50PG20−28
Single Package Rooftop Units
Electric Cooling with Electric Heat Option and
***COMFORT*LINK™ with PURON® (R−410A) Refrigerant**

Carrier®
Turn to the Experts℠

Installation Instructions

IMPORTANT: This installation instruction contains basic unit installation information including installation of field control devices. For information on unit start-up, service, and operation, refer to the unit Controls, Start-Up, Operation, Service, and Troubleshooting Instructions also enclosed in the unit literature packet.

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SAFETY CONSIDERATIONS

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

Untrained personnel can perform 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.

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

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

⚠ WARNING

UNIT OPERATION AND SAFETY HAZARD

Failure to follow this warning could cause personal injury, death and/or equipment damage.

Puron (R-410a) refrigerant systems operate at higher pressures than standard R-22 systems. Do not use R-22 service equipment or components on Puron refrigerant equipment.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

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

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. Ductwork must be attached to curb and not to unit. Curb must be level. This is necessary to permit unit drain to function properly. Unit leveling tolerance is ± $^1/_{16}$ 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. Carrier roof curb accessories are for flat roofs or slab mounting.

ROOFCURB ACCESSORY	CURB HEIGHT	DESCRIPTION	C	D	
CRRFCURB018C00	1′-2" [356]	ROOF CURB 14" HIGH	3′-1 15/16" [963]	9′-6 7/16" [2906]	HG 014-028, PG 28 HJ 020-028, 551A,581A 210-300
CRRFCURB019C00	2′-0" [610]	ROOF CURB 24" HIGH	3′-1 15/16" [963]	9′-6 7/16" [2906]	HG 014-028, PG 28 HJ 020-028, 551A,581A 210-300
CRRFCURB036A00	1′-2" [356]	ROOF CURB 14" HIGH	4′-3 9/16" [1310]	10′-8 1/16" [3279]	PG 20,24
CRRFCURB037A00	2′-0" [610]	ROOF CURB 24" HIGH	4′-3 9/16" [1310]	10′-8 1/16" [3279]	PG 20,24

NOTES:
1. ROOFCURB ACCESSORY IS SHIPPED DISASSEMBLED.
2. DIMENSIONS IN () ARE IN MILLIMETERS.
3. ▨ DIRECTION OF AIRFLOW.
4. ROOF CURB: 16 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.

MAX CURB LEVELING TOLERANCES:

ROOFCURB	A		B	
	DEG.	IN.	DEG.	IN.
CRRFCURB018C00 CRRFCURB019C00	.28	.57	.28	.42
CRRFCURB036A00 CRRFCURB037A00	.28	.63	.28	.42

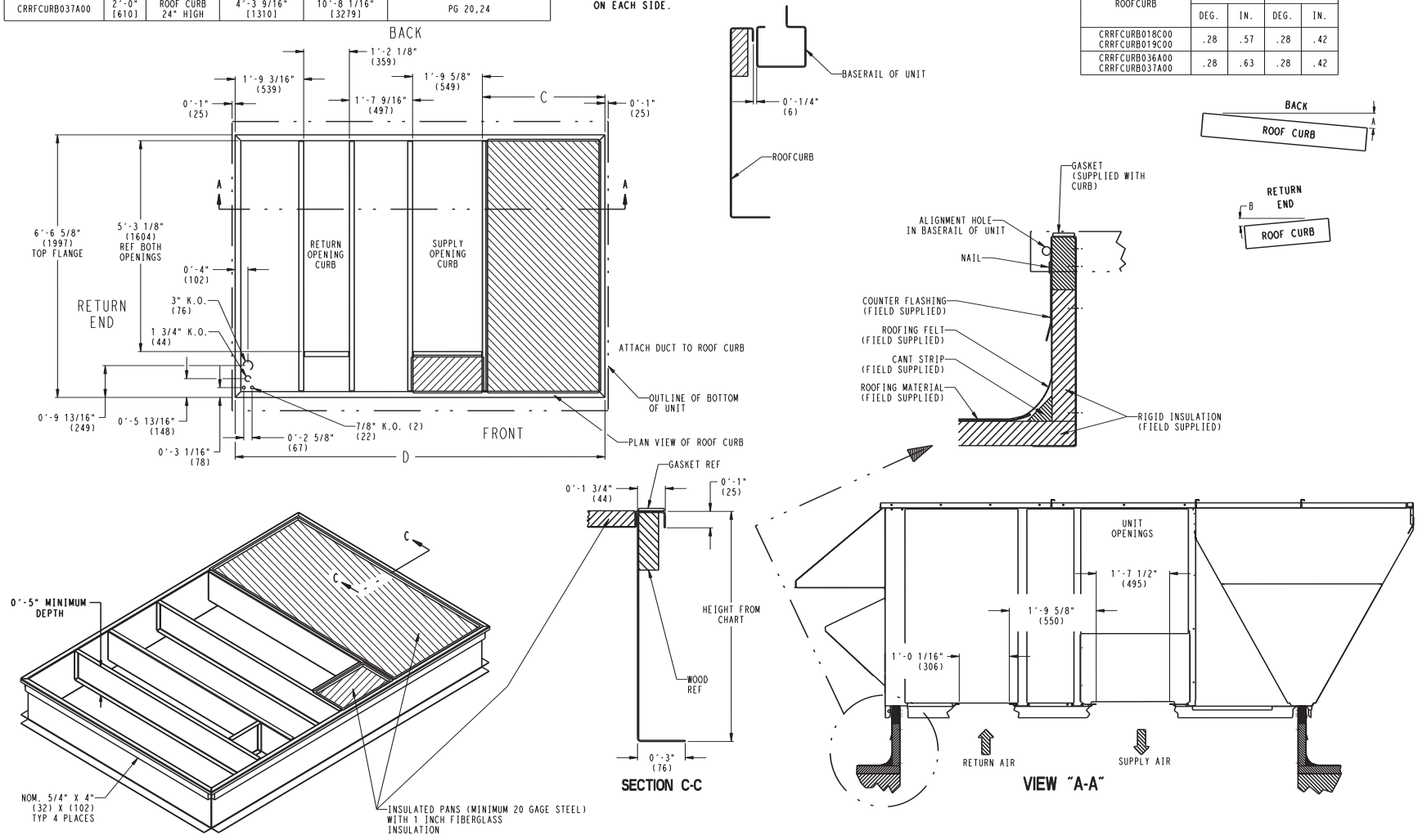

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Fig. 1 – Roof Curb Details

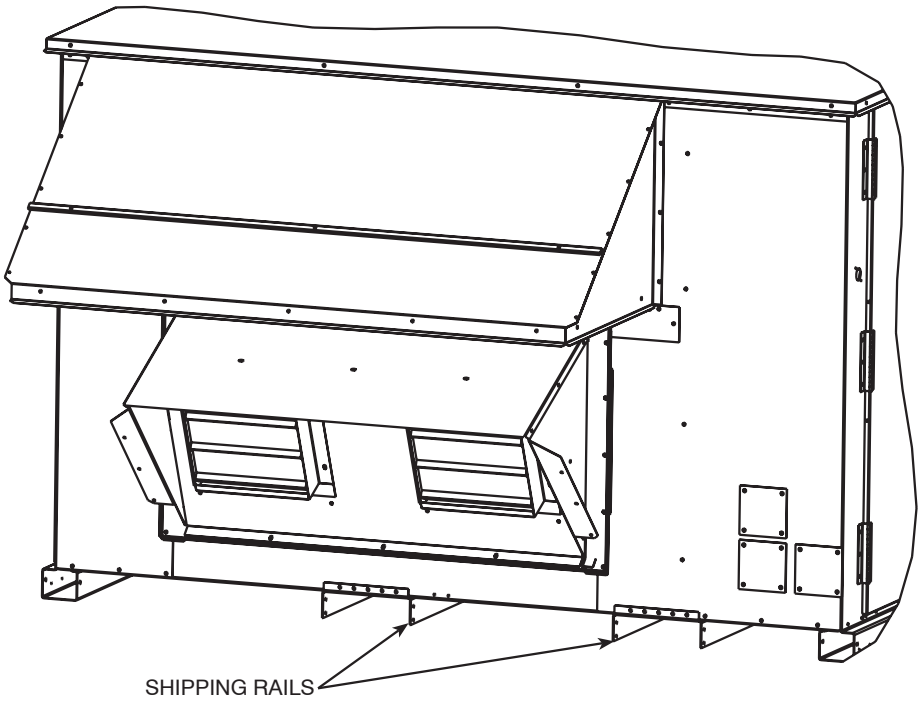

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Fig. 2 — Shipping Rail Removal

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. Do not slide unit to position on roof curb.

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.

Slab Mount (Horizontal Units Only)

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

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

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

PERSONAL INJURY AND PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in damage to roof.

All panels must be in place when rigging. Unit is not designed for handling by fork truck.

Step 3 —Rig and Place Unit

Inspect unit for transportation damage. See Table 1-3 for physical data. File any claim with transportation agency.

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 and unit rigging weight.

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. 6, 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. Locate unit at least 10 ft away from adjacent units.

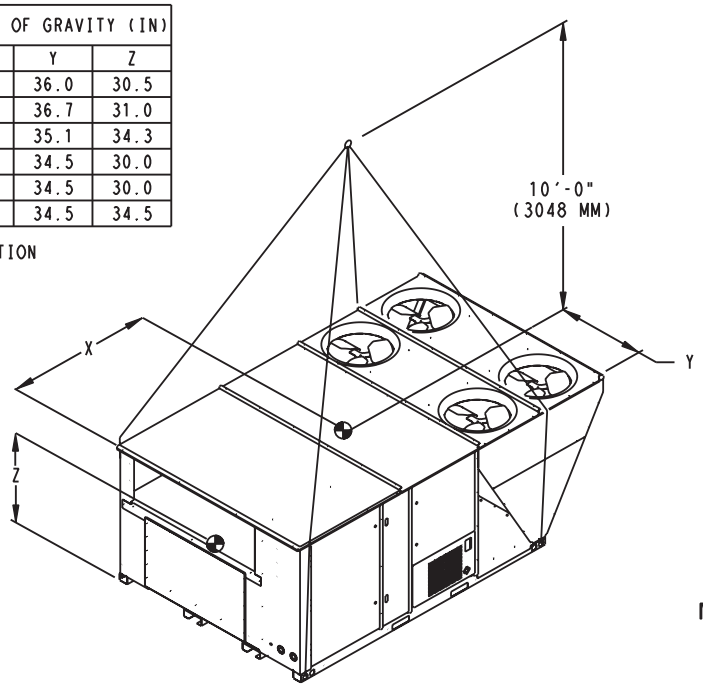
⚠ CAUTION: NOTICE TO RIGGERS:

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.

UNIT SIZE	MAX WEIGHT (LBS)*	CENTER OF GRAVITY (IN)		
		X	Y	Z
PG20	3825	73.0	36.0	30.5
PG24	4075	77.5	36.7	31.0
PG28	4300	70.9	35.1	34.3
PM20	3338	62.0	34.5	30.0
PM24	3371	62.0	34.5	30.0
PM28	3633	66.0	34.5	34.5

* - DOES NOT INCLUDE ERV OPTION



NOTE:
SEE LABEL FOR UNIT LOCATION ON ROOF CURB

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

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Fig. 3 – Rigging Details

Roof Mount

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

Installation Onto Curb

The 50PG units are designed to fit on the accessory full perimeter curb. 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. 4 and 5, to assure proper duct opening alignment. For placement on the 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.

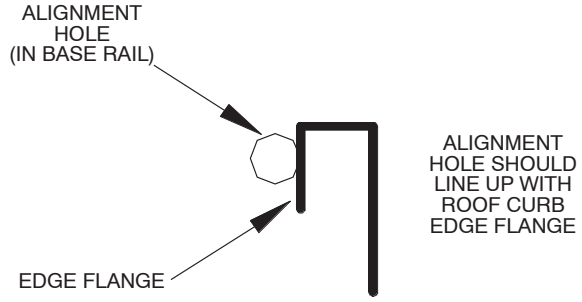

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Fig. 4 – Alignment Hole Details

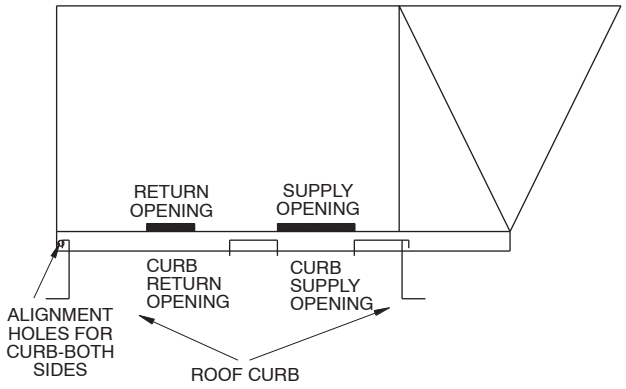

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Fig. 5 – Alignment Hole Location

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage.

Do not slide unit to position when it is sitting on the curb. Curb gasketing material may be damaged and leaks may result.

NOTES:
1. FOR OUTDOOR USE ONLY.
2. WEIGHTS SHOWN ARE FOR 50PG COOLING ONLY UNIT WITH MANUAL 25% OUTDOOR AIR OPTION, ALUMINUM COILS, AND STANDARD DRIVE. FOR WEIGHTS OF OPTIONAL EQUIPMENT CONSULT PRODUCT DATA BOOK.
3. MIN. CLEARANCES TO BE :
   RIGHT SIDE : 6'-0" [1829] CONDENSER AIR
   LEFT SIDE : 10'-0" [3048] OUTSIDE AIR
   FRONT SIDE : 3'-0" [915] SERVICE
   : 6'-0" [1829] CONDENSER AIR
   : 8'-0" [2438] COIL REMOVAL
   REAR SIDE : 6'-0" [1829] CONDENSER AIR
   : 6'-6" [1981] ECONOMIZER REMOVAL
   TOP : 6'-0 [1829] CONDENSER FAN
   BOTTOM : 1'-2" [356] COMBUSTIBLE SURFACES (W/O CURB)
4. FOR SMALLER SERVICE AND OPERATIONAL CLEARANCES, CONTACT CARRIER APPLICATION ENGINEERING DEPARTMENT.
5. 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.
6. DIMENSIONS ARE IN INCHES. WEIGHTS AND DIMENSIONS IN [ ] ARE IN MILLIMETERS OR KILOGRAMS.
7. WITH THE EXCEPTION OF CLEARANCE FOR THE CONDENSER COIL AND THE DAMPER/POWER EXHAUST AS STATED IN NOTE #3, A REMOVABLE FENCE OR BARRICADE REQUIRES NO CLEARANCE.
8. DIMENSIONS ARE FROM OUTSIDE OF BASE RAIL. ALLOW 0- 5/16 [8] ON EACH SIDE FOR TOP COVER DRIP EDGE.
9. A FIELD SUPPLIED 90° ELBOW DUCT MUST BE INSTALLED IN THE SUPPLY DUCTWORK BELOW THE UNIT DISCHARGE CONNECTION.

UNIT SIZE	OPERATING WT. WITHOUT HEAT (50PG)	UNIT HEIGHT	UNIT LENGTH	UNIT LENGTH	UNIT LENGTH	UNIT LENGTH	CENTER OF GRAVITY LOCATION			CORNER WEIGHT LBS. [KG]			
		W	E	F	G		X	Y	Z				
	LBS. [KG]	IN [MM]	IN [MM]	IN [MM]	IN [MM]	IN [MM]	IN [MM]	IN [MM]	IN [MM]	A	B	C	D
PG20	2367 [1074]	57-3/4 [1467]	196-7/16 [4989]	172-15/16 [4392]	130-1/16 [3304]		69.7 [1770]	35.9 [912]	30.2 [767]	643.8 [292]	740.9 [336]	456.7 [207]	525.6 [238]
PG24	2483 [1126]	57-3/4 [1467]	196-7/16 [4989]	172-15/16 [4392]	130-1/16 [3304]		72.7 [1847]	36.3 [922]	30.2 [767]	636.9 [289]	804.4 [365]	460.3 [209]	581.4 [264]
PG28	2668 [1210]	69-3/4 [1771]	169-1/4 [4298]	145-3/4 [3701]	116-7/16 [2957]		67.1 [1704]	34.5 [876]	33.8 [859]	679.9 [308]	925.7 [420]	449.9 [204]	612.5 [278]

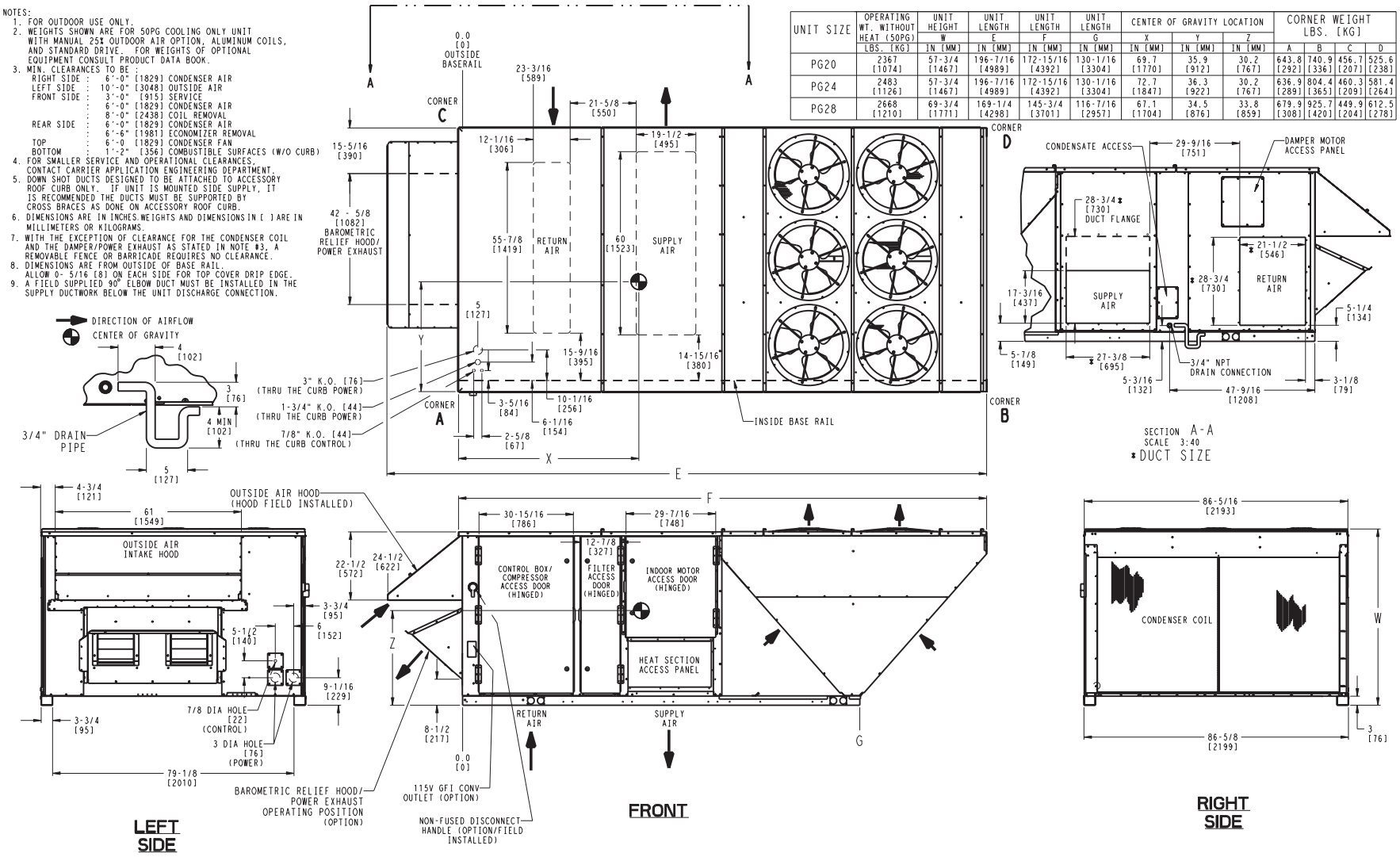

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Fig. 6 – Base Unit Dimensions

Table 1—Physical Data

UNIT 50PG	20		24		28	
VOLTAGE	208/230 and 460	575	208/230 and 460	575	208/230 and 460	575
NOMINAL CAPACITY (Tons)	18		20		25	
OPERATING WEIGHT (lb)						
50 Series (Low Heat) Al/Al	2367	2367	2483	2483	2668	2668
COMPRESSOR	Scroll					
Quantity	2	2	2	2	3	3
Number of Refrigerant Circuits	2	2	2	2	2	2
Oil (ounces) Comp A1, A2, B1	85, NA, 85	85, NA, 85	85, NA, 85	85, NA, 85	85, 85, 85	85, 85, 85
REFRIGERANT TYPE	Puron® (R-410A)					
Expansion Device	TXV	TXV	TXV	TXV	TXV	TXV
Operating Charge (lb) — Standard Unit						
Circuit A	25.3	25.3	29.2	29.2	49.3	49.3
Circuit B	25.3	25.3	30.1	30.1	24.3	24.3
Total Charge	50.6	50.6	59.3	59.3	73.6	73.6
OPERATING CHARGE (lb) — Unit with Humidi–MiZer™ System						
Circuit A	42.9	42.9	46.5	46.5	66.1	66.1
Circuit B	39.8	39.8	44.5	44.5	35.7	35.7
Total Charge	82.7	82.7	91.0	91.0	101.8	101.8
REFRIGERANT SUBCOOLER						
Heat Exchanger Size	B15H x 26 x 26	B15H x 26 x 26	B15H x 26 x 26	B15H x 26 x 26	B15H x 26 x 36	B15H x 26 x 36
Expansion Device	TXV	TXV	TXV	TXV	TXV	TXV
CONDENSER COIL	Face Split					
Rows...Fins/inch	2...17	2...17	3...17	3...17	3...17	3...17
Length of Coil (Between Tube Sheets) (in.)	80.3	80.3	80.3	80.3	80.3	80.3
Width (in.)	60	60	60	60	60	60
Total Face area (sq ft)	33.46	33.46	33.46	33.46	33.46	33.46
CONDENSER FAN						
Nominal Cfm (Total, all fans)	14,000	14,000	21,000	21,000	21,000	21,000
Quantity...Diameter (in.)	4...22	4...22	6...22	6...22	6...22	6...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	2100	2100	2100	2100
HUMIDI-MIZER™ COIL						
Weight	80	80	80	80	100	100
Rows...Fins/Inch	2...15	2...15	2...15	2...15	2...15	2...15
Length of Tube Sheets (in.)	56	56	56	56	56	56
Width (in.)	32	32	32	32	44	44
Total Face Area (sq ft)	12.4	12.4	12.4	12.4	17.1	17.1
EVAPORATOR COIL	Face Split					
Rows...Fins/inch	4...15	4...15	4...15	4...15	4...15	4...15
Length of Coil (Between Tube Sheets) (in.)	69.4	69.4	69.4	69.4	69.4	69.4
Width (in.)	48	48	48	48	60	60
Total Face area (sq ft)	23.13	23.13	23.13	23.13	28.92	28.92
EVAPORATOR FAN						
Quantity...Size (in.)	2...15 x 11	2...15 x 11	2...15 x 11	2...15 x 11	2...15 x 11	2...15 x 11
Type Drive	Belt	Belt	Belt	Belt	Belt	Belt
Nominal Cfm	7000	7000	8000	8000	10,000	10,000
Motor Bearing Type	Ball	Ball	Ball	Ball	Ball	Ball
Maximum Allowable Fan Rpm	1400	1400	1400	1400	1400	1400
HIGH PRESSURE SWITCHES (psig)						
Cutout	630 ± 10	630 ± 10	630 ± 10	630 ± 10	630 ± 10	630 ± 10
Reset (Auto)	505 ± 20	505 ± 20	505 ± 20	505 ± 20	505 ± 20	505 ± 20
OUTDOOR AIR INLET SCREENS						
Quantity...Size (in.)	3...20 x 25	3...20 x 25	3...20 x 25	3...20 x 25	3...20 x 25	3...20 x 25
RETURN AIR FILTERS						
Quantity...Size (in.)	9...16 x 25 x 2	9...16 x 25 x 2	9...16 x 25 x 2	9...16 x 25 x 2	9...20 x 25 x 2	9...20 x 25 x 2

LEGEND

TXV – Thermostatic Expansion Valve

Table 2—Fan Motor and Drive Data — Vertical Supply/Return

50PG	20		24		28	
	208/230 and 460 v	575 v	208/230 and 460 v	575 v	208/230 and 460 v	575 v
LOW RANGE						
Motor Hp	3.7	5	3.7	5	5	5
Motor Nominal Rpm	1750	1750	1750	1750	1750	1750
Maximum Continuous Bhp	4.26	5.88	4.26	5.88	5.37/6.00	5.88
Maximum Continuous Watts	3700	5015	3700	5015	4578/5115	5015
Motor Frame Size	56HZ	S184T	56HZ	S184T	S184T	S184T
Motor Shaft Diameter (in.)	7/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8
Fan Rpm Range	685-939	751-954	685-939	751-954	687-873	687-873
Motor Pulley Min. Pitch Diameter (in.)	2.7	3.7	2.7	3.7	3.7	3.7
Motor Pulley Max. Pitch Diameter (in.)	3.7	4.7	3.7	4.7	4.7	4.7
Blower Pulley Pitch Diameter (in.)	6.8	8.6	6.8	8.6	9.4	9.4
Blower Pulley Shaft Diameter (in.)	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16
Blower Pulley Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Pulley Center Line Distance (in.)	11.293-13.544	9.81-13.055	11.293-13.544	9.81-13.055	9.81-13.055	9.81-13.055
Belt, Quantity...Type...Length (in.)	1...BX38...39.8	1...BX40...41.8	1...BX38...39.8	1...BX40...41.8	1...BX41...42.8	1...BX41...42.8
Speed Change Per Turn — Moveable Pulley (Rpm)	42	34	42	34	31	31
Moveable Pulley Maximum Full Turns	6	6	6	6	6	6
Factory Speed Setting (Rpm)	812	853	812	853	780	780
MID-LOW RANGE						
Motor Hp	5	5	5	5	5	5
Motor Nominal Rpm	1750	1750	1750	1750	1750	1750
Maximum Continuous Bhp	5.37/6.00	5.88	5.37/6.00	5.88	5.37/6.00	5.88
Maximum Continuous Watts	4578/5115	5015	4578/5115	5015	4578/5115	5015
Motor Frame Size	S184T	S184T	S184T	S184T	S184T	S184T
Motor Shaft Diameter (in.)	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
Fan Rpm Range	949-1206	949-1206	949-1206	949-1206	805-1007	805-1007
Motor Pulley Min. Pitch Diameter (in.)	3.7	3.7	3.7	3.7	4.8	4.8
Motor Pulley Max. Pitch Diameter (in.)	4.7	4.7	4.7	4.7	6.0	6.0
Blower Pulley Pitch Diameter (in.)	6.8	6.8	6.8	6.8	10.4	10.4
Blower Pulley Shaft Diameter (in.)	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16
Blower Pulley Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Pulley Center Line Distance (in.)	9.81-13.055	9.81-13.055	9.81-13.055	9.81-13.055	9.81-13.055	9.81-13.055
Belt, Quantity...Type...Length (in.)	1...BX38...39.8	1...BX38...39.8	1...BX38...39.8	1...BX38...39.8	1...BX45...46.8	1...BX45...46.8
Speed Change Per Turn — Moveable Pulley (Rpm)	43	43	43	43	34	34
Moveable Pulley Maximum Full Turns	6	6	6	6	6	6
Factory Speed Setting (Rpm)	1078	1078	1078	1078	906	906
MID-HIGH RANGE						
Motor Hp	7.5	7.5	7.5	7.5	7.5	7.5
Motor Nominal Rpm	1750	1750	1750	1750	1750	1750
Maximum Continuous Bhp	7.66/9.00	9.00	7.66/9.00	9.00	7.66/9.00	9.00
Maximum Continuous Watts	6458/7586	7586	6458/7586	7586	6458/7586	7586
Motor Frame Size	S213T	S213T	S213T	S213T	S213T	S213T
Motor Shaft Diameter (in.)	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Fan Rpm Range	941-1176	941-1176	941-1176	941-1176	941-1176	941-1176
Motor Pulley Min. Pitch Diameter (in.)	4.8	4.8	4.8	4.8	4.8	4.8
Motor Pulley Max. Pitch Diameter (in.)	6.0	6.0	6.0	6.0	6.0	6.0
Blower Pulley Pitch Diameter (in.)	8.9	8.9	8.9	8.9	8.9	8.9
Blower Pulley Shaft Diameter (in.)	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16
Blower Pulley Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Pulley Center Line Distance (in.)	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179
Belt, Quantity...Type...Length (in.)	1...BX42...43.8	1...BX42...43.8	1...BX42...43.8	1...BX42...43.8	1...BX42...43.8	1...BX42...43.8
Speed Change Per Turn — Moveable Pulley (Rpm)	39	39	39	39	39	39
Moveable Pulley Maximum Full Turns	6	6	6	6	6	6
Factory Speed Setting (Rpm)	1059	1059	1059	1059	1059	1059
HIGH RANGE						
Motor Hp	10	10	10	10	10	10
Motor Nominal Rpm	1750	1750	1750	1750	1750	1750
Maximum Continuous Bhp	9.94/11.19	11.65	9.94/11.19	11.65	9.94/11.19	11.65
Maximum Continuous Watts	8284/9330	9711	8284/9330	9711	8284/9330	9711
Motor Frame Size	S215T	S215T	S215T	S215T	S215T	S215T
Motor Shaft Diameter (in.)	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Fan Rpm Range	1014-1297	1014-1297	1014-1297	1014-1297	1014-1297	1014-1297
Motor Pulley Min. Pitch Diameter (in.)	4.3	4.3	4.3	4.3	4.3	4.3
Motor Pulley Max. Pitch Diameter (in.)	5.5	5.5	5.5	5.5	5.5	5.5
Blower Pulley Pitch Diameter (in.)	7.4	7.4	7.4	7.4	7.4	7.4
Blower Pulley Shaft Diameter (in.)	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16	1 3/16
Blower Pulley Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Pulley Center Line Distance (in.)	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179
Belt, Quantity...Type...Length (in.)	2...BX38...39.8	2...BX38...39.8	2...BX38...39.8	2...BX38...39.8	2...BX38...39.8	2...BX38...39.8
Speed Change Per Turn — Moveable Pulley (Rpm)	47	47	47	47	47	47
Moveable Pulley Maximum Full Turns	6	6	6	6	6	6
Factory Speed Setting (Rpm)	1156	1156	1156	1156	1156	1156

Table 3—Fan Motor and Drive Data — Horizontal Supply/Return

50PG	20		24		28	
	208/230 and 460 v	575 v	208/230 and 460 v	575 v	208/230 and 460 v	575 v
LOW RANGE						
Motor Hp	3.7	5	3.7	5	5	5
Motor Nominal Rpm	1750	1750	1750	1750	1750	1750
Maximum Continuous Bhp	4.26	5.88	4.26	5.88	5.37/6.00	5.88
Maximum Continuous Watts	3700	5015	3700	5015	4578/5115	5015
Motor Frame Size	56HZ	S184T	56HZ	S184T	S184T	S184T
Motor Shaft Diameter (in.)	7/8	1 1/8	7/8	1 1/8	1 1/8	1 1/8
Fan Rpm Range	685-939	751-954	685-939	751-954	687-873	687-873
Motor Pulley Min. Pitch Diameter (in.)	2.7	3.7	2.7	3.7	3.7	3.7
Motor Pulley Max. Pitch Diameter (in.)	3.7	4.7	3.7	4.7	4.7	4.7
Blower Pulley Pitch Diameter (in.)	6.8	8.6	6.8	8.6	9.4	9.4
Blower Pulley Shaft Diameter (in.)	1.1875	1.1875	1.1875	1.1875	1 3/16	1 3/16
Blower Pulley Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Pulley Center Line Distance (in.)	11.293-13.544	9.81-13.055	11.293-13.544	9.81-13.055	9.81-13.055	9.81-13.055
Belt, Quantity...Type...Length (in.)	1...BX38...39.8	1...BX40...41.8	1...BX38...39.8	1...BX40...41.8	1...BX41...42.8	1...BX41...42.8
Speed Change Per Turn — Moveable Pulley (Rpm)	42	34	42	34	31	31
Moveable Pulley Maximum Full Turns	6	6	6	6	6	6
Factory Speed Setting (Rpm)	812	853	812	853	780	780
MID-LOW RANGE						
Motor Hp	5	5	5	5	5	5
Motor Nominal Rpm	1750	1750	1750	1750	1750	1750
Maximum Continuous Bhp	5.37/6.00	5.88	5.37/6.00	5.88	5.37/6.00	5.88
Maximum Continuous Watts	4578/5115	5015	4578/5115	5015	4578/5115	5015
Motor Frame Size	S184T	S184T	S184T	S184T	S184T	S184T
Motor Shaft Diameter (in.)	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8	1 1/8
Fan Rpm Range	949-1206	949-1206	949-1206	949-1206	805-1007	805-1007
Motor Pulley Min. Pitch Diameter (in.)	3.7	3.7	3.7	3.7	4.8	4.8
Motor Pulley Max. Pitch Diameter (in.)	4.7	4.7	4.7	4.7	6.0	6.0
Blower Pulley Pitch Diameter (in.)	6.8	6.8	6.8	6.8	10.4	10.4
Blower Pulley Shaft Diameter (in.)	1.1875	1.1875	1.1875	1.1875	1 3/16	1 3/16
Blower Pulley Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Pulley Center Line Distance (in.)	9.81-13.055	9.81-13.055	9.81-13.055	9.81-13.055	9.81-13.055	9.81-13.055
Belt, Quantity...Type...Length (in.)	1...BX38...39.8	1...BX38...39.8	1...BX38...39.8	1...BX38...39.8	1...BX45...46.8	1...BX45...46.8
Speed Change Per Turn — Moveable Pulley (Rpm)	43	43	43	43	34	34
Moveable Pulley Maximum Full Turns	6	6	6	6	6	6
Factory Speed Setting (Rpm)	1078	1078	1078	1078	906	906
MID-HIGH RANGE						
Motor Hp	7.5	7.5	7.5	7.5	7.5	7.5
Motor Nominal Rpm	1750	1750	1750	1750	1750	1750
Maximum Continuous Bhp	7.66/9.00	9.00	7.66/9.00	9.00	7.66/9.00	9.00
Maximum Continuous Watts	6458/7586	7586	6458/7586	7586	6458/7586	7586
Motor Frame Size	S213T	S213T	S213T	S213T	S213T	S213T
Motor Shaft Diameter (in.)	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Fan Rpm Range	941-1176	941-1176	941-1176	941-1176	941-1176	941-1176
Motor Pulley Min. Pitch Diameter (in.)	4.8	4.8	4.8	4.8	4.8	4.8
Motor Pulley Max. Pitch Diameter (in.)	6.0	6.0	6.0	6.0	6.0	6.0
Blower Pulley Pitch Diameter (in.)	8.9	8.9	8.9	8.9	8.9	8.9
Blower Pulley Shaft Diameter (in.)	1.1875	1.1875	1.1875	1.1875	1 3/16	1 3/16
Blower Pulley Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Pulley Center Line Distance (in.)	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179
Belt, Quantity...Type...Length (in.)	1...BX42...43.8	1...BX42...43.8	1...BX42...43.8	1...BX42...43.8	1...BX42...43.8	1...BX42...43.8
Speed Change Per Turn — Moveable Pulley (Rpm)	39	39	39	39	39	39
Moveable Pulley Maximum Full Turns	6	6	6	6	6	6
Factory Speed Setting (Rpm)	1059	1059	1059	1059	1059	1059
HIGH RANGE						
Motor Hp	10	10	10	10	10	10
Motor Nominal Rpm	1750	1750	1750	1750	1750	1750
Maximum Continuous Bhp	9.94/11.19	11.65	9.94/11.19	11.65	9.94/11.19	11.65
Maximum Continuous Watts	8284/9330	9711	8284/9330	9711	8284/9330	9711
Motor Frame Size	S215T	S215T	S215T	S215T	S215T	S215T
Motor Shaft Diameter (in.)	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8	1 3/8
Fan Rpm Range	1014-1297	1014-1297	1014-1297	1014-1297	1014-1297	1014-1297
Motor Pulley Min. Pitch Diameter (in.)	4.3	4.3	4.3	4.3	4.3	4.3
Motor Pulley Max. Pitch Diameter (in.)	5.5	5.5	5.5	5.5	5.5	5.5
Blower Pulley Pitch Diameter (in.)	7.4	7.4	7.4	7.4	7.4	7.4
Blower Pulley Shaft Diameter (in.)	1.1875	1.1875	1.1875	1.1875	1 3/16	1 3/16
Blower Pulley Type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed
Pulley Center Line Distance (in.)	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179	9.025-12.179
Belt, Quantity...Type...Length (in.)	2...BX38...39.8	2...BX38...39.8	2...BX38...39.8	2...BX38...39.8	1...BX38...39.8	1...BX38...39.8
Speed Change Per Turn — Moveable Pulley (Rpm)	47	47	47	47	47	47
Moveable Pulley Maximum Full Turns	6	6	6	6	6	6
Factory Speed Setting (Rpm)	1156	1156	1156	1156	1156	1156

Step 4 —Field Fabricate Ductwork

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

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

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

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

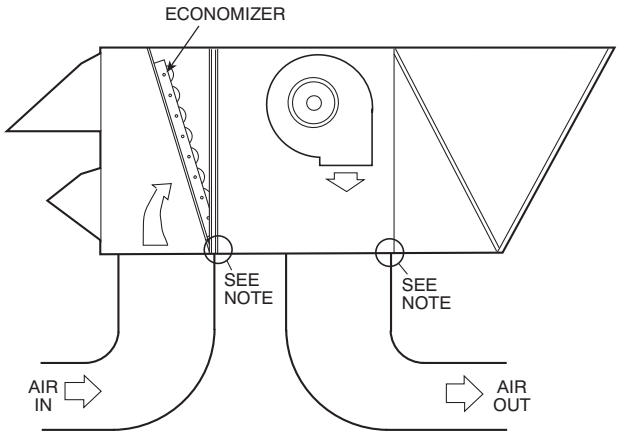
These units are designed for a minimum continuous return-air temperature in heating of 50°F (dry bulb), or an intermittent operation down to 45°F (dry bulb), such as when used with a night set-back thermostat.

To operate at lower return-air temperatures, a field-supplied outdoor-air temperature control must be used to initiate both stages of heat when the temperature is below 45°F. Indoor comfort may be compromised when these lower air temperatures are used with insufficient heating temperature rise.

Step 5 —Make Unit Connections

Vertical Configuration

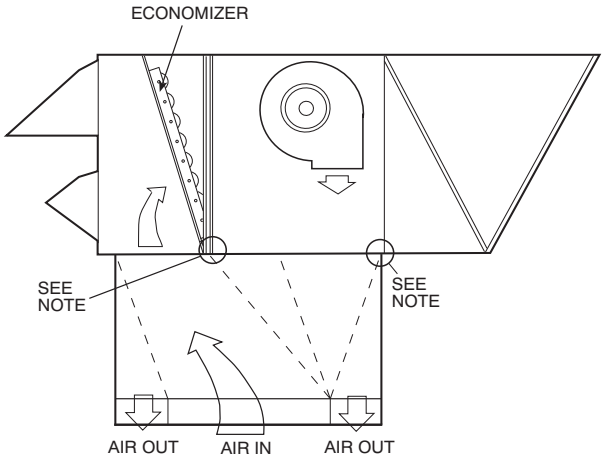
Unit is shipped for thru-the-bottom duct connections. Ductwork openings are shown in Fig. 1 and 6. Duct connections for vertical supply and return configuration are shown in Fig. 7. Field-fabricated concentric ductwork may be connected as shown in Fig. 8 and 9. The unit is designed to attach the ductwork to the roof curb. Do not attach duct directly to the unit.



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

C06378

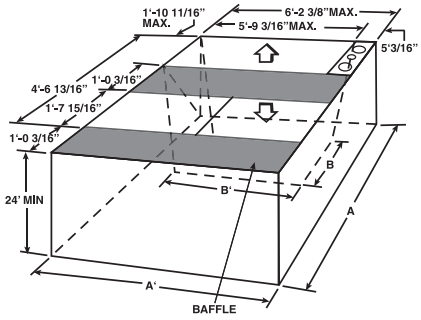
Fig. 7 – Air Distribution - Vertical Supply and Return



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

C06379

Fig. 8 – Air Distribution - Concentric Duct



Shaded area indicates block-off panels.

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

C06100

Fig. 9 – Concentric Duct Details

⚠ WARNING

UNIT DAMAGE AND PERSONAL INJURY HAZARD

Failure to follow this warning could cause equipment damage and/or personal injury.

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.

Horizontal Applications

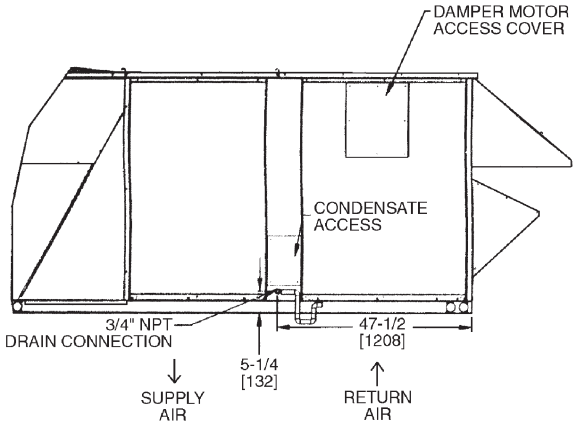
Horizontal units are shipped with outer panels that allow for side by side horizontal duct connections. If specified during ordering, the unit will be shipped with the vertical duct openings blocked off from the factory, ready for side supply installation. If the horizontal option was not specified at time of ordering the unit, a field-installed accessory kit is required to convert the vertical unit into a horizontal 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. 6. Connect ductwork to horizontal duct flange connections on side of unit.

Step 6 —Trap Condensate Drain

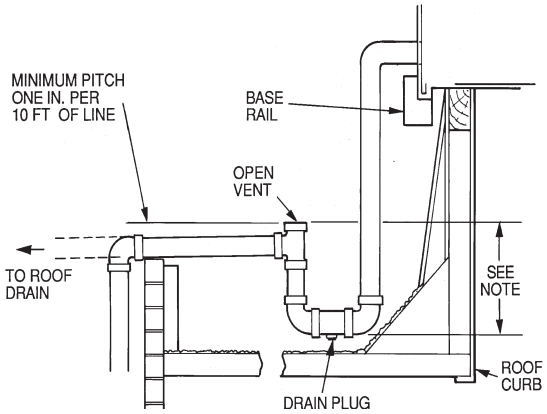
See Fig. 10 for drain location. One $^3/_4$-in. half coupling is provided outside unit evaporator section for condensate drain connection. A trap at least 4-in. deep must be used. (See Fig. 11.)

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



C06282

Fig. 10 – Condensate Drain Details



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

C06291

Fig. 11 – Condensate Drain Piping Details

Step 7 —Make Electrical Connections

⚠ WARNING

ELECTRICAL SHOCK AND FIRE HAZARD

Failure to follow this warning coud result in electrical shock, fire, or death.

The cabinet MUST have an uninterrupted or unbroken ground according to NEC ANSI/NFPA 70-2002 and Canadian Electrical Code CSA C22.1 or local codes to minimize personal injury if an electrical fault should occur. This may consist of electrical wire or conduit approved for electrical ground when installed in accordance with existing electrical codes. Do not use gas piping as an electrical ground.

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in damage to unit.

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.

Field Power Supply

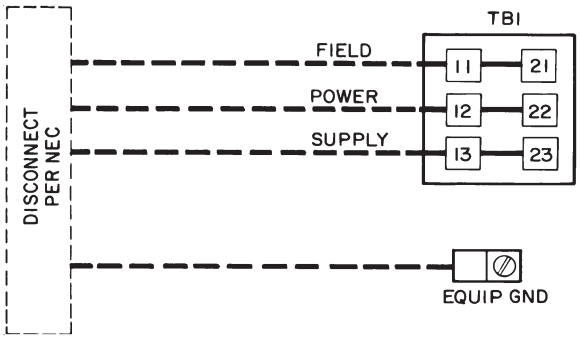
(For more details, refer to the Controls, Start-Up, Operation and Troubleshooting manual).

Unit is factory wired for voltage shown on unit nameplate. Be sure to check for correct voltage.

All 208/230-v units are factory wired for 230-v power supply. If the 208/230-v unit is to be connected to a 208-v power supply, transformers (TRAN1 and TRAN2) must be rewired by moving the black wire with the $^1/_4$-in. female quick connect from the 230-v connection and moving to the 200-volt $^1/_4$-in. male terminal on the primary side of the transformer.

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 4 and 5.) 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. 6) to connections as shown on unit wiring diagram and Fig. 12.



LEGEND

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

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

C06293

Fig. 12 – Field Power Wiring Connections

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%.

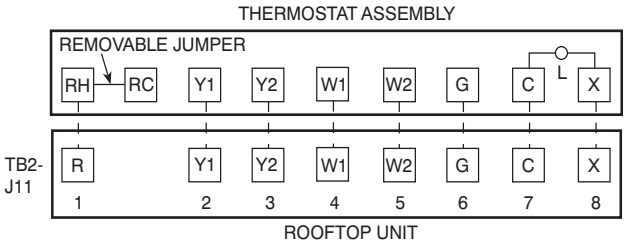
Unit failure as a result of operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components.

Field Control Wiring (Units Without Optional Humidi-MiZer™ Adaptive Dehumidification System)

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.

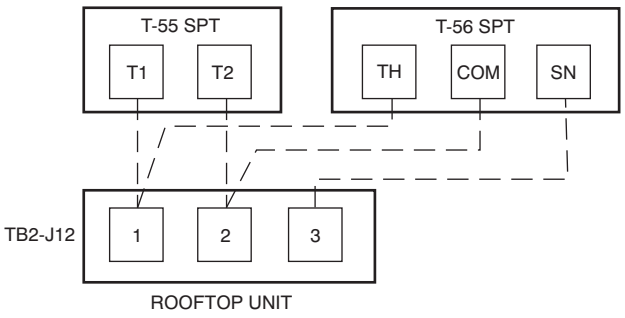
Route thermostat or space temperature sensor cable or equivalent single leads of colored wire from subbase terminals through conduit into unit to low-voltage connections as shown on unit label wiring diagram and in Fig. 13 or 14.

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



C06298

Fig. 13 – Field Control Thermostat Wiring



C06294

Fig. 14 – Field Control Space Temperature Sensor Wiring

Table 4—Electrical Data (Units Without Optional Convenience Outlet)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
20	208/230	187	253	28.2	208	28.2	208	—	—	4	0.25	1.5	—	—	3.7	10.6/9.6	—	—	—	80/79	100/100	80/80	100/100	84/83
																	2	1	5.9	92/91	100/100	92/92	100/100	98/96
															5	16.7/15.2	—	—	—	86/85	100/100	86/86	100/100	91/89
																	2	1	5.9	98/96	100/100	98/98	100/100	105/103
															7.5	24.2/22	—	—	—	94/91	100/100	94/94	100/100	100/97
																	2	1	5.9	105/103	125/125	105/105	125/125	113/111
															10	30.8/28	—	—	—	101/97	125/100	101/101	125/125	107/104
																	2	1	5.9	113/109	125/125	113/113	125/125	121/118
													19/25	52/60	3.7	10.6/9.6	—	—	—	80/87	100/100	87/ 87	100/100	84/ 83
																	2	1	5.9	93/102	100/110	102/102	125/125	98/ 96
															5	16.7/15.2	—	—	—	86/ 94	100/100	94/ 94	100/100	91/ 89
																	2	1	5.9	101/109	125/110	109/109	125/125	105/103
															7.5	24.2/22	—	—	—	95/103	100/110	103/103	125/125	100/ 97
																	2	1	5.9	110/117	125/125	117/117	125/125	113/111
															10	30.8/28	—	—	—	104/110	125/125	110/110	125/125	107/104
																	2	1	5.9	118/125	125/125	125/125	125/125	121/118
													38/50	104/120	3.7	10.6/9.6	—	—	—	143/132	150/150	143/143	150/150	132/149
																	2	1	5.9	158/147	175/150	158/158	175/175	145/163
															5	16.7/15.2	—	—	—	151/139	175/150	151/151	175/175	139/155
																	2	1	5.9	166/154	175/175	166/166	175/175	152/169
															7.5	24.2/22	—	—	—	160/148	175/150	160/160	175/175	147/163
																	2	1	5.9	175/162	200/175	175/175	200/200	161/177
															10	30.8/28	—	—	—	169/155	175/175	169/169	175/175	155/170
																	2	1	5.9	183/170	200/175	183/183	200/200	169/184
													56/75†	156/180	3.7	10.6/9.6	—	—	—	80/ 79	100/100	80/ 80	100/100	84/83
																	2	1	5.9	92/ 91	100/100	92/ 92	100/100	98/96
															5	16.7/15.2	—	—	—	86/ 85	100/100	86/ 86	100/100	91/ 89
																	2	1	5.9	98/ 96	100/100	98/ 98	100/100	105/103
															7.5	24.2/22	—	—	—	94/ 91	100/100	94/ 94	100/100	100/97
																	2	1	5.9	105/103	125/125	105/105	125/125	113/111
															10	30.8/28	—	—	—	101/ 97	125/100	101/101	125/125	107/104
																	2	1	5.9	113/109	125/125	113/113	125/125	121/118
	460	414	506	15.4	104	15.4	104	—	—	4	0.25	0.7	—	—	3.7	4.8	—	—	—	42	50	42	50	44
																	2	1	3.1	48	60	48	60	51
															5	7.6	—	—	—	45	60	45	60	47
																	2	1	3.1	51	60	51	60	55
															7.5	11	—	—	—	48	60	48	60	51
																	2	1	3.1	55	60	55	60	58
															10	14	—	—	—	51	60	51	60	55
																	2	1	3.1	58	60	58	60	62
													25	30	3.7	4.8	—	—	—	44	50	44	50	44
																	2	1	3.1	51	60	51	60	51
															5	7.6	—	—	—	47	60	47	60	47
																	2	1	3.1	55	60	55	60	55
															7.5	11	—	—	—	51	60	51	60	51
																	2	1	3.1	59	60	59	60	58
															10	14	—	—	—	55	60	55	60	55
																	2	1	3.1	63	70	63	70	62
													50	60	3.7	4.8	—	—	—	66	80	66	80	75
																	2	1	3.1	74	80	74	80	82
															5	7.6	—	—	—	70	80	70	80	78
																	2	1	3.1	77	80	77	80	85
															7.5	11	—	—	—	74	80	74	80	82
																	2	1	3.1	82	90	82	90	89
															10	14	—	—	—	78	90	78	90	85
																	2	1	3.1	85	90	85	90	92
													75	90	3.7	4.8	—	—	—	96	100	96	100	109
																	2	1	3.1	104	110	104	125	116
															5	7.6	—	—	—	100	110	100	125	112
																	2	1	3.1	107	125	107	125	119
															7.5	11	—	—	—	104	125	104	125	116
																	2	1	3.1	112	125	112	125	123
															10	14	—	—	—	108	125	108	125	120
																	2	1	3.1	115	125	115	125	127

See Legend and Notes on page 13.

Table 4 — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
20	575	518	633	12.8	83	12.8	83	—	—	4	0.25	0.7	—	—	5	6.1	—	—	—	38	50	38	50	40
																	2	1	2.4	43	50	43	50	45
															7.5	9	—	—	—	41	50	41	50	43
																	2	1	2.4	45	50	45	50	49
															10	11	—	—	—	43	50	43	50	45
																	2	1	2.4	47	60	47	60	51
													24.8	24	5	6.1	—	—	—	38	50	38	50	40
																	2	1	2.4	44	50	44	50	45
															7.5	9	—	—	—	41	50	41	50	43
																	2	1	2.4	47	50	47	50	49
															10	11	—	—	—	44	50	44	50	45
																	2	1	2.4	50	60	50	60	51
													48.3	46	5	6.1	—	—	—	65	70	65	70	60
																	2	1	2.4	71	80	71	80	65
															7.5	9	—	—	—	69	70	69	70	63
																	2	1	2.4	75	80	75	80	69
															10	11	—	—	—	71	80	71	80	66
																	2	1	2.4	77	80	77	80	71
													78	75	5	6.1	—	—	—	83	90	83	90	93
																	2	1	2.4	89	100	89	100	99
															7.5	9	—	—	—	86	100	86	100	97
																	2	1	2.4	92	100	92	100	102
															10	11	—	—	—	89	100	89	100	99
																	2	1	2.4	95	100	95	100	104

Electric Heat Branch Circuit For 208/240-V 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
20	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	180/180	200/200	179/207

Feeder Circuit For 208/230-V Unit With 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
20	208/240	187	253	28.2	208	28.2	208	—	—	4	0.25	1.5	56/75	156/180	3.7	10.6/9.6	—	—	—	169/192	200/225	192/192	200/225	192/218
																	2	1	5.9	184/207	200/225	207/207	225/225	205/232
															5	16.7/15.2	—	—	—	177/199	200/225	199/199	200/225	199/224
																	2	1	5.9	192/214	200/225	214/214	225/225	212/238
															7.5	24.2/22	—	—	—	186/208	200/225	208/208	225/225	207/232
																	2	1	5.9	201/222	225/225	222/222	225/225	221/246
															10	30.8/28	—	—	—	195/215	225/225	215/215	225/225	215/239
																	2	1	5.9	209/230	225/250	230/230	250/250	228/253

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.

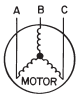
† 208/230 v 75–kW Electric Heat units must use dual–point wiring. The main table lists the branch circuit values for the refrigeration part of the system. The following two tables list the branch circuit values for the electric heat and values for a feeder circuit for both branch circuits.

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 percentage of voltage imbalance.

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

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 50PG 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 4 — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
24	208/230	187	253	32.1	240	32.1	240	—	—	6	0.25	1.5	—	—	3.7	10.6/9.6	—	—	—	92/91	100/100	92/92	100/100	96/95
																	2	1	5.9	104/103	125/125	104/104	125/125	110/109
															5	16.7/15.2	—	—	—	98/ 96	100/100	98/ 98	100/100	103/102
																	2	1	5.9	110/108	125/125	110/110	125/125	117/115
															7.5	24.2/22	—	—	—	105/103	125/125	105/105	125/125	112/109
																	2	1	5.9	117/115	125/125	117/117	125/125	126/123
															10	30.8/28	—	—	—	112/109	125/125	112/112	125/125	120/116
																	2	1	5.9	124/121	150/150	124/124	150/150	133/130
													19/25	52/60	3.7	10.6/ 9.6	—	—	—	92/91	100/100	92/ 92	100/100	96/ 95
																	2	1	5.9	104/103	125/125	104/104	125/125	110/109
															5	16.7/15.2	—	—	—	98/ 96	100/100	98/98	100/100	103/102
																	2	1	5.9	110/109	125/125	110/110	125/125	117/115
															7.5	24.2/22	—	—	—	105/103	125/125	105/105	125/125	112/109
																	2	1	5.9	117/117	125/125	117/117	125/125	126/123
															10	30.8/28	—	—	—	112/110	125/125	112/112	125/125	120/116
																	2	1	5.9	124/125	150/150	125/125	150/150	133/130
													38/50	104/120	3.7	10.6/9.6	—	—	—	143/132	150/150	143/143	150/150	132/149
																	2	1	5.9	158/147	175/150	158/158	175/175	145/163
															5	16.7/15.2	—	—	—	151/139	175/150	151/151	175/175	139/155
																	2	1	5.9	166/154	175/175	166/166	175/175	152/169
															7.5	24.2/22	—	—	—	160/148	175/150	160/160	175/175	147/163
																	2	1	5.9	175/162	200/175	175/175	200/200	161/177
															10	30.8/28	—	—	—	169/155	175/175	169/169	175/175	155/170
																	2	1	5.9	183/170	200/175	183/183	200/200	169/184
													56/75†	156/180	3.7	10.6/9.6	—	—	—	92/ 91	100/100	92/ 92	100/100	96/ 95
																	2	1	5.9	104/103	125/125	104/104	125/125	110/109
															5	16.7/15.2	—	—	—	98/ 96	100/100	98/ 98	100/100	103/102
																	2	1	5.9	110/108	125/125	110/110	125/125	117/115
															7.5	24.2/22	—	—	—	105/103	125/125	105/105	125/125	112/109
																	2	1	5.9	117/115	125/125	117/117	125/125	126/123
															10	30.8/28	—	—	—	112/109	125/125	112/112	125/125	120/116
																	2	1	5.9	124/121	150/150	124/124	150/150	133/130
	460	414	506	15.4	110	15.4	110	—	—	6	0.25	0.7	—	—	3.7	4.8	—	—	—	44	50	44	50	46
																	2	1	3.1	50	60	50	60	53
															5	7.6	—	—	—	46	60	46	60	49
																	2	1	3.1	53	60	53	60	56
															7.5	11	—	—	—	50	60	50	60	53
																	2	1	3.1	56	60	56	60	60
															10	14	—	—	—	53	60	53	60	56
																	2	1	3.1	59	60	59	60	63
													25	30	3.7	4.8	—	—	—	44	50	44	50	46
																	2	1	3.1	51	60	51	60	53
															5	7.6	—	—	—	47	60	47	60	49
																	2	1	3.1	55	60	55	60	56
															7.5	11	—	—	—	51	60	51	60	53
																	2	1	3.1	59	60	59	60	60
															10	14	—	—	—	55	60	55	60	56
																	2	1	3.1	63	70	63	70	63
													50	60	3.7	4.8	—	—	—	66	80	66	80	75
																	2	1	3.1	74	80	74	80	82
															5	7.6	—	—	—	70	80	70	80	78
																	2	1	3.1	77	80	77	80	85
															7.5	11	—	—	—	74	80	74	80	82
																	2	1	3.1	82	90	82	90	89
															10	14	—	—	—	78	90	78	90	85
																	2	1	3.1	85	90	85	90	92
													75	90	3.7	4.8	—	—	—	96	100	96	100	109
																	2	1	3.1	104	110	104	125	116
															5	7.6	—	—	—	100	110	100	125	112
																	2	1	3.1	107	125	107	125	119
															7.5	11	—	—	—	104	125	104	125	116
																	2	1	3.1	112	125	112	125	123
															10	14	—	—	—	108	125	108	125	120
																	2	1	3.1	115	125	115	125	127

See Legend and Notes on page 15.

Table 4 — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
24	575	518	633	12.8	88	12.8	88	—	—	6	0.25	0.7	—	—	5	6.1	—	—	—	39	50	39	50	41
																	2	1	2.4	44	50	44	50	47
															7.5	9	—	—	—	42	50	42	50	45
																	2	1	2.4	47	50	47	50	50
															10	11	—	—	—	44	50	44	50	47
																	2	1	2.4	49	60	49	60	52
													24.8	24	5	6.1	—	—	—	39	50	39	50	41
																	2	1	2.4	44	50	44	50	47
															7.5	9	—	—	—	42	50	42	50	45
																	2	1	2.4	47	50	47	50	50
															10	11	—	—	—	44	50	44	50	47
																	2	1	2.4	50	60	50	60	52
													48.3	46	5	6.1	—	—	—	65	70	65	70	60
																	2	1	2.4	71	80	71	80	65
															7.5	9	—	—	—	69	70	69	70	63
																	2	1	2.4	75	80	75	80	69
															10	11	—	—	—	71	80	71	80	66
																	2	1	2.4	77	80	77	80	71
													78	75	5	6.1	—	—	—	83	90	83	90	93
																	2	1	2.4	89	100	89	100	99
															7.5	9	—	—	—	86	100	86	100	97
																	2	1	2.4	92	100	92	100	102
															10	11	—	—	—	89	100	89	100	99
																	2	1	2.4	95	100	95	100	104

Electric Heat Branch Circuit For 208/240-V 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
24	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	180/180	200/200	179/207

Feeder Circuit For 208/230-V Unit With 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
24	208/240	187	253	32.1	240	32.1	240	—	—	6	0.25	1.5	56/75	156/180	3.7	10.6/9.6	—	—	—	169/192	200/225	192/192	200/225	192/218
																	2	1	5.9	184/207	200/225	207/207	225/225	205/232
															5	16.7/15.2	—	—	—	177/199	200/225	199/199	200/225	199/224
																	2	1	5.9	192/214	200/225	214/214	225/225	212/238
															7.5	24.2/22	—	—	—	186/208	200/225	208/208	225/225	207/232
																	2	1	5.9	201/222	225/225	222/222	225/225	221/246
															10	30.8/28	—	—	—	195/215	225/225	215/215	225/225	215/239
																	2	1	5.9	209/230	225/250	230/230	250/250	228/253

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 percentage of voltage imbalance.

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

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 50PG 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 4 — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
28	208/230	187	253	28.2	208	28.2	208	28.2	208	6	0.25	1.5	—	—	5	16.7/15.2	—	—	—	117/116	125/125	117/117	125/125	127/125
																	2	1	5.9	129/128	150/150	129/129	150/150	140/139
															7.5	24.2/22	—	—	—	125/123	150/150	125/125	150/150	135/133
																	2	1	5.9	137/134	150/150	137/137	150/150	149/147
															10	30.8/28	—	—	—	132/129	150/150	132/132	150/150	143/140
																	2	1	5.9	144/140	150/150	144/144	150/150	157/153
													19/25	52/ 60	5	16.7/15.2	—	—	—	117/116	125/125	117/117	125/125	127/125
																	2	1	5.9	129/128	150/150	129/129	150/150	140/139
															7.5	24.2/22	—	—	—	125/123	150/150	125/125	150/150	135/133
																	2	1	5.9	137/134	150/150	137/137	150/150	149/147
															10	30.8/28	—	—	—	132/129	150/150	132/132	150/150	143/140
																	2	1	5.9	144/140	150/150	144/144	150/150	157/153
													38/50	104/120	5	16.7/15.2	—	—	—	151/139	175/150	151/151	175/175	139/155
																	2	1	5.9	166/154	175/175	166/166	175/175	152/169
															7.5	24.2/22	—	—	—	160/148	175/150	160/160	175/175	147/163
																	2	1	5.9	175/162	200/175	175/175	200/200	161/177
															10	30.8/28	—	—	—	169/155	175/175	169/169	175/175	155/170
																	2	1	5.9	183/170	200/175	183/183	200/200	169/184
													56/75†	156/180	5	16.7/15.2	—	—	—	117/116	125/125	117/117	125/125	127/125
																	2	1	5.9	129/128	150/150	129/129	150/150	140/139
															7.5	24.2/22	—	—	—	125/123	150/150	125/125	150/150	135/133
																	2	1	5.9	137/134	150/150	137/137	150/150	149/147
															10	30.8/28	—	—	—	132/129	150/150	132/132	150/150	143/140
																	2	1	5.9	144/140	150/150	144/144	150/150	157/153
	460	414	506	15.4	104	15.4	104	15.4	104	6	0.25	0.7	—	—	5	7.6	—	—	—	62	70	62	70	67
																	2	1	3.1	68	80	68	80	74
															7.5	11	—	—	—	65	80	65	80	71
																	2	1	3.1	71	80	71	80	78
															10	14	—	—	—	68	80	68	80	74
																	2	1	3.1	74	80	74	80	81
													25	30	5	7.6	—	—	—	62	70	62	70	67
																	2	1	3.1	68	80	68	80	74
															7.5	11	—	—	—	65	80	65	80	71
																	2	1	3.1	71	80	71	80	78
															10	14	—	—	—	68	80	68	80	74
																	2	1	3.1	74	80	74	80	81
													50	60	5	7.6	—	—	—	70	80	70	80	78
																	2	1	3.1	77	80	77	80	85
															7.5	11	—	—	—	74	80	74	80	82
																	2	1	3.1	82	90	82	90	89
															10	14	—	—	—	78	90	78	90	85
																	2	1	3.1	85	90	85	90	92
													75	90	5	7.6	—	—	—	100	110	100	125	112
																	2	1	3.1	107	125	107	125	119
															7.5	11	—	—	—	104	125	104	125	116
																	2	1	3.1	112	125	112	125	123
															10	14	—	—	—	108	125	108	125	120
																	2	1	3.1	115	125	115	125	127

See Legend and Notes on page 17.

Table 4 — Electrical Data (Units Without Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
28	575	518	633	12.8	83	12.8	83	12.8	83	6	0.25	0.7	—	—	5	6.1	—	—	—	52	60	52	60	56
																	2	1	2.4	57	60	57	60	62
															7.5	9	—	—	—	55	60	55	60	59
																	2	1	2.4	60	60	60	60	65
															10	11	—	—	—	57	60	57	60	62
																	2	1	2.4	62	70	62	70	67
													24.8	24	5	6.1	—	—	—	52	60	52	60	56
																	2	1	2.4	57	60	57	60	62
															7.5	9	—	—	—	55	60	55	60	59
																	2	1	2.4	60	60	60	60	65
															10	11	—	—	—	57	60	57	60	62
																	2	1	2.4	62	70	62	70	67
													48.3	46	5	6.1	—	—	—	65	70	65	70	60
																	2	1	2.4	71	80	71	80	65
															7.5	9	—	—	—	69	70	69	70	63
																	2	1	2.4	75	80	75	80	69
															10	11	—	—	—	71	80	71	80	66
																	2	1	2.4	77	80	77	80	71
													78	75	5	6.1	—	—	—	83	90	83	90	93
																	2	1	2.4	89	100	89	100	99
															7.5	9	—	—	—	86	100	86	100	97
																	2	1	2.4	92	100	92	100	102
															10	11	—	—	—	89	100	89	100	99
																	2	1	2.4	95	100	95	100	104

Electric Heat Branch Circuit For 208/240-V 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
28	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	180/180	200/200	179/207

Feeder Circuit For 208/230-V Unit With 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
28	208/240	187	253	28.2	208	28.2	208	28.2	208	6	0.25	1.5	56/75	156/180	5	16.7/15.2	—	—	—	177/199	200/225	199/199	200/225	199/224
																	2	1	5.9	192/214	200/225	214/214	225/225	212/238
															7.5	24.2/22	—	—	—	186/208	200/225	208/208	225/225	207/232
																	2	1	5.9	201/222	225/225	222/222	225/225	221/246
															10	30.8/28	—	—	—	195/215	225/225	215/215	225/225	215/239
																	2	1	5.9	209/230	225/250	230/230	250/250	228/253

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 percentage of voltage imbalance.

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

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 50PG 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 5—Electrical Data (Units With Optional Convenience Outlet)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
20	208/230	187	253	28.2	208	28.2	208	—	—	4	0.25	1.5	—	—	3.7	10.6/ 9.6	—	—	—	85/ 84	100/100	85/ 85	100/100	90/ 89
																	2	1	5.9	97/ 96	100/100	97/ 97	100/100	103/102
															5	16.7/15.2	—	—	—	91/ 90	100/100	91/ 91	100/100	97/ 95
																	2	1	5.9	103/101	125/125	103/103	125/125	110/109
															7.5	24.2/22	—	—	—	99/ 96	100/100	99/ 99	100/100	105/103
																	2	1	5.9	110/108	125/125	110/110	125/125	119/116
															10	30.8/28	—	—	—	106/102	125/125	106/106	125/125	113/110
																	2	1	5.9	118/114	125/125	118/118	125/125	127/123
													19/25	52/ 60	3.7	10.6/9.6	—	—	—	85/ 93	100/100	93/ 93	100/100	90/ 89
																	2	1	5.9	99/108	100/110	108/108	125/125	103/102
															5	16.7/15.2	—	—	—	92/100	100/110	100/100	125/125	97/ 95
																	2	1	5.9	107/115	125/125	115/115	125/125	110/109
															7.5	24.2/22	—	—	—	102/109	125/110	109/109	125/125	105/103
																	2	1	5.9	116/124	125/125	124/124	125/125	119/116
															10	30.8/28	—	—	—	110/116	125/125	116/116	125/125	113/110
																	2	1	5.9	125/131	125/150	131/131	150/150	127/123
													38/50	104/120	3.7	10.6/ 9.6	—	—	—	150/138	150/150	150/150	150/150	138/155
																	2	1	5.9	164/153	175/175	164/164	175/175	151/168
															5	16.7/15.2	—	—	—	157/145	175/150	157/157	175/175	145/161
																	2	1	5.9	172/160	175/175	172/172	175/175	158/175
															7.5	24.2/22	—	—	—	167/154	175/175	167/167	175/175	153/169
																	2	1	5.9	181/169	200/175	181/181	200/200	167/183
															10	30.8/28	—	—	—	175/161	175/175	175/175	175/175	161/176
																	2	1	5.9	190/176	200/200	190/190	200/200	174/190
													56/75†	156/180	3.7	10.6/9.6	—	—	—	85/ 84	100/100	85/ 85	100/100	90/ 89
																	2	1	5.9	97/ 96	100/100	97/ 97	100/100	103/102
															5	16.7/15.2	—	—	—	91/ 90	100/100	91/ 91	100/100	97/ 95
																	2	1	5.9	103/101	125/125	103/103	125/125	110/109
															7.5	24.2/22	—	—	—	99/ 96	100/100	99/ 99	100/100	105/103
																	2	1	5.9	110/108	125/125	110/110	125/125	119/116
															10	30.8/28	—	—	—	106/102	125/125	106/106	125/125	113/110
																	2	1	5.9	118/114	125/125	118/118	125/125	127/123
	460	414	506	15.4	104	15.4	104	—	—	4	0.25	0.7	—	—	3.7	4.8	—	—	—	45	60	45	60	48
																	2	1	3.1	51	60	51	60	55
															5	7.6	—	—	—	48	60	48	60	51
																	2	1	3.1	54	60	54	60	58
															7.5	11	—	—	—	51	60	51	60	55
																	2	1	3.1	58	60	58	60	62
															10	14	—	—	—	54	60	54	60	58
																	2	1	3.1	61	70	61	70	65
													25	30	3.7	4.8	—	—	—	47	60	47	60	48
																	2	1	3.1	55	60	55	60	55
															5	7.6	—	—	—	51	60	51	60	51
																	2	1	3.1	59	60	59	60	58
															7.5	11	—	—	—	55	60	55	60	55
																	2	1	3.1	63	70	63	70	62
															10	14	—	—	—	59	60	59	60	58
																	2	1	3.1	67	70	67	70	65
													50	60	3.7	4.8	—	—	—	70	80	70	80	78
																	2	1	3.1	78	80	78	80	85
															5	7.6	—	—	—	73	80	73	80	81
																	2	1	3.1	81	90	81	90	88
															7.5	11	—	—	—	78	80	78	80	85
																	2	1	3.1	85	90	85	90	92
															10	14	—	—	—	81	90	81	90	89
																	2	1	3.1	89	100	89	100	96
													75	90	3.7	4.8	—	—	—	100	110	100	125	112
																	2	1	3.1	108	125	108	125	120
															5	7.6	—	—	—	103	125	103	125	116
																	2	1	3.1	111	125	111	125	123
															7.5	11	—	—	—	108	125	108	125	120
																	2	1	3.1	115	125	115	125	127
															10	14	—	—	—	111	125	111	125	123
																	2	1	3.1	119	125	119	125	130

See Legend and Notes on page 19.

Table 5 — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
20	575	518	633	12.8	83	12.8	83	—	—	4	0.25	0.7	—	—	5	6.1	—	—	—	41	50	41	50	43
																	2	1	2.4	46	50	46	50	49
															7.5	9	—	—	—	44	50	44	50	46
																	2	1	2.4	48	60	48	60	52
															10	11	—	—	—	46	50	46	50	49
																	2	1	2.4	50	60	50	60	54
													24.8	24	5	6.1	—	—	—	41	50	41	50	43
																	2	1	2.4	47	50	47	50	49
															7.5	9	—	—	—	45	50	45	50	46
																	2	1	2.4	51	60	51	60	52
															10	11	—	—	—	48	50	48	50	49
																	2	1	2.4	54	60	54	60	54
													48.3	46	5	6.1	—	—	—	69	70	69	70	63
																	2	1	2.4	75	80	75	80	69
															7.5	9	—	—	—	73	80	73	80	67
																	2	1	2.4	79	80	79	80	72
															10	11	—	—	—	75	80	75	80	69
																	2	1	2.4	81	90	81	90	75
													78	75	5	6.1	—	—	—	86	100	86	100	97
																	2	1	2.4	92	100	92	100	102
															7.5	9	—	—	—	90	100	90	100	100
																	2	1	2.4	96	100	96	100	106
															10	11	—	—	—	93	100	93	100	102
																	2	1	2.4	99	100	99	100	108

Electric Heat Branch Circuit For 208/240-V 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
20	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	180/180	200/200	179/207

Feeder Circuit For 208/230-V Unit With 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
20	208/240	187	253	28.2	208	28.2	208	—	—	4	0.25	1.5	56/75	156/180	3.7	10.6/ 9.6	—	—	—	176/198	200/225	198/198	200/225	197/224
																	2	1	5.9	190/213	200/225	213/213	225/225	211/237
															5	16.7/15.2	—	—	—	183/205	200/225	205/205	225/225	204/230
																	2	1	5.9	198/220	200/225	220/220	225/225	218/244
															7.5	24.2/22	—	—	—	193/214	200/225	214/214	225/225	213/238
																	2	1	5.9	207/229	225/250	229/229	250/250	227/252
															10	30.8/28	—	—	—	201/221	225/225	221/221	225/225	221/245
																	2	1	5.9	216/236	225/250	236/236	250/250	234/259

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 percentage of voltage imbalance.

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

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 50PG 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 5 — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
24	208/230	187	253	32.1	240	32.1	240	—	—	6	0.25	1.5	—	—	3.7	10.6/9.6	—	—	—	97/ 96	100/100	97/ 97	100/100	102/101
																	2	1	5.9	109/108	125/125	109/109	125/125	116/115
															5	16.7/15.2	—	—	—	103/101	125/125	103/103	125/125	109/107
																	2	1	5.9	115/113	125/125	115/115	125/125	123/121
															7.5	24.2/22	—	—	—	110/108	125/125	110/110	125/125	118/115
																	2	1	5.9	122/120	150/150	122/122	150/150	131/129
															10	30.8/28	—	—	—	117/114	125/125	117/117	125/125	125/122
																	2	1	5.9	129/126	150/150	129/129	150/150	139/136
													19/25	52/ 60	3.7	10.6/9.6	—	—	—	97/ 96	100/100	97/ 97	100/100	102/101
																	2	1	5.9	109/108	125/125	109/109	125/125	116/115
															5	16.7/15.2	—	—	—	103/101	125/125	103/103	125/125	109/107
																	2	1	5.9	115/115	125/125	115/115	125/125	123/121
															7.5	24.2/22	—	—	—	110/109	125/125	110/110	125/125	118/115
																	2	1	5.9	122/124	150/150	124/124	150/150	131/129
															10	30.8/28	—	—	—	117/116	125/125	117/117	125/125	125/122
																	2	1	5.9	129/131	150/150	131/131	150/150	139/136
													38/50	104/120	3.7	10.6/9.6	—	—	—	150/138	150/150	150/150	150/150	138/155
																	2	1	5.9	164/153	175/175	164/164	175/175	151/168
															5	16.7/15.2	—	—	—	157/145	175/150	157/157	175/175	145/161
																	2	1	5.9	172/160	175/175	172/172	175/175	158/175
															7.5	24.2/22	—	—	—	167/154	175/175	167/167	175/175	153/169
																	2	1	5.9	181/169	200/175	181/181	200/200	167/183
															10	30.8/28	—	—	—	175/161	175/175	175/175	175/175	161/176
																	2	1	5.9	190/176	200/200	190/190	200/200	174/190
													56/75†	156/180	3.7	10.6/9.6	—	—	—	97/ 96	100/100	97/ 97	100/100	102/101
																	2	1	5.9	109/108	125/125	109/109	125/125	116/115
															5	16.7/15.2	—	—	—	103/101	125/125	103/103	125/125	109/107
																	2	1	5.9	115/113	125/125	115/115	125/125	123/121
															7.5	24.2/22	—	—	—	110/108	125/125	110/110	125/125	118/115
																	2	1	5.9	122/120	150/150	122/122	150/150	131/129
															10	30.8/28	—	—	—	117/114	125/125	117/117	125/125	125/122
																	2	1	5.9	129/126	150/150	129/129	150/150	139/136
	460	414	506	15.4	110	15.4	110	—	—	6	0.25	0.7	—	—	3.7	4.8	—	—	—	47	60	47	60	49
																	2	1	3.1	53	60	53	60	56
															5	7.6	—	—	—	49	60	49	60	52
																	2	1	3.1	56	60	56	60	60
															7.5	11	—	—	—	53	60	53	60	56
																	2	1	3.1	59	60	59	60	63
															10	14	—	—	—	56	60	56	60	60
																	2	1	3.1	62	70	62	70	67
													25	30	3.7	4.8	—	—	—	47	60	47	60	49
																	2	1	3.1	55	60	55	60	56
															5	7.6	—	—	—	51	60	51	60	52
																	2	1	3.1	59	60	59	60	60
															7.5	11	—	—	—	55	60	55	60	56
																	2	1	3.1	63	70	63	70	63
															10	14	—	—	—	59	60	59	60	60
																	2	1	3.1	67	70	67	70	67
													50	60	3.7	4.8	—	—	—	70	80	70	80	78
																	2	1	3.1	78	80	78	80	85
															5	7.6	—	—	—	73	80	73	80	81
																	2	1	3.1	81	90	81	90	88
															7.5	11	—	—	—	78	80	78	80	85
																	2	1	3.1	85	90	85	90	92
															10	14	—	—	—	81	90	81	90	89
																	2	1	3.1	89	100	89	100	96
													75	90	3.7	4.8	—	—	—	100	110	100	125	112
																	2	1	3.1	108	125	108	125	120
															5	7.6	—	—	—	103	125	103	125	116
																	2	1	3.1	111	125	111	125	123
															7.5	11	—	—	—	108	125	108	125	120
																	2	1	3.1	115	125	115	125	127
															10	14	—	—	—	111	125	111	125	123
																	2	1	3.1	119	125	119	125	130

See Legend and Notes on page 21.

Table 5 — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
24	575	518	633	12.8	88	12.8	88	—	—	6	0.25	0.7	—	—	5	6.1	—	—	—	42	50	42	50	45
																	2	1	2.4	47	50	47	50	50
															7.5	9	—	—	—	45	50	45	50	48
																	2	1	2.4	50	60	50	60	54
															10	11	—	—	—	47	50	47	50	50
																	2	1	2.4	52	60	52	60	56
													24.8	24	5	6.1	—	—	—	42	50	42	50	45
																	2	1	2.4	47	50	47	50	50
															7.5	9	—	—	—	45	50	45	50	48
																	2	1	2.4	51	60	51	60	54
															10	11	—	—	—	48	50	48	50	50
																	2	1	2.4	54	60	54	60	56
													48.3	46	5	6.1	—	—	—	69	70	69	70	63
																	2	1	2.4	75	80	75	80	69
															7.5	9	—	—	—	73	80	73	80	67
																	2	1	2.4	79	80	79	80	72
															10	11	—	—	—	75	80	75	80	69
																	2	1	2.4	81	90	81	90	75
													78	75	5	6.1	—	—	—	86	100	86	100	97
																	2	1	2.4	92	100	92	100	102
															7.5	9	—	—	—	90	100	90	100	100
																	2	1	2.4	96	100	96	100	106
															10	11	—	—	—	93	100	93	100	102
																	2	1	2.4	99	100	99	100	108

Electric Heat Branch Circuit For 208/240-V 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
24	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	180/180	200/200	179/207

Feeder Circuit For 208/230-V Unit With 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
24	208/240	187	253	32.1	240	32.1	240	—	—	6	0.25	1.5	56/75	156/180	3.7	10.6/ 9.6	—	—	—	176/198	200/225	198/198	200/225	197/224
																	2	1	5.9	190/213	200/225	213/213	225/225	211/237
															5	16.7/15.2	—	—	—	183/205	200/225	205/205	225/225	204/230
																	2	1	5.9	198/220	200/225	220/220	225/225	218/244
															7.5	24.2/22	—	—	—	193/214	200/225	214/214	225/225	213/238
																	2	1	5.9	207/229	225/250	229/229	250/250	227/252
															10	30.8/28	—	—	—	201/221	225/225	221/221	225/225	221/245
																	2	1	5.9	216/236	225/250	236/236	250/250	234/259

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.

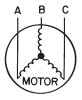
† 208/230 v 75–kW Electric Heat units must use dual–point wiring. The main table lists the branch circuit values for the refrigeration part of the system. The following two tables list the branch circuit values for the electric heat and values for a feeder circuit for both branch circuits.

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 percentage of voltage imbalance.

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

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 50PG 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 5 — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
28	208/230	187	253	28.2	208	28.2	208	28.2	208	6	0.25	1.5	—	—	5	16.7/15.2	—	—	—	122/121	150/125	122/122	150/150	133/131
																	2	1	5.9	134/133	150/150	134/134	150/150	146/144
															7.5	24.2/22	—	—	—	130/128	150/150	130/130	150/150	141/139
																	2	1	5.9	142/139	150/150	142/142	150/150	155/152
															10	30.8/28	—	—	—	137/134	150/150	137/137	150/150	149/146
																	2	1	5.9	149/145	175/150	149/149	175/175	162/159
													19/25	52/ 60	5	16.7/15.2	—	—	—	122/121	150/125	122/122	150/150	133/131
																	2	1	5.9	134/133	150/150	134/134	150/150	146/144
															7.5	24.2/22	—	—	—	130/128	150/150	130/130	150/150	141/139
																	2	1	5.9	142/139	150/150	142/142	150/150	155/152
															10	30.8/28	—	—	—	137/134	150/150	137/137	150/150	149/146
																	2	1	5.9	149/145	175/150	149/149	175/175	162/159
													38/50	104/120	5	16.7/15.2	—	—	—	157/145	175/150	157/157	175/175	145/161
																	2	1	5.9	172/160	175/175	172/172	175/175	158/175
															7.5	24.2/22	—	—	—	167/154	175/175	167/167	175/175	153/169
																	2	1	5.9	181/169	200/175	181/181	200/200	167/183
															10	30.8/28	—	—	—	175/161	175/175	175/175	175/175	161/176
																	2	1	5.9	190/176	200/200	190/190	200/200	174/190
													56/75†	156/180	5	16.7/15.2	—	—	—	122/121	150/125	122/122	150/150	133/131
																	2	1	5.9	134/133	150/150	134/134	150/150	146/144
															7.5	24.2/22	—	—	—	130/128	150/150	130/130	150/150	141/139
																	2	1	5.9	142/139	150/150	142/142	150/150	155/152
															10	30.8/28	—	—	—	137/134	150/150	137/137	150/150	149/146
																	2	1	5.9	149/145	175/150	149/149	175/175	162/159
	460	414	506	15.4	104	15.4	104	15.4	104	6	0.25	0.7	—	—	5	7.6	—	—	—	65	80	65	80	70
																	2	1	3.1	71	80	71	80	77
															7.5	11	—	—	—	68	80	68	80	74
																	2	1	3.1	74	80	74	80	81
															10	14	—	—	—	71	80	71	80	78
																	2	1	3.1	77	90	77	90	85
													25	30	5	7.6	—	—	—	65	80	65	80	70
																	2	1	3.1	71	80	71	80	77
															7.5	11	—	—	—	68	80	68	80	74
																	2	1	3.1	74	80	74	80	81
															10	14	—	—	—	71	80	71	80	78
																	2	1	3.1	77	90	77	90	85
													50	60	5	7.6	—	—	—	73	80	73	80	81
																	2	1	3.1	81	90	81	90	88
															7.5	11	—	—	—	78	80	78	80	85
																	2	1	3.1	85	90	85	90	92
															10	14	—	—	—	81	90	81	90	89
																	2	1	3.1	89	100	89	100	96
													75	90	5	7.6	—	—	—	103	125	103	125	116
																	2	1	3.1	111	125	111	125	123
															7.5	11	—	—	—	108	125	108	125	120
																	2	1	3.1	115	125	115	125	127
															10	14	—	—	—	111	125	111	125	123
																	2	1	3.1	119	125	119	125	130

See Legend and Notes on page 23.

Table 5 — Electrical Data (Units With Optional Convenience Outlet) (cont)

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
28	575	518	633	12.8	83	12.8	83	12.8	83	6	0.25	0.7	—	—	5	6.1	—	—	—	55	60	55	60	59
																	2	1	2.4	60	60	60	60	65
															7.5	9	—	—	—	58	60	58	60	63
																	2	1	2.4	63	70	63	70	68
															10	11	—	—	—	60	60	60	60	65
																	2	1	2.4	65	70	65	70	71
													24.8	24	5	6.1	—	—	—	55	60	55	60	59
																	2	1	2.4	60	60	60	60	65
															7.5	9	—	—	—	58	60	58	60	63
																	2	1	2.4	63	70	63	70	68
															10	11	—	—	—	60	60	60	60	65
																	2	1	2.4	65	70	65	70	71
													48.3	46	5	6.1	—	—	—	69	70	69	70	63
																	2	1	2.4	75	80	75	80	69
															7.5	9	—	—	—	73	80	73	80	67
																	2	1	2.4	79	80	79	80	72
															10	11	—	—	—	75	80	75	80	69
																	2	1	2.4	81	90	81	90	75
													78	75	5	6.1	—	—	—	86	100	86	100	97
																	2	1	2.4	92	100	92	100	102
															7.5	9	—	—	—	90	100	90	100	100
																	2	1	2.4	96	100	96	100	106
															10	11	—	—	—	93	100	93	100	102
																	2	1	2.4	99	100	99	100	108

Electric Heat Branch Circuit For 208/240-V 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
28	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	180/180	200/200	179/207

Feeder Circuit For 208/230-V Unit With 75-kW Electric Heat†

UNIT SIZE 50PG	NOMINAL VOLTAGE (3 Ph, 60 Hz)	VOLTAGE RANGE		COMPRESSOR						OFM			ELECTRIC HEAT		IFM		POWER EXHAUST			POWER SUPPLY		POWER SUPPLY WITH OPTIONAL HACR BREAKER		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*	MCA	MOCP	FLA
28	208/240	187	253	28.2	208	28.2	208	28.2	208	6	0.25	1.5	56/75	156/180	5	16.7/15.2	—	—	—	183/205	200/225	205/205	225/225	204/230
																	2	1	5.9	198/220	200/225	220/220	225/225	218/244
															7.5	24.2/22	—	—	—	193/214	200/225	214/214	225/225	213/238
																	2	1	5.9	207/229	225/250	229/229	250/250	227/252
															10	30.8/28	—	—	—	201/221	225/225	221/221	225/225	221/245
																	2	1	5.9	216/236	225/250	236/236	250/250	234/259

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 percentage of voltage imbalance.

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

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 50PG units with electric heaters over 50 kW is = 1.25 x (IFM + Power Exhaust + Convenience Outlet FLA amps) + 1.00 x (Electric Heater FLA).

Set heat anticipator settings as shown in Table 6.

Table 6—Heat Anticipator Settings

UNIT SIZE 50PG	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
20-28	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.

Field Control Wiring (Units with Optional Humidi--MiZer™ Adaptive Dehumidification System)

Units require temperature control inputs for cooling and heating operation and humidity control inputs for Humidi-MiZer operation.

Temperature Control

The unit can be controlled with either a Carrier-approved space temperature sensor, a Carrier accessory Thermidistat™ device, or a Carrier-approved accessory thermostat. Refer to unit price pages for reference. Install the temperature control device according to the installation instructions included with the accessory. Locate the device on a solid interior wall in the conditioned space to sense average temperature. Carrier space temperature sensor wiring connections are shown in Fig. 14. General thermostat field control wiring connections are shown in Fig. 13. Carrier Thermidistat device wiring connections are shown in Fig. 15. Configuration of the unit control is required to specify the control input type before unit operation.

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. 13-15.

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

Set heat anticipator settings as shown in Table 6.

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

Humidity Control

Unit can be controlled with either a Carrier accessory Thermidistat device or a Carrier-approved accessory humidistat (switch output). The input for an accessory humidity sensor with 4 to 20 mA output is another option available when an economizer board is installed.

Install the humidity control device according to the installation instructions included with the accessory. Locate the device on a solid interior wall in the conditioned space to sense average humidity. Carrier Thermidistat device wiring connections are shown in Fig. 15. General humidistat wiring connections are shown in Fig. 16. Configuration of the unit control is required to specify the control input type before unit operation. Refer to the Controls, Start-Up, Operation and Troubleshooting manual for configuration.

Units with the Humidi-MiZer option receive a discrete input from a field-installed device (such as from the Carrier humidistat or Thermidistat device). The discrete input is connected to the TB1 terminal strip points labeled Humidistat 1 and 2. As this is a discrete input, one of the connection points is for power to the switch and the other is the return path. (See Fig. 16.) A space relative humidity sensor input (SP.RH) is only available if an economizer board (ECB) is installed in the unit and then the sensor can be connected to the OAQ point TB1-4. (See Fig. 16.) This input is used instead of the discrete humidistat or thermidistat inputs. The input controls the Humidi-MiZer using the 4-20mA as percent humidity. The relative humidity value (measured by the relative humidity sensor) can be displayed on the Scrolling Marquee, in the space through a System Pilot™ device, or can be read by other CCN devices where it can be used to perform more advanced functions. The humidity sensor must be configured correctly. Refer to the Controls, Start-Up, Operation, and Troubleshooting manual for details.

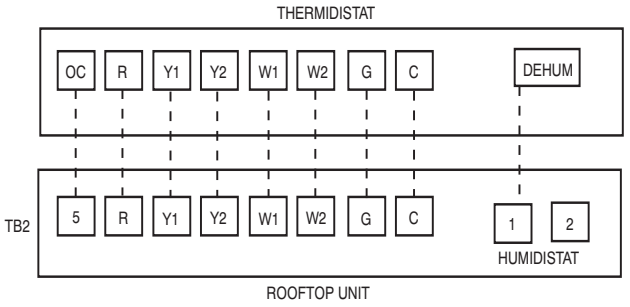


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Fig. 15 – Field Control Thermidistat Wiring

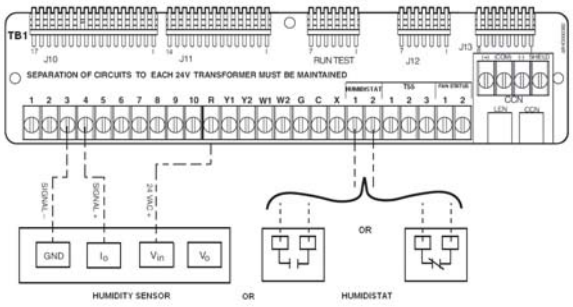

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Fig. 16 – Field Control Humidistat Wiring

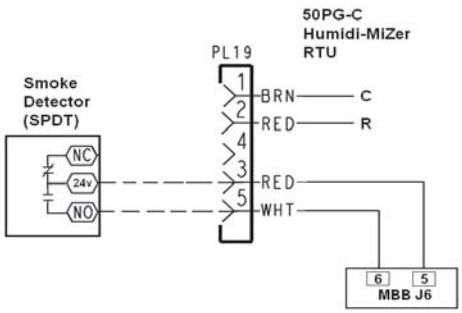

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Fig. 17 – Third Party Smoke Detector Wiring

If the customer also wishes to install a smoke detector into a Humidi-MiZer™ equipped 50PG unit, the fire shutdown connection points are on Plug PL-19, located in the compressor section outside the control box. See the unit wiring schematic for wiring. For third-party smoke detector, refer to Fig. 17.

Point 19-3 is the 24 vac power source for the detector, and point 19-5 is the 24 vac signal input for fire shutdown.

More information is available in the third party control section of the Controls, Start-Up, Operation, and Troubleshooting manual.

Step 8 —Install Outdoor-Air Hood

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.

Perform the following procedure to install the outdoor-air hood on units equipped with an economizer, two-position damper, or outdoor-air damper:

1. Remove blank panel from return end of unit (hood section). Save the screws. See Fig. 18 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.
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. 19.)
6. Apply seal strip (provided) to top flange of both hood sides where hood sides connect to the hood top panels. (See Fig. 19.)

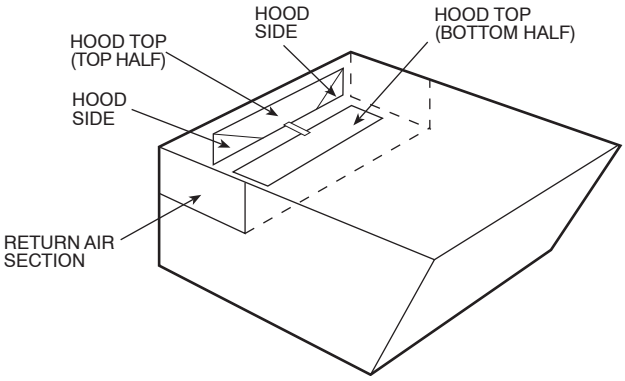

Fig. 18 – Outdoor-Air Hood Compartment Shipping Location

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. 19.)
8. Apply seal strip along the entire length of the bottom flange of the hood top. (See Fig. 19.)
9. Install the bottom part of the hood top using 4 screws provided. (See Fig. 19.)
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. 19.)
12. Install top section of the outdoor air hood using 9 screws provided. (See Fig. 19.) See Fig. 20 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. 21.)

Step 9 —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. 22.) Each damper assembly is secured with 3 screws on each side and 3 screws along the bottom. Save screws.

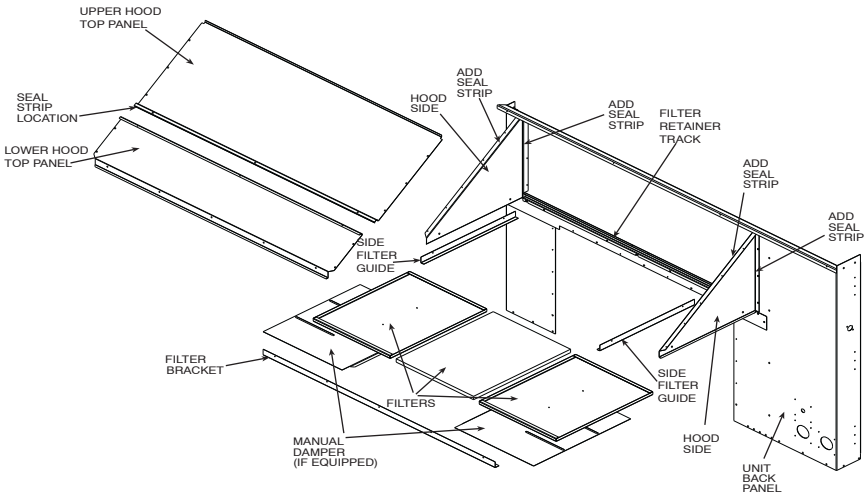

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Fig. 19 – Outdoor Air Hood Details

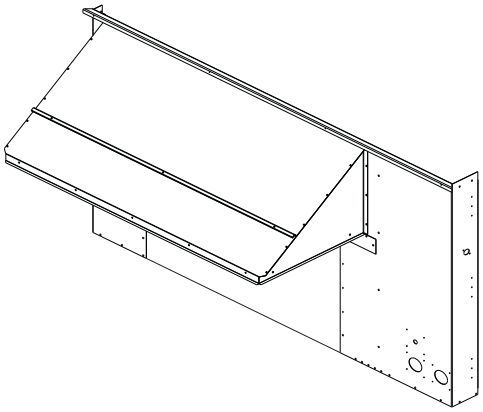

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Fig. 20 – Outdoor Air Hood Assembled

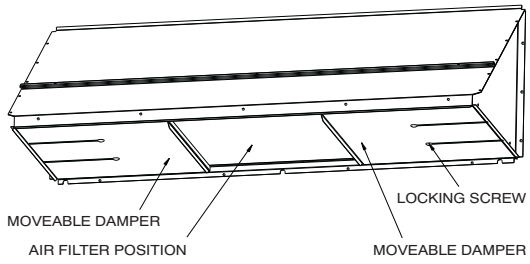

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Fig. 21 – Manual Damper Details

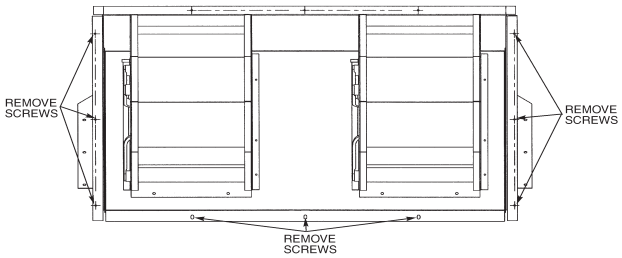

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Fig. 22 – Power Exhaust or Barometric Relief Damper Mounting Details

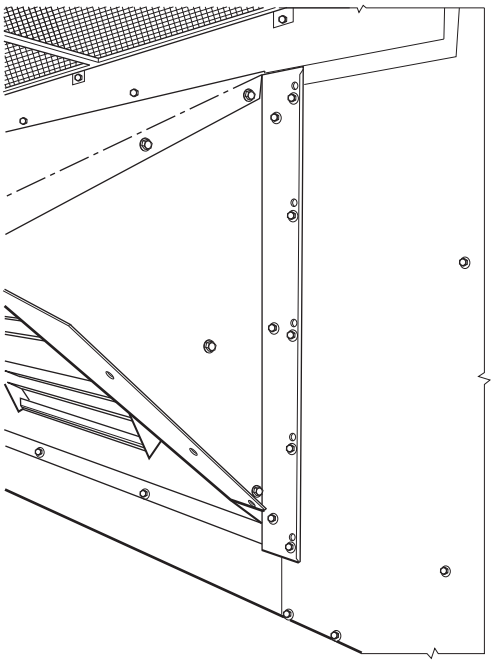

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Fig. 23 – Bracket and Hood Positioning

⚠ CAUTION

PERSONAL INJURY HAZARD

Failure to follow this caution may result in personal injury.

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. 23.)
5. Remove tape from damper blades.

Step 10 —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

ELECTRICAL SHOCK HAZARD

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

Be sure power is shut-off to the unit from the building power supply and install lock-out tag-out for safety.

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.

Step 11 —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.

Step 12 —Configure Controls

Refer to unit Controls and Troubleshooting book for information on configuring controls.

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