
6500	923	3327	3.83	972	3606	4.15	1020	3883	4.47	1065	4159	4.78	1108	4434	5.10
7000	948	3753	4.32	996	4045	4.65	1042	4337	4.99	1086	4627	5.32	1128	4917	5.65
7500	975	4219	4.85	1021	4525	5.20	1066	4829	5.55	1109	5134	5.90	1150	5436	6.25
8000	1002	4727	5.44	1047	5045	5.80	1091	5362	6.17	1133	5680	6.53	1173	5995	6.90
8500	1031	5280	6.07	1075	5609	6.45	1117	5938	6.83	1158	6268	7.21	1197	6596	7.59

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 485 to 613 rpm (208/230 and 460-v units) or 472 to 619 (575-v units). For standard motor with alternate drive, the drive range is 618 to 789 rpm (208/230 and 460-v units) or 609 to 778 (575-v units). For alternate motor with standard drive, the drive range is 778 to 1021 rpm. For alternate motor with alternate drive, the drive range is 1000 to 1227 rpm. All other rpms require a field-supplied drive.

NOTES:

1. Maximum continuous Bhp for the standard motor is 4.25 (for 208/230 and 460-v units) or 3.45 (for 575-v units). Maximum continuous Bhp for the alternate motor is 5.75. The maximum continuous watts for the standard motor is 3171 (for 208/230 and 460-v units) or 2574 (for 575-v units). The maximum continuous watts for the alternate motor is 4290. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 5 — Fan Performance — 50HG016 — Vertical Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	423	522	0.60	521	715	0.82	605	906	1.04	679	1093	1.26	747	1278	1.47
4000	454	675	0.78	545	884	1.02	625	1093	1.26	697	1299	1.49	762	1502	1.73
4500	487	859	0.99	572	1082	1.24	648	1307	1.50	717	1529	1.76	780	1750	2.01
5000	522	1077	1.24	601	1311	1.51	673	1550	1.78	739	1789	2.06	800	2026	2.33
5500	559	1330	1.53	632	1573	1.81	700	1826	2.10	763	2080	2.39	822	2332	2.68
6000	598	1621	1.86	664	1873	2.15	729	2137	2.46	789	2405	2.77	846	2671	3.07
6500	637	1953	2.25	698	2212	2.54	759	2486	2.86	817	2766	3.18	871	3046	3.50
7000	677	2327	2.68	734	2593	2.98	791	2876	3.31	846	3167	3.64	898	3459	3.98
7500	718	2745	3.16	770	3018	3.47	824	3309	3.81	876	3609	4.15	926	3913	4.50
8000	759	3209	3.69	808	3489	4.01	858	3787	4.36	907	4095	4.71	956	4410	5.07
8500	801	3722	4.28	846	4007	4.61	893	4311	4.96	940	4628	5.32	986	4952	5.69

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	810	1461	1.68	868	1642	1.89	923	1821	2.09	975	1999	2.30	1024	2176	2.50
4000	823	1703	1.96	880	1902	2.19	934	2100	2.42	985	2296	2.64	1034	2490	2.86
4500	839	1969	2.26	894	2185	2.51	947	2400	2.76	997	2613	3.01	1045	2826	3.25
5000	857	2261	2.60	911	2494	2.87	962	2726	3.14	1011	2956	3.40	1058	3185	3.66
5500	877	2583	2.97	930	2832	3.26	979	3080	3.54	1027	3326	3.83	1073	3570	4.11
6000	899	2937	3.38	950	3202	3.68	999	3465	3.98	1045	3726	4.29	1090	3986	4.58
6500	923	3327	3.83	972	3606	4.15	1020	3883	4.47	1065	4159	4.78	1108	4434	5.10
7000	948	3753	4.32	996	4045	4.65	1042	4337	4.99	1086	4627	5.32	1128	4917	5.65
7500	975	4219	4.85	1021	4525	5.20	1066	4829	5.55	1109	5134	5.90	1150	5436	6.25
8000	1002	4727	5.44	1047	5045	5.80	1091	5362	6.17	1133	5680	6.53	1173	5995	6.90
8500	1031	5280	6.07	1075	5609	6.45	1117	5938	6.83	1158	6268	7.21	1197	6596	7.59

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 618 to 789 rpm (208/230 and 460-v units) or 609 to 778 (575-v units). For standard motor with alternate drive, the drive range is 485 to 613 rpm (208/230 and 460-v units) or 472 to 619 (575-v units). For alternate motor with standard drive, the drive range is 778 to 1021 rpm. For alternate motor with alternate drive, the drive range is 1000 to 1227 rpm. All other rpms require a field-supplied drive.

NOTES:
1. Maximum continuous Bhp for the standard motor is 4.25 (for 208/230 and 460-v units) or 3.45 (for 575-v units). Maximum continuous Bhp for the alternate motor is 5.75. The maximum continuous watts for the standard motor is 3171 (for 208/230 and 460-v units) or 2574 (for 575-v units). The maximum continuous watts for the alternate motor is 4290. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 6 — Fan Performance — 50HG020 — Vertical Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	423	522	0.60	521	715	0.82	605	906	1.04	679	1093	1.26	747	1278	1.47
4000	454	675	0.78	545	884	1.02	625	1093	1.26	697	1299	1.49	762	1502	1.73
4500	487	859	0.99	572	1082	1.24	648	1307	1.50	717	1529	1.76	780	1750	2.01
5000	522	1077	1.24	601	1311	1.51	673	1550	1.78	739	1789	2.06	800	2026	2.33
5500	559	1330	1.53	632	1573	1.81	700	1826	2.10	763	2080	2.39	822	2332	2.68
6000	598	1621	1.86	664	1873	2.15	729	2137	2.46	789	2405	2.77	846	2671	3.07
6500	637	1953	2.25	698	2212	2.54	759	2486	2.86	817	2766	3.18	871	3046	3.50
7000	677	2327	2.68	734	2593	2.98	791	2876	3.31	846	3167	3.64	898	3459	3.98
7500	718	2745	3.16	770	3018	3.47	824	3309	3.81	876	3609	4.15	926	3913	4.50
8000	759	3209	3.69	808	3489	4.01	858	3787	4.36	907	4095	4.71	956	4410	5.07
8500	801	3722	4.28	846	4007	4.61	893	4311	4.96	940	4628	5.32	986	4952	5.69

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	810	1461	1.68	868	1642	1.89	923	1821	2.09	975	1999	2.30	1024	2176	2.50
4000	823	1703	1.96	880	1902	2.19	934	2100	2.42	985	2296	2.64	1034	2490	2.86
4500	839	1969	2.26	894	2185	2.51	947	2400	2.76	997	2613	3.01	1045	2826	3.25
5000	857	2261	2.60	911	2494	2.87	962	2726	3.14	1011	2956	3.40	1058	3185	3.66
5500	877	2583	2.97	930	2832	3.26	979	3080	3.54	1027	3326	3.83	1073	3570	4.11
6000	899	2937	3.38	950	3202	3.68	999	3465	3.98	1045	3726	4.29	1090	3986	4.58
6500	923	3327	3.83	972	3606	4.15	1020	3883	4.47	1065	4159	4.78	1108	4434	5.10
7000	948	3753	4.32	996	4045	4.65	1042	4337	4.99	1086	4627	5.32	1128	4917	5.65
7500	975	4219	4.85	1021	4525	5.20	1066	4829	5.55	1109	5134	5.90	1150	5436	6.25
8000	1002	4727	5.44	1047	5045	5.80	1091	5362	6.17	1133	5680	6.53	1173	5995	6.90
8500	1031	5280	6.07	1075	5609	6.45	1117	5938	6.83	1158	6268	7.21	1197	6596	7.59

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 658 to 808 rpm. For standard motor with alternate drive, the drive range is 794 to 974 rpm. For alternate motor with standard drive, the drive range is 949 to 1145 rpm. For alternate motor with alternate drive, the drive range is 1126 to 1328 rpm. All other rpms require a field-supplied drive.

NOTES:
1. Maximum continuous Bhp for the standard motor is 5.75. Maximum continuous Bhp for the alternate motor is 8.63. The maximum continuous watts for the standard motor is 4290. The maximum continuous watts for the alternate motor is 6438. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 7 — Fan Performance — 50HG024 — Vertical Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
5,000	533	1106	1.27	611	1342	1.54	682	1582	1.82	748	1822	2.10	808	2059	2.37
5,500	571	1366	1.57	643	1613	1.86	711	1867	2.15	773	2121	2.44	832	2374	2.73
6,000	610	1666	1.92	676	1922	2.21	740	2188	2.52	800	2456	2.82	857	2724	3.13
6,500	650	2007	2.31	712	2271	2.61	772	2548	2.93	829	2829	3.25	883	3110	3.58
7,000	691	2391	2.75	748	2663	3.06	805	2949	3.39	859	3242	3.73	911	3536	4.07
7,500	732	2820	3.24	786	3100	3.57	839	3395	3.91	891	3698	4.25	941	4004	4.61
8,000	775	3297	3.79	824	3585	4.12	874	3887	4.47	924	4200	4.83	972	4516	5.19
8,500	817	3823	4.40	863	4118	4.74	911	4428	5.09	958	4749	5.46	1003	5075	5.84
9,000	860	4400	5.06	904	4702	5.41	948	5019	5.77	993	5347	6.15	1036	5683	6.54
9,500	903	5031	5.79	944	5339	6.14	986	5663	6.51	1028	5998	6.90	1070	6343	7.29
10,000	947	5715	6.57	985	6030	6.93	1025	6360	7.32	1065	6703	7.71	1105	7055	8.11

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
5,000	865	2294	2.64	918	2527	2.91	969	2760	3.17	1018	2990	3.44	1065	3219	3.70
5,500	886	2625	3.02	938	2875	3.31	988	3123	3.59	1035	3369	3.87	1081	3614	4.16
6,000	910	2990	3.44	960	3254	3.74	1008	3518	4.05	1054	3779	4.35	1099	4040	4.65
6,500	935	3391	3.90	984	3670	4.22	1030	3948	4.54	1075	4224	4.86	1118	4499	5.18
7,000	961	3830	4.40	1008	4123	4.74	1054	4415	5.08	1098	4706	5.41	1140	4996	5.75
7,500	989	4311	4.96	1035	4617	5.31	1079	4922	5.66	1122	5227	6.01	1163	5530	6.36
8,000	1018	4835	5.56	1062	5153	5.93	1105	5472	6.29	1147	5790	6.66	1187	6106	7.02
8,500	1048	5405	6.22	1091	5735	6.60	1133	6065	6.98	1173	6396	7.36	1212	6725	7.73
9,000	1079	6022	6.93	1121	6364	7.32	1161	6706	7.71	1201	7048	8.11	1239	7390	8.50
9,500	1112	6691	7.70	1152	7042	8.10	1191	7395	8.51	1229	7749	8.91	1266	8102	9.32
10,000	1145	7412	8.52	1184	7773	8.94	1222	8135	9.36	1259	8500	9.78	1295	8864	10.20

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 658 to 808 rpm. For standard motor with alternate drive, the drive range is 794 to 974 rpm. For alternate motor with standard drive, the drive range is 949 to 1145 rpm. For alternate motor with alternate drive, the drive range is 1126 to 1328 rpm. All other rpms require a field-supplied drive.

NOTES:
1. Maximum continuous Bhp for the standard motor is 5.75. Maximum continuous Bhp for the alternate motor is 8.63. The maximum continuous watts for the standard motor is 4290. The maximum continuous watts for the alternate motor is 6438. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 8 — Fan Performance — 50HG028 — Vertical Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
6,500	734	2384	2.74	752	2482	2.85	803	2,752	3.16	848	2,998	3.45	891	3,250	3.74
7,000	728	2506	2.88	792	2911	3.35	844	3,220	3.70	887	3,484	4.01	928	3,742	4.30
7,500	746	2738	3.15	831	3375	3.88	884	3,734	4.29	927	4,023	4.63	966	4,293	4.94
8,000	786	3148	3.62	869	3868	4.45	925	4,292	4.94	968	4,612	5.30	1006	4,901	5.64
8,500	827	3611	4.15	905	4384	5.04	964	4,891	5.63	1008	5,251	6.04	1046	5,564	6.40
9,000	870	4125	4.74	940	4921	5.66	1003	5,529	6.36	1049	5,939	6.83	1086	6,281	7.22
9,500	913	4691	5.40	975	5480	6.30	1042	6,202	7.13	1089	6,674	7.68	1127	7,053	8.11
10,000	957	5312	6.11	1010	6073	6.98	1079	6,906	7.94	1128	7,453	8.57	1167	7,876	9.06
10,500	1002	5988	6.89	1047	6715	7.72	1115	7,635	8.78	1167	8,275	9.52	1207	8,751	10.06
11,000	1047	6719	7.73	1086	7416	8.53	1150	8,388	9.65	1205	9,133	10.50	1247	9,674	11.13
11,500	1092	7507	8.63	1126	8180	9.41	1185	9,163	10.54	1242	10,025	11.53	1286	10,642	12.24
12,000	1137	8356	9.61	1168	9009	10.36	1220	9,975	11.47	1278	10,945	12.59	1325	11,654	13.40
12,500	1182	9264	10.65	1210	9903	11.39	1256	10,835	12.46	1314	11,891	13.68	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
6,500	934	3,521	4.05	978	3,822	4.40	1023	4,160	4.78	1071	4,540	5.22	1119	4,961	5.71
7,000	967	4,010	4.61	1007	4,297	4.94	1048	4,612	5.30	1090	4,960	5.70	1134	5,344	6.15
7,500	1003	4,565	5.25	1040	4,847	5.57	1078	5,148	5.92	1116	5,474	6.30	1155	5,830	6.71
8,000	1041	5,181	5.96	1076	5,465	6.29	1111	5,762	6.63	1146	6,076	6.99	1181	6,412	7.37
8,500	1081	5,859	6.74	1114	6,150	7.07	1147	6,448	7.42	1179	6,756	7.77	1212	7,081	8.14
9,000	1121	6,595	7.59	1153	6,899	7.93	1184	7,202	8.28	1215	7,512	8.64	1246	7,832	9.01
9,500	1161	7,390	8.50	1193	7,710	8.87	1223	8,025	9.23	1253	8,340	9.59	1282	8,660	9.96
10,000	1202	8,244	9.48	1233	8,584	9.87	1263	8,913	10.25	1291	9,237	10.62	1319	9,563	11.00
10,500	1242	9,154	10.53	1273	9,519	10.95	1303	9,866	11.35	1331	10,203	11.73	1358	10,537	12.12
11,000	1282	10,118	11.64	1314	10,514	12.09	1343	10,884	12.52	1371	11,237	12.92	1397	11,584	13.32
11,500	1322	11,136	12.81	1354	11,568	13.30	1384	11,964	13.76	—	—	—	—	—	—
12,000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12,500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 799 to 965 rpm. For standard motor with alternate drive, the drive range is 939 to 1152 rpm. For alternate motor with standard drive, the drive range is 945 to 1187 rpm. For alternate motor with alternate drive, the drive range is 1152 to 1366 rpm. All other rpms require a field-supplied drive.

NOTES:
1. Maximum continuous Bhp for the standard motor is 8.63. Maximum continuous Bhp for the alternate motor is 11.50. The maximum continuous watts for the standard motor is 6438. The maximum continuous watts for the alternate motor is 8579. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 9 — Fan Performance — 50HG014 — Horizontal Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	445	546	0.63	526	712	0.82	603	892	1.03	681	1102	1.27	761	1346	1.55
4000	484	718	0.83	559	896	1.03	627	1079	1.24	694	1280	1.47	763	1505	1.73
4500	524	923	1.06	596	1116	1.28	658	1308	1.50	717	1508	1.73	777	1724	1.98
5000	566	1166	1.34	634	1373	1.58	692	1576	1.81	747	1781	2.05	800	1996	2.30
5500	608	1450	1.67	672	1667	1.92	729	1884	2.17	780	2099	2.41	829	2318	2.67
6000	651	1777	2.04	712	2002	2.30	766	2232	2.57	815	2459	2.83	862	2686	3.09
6500	695	2152	2.47	753	2381	2.74	805	2623	3.02	852	2863	3.29	897	3100	3.57
7000	740	2576	2.96	794	2807	3.23	844	3059	3.52	890	3312	3.81	933	3561	4.10
7500	785	3051	3.51	836	3282	3.77	885	3544	4.08	929	3807	4.38	971	4069	4.68
8000	831	3581	4.12	878	3810	4.38	925	4077	4.69	969	4352	5.01	1009	4625	5.32
8500	878	4167	4.79	922	4394	5.05	966	4664	5.36	1008	4948	5.69	1048	5233	6.02

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
4000	833	1759	2.02	†	†	†	†	†	†	†	†	†	†	†	†
4500	838	1961	2.26	900	2223	2.56	962	2507	2.88	†	†	†	†	†	†
5000	854	2226	2.56	909	2473	2.84	964	2740	3.15	1020	3029	3.48	†	†	†
5500	878	2546	2.93	927	2787	3.21	976	3042	3.50	1026	3315	3.81	1077	3606	4.15
6000	907	2918	3.36	952	3158	3.63	996	3408	3.92	1041	3672	4.22	1087	3950	4.54
6500	939	3339	3.84	981	3583	4.12	1022	3834	4.41	1063	4094	4.71	1105	4364	5.02
7000	974	3809	4.38	1013	4059	4.67	1052	4314	4.96	1090	4575	5.26	1128	4843	5.57
7500	1010	4328	4.98	1047	4587	5.28	1084	4848	5.58	1120	5112	5.88	1156	5382	6.19
8000	1047	4896	5.63	1083	5165	5.94	1118	5435	6.25	1153	5706	6.56	1187	5980	6.88
8500	1085	5515	6.34	1120	5795	6.66	1154	6074	6.99	1187	6353	7.31	1220	6634	7.63

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 485 to 613 rpm (208/230 and 460-v units) or 472 to 619 (575-v units). For standard motor with alternate drive, the drive range is 618 to 789 rpm (208/230 and 460-v units) or 609 to 778 (575-v units). For alternate motor with standard drive, the drive range is 778 to 1021 rpm. For alternate motor with alternate drive, the drive range is 1000 to 1227 rpm. All other rpms require a field-supplied drive.

†Contact Carrier Applications Engineering for operation in this region.

NOTES:

1. Maximum continuous Bhp for the standard motor is 4.25 (for 208/230 and 460-v units) or 3.45 (for 575-v units). Maximum continuous Bhp for the alternate motor is 5.75. The maximum continuous watts for the standard motor is 3171 (for 208/230 and 460-v units) or 2574 (for 575-v units). The maximum continuous watts for the alternate motor is 4290. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 10 — Fan Performance — 50HG016 — Horizontal Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	445	546	0.63	526	712	0.82	603	892	1.03	681	1102	1.27	761	1346	1.55
4000	484	718	0.83	559	896	1.03	627	1079	1.24	694	1280	1.47	763	1505	1.73
4500	524	923	1.06	596	1116	1.28	658	1308	1.50	717	1508	1.73	777	1724	1.98
5000	566	1166	1.34	634	1373	1.58	692	1576	1.81	747	1781	2.05	800	1996	2.30
5500	608	1450	1.67	672	1667	1.92	729	1884	2.17	780	2099	2.41	829	2318	2.67
6000	651	1777	2.04	712	2002	2.30	766	2232	2.57	815	2459	2.83	862	2686	3.09
6500	695	2152	2.47	753	2381	2.74	805	2623	3.02	852	2863	3.29	897	3100	3.57
7000	740	2576	2.96	794	2807	3.23	844	3059	3.52	890	3312	3.81	933	3561	4.10
7500	785	3051	3.51	836	3282	3.77	885	3544	4.08	929	3807	4.38	971	4069	4.68
8000	831	3581	4.12	878	3810	4.38	925	4077	4.69	969	4352	5.01	1009	4625	5.32
8500	878	4167	4.79	922	4394	5.05	966	4664	5.36	1008	4948	5.69	1048	5233	6.02

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
4000	833	1759	2.02	†	†	†	†	†	†	†	†	†	†	†	†
4500	838	1961	2.26	900	2223	2.56	962	2507	2.88	†	†	†	†	†	†
5000	854	2226	2.56	909	2473	2.84	964	2740	3.15	1020	3029	3.48	†	†	†
5500	878	2546	2.93	927	2787	3.21	976	3042	3.50	1026	3315	3.81	1077	3606	4.15
6000	907	2918	3.36	952	3158	3.63	996	3408	3.92	1041	3672	4.22	1087	3950	4.54
6500	939	3339	3.84	981	3583	4.12	1022	3834	4.41	1063	4094	4.71	1105	4364	5.02
7000	974	3809	4.38	1013	4059	4.67	1052	4314	4.96	1090	4575	5.26	1128	4843	5.57
7500	1010	4328	4.98	1047	4587	5.28	1084	4848	5.58	1120	5112	5.88	1156	5382	6.19
8000	1047	4896	5.63	1083	5165	5.94	1118	5435	6.25	1153	5706	6.56	1187	5980	6.88
8500	1085	5515	6.34	1120	5795	6.66	1154	6074	6.99	1187	6353	7.31	1220	6634	7.63

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 618 to 789 rpm (208/230 and 460-v units) or 609 to 778 (575-v units). For standard motor with alternate drive, the drive range is 485 to 613 rpm (208/230 and 460-v units) or 472 to 619 (575-v units). For alternate motor with standard drive, the drive range is 778 to 1021 rpm. For alternate motor with alternate drive, the drive range is 1000 to 1227 rpm. All other rpms require a field-supplied drive.

†Contact Carrier Applications Engineering for operation in this region.

NOTES:

1. Maximum continuous Bhp for the standard motor is 4.25 (for 208/230 and 460-v units) or 3.45 (for 575-v units). Maximum continuous Bhp for the alternate motor is 5.75. The maximum continuous watts for the standard motor is 3171 (for 208/230 and 460-v units) or 2574 (for 575-v units). The maximum continuous watts for the alternate motor is 4290. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 11 — Fan Performance — 50HG020 — Horizontal Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	445	546	0.63	526	712	0.82	603	892	1.03	681	1102	1.27	761	1346	1.55
4000	484	718	0.83	559	896	1.03	627	1079	1.24	694	1280	1.47	763	1505	1.73
4500	524	923	1.06	596	1116	1.28	658	1308	1.50	717	1508	1.73	777	1724	1.98
5000	566	1166	1.34	634	1373	1.58	692	1576	1.81	747	1781	2.05	800	1996	2.30
5500	608	1450	1.67	672	1667	1.92	729	1884	2.17	780	2099	2.41	829	2318	2.67
6000	651	1777	2.04	712	2002	2.30	766	2232	2.57	815	2459	2.83	862	2686	3.09
6500	695	2152	2.47	753	2381	2.74	805	2623	3.02	852	2863	3.29	897	3100	3.57
7000	740	2576	2.96	794	2807	3.23	844	3059	3.52	890	3312	3.81	933	3561	4.10
7500	785	3051	3.51	836	3282	3.77	885	3544	4.08	929	3807	4.38	971	4069	4.68
8000	831	3581	4.12	878	3810	4.38	925	4077	4.69	969	4352	5.01	1009	4625	5.32
8500	878	4167	4.79	922	4394	5.05	966	4664	5.36	1008	4948	5.69	1048	5233	6.02

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
3500	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
4000	833	1759	2.02	†	†	†	†	†	†	†	†	†	†	†	†
4500	838	1961	2.26	900	2223	2.56	962	2507	2.88	†	†	†	†	†	†
5000	854	2226	2.56	909	2473	2.84	964	2740	3.15	1020	3029	3.48	†	†	†
5500	878	2546	2.93	927	2787	3.21	976	3042	3.50	1026	3315	3.81	1077	3606	4.15
6000	907	2918	3.36	952	3158	3.63	996	3408	3.92	1041	3672	4.22	1087	3950	4.54
6500	939	3339	3.84	981	3583	4.12	1022	3834	4.41	1063	4094	4.71	1105	4364	5.02
7000	974	3809	4.38	1013	4059	4.67	1052	4314	4.96	1090	4575	5.26	1128	4843	5.57
7500	1010	4328	4.98	1047	4587	5.28	1084	4848	5.58	1120	5112	5.88	1156	5382	6.19
8000	1047	4896	5.63	1083	5165	5.94	1118	5435	6.25	1153	5706	6.56	1187	5980	6.88
8500	1085	5515	6.34	1120	5795	6.66	1154	6074	6.99	1187	6353	7.31	1220	6634	7.63

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 658 to 808 rpm. For standard motor with alternate drive, the drive range is 794 to 974 rpm. For alternate motor with standard drive, the drive range is 949 to 1145 rpm. For alternate motor with alternate drive, the drive range is 1126 to 1328 rpm. All other rpms require a field-supplied drive.

†Contact Carrier Applications Engineering for operation in this region.

NOTES:

1. Maximum continuous Bhp for the standard motor is 5.75. Maximum continuous Bhp for the alternate motor is 8.63. The maximum continuous watts for the standard motor is 4290. The maximum continuous watts for the alternate motor is 6438. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 12 — Fan Performance — 50HG024 — Horizontal Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
5,000	575	1193	1.37	642	1400	1.61	700	1603	1.84	754	1810	2.08	808	2028	2.33
5,500	619	1483	1.71	682	1702	1.96	737	1918	2.21	788	2134	2.45	837	2355	2.71
6,000	663	1817	2.09	723	2046	2.35	776	2276	2.62	825	2503	2.88	871	2731	3.14
6,500	708	2198	2.53	765	2435	2.80	816	2677	3.08	863	2916	3.35	906	3155	3.63
7,000	753	2629	3.02	807	2871	3.30	857	3125	3.59	902	3377	3.88	944	3626	4.17
7,500	800	3112	3.58	850	3357	3.86	898	3621	4.16	942	3885	4.47	982	4146	4.77
8,000	847	3650	4.20	894	3897	4.48	940	4169	4.80	982	4445	5.11	1022	4717	5.43
8,500	894	4244	4.88	939	4491	5.17	982	4770	5.49	1024	5056	5.82	1062	5340	6.14
9,000	941	4896	5.63	983	5145	5.92	1025	5428	6.24	1065	5723	6.58	1103	6018	6.92
9,500	989	5610	6.45	1029	5858	6.74	1069	6145	7.07	1108	6447	7.41	1144	6753	7.77
10,000	1037	6386	7.34	1075	6634	7.63	1113	6923	7.96	1150	7231	8.32	1186	7546	8.68

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
5,000	862	2260	2.60	917	2510	2.89	972	2781	3.20	1028	3073	3.53	1084	3384	3.89
5,500	886	2586	2.97	935	2829	3.25	985	3089	3.55	1035	3365	3.87	1086	3660	4.21
6,000	916	2965	3.41	960	3207	3.69	1005	3461	3.98	1050	3728	4.29	1096	4009	4.61
6,500	949	3395	3.90	990	3641	4.19	1032	3894	4.48	1073	4157	4.78	1114	4430	5.10
7,000	984	3875	4.46	1023	4127	4.75	1062	4383	5.04	1100	4647	5.34	1139	4918	5.66
7,500	1021	4406	5.07	1059	4666	5.37	1095	4928	5.67	1131	5195	5.98	1167	5468	6.29
8,000	1059	4988	5.74	1095	5258	6.05	1130	5528	6.36	1165	5800	6.67	1199	6077	6.99
8,500	1099	5623	6.47	1133	5903	6.79	1167	6182	7.11	1200	6463	7.43	1232	6745	7.76
9,000	1138	6312	7.26	1172	6603	7.59	1205	6893	7.93	1237	7182	8.26	1268	7472	8.59
9,500	1179	7057	8.12	1212	7359	8.46	1244	7660	8.81	1275	7959	9.15	1305	8258	9.50
10,000	1220	7860	9.04	1252	8174	9.40	1283	8485	9.76	1313	8794	10.11	1342	9103	10.47

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 658 to 808 rpm. For standard motor with alternate drive, the drive range is 794 to 974 rpm. For alternate motor with standard drive, the drive range is 949 to 1145 rpm. For alternate motor with alternate drive, the drive range is 1126 to 1328 rpm. All other rpms require a field-supplied drive.

NOTES:
1. Maximum continuous Bhp for the standard motor is 5.75. Maximum continuous Bhp for the alternate motor is 8.63. The maximum continuous watts for the standard motor is 4290. The maximum continuous watts for the alternate motor is 6438. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 13 — Fan Performance — 50HG028 — Horizontal Discharge Units*

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	0.2			0.4			0.6			0.8			1.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
6,500	759	2,517	2.89	804	2,753	3.17	844	2,975	3.42	883	3,202	3.68	922	3,445	3.96
7,000	810	3,020	3.47	853	3,274	3.77	891	3,509	4.04	928	3,743	4.30	964	3,986	4.58
7,500	862	3,581	4.12	903	3,856	4.43	939	4,105	4.72	974	4,348	5.00	1008	4,596	5.29
8,000	913	4,206	4.84	953	4,500	5.18	988	4,765	5.48	1021	5,019	5.77	1053	5,274	6.07
8,500	965	4,894	5.63	1003	5,209	5.99	1037	5,491	6.32	1069	5,758	6.62	1100	6,022	6.93
9,000	1017	5,651	6.50	1054	5,988	6.89	1087	6,285	7.23	1118	6,567	7.55	1147	6,841	7.87
9,500	1069	6,477	7.45	1105	6,834	7.86	1137	7,150	8.22	1167	7,446	8.56	1195	7,733	8.89
10,000	1121	7,376	8.48	1156	7,755	8.92	1187	8,089	9.30	1216	8,400	9.66	1243	8,699	10.01
10,500	1173	8,350	9.60	1207	8,751	10.06	1238	9,103	10.47	1266	9,430	10.85	1292	9,744	11.21
11,000	1226	9,401	10.81	1259	9,823	11.30	1288	10,194	11.72	1316	10,538	12.12	1342	10,866	12.50
11,500	1278	10,532	12.11	1310	10,975	12.62	1339	11,366	13.07	1366	11,726	13.49	—	—	—
12,000	1331	11,745	13.51	—	—	—	—	—	—	—	—	—	—	—	—
12,500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)														
	1.2			1.4			1.6			1.8			2.0		
	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp	Rpm	Watts	Bhp
6,500	962	3,710	4.27	1003	4,005	4.61	1045	4,334	4.98	1090	4,701	5.41	1135	5,103	5.87
7,000	1000	4,245	4.88	1037	4,527	5.21	1075	4,836	5.56	1115	5,174	5.95	1155	5,547	6.38
7,500	1041	4,854	5.58	1075	5,129	5.90	1110	5,424	6.24	1145	5,744	6.61	1182	6,091	7.01
8,000	1085	5,535	6.37	1116	5,808	6.68	1148	6,096	7.01	1180	6,403	7.36	1214	6,733	7.74
8,500	1129	6,289	7.23	1159	6,563	7.55	1189	6,849	7.88	1219	7,149	8.22	1249	7,467	8.59
9,000	1175	7,115	8.18	1204	7,394	8.50	1232	7,681	8.83	1260	7,978	9.18	1288	8,289	9.53
9,500	1222	8,016	9.22	1249	8,301	9.55	1276	8,591	9.88	1302	8,890	10.22	1329	9,198	10.58
10,000	1270	8,993	10.34	1296	9,286	10.68	1321	9,582	11.02	1346	9,884	11.37	1371	10,193	11.72
10,500	1318	10,048	11.56	1343	10,351	11.90	1367	10,655	12.25	1391	10,960	12.61	—	—	—
11,000	1366	11,183	12.86	1390	11,496	13.22	—	—	—	—	—	—	—	—	—
11,500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12,000	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12,500	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp — Brake Horsepower Input to Fan
FIOP — Factory-Installed Option
Watts — Input Watts to Motor

*For standard motor with standard drive, the drive range is 799 to 965 rpm. For standard motor with alternate drive, the drive range is 939 to 1152 rpm. For alternate motor with standard drive, the drive range is 945 to 1187 rpm. For alternate motor with alternate drive, the drive range is 1152 to 1366 rpm. All other rpms require a field-supplied drive.

NOTES:
1. Maximum continuous Bhp for the standard motor is 8.63. Maximum continuous Bhp for the alternate motor is 11.50. The maximum continuous watts for the standard motor is 6438. The maximum continuous watts for the alternate motor is 8579. Do not adjust motor rpm such that motor maximum Bhp and/or watts is exceeded at the maximum operating cfm.
2. Static pressure losses must be added to external static pressure before entering fan performance table.
3. Interpolation is permissible. Do not extrapolate.
4. Fan performance is based on economizer, filters, unit casing, and wet coil losses.
5. Extensive motor and electrical testing on these units ensures that the full range of the motor can be utilized with confidence. Using your fan motors up to the wattage ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected. See Table 16 on page 34 for additional information.
6. Use of a field-supplied motor may affect wire sizing. Contact your Carrier representative for details.

Table 14 — Power Exhaust Fan Performance

AIRFLOW	LOW SPEED						MEDIUM SPEED						HIGH SPEED					
	208 V			230,460,575 V			208 V			230,460,575 V			208 V			230,460,575 V		
	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts	ESP	Bhp	Watts
3250	0.32	1.41	1580	0.70	1.49	1670	—	—	—	—	—	—	—	—	—	—	—	—
3350	0.23	1.44	1610	0.63	1.52	1700	0.60	1.51	1690	0.82	1.62	1810	—	—	—	—	—	—
3450	0.17	1.46	1635	0.59	1.55	1730	0.55	1.54	1720	0.78	1.64	1840	—	—	—	—	—	—
3550	0.13	1.47	1645	0.56	1.56	1745	0.49	1.56	1750	0.73	1.67	1870	—	—	—	—	—	—
3650	0.09	1.49	1665	0.53	1.58	1765	0.43	1.59	1780	0.68	1.70	1900	—	—	—	—	—	—
3750	—	—	—	0.51	1.60	1790	0.39	1.62	1815	0.64	1.72	1930	—	—	—	—	—	—
3850	—	—	—	0.48	1.62	1810	0.33	1.64	1835	0.59	1.74	1950	0.60	1.85	2070	0.73	1.99	2230
3950	—	—	—	0.45	1.64	1835	0.27	1.66	1860	0.54	1.76	1975	0.56	1.87	2095	0.69	2.01	2255
4050	—	—	—	0.40	1.67	1865	0.22	1.68	1885	0.49	1.79	2000	0.51	1.89	2120	0.65	2.04	2280
4250	—	—	—	—	—	—	0.17	1.74	1945	0.40	1.84	2060	0.41	1.92	2145	0.56	2.06	2310
4450	—	—	—	—	—	—	0.00	1.79	2005	0.30	1.89	2115	0.31	1.97	2205	0.47	2.12	2370
4650	—	—	—	—	—	—	—	—	—	0.22	1.94	2170	0.20	2.04	2280	0.37	2.19	2450
4850	—	—	—	—	—	—	—	—	—	0.16	1.98	2215	0.11	2.09	2335	0.30	2.24	2505
5050	—	—	—	—	—	—	—	—	—	0.12	2.02	2260	0.04	2.13	2385	0.23	2.28	2555
5250	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.17	2.33	2610
5450	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.12	2.38	2665
5650	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.07	2.40	2690
5850	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.04	2.42	2710

ESP — External Static Pressure

Table 15 — Operation Air Quantity Limits

50HG	COOLING		ELECTRIC HEAT	ELECTRIC HEAT (Vertical)	ELECTRIC HEAT (Horizontal)
	Minimum CFM	Maximum CFM		Minimum CFM	Minimum CFM
014	3,750	6,250	High Heat (50 kW)	3,750	4,800
			Medium Heat (25 kW)	3,750	3,750
			Low Heat (15 kW)	3,750	3,750
016	4,500	7,500	High Heat (75 kW)	4,500	5,400
			Medium Heat (50 kW)	3,750	4,800
			Low Heat (25 kW)	3,750	3,750
020	5,400	9,000	High Heat (75 kW)	4,500	5,400
			Medium Heat (50 kW)	3,750	4,800
			Low Heat (25 kW)	3,750	3,750
024	5,500	10,000	High Heat (75 kW)	4,500	5,400
			Medium Heat (50 kW)	3,750	4,800
			Low Heat (25 kW)	3,750	3,750
028	6,000	11,500	High Heat (75 kW)	4,500	5,400
			Medium Heat (50 kW)	3,750	4,800
			Low Heat (25 kW)	3,750	3,750

Table 16 — Evaporator Fan Motor Specifications

UNIT 50HG	OPTION	MOTOR P/N	NOMINAL HP	VOLTAGE	MAX WATTS	EFFICIENCY %	MAX BHP	MAX BkW	MAX AMPS
014	STD MOTOR	HD60FK651	3.7	208	3698	85.8	4.25	3.17	10.6
		HD60FK651	3.7	230	3698	85.8	4.25	3.17	9.6
		HD60FK651	3.7	460	3698	85.8	4.25	3.17	4.8
		HD58DL575	3.0	575	3149	81.7	3.45	2.57	3.9
	ALT MOTOR	HD60FK653	5.0	208	4900	87.5	5.75	4.29	16.7
		HD60FK653	5.0	230	4900	87.5	5.75	4.29	15.2
		HD60FK653	5.0	460	4900	87.5	5.75	4.29	7.6
		HD60FK575	5.0	575	4900	87.5	5.75	4.29	6.1
016	STD MOTOR	HD60FK651	3.7	208	3698	85.8	4.25	3.17	10.6
		HD60FK651	3.7	230	3698	85.8	4.25	3.17	9.6
		HD60FK651	3.7	460	3698	85.8	4.25	3.17	4.8
		HD58DL575	3.0	575	3149	81.7	3.45	2.57	3.9
	ALT MOTOR	HD60FK653	5.0	208	4900	87.5	5.75	4.29	16.7
		HD60FK653	5.0	230	4900	87.5	5.75	4.29	15.2
		HD60FK653	5.0	460	4900	87.5	5.75	4.29	7.6
		HD60FK575	5.0	575	4900	87.5	5.75	4.29	6.1
020	STD MOTOR	HD60FK653	5.0	208	4900	87.5	5.75	4.29	16.7
		HD60FK653	5.0	230	4900	87.5	5.75	4.29	15.2
		HD60FK653	5.0	460	4900	87.5	5.75	4.29	7.6
		HD60FK575	5.0	575	4900	87.5	5.75	4.29	6.1
	ALT MOTOR	HD62FK652	7.5	208	7267	88.5	8.63	6.43	24.2
		HD62FK652	7.5	230	7267	88.5	8.63	6.43	22.0
		HD62FK652	7.5	460	7267	88.5	8.63	6.43	11.0
		HD62FK576	7.5	575	7267	88.5	8.63	6.43	9.0
024	STD MOTOR	HD60FK653	5.0	208	4900	87.5	5.75	4.29	16.7
		HD60FK653	5.0	230	4900	87.5	5.75	4.29	15.2
		HD60FK653	5.0	460	4900	87.5	5.75	4.29	7.6
		HD60FK575	5.0	575	4900	87.5	5.75	4.29	6.1
	ALT MOTOR	HD62FK652	7.5	208	7267	88.5	8.63	6.43	24.2
		HD62FK652	7.5	230	7267	88.5	8.63	6.43	22.0
		HD62FK652	7.5	460	7267	88.5	8.63	6.43	11.0
		HD62FK576	7.5	575	7267	88.5	8.63	6.43	9.0
028	STD MOTOR	HD62FK652	7.5	208	7267	88.5	8.63	6.43	24.2
		HD62FK652	7.5	230	7267	88.5	8.63	6.43	22.0
		HD62FK652	7.5	460	7267	88.5	8.63	6.43	11.0
		HD62FK576	7.5	575	7267	88.5	8.63	6.43	9.0
	ALT MOTOR	HD64FK651	10.0	208	9582	89.5	11.50	8.58	30.8
		HD64FK651	10.0	230	9582	89.5	11.50	8.58	28.0
		HD64FK651	10.0	460	9582	89.5	11.50	8.58	14.0
		HD64FK575	10.0	575	9582	89.5	11.50	8.58	11.0

Table 17 — Fan Rpm at Motor Pulley Settings*

50HG	MOTOR AND DRIVE	TURNS OPEN												
		0	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6
014 (except 575 v)	Std. Motor/Std. Drive	613	602	592	581	570	560	549	538	528	517	506	496	485
	Std. Motor/Alt. Drive	789	775	761	746	732	718	704	689	675	661	647	632	618
	Alt. Motor/Std. Drive	1021	1001	981	960	940	920	900	879	859	839	819	798	778
	Alt. Motor/Alt. Drive	1227	1208	1189	1170	1151	1132	1114	1095	1076	1057	1038	1019	1000
014 (575 v)	Std. Motor/Std. Drive	619	607	595	582	570	558	546	533	521	509	497	484	472
	Std. Motor/Alt. Drive	778	764	750	736	722	708	694	679	665	651	637	623	609
	Alt. Motor/Std. Drive	1021	1001	981	960	940	920	900	879	859	839	819	798	778
	Alt. Motor/Alt. Drive	1227	1208	1189	1170	1151	1132	1114	1095	1076	1057	1038	1019	1000
016 (except 575 v)	Std. Motor/Std. Drive	789	775	761	746	732	718	704	689	675	661	647	632	618
	Std. Motor/Alt. Drive	613	602	592	581	570	560	549	538	528	517	506	496	485
	Alt. Motor/Std. Drive	1021	1001	981	960	940	920	900	879	859	839	819	798	778
	Alt. Motor/Alt. Drive	1227	1208	1189	1170	1151	1132	1114	1095	1076	1057	1038	1019	1000
016 (575 v)	Std. Motor/Std. Drive	778	764	750	736	722	708	694	679	665	651	637	623	609
	Std. Motor/Alt. Drive	619	607	595	582	570	558	546	533	521	509	497	484	472
	Alt. Motor/Std. Drive	1021	1001	981	960	940	920	900	879	859	839	819	798	778
	Alt. Motor/Alt. Drive	1227	1208	1189	1170	1151	1132	1114	1095	1076	1057	1038	1019	1000
020, 024	Std. Motor/Std. Drive	808	796	783	771	758	746	733	721	708	696	683	671	658
	Std. Motor/Alt. Drive	974	959	944	929	914	899	884	869	854	839	824	809	794
	Alt. Motor/Std. Drive	1145	1129	1112	1096	1080	1063	1047	1031	1014	998	982	965	949
	Alt. Motor/Alt. Drive	1328	1311	1294	1278	1261	1244	1227	1210	1193	1177	1160	1143	1126
028	Std. Motor/Std. Drive	965	951	937	924	910	896	882	868	854	841	827	813	799
	Std. Motor/Alt. Drive	1152	1134	1117	1099	1081	1063	1046	1028	1010	992	975	957	939
	Alt. Motor/Std. Drive	1187	1167	1147	1127	1106	1086	1066	1046	1026	1006	985	965	945
	Alt. Motor/Alt. Drive	1366	1348	1330	1313	1295	1277	1259	1241	1223	1206	1188	1170	1152

*Approximate Rpm shown.

Table 18 — Optional Electric Heater Specifications

UNIT 50HG	HEATER kW							HEATER STAGES	% HEAT PER STAGE	HEATER AMPS						
	Unit Voltages															
	208	230	240	460	480	575	600			208	230	240	460	480	575	600
014	12	15	16	14	15	14	16	1	100	33	37	38	17	18	15	15
	19	23	25	23	25	23	25	2	50/50	52	58	60	29	30	23	24
	38	46	50	46	50	44	48	2	50/50	104	115	120	58	60	44	46
016,020, 024,028	19	23	25	23	25	23	25	2	50/50	52	58	60	29	30	23	24
	38	46	50	46	50	44	48	2	50/50	104	115	120	58	60	44	46
	56	69	75	69	75	72	78	2	50/50	156	174	180	86	90	72	75

Table 19 — Electric Heat Multiplication Factors

HEATER RATING VOLTAGE	ACTUAL HEATER VOLTAGE										
	200	208	230	240	380	440	460	480	550	575	600
240	0.694	0.751	0.918	1.000	—	—	—	—	—	—	—
480	—	—	—	—	0.626	0.840	0.918	1.000	—	—	—
600	—	—	—	—	—	—	—	—	0.840	0.918	1.000

NOTE: The following equation converts kW of heat energy to Btuh: kW x 3.413 = Btuh.

EXAMPLE: 25.0 kW (at 240 v) heater on 208 v
= 25.0 (.751 mult factor)
= 18.8 kW capacity at 208 v.

Table 20 — Accessory/FIOP Electrical Heater Static Pressure (in. wg) — 50HG014-028 Units

UNIT 50HG	ELECTRIC HEATERS							
	Unit Voltages	Cfm	Nominal Heater Size (kW)	Pressure Drop (in. wg)	Nominal Heater Size (kW)	Pressure Drop (in. wg)	Nominal Heater Size (kW)	Pressure Drop (in. wg)
014	208/240-3-60	4,000	15	0.01	25	0.01	50	0.01
		5,000		0.01		0.01		0.02
		6,000		0.02		0.02		0.04
		6,250		0.02		0.02		0.04
	480-3-60	4,000		0.01		0.01		0.01
		5,000		0.02		0.01		0.02
		6,000		0.02		0.02		0.04
		6,250		0.02		0.02		0.04
	575-3-60	4,000		0.01		0.01		0.01
		5,000		0.01		0.01		0.02
		6,000		0.02		0.02		0.04
		6,250		0.02		0.02		0.04
016,020, 024,028	208/240-3-60	4,800	25	0.01	50	0.02	75	0.03
		5,000		0.01		0.02		0.04
		6,000		0.02		0.04		0.06
		7,000		0.03		0.06		0.08
		8,000		0.04		0.08		0.12
		9,000		0.05		0.10		0.15
		10,000		0.06		0.13		0.20
		11,500		0.09		0.18		0.27
	480-3-60	4,800		0.01		0.02		0.03
		5,000		0.01		0.02		0.04
		6,000		0.02		0.04		0.06
		7,000		0.03		0.06		0.08
		8,000		0.04		0.08		0.12
		9,000		0.05		0.10		0.15
		10,000		0.06		0.13		0.20
		11,500		0.09		0.18		0.27
	575-3-60	4,800		0.01		0.02		0.03
		5,000		0.01		0.02		0.04
		6,000		0.02		0.04		0.06
		7,000		0.03		0.06		0.08
		8,000		0.04		0.08		0.12
		9,000		0.05		0.10		0.15
		10,000		0.06		0.13		0.20
		11,500		0.09		0.18		0.27

Table 21 — Accessory/FIOP Static Pressure (in. wg)* — 50HG014-028

COMPONENT	CFM								
	4,000	4,500	5,000	5,500	6,000	6,500	7,000	7,500	8,000
Economizer	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10
4-in. Filters†	0.00	0.02	0.03	0.05	0.06	0.08	0.09	0.11	0.12

COMPONENT	CFM							
	8,500	9,000	9,500	10,000	10,500	11,000	11,500	12,000
Economizer	0.11	0.12	0.13	0.15	0.16	0.17	0.19	0.20
4-in. Filters†	0.14	0.15	0.17	0.18	0.20	0.21	0.23	0.24

LEGEND

FIOP — Factory-Installed Option

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

†Four-inch filters are field-supplied.

Sequence of Operation

HEATING

Thermostat Mode — The 50HG (low, medium, and high electric heat) units have 2 stages of electric heat (nominal 15 kW heater is single stage). When the thermostat calls for heating, power is applied to the W1 terminal at the unit. The unit control will energize the indoor-fan contactor and the first stage of electric heat. On units with two-stage heating, when additional heating is required, the second stage of electric heat will be energized when power is applied at the W2 terminal on the unit.

Space Sensor Mode — The 50HG (low, medium, and high electric heat) units have 2 stages of electric heat (nominal 15 kW heater is single stage). When the space sensor senses a temperature that is below the heating set point, the unit control will energize the indoor-fan contactor and the first stage of electric heat. On units with two-stage heating, when additional heating is required, the second stage of electric heat will be energized when the space temperature does not reach the desired set point within the appropriate time. See the Controls and Troubleshooting guide for more detail.

COOLING

Economizer Control — If the economizer is available for cooling, the unit will always try to meet demand using the economizer before turning on a compressor. The economizer is available for cooling when:

- the outdoor temperature is below the Economizer High Temperature Lockout (ECL.H) and above the Economizer Low Temperature Lockout (ECL.L)
- the outdoor enthalpy is low.

If the economizer is not available for cooling, the economizer will move to the Economizer Minimum Position (MIN.P).

If the economizer is available for cooling and yet it is unable to meet demand, the unit will continue to modulate the economizer while cycling the compressors to increase total cooling capacity.

If the indoor fan is not operating, the economizer will be closed.

The 50HG units can also be equipped with an optional CO_2 sensor for additional indoor air quality control. Consult the Controls and Troubleshooting Guide for more information on IAQ features.

Cooling Using Space Sensor (T55 or T56) Control — To operate the unit in Space Sensor mode, Unit Control Type must be set to Space Sensor (3) and a wire must be added between R and W1 on TB4 (see controls schematic). While in this mode, the unit tries to maintain the Space Temperature (SPT) at one of 4 different set points: the Occupied Cool Set Point (OCSP), the Unoccupied Cool Set Point (UCSP), the Occupied Heat Set Point (OHSP), or the Unoccupied Heat Set Point (UHSP). The building's occupancy is affected by a number of different factors (see Controls and Troubleshooting Guide for details). When the building is occupied, the occupied set points are active. When the building in unoccupied, the unoccupied set points are active. In Space Sensor mode, the control will switch automatically between cooling and heating to maintain temperature. However, to minimize unnecessary cool to heat and heat to cool changes, there is a 10-minute delay after the last stage turns off before the control will switch modes.

To maintain temperature while cooling, the unit will turn on compressors as needed when the economizer is either unavailable or not providing enough cooling. The minimum on-time for each compressor is 3 minutes and the minimum off-time is 5 minutes.

Units with 3 compressors (50HG016,020,024) have 3 stages of cooling. Units with 2 compressors (50HG014,028) have 2 stages of cooling. The economizer is not considered a stage of cooling even though it can provide cooling in certain situations. In general, the minimum time between increasing stages (from 1 to 2 and from 2 to 3) is 7.5 minutes, however, the minimum time between stages can be further reduced in certain situations (see Controls and Troubleshooting Guide). The minimum time between decreasing stages (3 to 1 and 2 to 0) is 5 minutes.

Consult the Controls and Troubleshooting Guide for additional information on configuring the controls for space sensor control and adjusting the minimum compressor on-time, minimum compressor off-time, and the minimum time between decreasing stages.

Cooling Using Thermostat Control — Thermostat cooling begins when the Y1 input is energized. If the economizer is available for cooling, the economizer will try to maintain the Supply Air Temperature (SAT) at either the Low Cool Supply Air Set Point (LCS) for a Y1 call or the High Cool Supply Air Set Point (HCS) for a Y2 call. If the economizer operates at 100% for 5 minutes or the economizer cooling is not available, the unit will begin to stage compressors. While the compressors are operating, the economizer will try to maintain its position at 100%. However, if low suction pressures are experienced, the economizer will begin to close in order to protect the compressors from damage.

Three different compressor-staging algorithms are available with *Comfort*Link™ control. They are called Adaptive, 1-stage Y1 and 2-stage Y1. In Adaptive mode, once compressor staging begins (see above), at least one compressor will run as long as there is a Y1 call. On a three-circuit machine with only a Y1 call, the second circuit will cycle depending upon the trend in the Supply Air Temperature (SAT). If there is a Y2 call, compressors will stage up to the maximum number available.

The 1-stage Y1 and 2-stage Y1 modes are identical if there are only two circuits. In both cases, the stages follow the thermostat calls directly. The two modes differ when three circuits are available as they are on the 016, 020, and 024 units. In 1-stage Y1 mode, a Y1 call will cause the first compressor stage to operate immediately (there always is a 5-second delay between compressor starts) while in 2-stage Y1 mode, a Y1 call will cause the first two stages to operate immediately. For either mode, all stages will operate immediately if there is a Y2 call.

If fan request G is energized, but Y1 is not energized, the indoor fan will operate and the economizer position will be maintained at MIN.P.

***Comfort*Link™ Display Usage —** The display module provides the user interface to the *Comfort*Link control system. See Fig. 21. The display has up and down arrow keys, an ESCAPE key, and an ENTER key. These keys are used to navigate through the different levels of the display structure. See Table 22. Press the ESCAPE key until the display is blank to move through the top 11 mode levels indicated by LEDs on the left side of the display.

Pressing the ESCAPE and ENTER keys simultaneously will scroll a clear language text description across the display indicating the full meaning of each display acronym. Pressing the ESCAPE and ENTER keys when the display is blank (Mode LED level) will return the display to its default menu of rotating display items. In addition, the password will be disabled requiring that it be entered again before changes can be made to password protected items.

When a specific item is located, the display will flash showing the operator, the item, followed by the item value and then followed by the item units (if any). Press the ENTER key to stop the display at the item value. Items in the Configuration and Service Test modes are password protected. The display

will flash PASS and WORD when required. Use the ENTER and arrow keys to enter the 4 digits of the password. The default password is 1111.

Changing item values or testing outputs is accomplished in the same manner. Locate and display the desired item. Press ENTER to stop the display at the item value. Press the ENTER key again so that the item value flashes. Use the arrow keys to change the value or state of an item and press the ENTER key to accept it. Press the ESCAPE key and the item, value, or units display will resume. Repeat the process as required for other items.

Clearing Unit Alarms — The unit alarms can be cleared through the *Comfort*Link™ display. To check the current alarms, enter into the Alarms menu. The first submenu is the CURR submenu. The CURR function displays the list of current alarms (maximum of 25). The second submenu item is the R.CUR (Reset Current Alarms) function. Temporarily change R.CUR to "YES" in order to reset the current alarms. The next submenu item, HIST, displays the list of cleared alarms (maximum of 20) HIST function can be cleared with the R.HIS function.

Table 22 — Marquee Display Menu Structure

RUN STATUS	SERVICE TEST	TEMPERATURES	PRESSURES	SET POINTS	INPUTS	OUTPUTS	CONFIGURATION	TIME CLOCK	OPERATING MODES	ALARMS
Auto Display (VIEW)	Manual Mode On/Off (TEST)	Unit Temperatures (UNIT)		Cooling (COOL)	Thermostat Inputs (STAT)	Fans (FANS)	Unit Configuration (UNIT)	Time (TIME)	System (SYS)	Current Alarms (CURR)
Software Version (VERS)	Test Independent Outputs (INDP)	Circuit Temperatures (CIRC)		Heating (HEAT)	Switch Inputs (SW.IN)	Compressor (CMPR)	Cooling Configuration (COOL)	Date (DATE)	HVAC (HVAC)	Reset Current Alarms (R.CUR)
Run Hours (HRS)	Test Fans (FANS)	Calibrate Temperatures (CALB)		Supply Air (SAT)	IAQ Inputs (AQ.IN)	Heat (HEAT)	Heating Configuration (HEAT)	Daylight Savings Config (DST)		Alarm History (HIST)
Component Cycles (CYCS)	Test Cooling (COOL)			Heat-Cool Set Point Gap (HC.SG)	Compressor Current Sensor (CS.IN)	Economizer (ECON)	Economizer Configuration (ECON)	Occupancy Schedule Number (SCH.N)		Reset Alarm History (R.HIS)
Compressor Time Guard (TMGD)	Test Heating (HEAT)						IAQ Configuration (IAQ)	Override Time Limit (OTL)		
							CCN Configuration (CCN)	SPT Override Enabled? (OVR.E)		
							Display Configuration (DISP)	Local Occupancy Schedule (SCH.L)		
							Alarm Output Control (ALRM)	Accept Global Holidays (HOL.G)		
								Local Holiday Schedule (HOL.L)		

SERVICE

⚠ WARNING

Before performing service or maintenance operations on unit, turn off main power switch to unit. Electrical shock could cause personal injury.

Cleaning — Inspect unit interior at beginning of each heating and cooling season and as operating conditions require. Remove unit top panel and/or side panels for access to unit interior.

EVAPORATOR COIL — Clean as required with commercial coil cleaner.

CONDENSER COIL — Clean condenser coil annually and as required by location and outdoor-air conditions. Inspect coil monthly; clean as required.

CONDENSATE DRAIN — Check and clean each year at the start of the cooling season. In winter, keep drains and traps dry. An access panel is located above the condensate connection to allow easy clean out of the condensate pan. The first time the panel is removed, the insulation behind the access panel will need to be cut away. Carefully cut the insulation with a knife or blade on three sides so the insulation can be folded out of the way during cleaning. Be careful not to damage components behind the insulation while cutting. Once cleaning is completed, fold the insulation back into place and secure the access panel in the original position.

FILTERS — Clean or replace at start of each heating and cooling season, or more often if operating conditions require. Refer to Table 1 for type and size.

OUTDOOR-AIR INLET SCREENS — Clean screens with steam or hot water and a mild detergent. Do not use throwaway filters in place of screens. See Table 1 for quantity and size.

Lubrication

COMPRESSORS — Each compressor is charged with the correct amount of oil at the factory. Conventional white oil (Zerol 150T or Sontex SA32) is used. White oil is compatible with 3GS oil, and 3GS oil may be used if the addition of oil is required. See compressor nameplate for original oil charge. Oil recharge amount is shown in Table 1. When a compressor is exchanged in the field it is possible that a major portion of the oil from the replaced compressor may still be in the system. While this will not affect the reliability of the replacement compressor, the extra oil will add rotor drag and increase power usage. To remove this excess oil, an access valve may be added to the lower portion of the suction line at the inlet of the compressor. The compressor should then be run for 10 minutes, shut down and the access valve opened until no oil flows. This should be repeated twice to make sure the proper oil level has been achieved.

FAN SHAFT BEARINGS — Lubricate bearings at least every 6 months with suitable bearing grease. Typical lubricants are given below:

MANUFACTURER	LUBRICANT
Texaco	Regal AFB-2*
Mobil	Mobilplex EP No. 1
Sunoco	Prestige 42
Texaco	Multifak 2

*Preferred lubricant because it contains rust and oxidation inhibitors.

CONDENSER AND EVAPORATOR-FAN MOTOR BEARINGS — The condenser- and evaporator-fan motors have permanently sealed bearings, so no field lubrication is necessary.

Evaporator Fan Service and Replacement — The 50HG units feature a slide-out fan deck for easy servicing of the indoor-fan motor, pulleys, belt, and bearings. To service components in this section, perform the following procedure:

1. Shut off unit power supply.
2. Open the fan section access panel.
3. Remove three no. 10 screws at front of slide-out fan deck. Save screws. See Fig. 22.
4. Disconnect the electrical plugs and wires connected to the slide-out fan deck (evaporator fan plug, supply air thermistor, and fan status switch, if installed). Wires may be damaged if not disengaged.
5. Fan deck can now be slid out to access serviceable components.

⚠ CAUTION

DO NOT SLIDE FAN DECK OUT PAST THE STOP BRACKET. If further access is required, the fan deck must be supported. Make sure plugs and wiring are not pinched between fan housing and unit center post. Damage to unit may result.

6. To replace fan deck to operating position, slide fan deck back into the unit. Secure with the three no. 10 screws removed in Step 3.
7. Re-attach electrical plugs and wires.
8. Close fan section access door.
9. Restore power to unit.

Evaporator Fan Performance Adjustment (Fig. 22 and 23) — Fan motor pulleys are factory set for speed shown in Table 1.

To change fan speeds:

1. Shut off unit power supply.
2. Loosen nuts on the 4 carriage bolts in the mounting base. Using adjusting bolts and plate, slide motor and remove belt.
3. Loosen movable-pulley flange setscrew (see Fig. 23).
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.

   See Table 15 for air quantity limits.
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. Replace and tighten belts (see Belt Tension Adjustment section below).
7. Restore power to unit.

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 plate.
4. Restore power to unit.

Belt Tension Adjustment — To adjust belt tension:

1. Shut off power to unit.
2. Slide out fan deck to service position as shown in Evaporator Fan Service and Replacement section above.
3. Loosen fan motor bolts.
4. Move motor mounting plate to adjust to proper belt tension. See Table 23. Motor adjuster bolts may be used to tighten belts. See Fig. 22.
5. Check for proper belt alignment. Adjust if necessary.
6. Tighten motor mounting plate bolts to lock motor in proper position.
7. Return fan deck back into operating position.
8. Restore power to unit.

Table 23 — Belt Tension Adjustment

UNIT 50HG	VOLTAGE	BELT TENSION — lbs			
		Unit Model Number Position 10			
		—	A	B	C
014	230	4.6	3.8	5.6	4.5
	460	4.6	3.8	5.6	4.5
	575	4.2	3.3	5.6	4.5
016	230	3.8	4.6	5.6	4.5
	460	3.8	4.6	5.6	4.5
	575	3.3	4.2	5.6	4.5
020	230	5.1	4.9	5.5	5.7
	460	5.1	4.9	5.5	5.7
	575	5.1	4.9	5.5	5.7
024	230	5.1	4.9	5.5	5.7
	460	5.1	4.9	5.5	5.7
	575	5.1	4.9	5.5	5.7
028	230	4.2	5.8	4.6	3.7
	460	4.2	5.8	4.6	3.7
	575	4.2	5.8	4.6	3.7

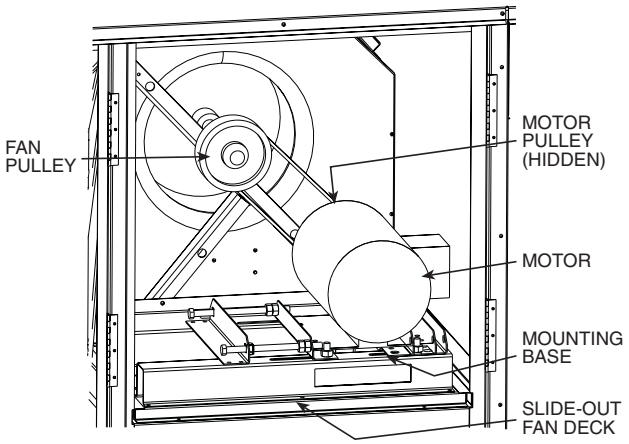


Fig. 22 — Evaporator-Fan Motor Adjustment

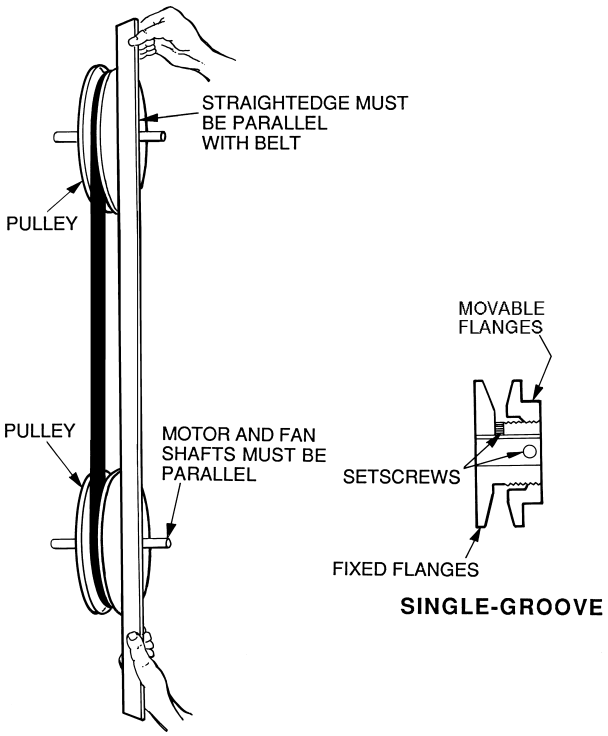


Fig. 23 — Evaporator-Fan Alignment and Adjustment

Condenser-Fan Adjustment (Fig. 24)

1. Shut off unit power supply.
2. Remove condenser-fan assembly (grille, motor, motor cover, and fan) and loosen fan hub setscrews.
3. Adjust fan height as shown in Fig. 24.
4. Tighten setscrews and replace condenser-fan assembly.

Economizer Checkout Procedure — For units equipped with economizers, the unit software provides a test to determine if the economizer is working properly. The following steps specify how to test the economizer using the *Comfort*Link™ display. Refer to *Comfort*Link Display Usage section on page 37 for more information.

1. Enter the Service Test main menu on the display.
2. Enter the TEST submenu and turn ON test mode. If the password has not already been entered, the password must be entered in order to turn ON Service Test. The default password is 1111.
3. Return to the main level of Service Test.
4. Enter the FANS submenu and turn on the IDF (indoor fan).
5. Exit the FANS menu and enter the INDP submenu. Enter an initial value for ECON. This will drive the economizer damper to the specified position. Continue to adjust the ECON value to make sure the economizer opens and closes.
6. The economizer spring return can be checked by setting E.PWR in the INDP menu to NO. Be sure to change the E.PWR value back to YES before exiting in order to restore power to the economizer.
7. Return to the TEST submenu and turn OFF test mode. This will cause the economizer to close and the indoor fan to turn off. Verify that the economizer damper moves as directed.

Verify Outdoor Air Temperature (OAT) Sensor and Supply Air Temperature (SAT) Sensor Performance — Verify that the OAT and SAT sensors are reading correctly. The OAT and SAT values can be accessed through the *Comfort*Link display in the Temperatures menu and UNIT submenu.

Power Failure — Dampers have a spring return. In event of power failure, dampers will return to fully closed position until power is restored. *Do not manually operate damper motor.*

Refrigerant Charge — Amount of refrigerant charge is listed on unit nameplate and in Table 1. Refer to Carrier GTAC II; Module 5; Charging, Recovery, Recycling, and Reclamation section for charging methods and procedures. Unit panels must be in place when unit is operating during charging procedure.

NOTE: Do not use recycled refrigerant as it may contain contaminants.

NO CHARGE — Use standard evacuating techniques. After evacuating system, weigh in the specified amount of refrigerant (refer to Table 1).

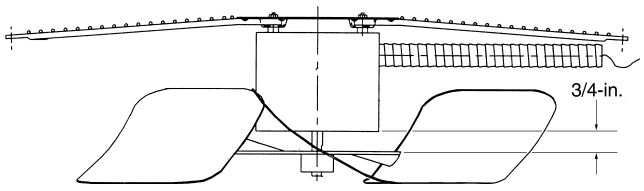


Fig. 24 — Condenser-Fan Adjustment

LOW CHARGE COOLING — Using cooling charging chart (see Fig. 25-29), add or remove refrigerant until conditions of the chart are met. An accurate pressure gage and temperature-sensing device is required. Charging is accomplished by ensuring the proper amount of liquid subcooling. Measure liquid line pressure at the liquid line service valve using pressure gage. Connect temperature sensing device to the liquid line near the liquid line service valve and insulate it so that outdoor ambient temperature does not affect reading.

TO USE THE COOLING CHARGING CHART — Use the above temperature and pressure readings, and find the intersection point on the cooling charging chart. If intersection point on chart is above line, add refrigerant. If intersection point on chart is below line, carefully recover some of the charge. Recheck suction pressure as charge is adjusted.

NOTE: Indoor-air CFM must be within normal operating range of unit. All outdoor fans must be operating.

The TXV (thermostatic expansion valve) is set to maintain between 10 and 15 degrees of superheat at the compressors. The valves are factory set and should not require re-adjustment.

Filter Drier — Replace whenever refrigerant system is exposed to atmosphere.

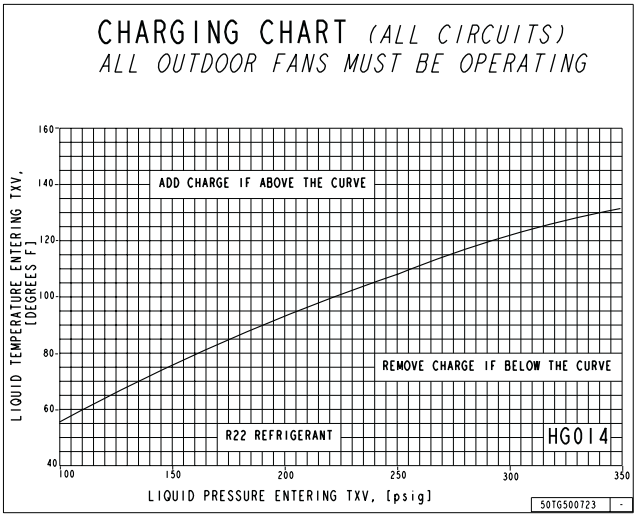


Fig. 25 — Cooling Charging Chart — 50HG014 Units

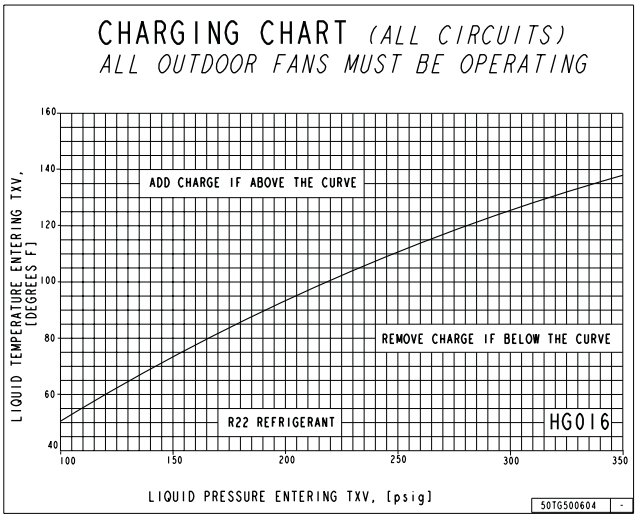


Fig. 26 — Cooling Charging Chart — 50HG016 Units

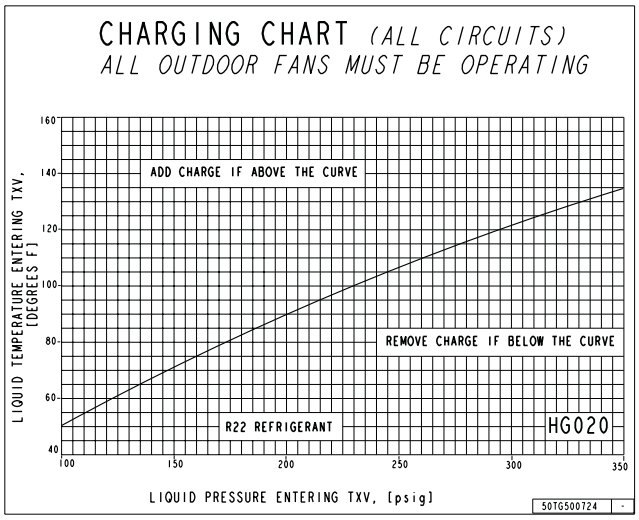


Fig. 27 — Cooling Charging Chart — 50HG020 Units

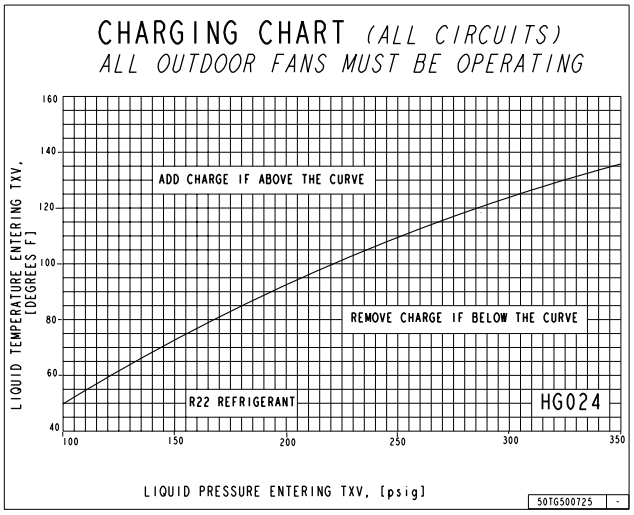


Fig. 28 — Cooling Charging Chart — 50HG024 Units

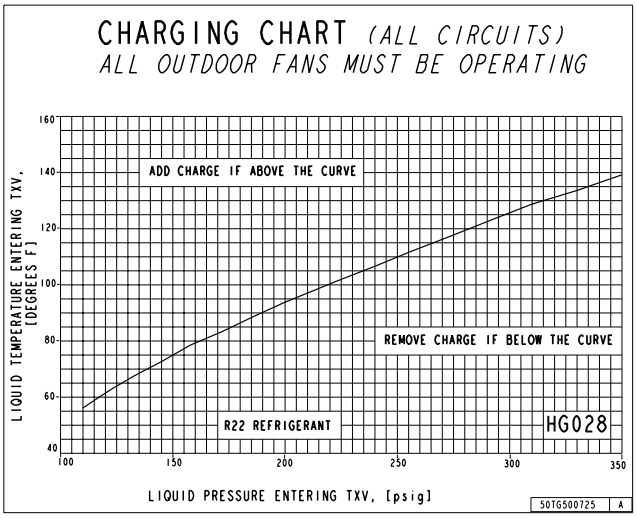


Fig. 29 — Cooling Charging Chart — 50HG028 Units

Protective Devices

COMPRESSOR PROTECTION

Overcurrent — Each compressor has internal line break motor protection.

Overtemperature — Each compressor has an internal protector to protect it against excessively high discharge gas temperatures.

High-Pressure Switch — If the high-pressure switch trips, the compressor will shut down and the current sensor will not detect current. See the Current Sensor section below for more information.

Current Sensor (CS) — The purpose of the CS is to detect losses in compressor power. After detecting a loss in compressor power, the unit control locks out the compressor for 15 minutes. After 15 minutes, the alarm will automatically reset. If this alarm occurs 3 times consecutively, the compressor will remain locked out until an alarm reset is initiated via CCN or manually via the *Comfort*Link™ display (see Clearing Unit Alarms section on page 38 for more details).

EVAPORATOR FAN MOTOR PROTECTION — A manual reset, calibrated trip, magnetic circuit breaker protects against overcurrent. Do not bypass connections or increase the size of the breaker to correct trouble. Determine the cause and correct it before resetting the breaker.

CONDENSER-FAN MOTOR PROTECTION — Each condenser-fan motor is internally protected against overtemperature.

Fuses are also located in the control box and feed power to the condenser fan motors. Always replace blown fuses with the correct size fuse as indicated on the unit fuse label.

SATURATED SUCTION PRESSURE (SSP) — If the SSP for a particular circuit is reading below the alarm set point for an extended period of time, that circuit will be shut down. After 15 minutes, the alarm will automatically reset. If this alarm occurs 3 times consecutively, the circuit will remain locked out until an alarm reset is initiated via CCN or manually via the *Comfort*Link display (see Clearing Unit Alarms section on page 38 for more details).

Relief Devices — All units have relief devices to protect against damage from excessive pressures (i.e., fire). These devices protect the high and low side.

Control Circuit, 24-V — Each control circuit is protected against overcurrent by a 3.2 amp circuit breaker. Breaker can be reset. If it trips, determine cause of trouble before resetting.

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

LEGEND

Fig. 30 — Low Voltage Control Schematic, Fig. 31 — Power Schematic and Fig. 32 — Component Arrangement

_ _ .A	—	Circuit A
AUX	—	Auxiliary Contact
_ _ .B	—	Circuit B
_ _ .C	—	Circuit C
C	—	Compressor, Contactor
CAP	—	Capacitor
CB	—	Circuit Breaker
CCN	—	Carrier Comfort Network
CCH	—	Crankcase Heater
COMP	—	Compressor
CS	—	Current Sensor
DU	—	Dummy Terminal
EC	—	Enthalpy Control
ECB	—	Economizer Control Board
FIOP	—	Factory-Installed Option
FU	—	Fuse
GND	—	Ground
HPS	—	High-Pressure Switch
IFC	—	Indoor Fan Contactor
IFCB	—	Indoor Fan Circuit Breaker
IFM	—	Indoor-Fan Motor
LEN	—	Local Equipment Network
MBB	—	Main Base Board
OAT	—	Outdoor-Air Temperature
OFC	—	Outdoor-Fan Contactor
OFM	—	Outdoor-Fan Motor
PEC	—	Power Exhaust Contactor
PEM	—	Power Exhaust Motor
PL	—	Plug
QT	—	Quadruple Terminal
SAT	—	Supply-Air Temperature
SCT	—	Saturated Condensing Temp
SSP	—	Saturated Suction Pressure
TB	—	Terminal Block
TRAN	—	Transformer
T-55	—	Room Temp Sensor
T-56	—	Room Temp Sensor With Set Point Adjustment
○		Terminal (Unmarked)
x		Terminal Block
●		Splice
———		Factory Wiring
- - - -		Field Wiring
— · · —		To Indicate FIOP or Accessory
▬▬		To Indicate Common Potential Only, Not To Represent Wiring

THERMOSTAT MARKINGS

C	—	Common	**W2**	—	2nd Stage of Heating
G	—	Fan	**X**	—	Alarm Output
R	—	Thermostat Power	**Y1**	—	1st Stage of Cooling
W1	—	1st Stage of Heating	**Y2**	—	2nd Stage of Cooling

NOTES:
1. Factory wiring is in accordance with the National Electrical Codes. Any field modifications or additions must be in compliance with all applicable codes.
2. Use 75° C minimum wire for field power supply. Use copper wires for all units.
3. All circuit breakers “Must Trip Amps” are equal to or less than 156% RLA (rated load amps).
4. Compressor and fan motors are thermally protected. Three-phase motors protected against primary single phase conditions.
5. Red jumper wire must be added between R and W1 for space temperature mode and temporarily during Service Test mode when the heaters need to operate.

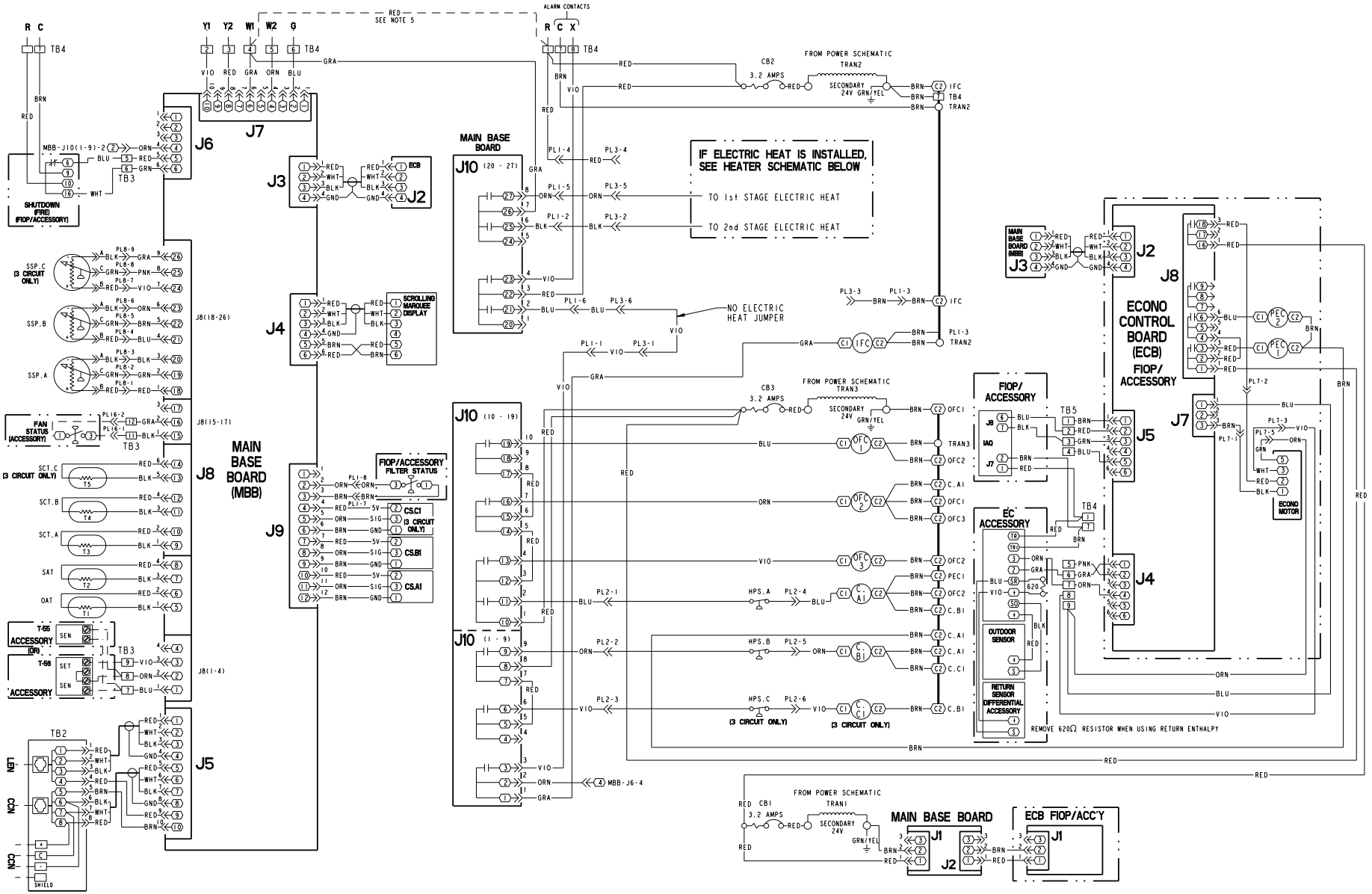


Fig. 30 — Low Voltage Control Schematic

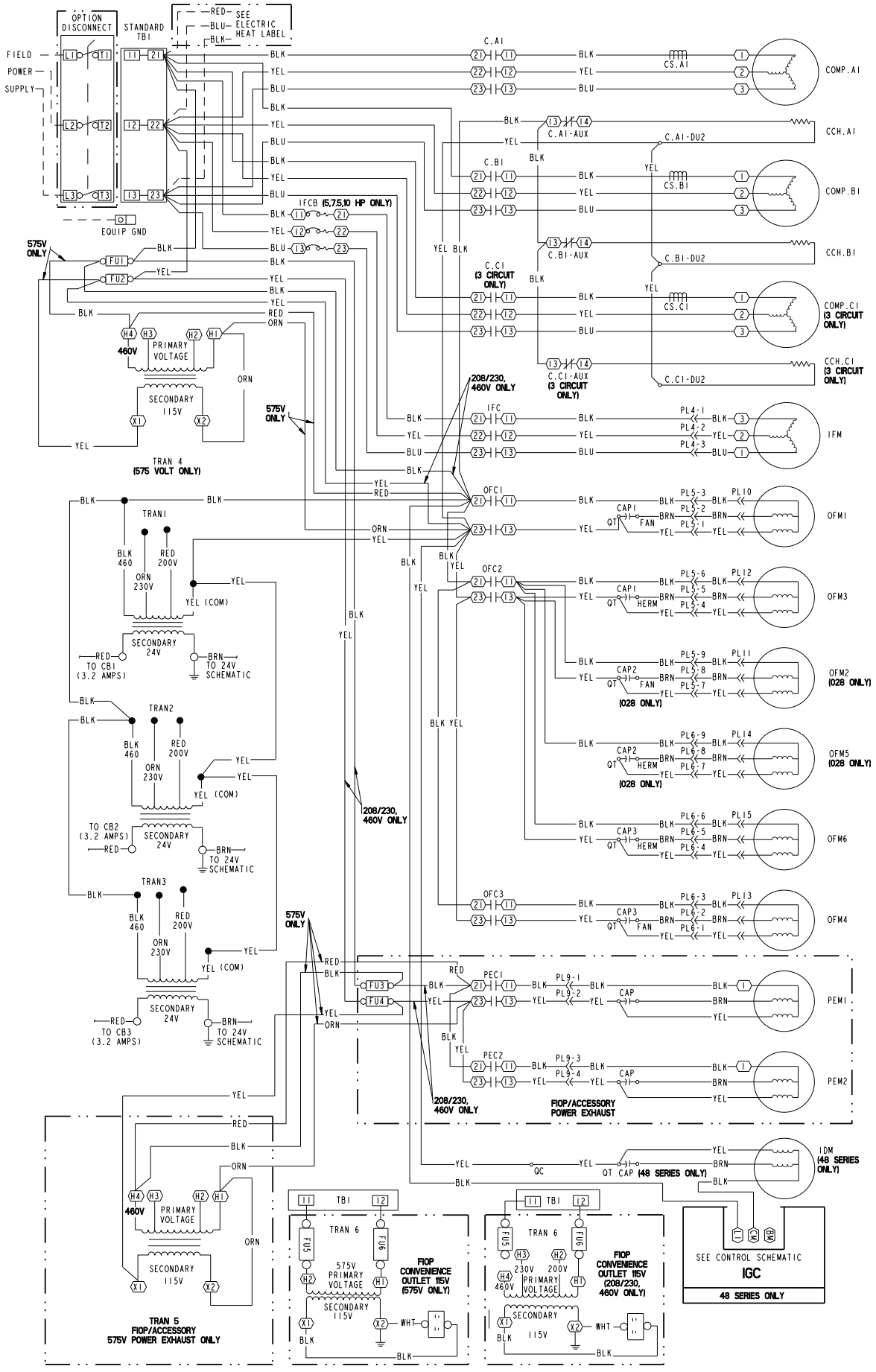


Fig. 31 — Power Schematic

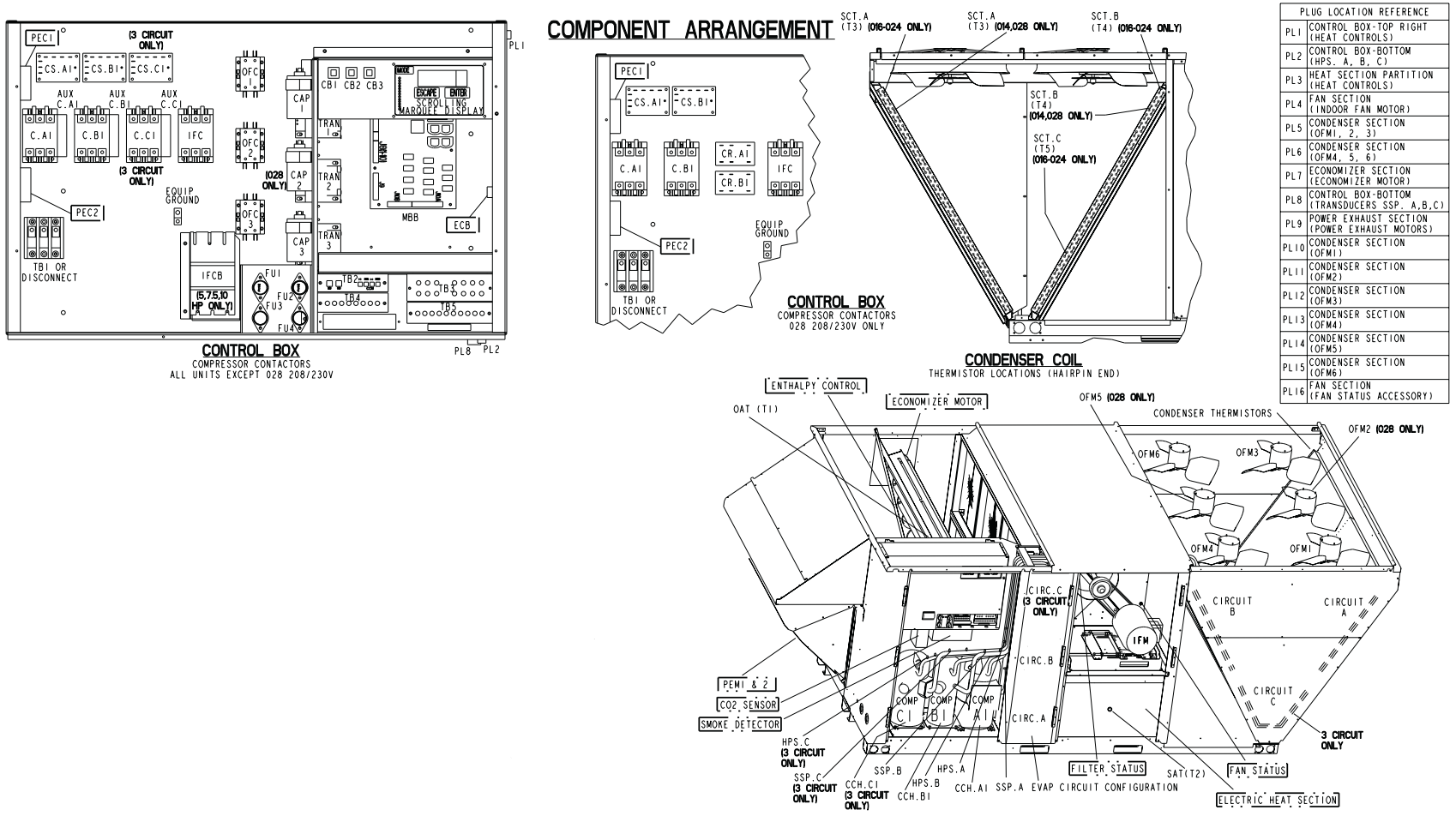


Fig. 32 — Component Arrangement

TROUBLESHOOTING

Refer to Table 24 and 25 for troubleshooting details.

Table 24 — Cooling Service Analysis

PROBLEM	CAUSE	REMEDY
Compressor and fan will not start.	Power failure.	Call power company.
	Fuse blown or circuit breaker tripped. CB1, CB2, CB3.	Replace fuse or reset circuit breaker.
	Disconnect off.	Power disconnect.
	Unit compressor off until time guard expires.	Check using Scrolling Marquee (see page 37).
	Thermostat or occupancy schedule set point not calling for Cooling.	Check using Scrolling Marquee (see page 37).
	Outdoor temperature too low.	Check (MC.LO) using Scrolling Marquee (see page 37).
	Active alarm.	Check active alarms using Scrolling Marquee.
Compressor cycles (other than normally satisfying thermostat).	Insufficient line voltage.	Determine cause and correct.
	Active alarm.	Check active alarms using Scrolling Marquee (see page 37).
Compressors operates continuously.	Unit undersized for load.	Decrease load or increase size of unit.
	Thermostat or occupancy schedule set point too low.	Reset thermostat or schedule set point.
	Dirty air filters.	Replace filters.
	Low refrigerant charge.	Check pressures, locate leak, repair evacuate, and recharge.
	Condenser coil dirty or restricted.	Clean coil or remove restriction.
Excessive head pressures.	Loose condenser thermistors.	Tighten thermistors.
	Dirty condenser coil.	Clean coil.
	Refrigerant overcharge.	Recover excess refrigerant.
	Faulty TXV.	1. Check TXV bulb mounting and secure tightly to suction line, and insulate. 2. Replace TXV (and new filter drier) if stuck open or closed.
	Condenser air restricted or air short-cycling.	Determine cause and correct.
	Restriction in liquid tube.	Remove restriction.
Condenser fans not operating.	Review operation of condenser fan in Control & Troubleshooting guide.	
	No power to contactors.	Fuse blown, plug at motor loose.
Excessive suction pressure.	High heat load.	Check for sources and eliminate.
	Faulty TXV.	1. Check TXV bulb mounting and secure tightly to suction line, and insulate. 2. Replace TXV if stuck open or closed.
	Refrigerant overcharged.	Recover excess refrigerant.
Suction pressure to low.	Dirty air filters.	Replace air filters.
	Low refrigerant charge.	Check for leaks, repair and recharge.
	Faulty TXV.	1. Check TXV bulb mounting and secure tightly to suction line, and insulate. 2. Replace TXV if stuck open or closed.
	Insufficient evaporator airflow.	Check belt tension, check for other restrictions.
	Temperature too low in conditioned area (low return air temp).	Reset thermostat or occupancy schedule.

LEGEND

TXV — Thermostatic Expansion Valve

Table 25 — Heating Service Analysis

PROBLEM	CAUSE	REMEDY
No heat.	Power failure.	Call power company.
	Fuse blown or circuit breaker tripped. CB1, CB2, CB3.	Replace fuse or reset circuit breaker.
	Thermostat or occupancy schedule set point not calling for heating.	Check using Scrolling Marquee (see page 37).
	No 24 vac at primary contactor.	Check transformer and circuit breaker.
	No power (high voltage) to L2 of primary contactor.	Check safety switches, one shot backup, and auto limit.
	Bad electrical elements.	With power off, remove high voltage wires and check resistance of heater. Replace if open.

START-UP CHECKLIST

MODEL NO.:_____ SERIAL NO.:_____

DATE:_____ TECHNICIAN: _____

I. PRE-START-UP:

- ☐ VERIFY THAT ALL PACKING MATERIALS HAVE BEEN REMOVED FROM UNIT
- ☐ VERIFY INSTALLATION OF OUTDOOR AIR HOOD
- ☐ VERIFY THAT CONDENSATE CONNECTION IS INSTALLED PER INSTRUCTIONS
- ☐ VERIFY THAT ALL ELECTRICAL CONNECTIONS AND TERMINALS ARE TIGHT
- ☐ CHECK THAT RETURN-AIR FILTERS ARE CLEAN AND IN PLACE
- ☐ CHECK THAT OUTDOOR AIR INLET SCREENS ARE IN PLACE
- ☐ VERIFY THAT UNIT IS LEVEL
- ☐ CHECK FAN WHEEL AND PROPELLER FOR LOCATION IN HOUSING/ORIFICE, AND VERIFY SETSCREW IS TIGHT
- ☐ VERIFY THAT FAN SHEAVES ARE ALIGNED AND BELTS ARE PROPERLY TENSIONED
- ☐ VERIFY THAT SCROLL COMPRESSORS ARE ROTATING IN THE CORRECT DIRECTION
- ☐ VERIFY INSTALLATION OF THERMOSTAT/SPACE SENSOR
- ☐ VERIFY SET UP OF ELECTRONIC CONTROLS (REFER TO CONTROLS AND TROUBLESHOOTING GUIDE)
- ☐ VERIFY THAT CRANKCASE HEATERS HAVE BEEN ENERGIZED FOR AT LEAST 24 HOURS

II. START-UP

ELECTRICAL

SUPPLY VOLTAGE L1-L2 _____ L2-L3 _____ L3-L1 _____

COMPRESSOR AMPS — COMPRESSOR A1 L1 _____ L2 _____ L3 _____

— COMPRESSOR B1 L1 _____ L2 _____ L3 _____

— COMPRESSOR C1 (016-024 ONLY) L1 _____ L2 _____ L3 _____

SUPPLY FAN AMPS _____

ELECTRIC HEAT AMPS (IF EQUIPPED) L1 _____ L2 _____ L3 _____

TEMPERATURES

OUTDOOR-AIR TEMPERATURE _____ F DB (Dry Bulb)

RETURN-AIR TEMPERATURE _____ F DB _____ F WB (Wet Bulb)

COOLING SUPPLY AIR _____ F

ELECTRIC HEAT SUPPLY AIR (IF EQUIPPED) _____ F

PRESSURES

REFRIGERANT SUCTION CIRCUIT A _____ PSIG

CIRCUIT B _____ PSIG

CIRCUIT C _____ PSIG (016-024 ONLY)

REFRIGERANT DISCHARGE CIRCUIT A _____ PSIG

CIRCUIT B _____ PSIG

CIRCUIT C _____ PSIG (016-024 ONLY)

☐ VERIFY REFRIGERANT CHARGE USING CHARGING CHARTS ON PAGE 41.

GENERAL

☐ ECONOMIZER MINIMUM VENT AND CHANGEOVER SETTINGS TO JOB REQUIREMENTS

☐ VERIFY INSTALLATION OF ALL OPTIONS AND ACCESSORIES

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE