

# Installation, Start-Up and Service Instructions

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

### ⚠ WARNING

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

### INSTALLATION

Unit is shipped in the vertical discharge configuration. To convert to horizontal discharge application, cut imprint area from front panels using sheet metal cutters. See Fig. 1. Duct openings in basepan must be covered by panels provided in the Accessory Duct Cover Package, part no. 50LJ900214 (50LJ008,009) or 50LJ900217 (50LJ012,014).

Using screws provided in accessory package, install covers on duct openings in basepan of unit with insulation-side down. Seals around opening must be tight.

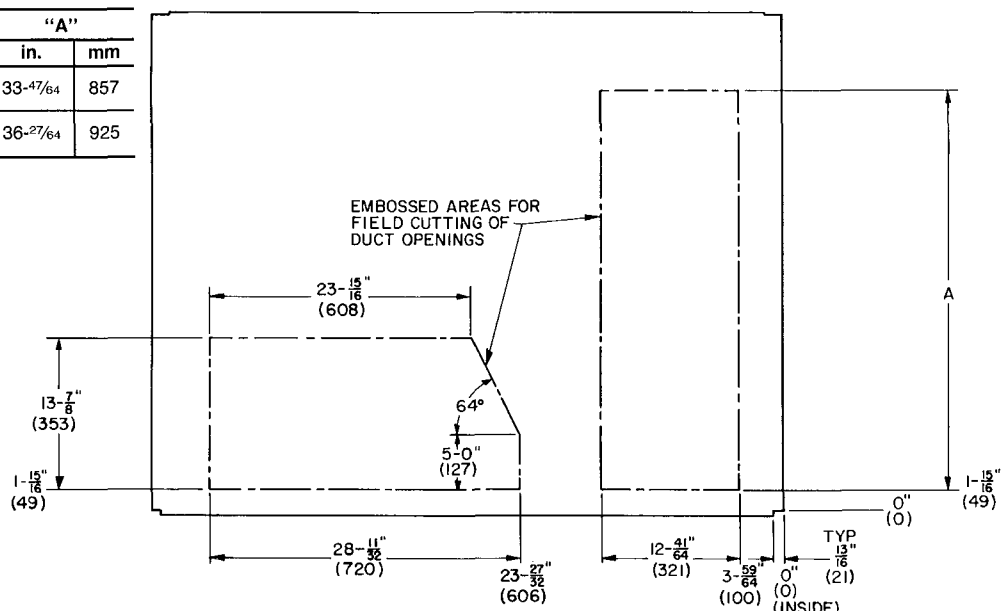
### SAFETY CONSIDERATIONS

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

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

**IMPORTANT:** An external filter kit **MUST** be used or the filters **MUST** be field-installed outside the unit on horizontal applications with accessory economizer or two-position damper. Otherwise, the economizer or two-position damper must be partially removed to access the filters. The area of the field-installed filters should be equal to the area of the factory-installed filters.

UNIT 50LJ	PART NUMBER	"A"	
		in.	mm
008, 009	50LJ900214	33- <sup>47</sup> / <sub>64</sub>	857
012, 014	50LJ900217	36- <sup>27</sup> / <sub>64</sub>	925



NOTE: Dimensions in ( ) are in millimeters.

**Fig. 1 – Horizontal Conversion Imprint Dimensions**

## Step 1 — Provide Unit Support

**ROOF CURB** — Assemble and install accessory roof curb in accordance with instructions shipped with curb. See Fig. 2. Install insulation, cant strips, roofing and counter flashing as shown. *Ductwork must be attached to curb, not to unit.* If electric or control power is to be routed through the curb, attach the accessory thru-the-curb service connection plates to the roof curb in accordance with the accessory installation instructions. Connection plates must be installed before unit is set on roof curb.

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

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

**SLAB MOUNT (Horizontal Units Only)** — Provide a level concrete slab that extends a minimum of 6 in. beyond unit cabinet. Install a gravel apron in front of outdoor-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 — Field Fabricate Ductwork** — On vertical discharge 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 attached 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 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 to combustibles is not required around ductwork on vertical discharge units. On horizontal discharge units, a minimum clearance of one in. is required for the first 12 in. of ductwork. Cabinet return-air static shall not exceed  $-.35$  in. wg with economizer or  $-.45$  in. wg without economizer

**Step 3 — Install External Trap for Condensate Drain** — All units must have an external trap added. A  $\frac{3}{4}$ -in. NPT connection is located on the side of the unit. Use a trap at least 4-in. deep, and protect against freeze-up. See Fig. 4.

If drain line is run to a drain, pitch line away from unit at one in. per 10 ft of run. Do not use a pipe size smaller than the unit connection.

**Step 4 — Rig and Place Unit** — Inspect unit for transportation damage. File any claim with transportation agency. Keep unit upright and do not drop. Spreader bars

are not required if top crating is left on unit. Rollers may be used to move unit across a roof. Level by using unit frame as a reference. See Table 1 and Fig. 5 for additional information. Operating weight is shown in Table 1 and Fig. 5.

Lifting holes are provided in base rails as shown in Fig. 5 and 6. Refer to rigging instructions on unit.

### ⚠ CAUTION

All panels must be in place when rigging.

**POSITIONING** — Maintain clearance around and above unit to provide proper airflow and service access. See Fig. 6

Position unit on roof curb so that the following clearances are maintained:  $\frac{1}{4}$ -in. clearance between roof curb and base rails on each side and front of unit;  $1\frac{1}{2}$ -in. clearance between roof curb and rear of unit (see Fig. 2, section C-C).

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

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

After unit is in position, remove polyethylene shipping wrapper and rigging skid.

## Step 5 — Make Electrical Connections

### ⚠ WARNING

Unit cabinet must have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. This ground may consist of electrical wire connected to unit ground lug in control compartment, or conduit approved for electrical ground when installed in accordance with NEC (National Electrical Code) ANSI (American National Standards Institute) /NFPA (National Fire Protection Association) 70-1987 and local electrical codes. Failure to follow this warning could result in the installer being liable for personal injury of others.

**FIELD POWER SUPPLY** — All units except 208/230-v units are factory wired for the voltage shown on the nameplate. If the 208/230-v unit is to be connected to a 208-v power supply, the transformer *must* be rewired by moving the black wire from the 230-v red wire on the transformer and connecting it to the 200-v blue wire from the transformer. The end of the red wire then must be insulated.

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

When installing units, provide a disconnect per NEC.

All field wiring must comply with NEC and local requirements. In Canada, electrical connections must be in accordance with CSA (Canadian Standards Association) C22.1 Canadian Electrical Code Part One.

### SERVICE PLATE SIZES

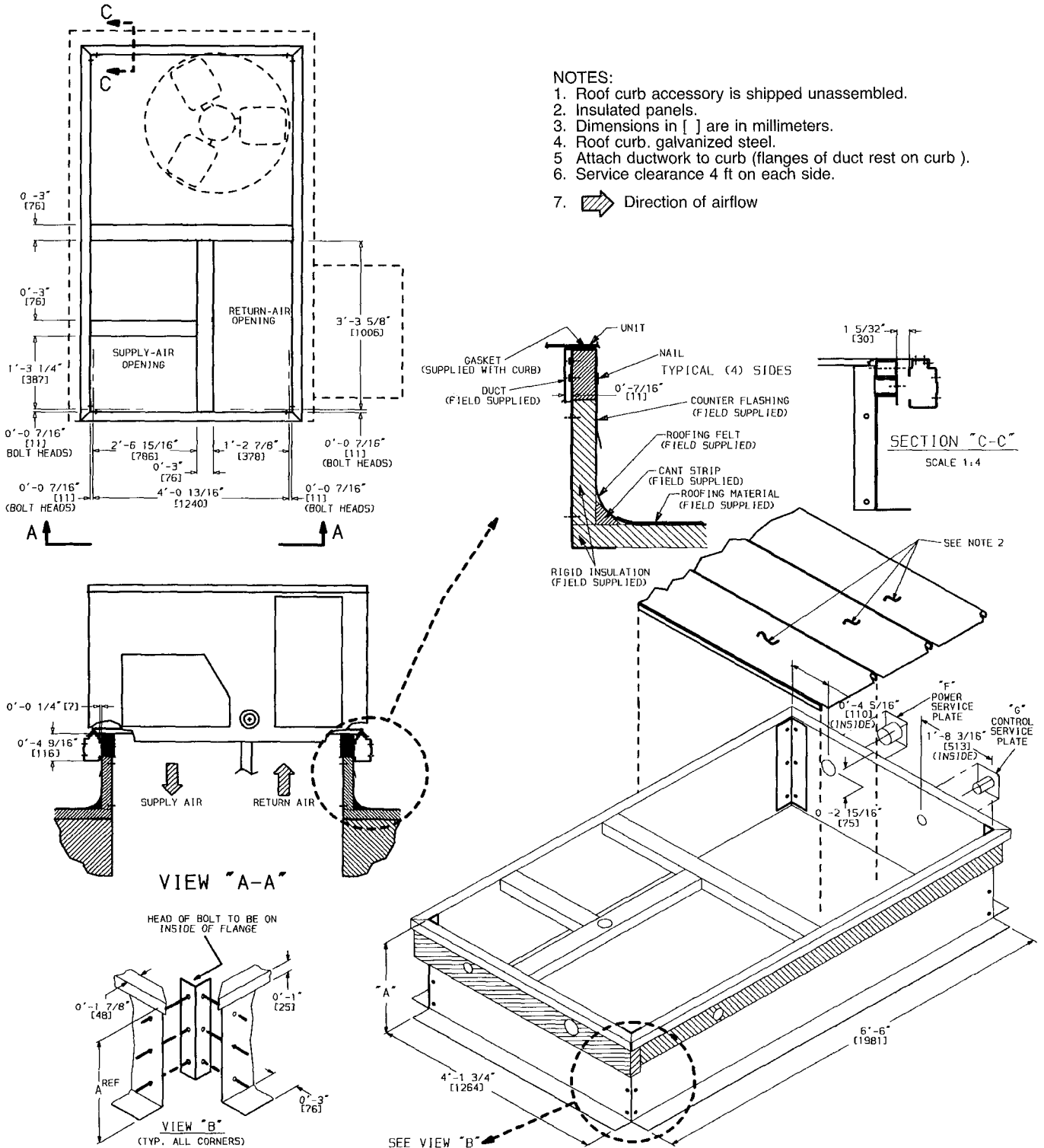
UNIT SIZE	"F" POWER	"G" CONTROL	CONNECTOR PKG. ACY.
50LJ008, 009, 012 & 014	1" [25] NPT or 2" [51] NPT	3/4" [19] NPT	50DJ901311

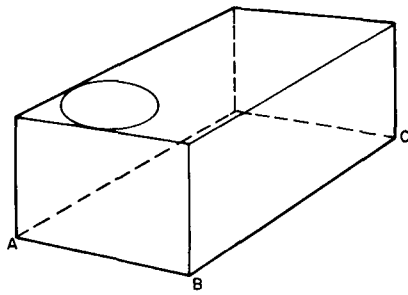
ROOF CURB ACCESSORY	"A"	UNIT SIZE
50DJ901371	1'-2" [356]	50LJ008, 009, 012 & 014
50DJ901381	2'-0" [610]	

**NOTES:**

1. Roof curb accessory is shipped unassembled.
2. Insulated panels.
3. Dimensions in [ ] are in millimeters.
4. Roof curb, galvanized steel.
5. Attach ductwork to curb (flanges of duct rest on curb).
6. Service clearance 4 ft on each side.
7. Direction of airflow



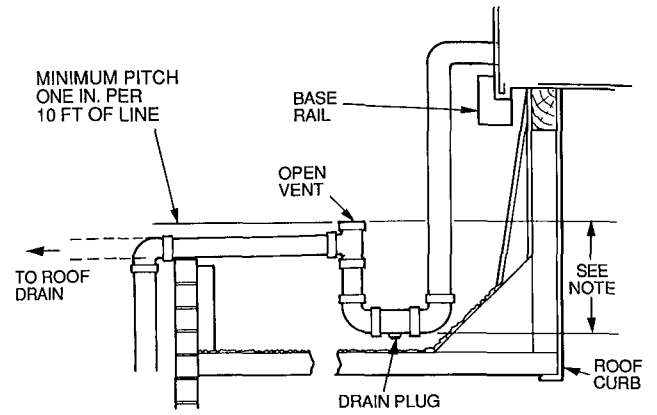
**Fig. 2 – Roof Curb**



**MAXIMUM ALLOWABLE DIFFERENCE (in.)**

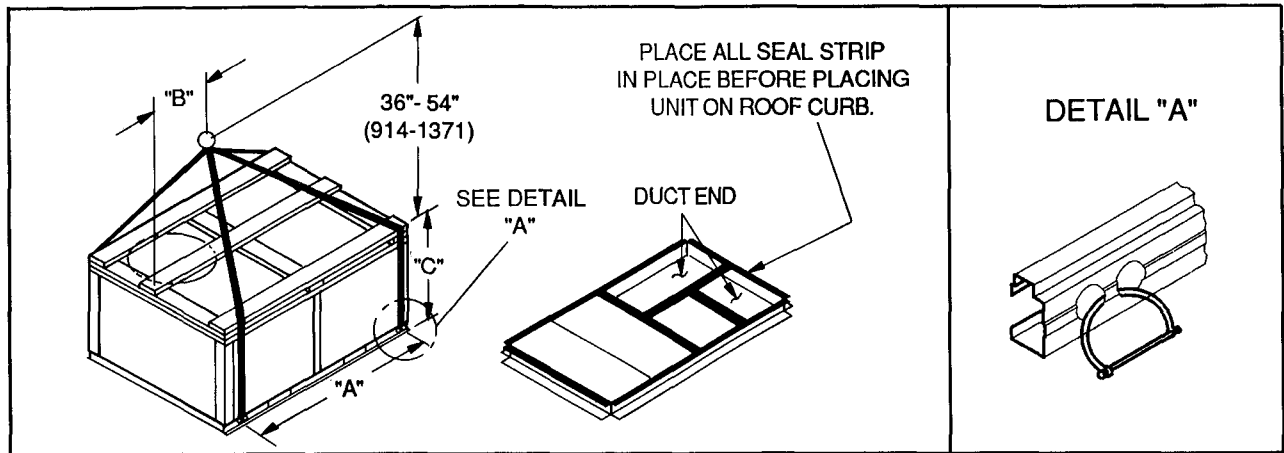
A-B	B-C	A-C
0.5	1.0	1.0

**Fig. 3 – Unit Leveling Tolerance**



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

**Fig. 4 – External Trap Condensate Drain**



**NOTES:**

1. Dimensions in ( ) are in millimeters
2. Hook rigging shackles through holes in base rail, as shown in detail "A". Holes in base rails are centered around the unit center of gravity. Use wooden top skid when rigging to prevent rigging straps from damaging unit
3. Unit weights do not include economizer. See Table 1 for economizer weights.

**⚠ CAUTION**  
All panels must be in place when rigging

UNIT	MAX WEIGHT		DIMENSIONS					
	lb	kg	"A"		"B"		"C"	
			in.	mm	in.	mm	in.	mm
50LJ008	755	342	77.42	1967	40.25	1022	41.31	1050
50LJ009	760	345	77.42	1967	40.25	1022	41.31	1050
50LJ012	915	415	77.42	1967	40.25	1022	49.31	1253
50LJ014	930	422	77.42	1967	40.25	1022	49.31	1253

**Fig. 5 – Rigging Details**

**Table 1 – Physical Data**

BASE UNIT 50LJ	008	009	012	014
NOMINAL CAPACITY (tons)	7½	8½	10	12½
OPERATING WEIGHT (lb)				
Unit	755	760	915	930
With Economizer	799	804	959	974
Roof Curb	143	143	143	143
COMPRESSOR	Hermetic			
Quantity	2	2	2	2
Oil (oz) (each compressor)	55	55	70	70
REFRIGERANT TYPE	R-22			
Operating Charge (lb-oz)				
Circuit 1	7- 0	7-0	9-7	8- 3
Circuit 2	5-12	6-2	8-6	8-11
CONDENSER FAN	Propeller			
Qty...Diameter (in.)	1 ..26	1...26	1 .26	1...26
Nominal Cfm	6500	6500	7000	7200
Motor Hp...Rpm	¾ ..1100	¾...1100	¾.. 1100	¾...1100
CONDENSER COIL	Enhanced Copper Tubes, Aluminum Lanced Fin			
Rows...Fins/in.	2 .17	2 .17	2...17	2.. 17
Total Face Area (sq ft)	18.0	20 5	25.0	25.0
EVAPORATOR FAN	Centrifugal			
Size (in.)	15 x 15	15 x 15	15 x 15	15 x 15
Type Drive	Belt	Belt	Belt	Belt
Nominal Cfm	3000	3400	4000	5000
Maximum Continuous Bhp	2.4	2.4	2.4	4 2
Motor Frame	56	56	56	56
Fan Rpm Range	590-840	590-840	690-935	860-1080
Motor Bearing Type	Ball	Ball	Ball	Ball
Maximum Fan Rpm	2100	2100	2100	2100
Motor Pulley Pitch Diameter A/B (in.)	2.4/3 4	2 4/3.4	2.8/3.8	4.0/5 0
Fan Pulley Pitch Diameter (in.)	7.0	7 0	7 0	8.0
Belt – Type...Length (in.)	A...48	A .48	A...51	A...57
Pulley Center Line Distance (in.)	16.75-19.25	16 75-19.25	18.25-20 75	18.25-20 75
Speed Change per Full Turn of Movable Pulley Flange (rpm)	50	50	50	44
Movable Pulley Maximum Full Turns From Closed Position	5	5	5	5
Factory Setting – Full Turns Open	5	5	5	5
Factory Speed Setting (rpm)	590	590	690	860
Fan Shaft Diameter at Pulley (in.)	1	1	1	1
EVAPORATOR COIL	Enhanced Copper Tubes, Aluminum Double-Wavy Fin			
Rows...Fins/in.	3. 15	3 .15	3 .15	4...15
Total Face Area (sq ft)	8 0	8 0	10 0	11.1
OUTDOOR-AIR INLET SCREENS	Cleanable			
Qty...Size (in.)	1 20 x 25 x 1 1.. 16 x 25 x 1			
RETURN-AIR FILTERS	Disposable			
Qty...Size (in.)	4 ..16 x 20 x 2	4...16 x 20 x 2	4 20 x 20 x 2	4 20 x 20 x 2

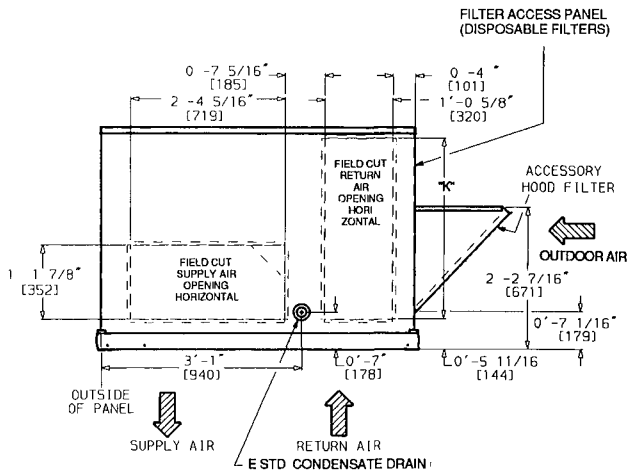
**LEGEND**

**Bhp** — Brake Horsepower

UNIT	STD. UNIT WEIGHT		ECONOMIZER WEIGHT		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		"H"		"J"		"K"	
	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Lb	Kg	Ft.-in.	mm	Ft.-in.	mm	Ft.-in.	mm
50LJ008	755	342	44	20	164	74	140	64	208	94	243	110	2-0 <sup>7</sup> / <sub>8</sub>	632	3-5 <sup>5</sup> / <sub>16</sub>	1050	2-9 <sup>1</sup> / <sub>16</sub>	856
50LJ009	760	345	44	20	165	75	141	64	209	94	245	111	1-2 <sup>7</sup> / <sub>8</sub>	378	3-5 <sup>5</sup> / <sub>16</sub>	1050	2-9 <sup>1</sup> / <sub>16</sub>	856
50LJ012	915	415	44	20	199	90	170	77	252	114	294	134	1-2 <sup>7</sup> / <sub>8</sub>	378	4-1 <sup>5</sup> / <sub>16</sub>	1253	3-0 <sup>9</sup> / <sub>16</sub>	924
50LJ014	930	422	44	20	202	92	172	78	256	116	300	136	1-2 <sup>7</sup> / <sub>8</sub>	378	4-1 <sup>5</sup> / <sub>16</sub>	1253	3-0 <sup>9</sup> / <sub>16</sub>	924

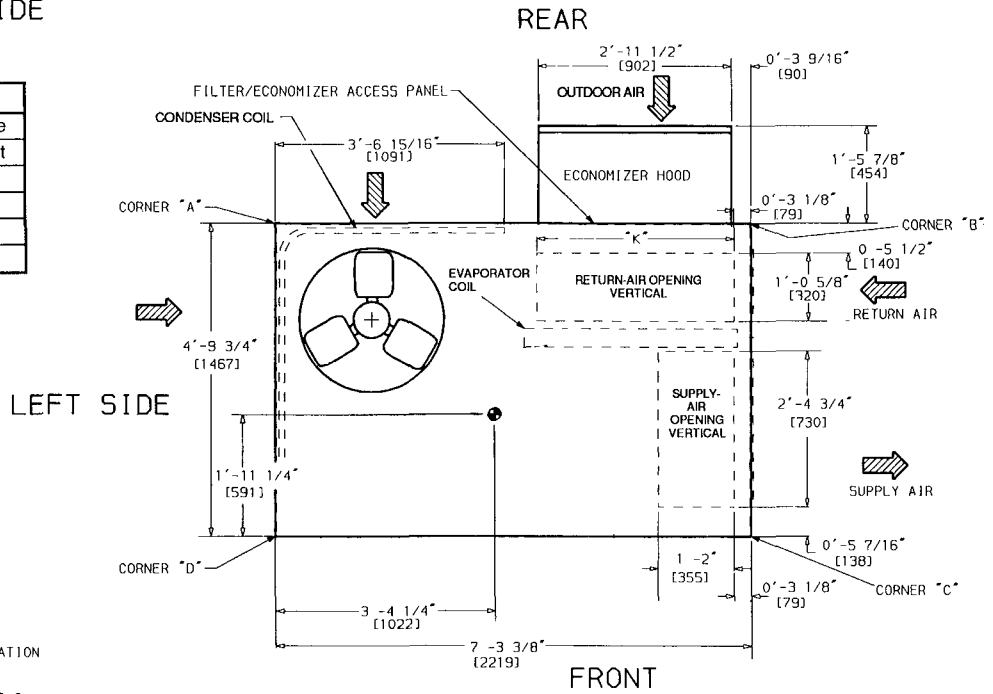
NOTES:

- Dimensions in [ ] are in millimeters
- Center of gravity
- Direction of airflow
- On vertical discharge units, ductwork to be attached to accessory roof curb only. For horizontal discharge units, field-supplied flanges should be attached to horizontal discharge openings and all ductwork should be attached to the flanges.
- Minimum clearance (local codes or jurisdiction may prevail):
  - Bottom to combustible surfaces (when not using curb) zero in on vertical discharge units, and one in on horizontal discharge units.
  - Condenser coil, for proper airflow, 36 in. one side, 12 in. the other. The side getting the greater clearance is optional.
  - Overhead, 60 in. to assure proper condenser fan operation.
  - Horizontal supply and return end, zero inches.
  - Between units, control box side, 42 in. per NEC.
  - Between unit and ungrounded surfaces, control box side, 36 in. per NEC.
  - Between unit and block or concrete walls and other grounded surfaces, control box side, 42 in. per NEC.
- With the exception of the clearance for the condenser coil as stated in Notes 5b and c, a removable fence or barricade requires no clearance.
- Units may be installed on combustible floors made from wood or class A, B, or C roof covering material.



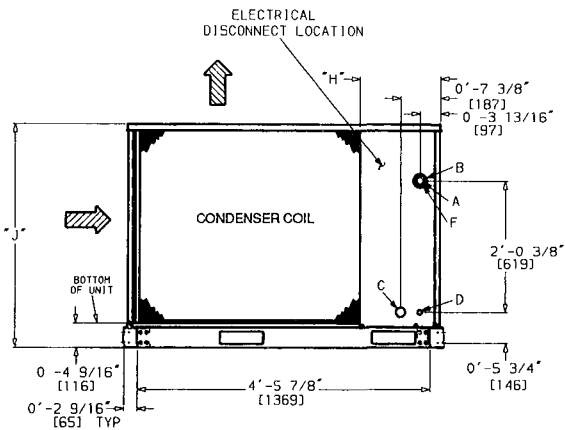
RIGHT SIDE

CONNECTION SIZES	
A	1 <sup>3</sup> / <sub>8</sub> " dia [35] field power supply hole
B	2 <sup>1</sup> / <sub>2</sub> " dia [64] power supply knockout
C	1 <sup>3</sup> / <sub>4</sub> " dia [44] charging-port hole
D	7/8" dia [22] field control wiring hole
E	3/4"-14 NPT condensate drain
F	2" dia [51] power supply knockout

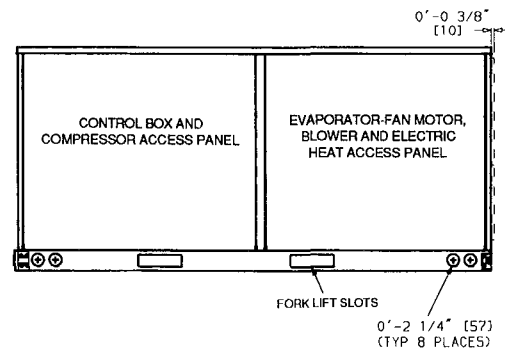


LEFT SIDE

FRONT



LEFT SIDE



FRONT

Fig. 6 – Base Unit Dimensions

Install conduit through side panel openings. Install conduit between disconnect and control box. Install power lines to terminal connections as shown in Fig. 7.

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

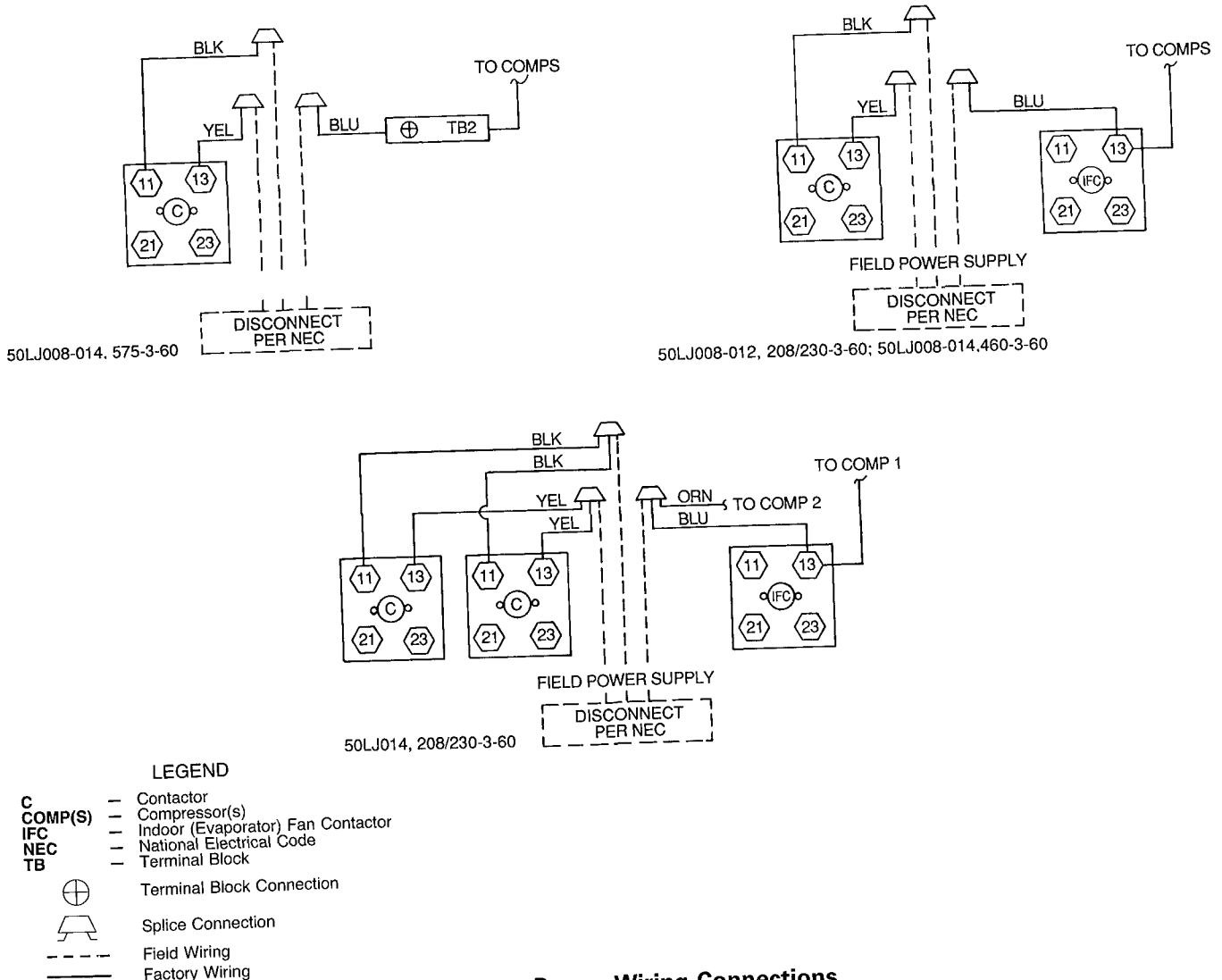
**FIELD CONTROL WIRING** — Install a Carrier-approved accessory thermostat assembly according to installation instructions included with the accessory. Locate thermostat assembly on a solid wall in the conditioned space to sense average temperature in accordance with thermostat installation instructions.

Route thermostat cable or equivalent single leads of colored wire from subbase terminals to low-voltage connections on unit (shown in Fig. 8) as described in Steps 1-4 below.

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

1. If unit is mounted on roof curb and accessory thru-the-curb service plate connection is used, route wire through connection plate.
2. Pass control wires through the hole provided on unit (see connection D, Connection Sizes Table, Fig. 6).
3. Feed wire through the raceway built into the corner post to the 24-v barrier located on the left side of the control box. See Fig. 9. The raceway provides the UL-required clearance between the high- and low-voltage wiring
4. Connect thermostat wires to screw terminals of low-voltage connector.

**HEAT ANTICIPATOR SETTINGS** — Set heat anticipator settings as shown in Table 3.



**Fig. 7 — Power Wiring Connections**

**Table 2 – Electrical Data**

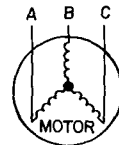
UNIT 50LJ	NOMINAL VOLTAGE (60 Hz)	VOLTAGE RANGE		COMPR (each)		OFM	IFM	ELECTRIC HEAT*		POWER SUPPLY		DISCONNECT SIZE†	
		Min	Max	RLA	LRA	FLA	FLA	Nominal kW**	FLA	MCA	MOCPT††	FLA	LRA
008 (7½ Tons)	208/230 (3-phase)	187	254	13.7	82	3.0	5.8	7.8/10.4 12.0/16.0 18.6/24.8 24.0/32.0 31.8/42.2	— 21.7/ 25.0 33.4/ 38.1 51.7/ 59.7 66.7/ 74.2 88.4/102.0	39.7/ 39.7 39.7/ 39.7 48.9/ 54.9 71.9/ 81.8 90.6/100.0 117.7/134.8	45/ 45 45/ 45 50/ 60 80/ 90   100/100   125/150	42/ 42 42/ 42 45/ 50 66/ 75 83/ 92 108/124	223/223
	460 (3-phase)	414	508	6.9	41	1.5	2.6	— 13.9 16.5 27.8 33.0 41.7	— 16.7 19.8 33.4 39.7 50.2	19.6 24.1 28.1 45.0 52.9 65.9	25 25 30 50 60 70	21 22 26 38 46 58	112
	575 (3-phase)	518	632	4.9	30	1.5	2.6	— 18.0 36.0	— 17.0 34.0	15.1 24.5 45.7	20 25 50	16 23 42	90
009 (8½ Tons)	208/230 (3 phase)	187	254	16.2	84	3.0	5.8	7.8/10.4 12.0/16.0 18.6/24.8 24.0/32.0 31.8/42.4	— 21.7/ 25.0 33.4/ 38.1 51.7/ 59.7 66.7/ 74.2 88.4/102.0	45.4/ 45.4 45.4/ 45.4 48.9/ 54.9 71.9/ 81.8 90.6/100.0 117.7/134.8	50/ 50 50/ 50 50/ 60 80/ 90   100/100   125/150	47/ 47 47/ 47 47/ 50 66/ 75 83/ 92 108/124	227/227
	460 (3-phase)	414	508	8.0	42	1.5	2.6	— 13.9 16.5 27.8 33.0 41.7	— 16.7 19.8 33.4 39.7 50.2	22.1 24.1 28.1 45.0 52.9 65.9	25 25 30 50 60 70	23 23 26 38 46 58	114
	575 (3-phase)	518	632	6.1	33	1.5	2.6	— 18.0 36.0	— 17.0 34.0	17.8 24.5 45.7	20 25 50	19 23 42	96
012 (10 Tons)	208/230 (3-phase)	187	254	19.2	105	3.0	5.8	7.8/10.4 12.0/16.0 18.6/24.8 24.0/32.0 31.8/42.4 37.5/50.0	— 21.7/ 25.0 33.4/ 38.1 51.7/ 59.7 66.7/ 74.2 88.4/102.0 104.1/120.2	52.1/ 52.1 52.1/ 52.1 52.1/ 54.9 90.6/100.0 117.7/134.8 137.4/127.4	60/ 60 60/ 60 80/ 60 100/100   125/150   150/150	54/ 54 54/ 54 54/ 54 83/ 92 108/124 127/145	269/269
	460 (3-phase)	414	508	9.6	55	1.5	2.6	— 16.5 27.8 33.0 41.7 50.0	— 19.8 33.4 39.7 50.2 60.1	25.7 28.1 45.0 52.9 65.9 63.4	30 30 50 60 70   70	27 27 41 46 58 69	140
	575 (3-phase)	518	632	8.3	45	1.5	2.6	— 18.0 36.0 54.0	— 17.0 34.0 51.0	22.8 24.5 45.7 67.0	30 30 50 70	24 24 42 59	120
014 (12½ Tons)	208/230 (3-phase)	187	254	22.3	137	3.0	12.0	7.8/10.4 12.0/16.0 18.6/24.8 24.0/32.0 31.8/42.4 37.5/50.0	— 21.7/ 25.0 33.4/ 38.5 51.7/ 59.7 66.7/ 77.0 88.4/102.0 104.2/120.3	65.3/ 65.3 65.3/ 65.3 65.3/ 65.3 98.4/111.2 125.5/142.5 145.3/135.3	80/ 80   80/ 80   80/ 80   100/125   150/150   150/150	69/ 69 69/ 69 69/ 69 91/102 115/131 134/152	376/376
	460 (3-phase)	414	508	10.4	69	1.5	5.4	— 16.5 27.8 33.0 41.7 50.0	— 19.8 33.4 39.7 50.2 60.1	30.3 31.6 48.5 56.4 69.4 66.9	35 35 50 60 70   80	32 32 45 52 64 75	189
	575 (3-phase)	518	632	9.6	55	1.5	5.4	— 18.0 36.0 54.0	— 17.0 34.0 51.0	28.5 28.5 49.2 70.5	35 35 50 80	30 30 45 65	161

**LEGEND**

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



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 % 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

\*Heaters are field installed only.  
 †Used to determine minimum disconnect size per NEC.  
 \*\*Heater capacity (kW) is based on heater voltage of 240 v, 480 v or 575 v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly.

††Fuse or HACR circuit breaker  
 ||Fusing in single point box provides the required branch circuit protection

**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. The CSA units may be fuse or circuit breaker.

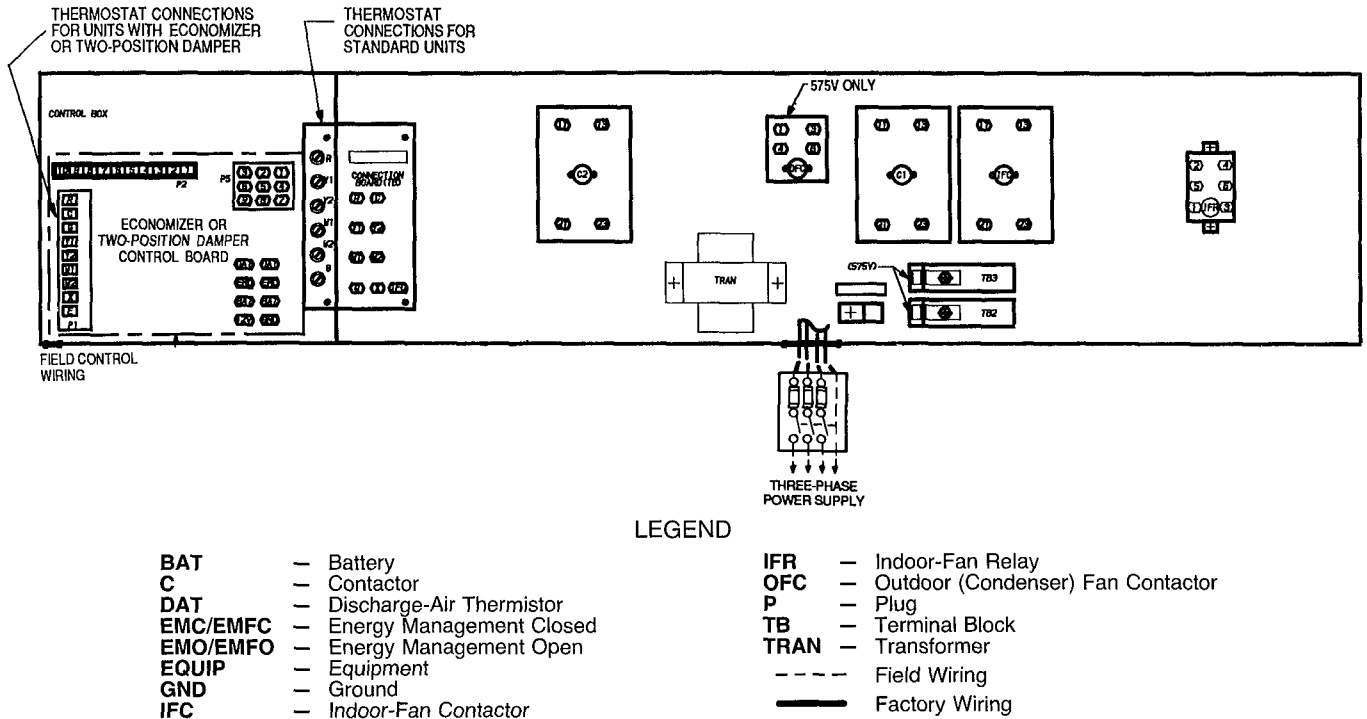
2 Unbalanced 3-Phase Supply Voltage  
 Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the % voltage imbalance

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

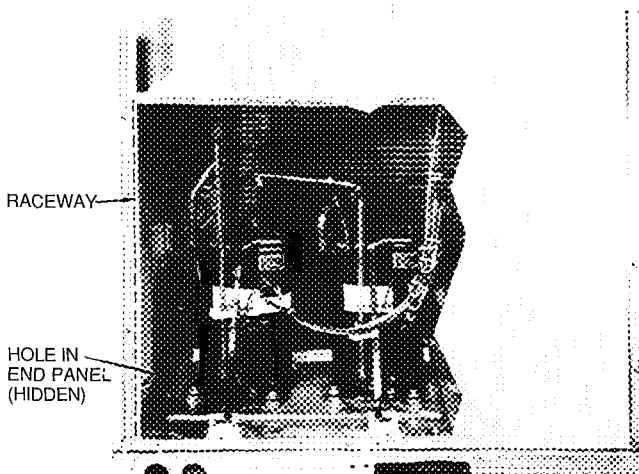


**Table 3 – Heat Anticipator Settings**

UNIT	UNIT VOLTAGE																	
	208/230						460						575					
	Heater kW	Configuration			Heater kW	Configuration			Heater kW	Configuration								
		1 Stage	2 Stage			1 Stage	2 Stage			1 Stage	2 Stage							
	Stage 1	Stage 1	Stage 2		Stage 1	Stage 1	Stage 2		Stage 1	Stage 1	Stage 2							
50LJ	10.4, 16.0	0.3	NA	NA	13.9, 16.5	0.3	NA	NA	18.0, 36.0	0.3	NA	NA						
	32.0, 24.8	0.6	0.3	0.3	27.8, 33.0	0.6	0.3	0.3										
	42.4, 50.0	0.9	0.6	0.3	41.7, 50.0	0.6	0.3	0.3	54.0	0.6	0.3	0.3						



**Fig. 8 – Control Wiring Connections**



**Fig. 9 – Field Control Wiring Raceway**

**Step 6 – Adjust Evaporator-Fan Speed** – Adjust evaporator-fan speed to meet jobsite conditions.

For units with electric heating, required minimum cfm is 2250 for 50LJ008; 2550 for 50LJ009; and 3000 for 50LJ012 and 014 with the following exceptions.

UNIT	UNIT VOLTAGE	HEATER kW	UNIT CONFIG-ATION	REQUIRED MINIMUM CFM
50LJ012 and 014	208/230	42.4	Horizontal	3200
	208/230	50.0	Horizontal	3200
	460	50.0	Horizontal or Vertical	3200
50LJ008-014	575	18.0	Horizontal or Vertical	2800
		36.0	Horizontal or Vertical	2350

Table 4 shows fan rpm motor pulley settings, Table 5 shows motor efficiencies and Table 6 gives accessory static pressure drops. Refer to Tables 7-12 to determine fan speed settings. Fan motor pulleys are factory set for speed shown in Table 1.

**Table 4 – Fan Rpm at Motor Pulley Settings**

50LJ	MOTOR PULLEY TURNS OPEN										
	0	½	1	1½	2	2½	3	3½	4	4½	5
008, 009	840	815	790	765	740	715	690	665	640	615	590
012	935	910	890	865	840	815	790	765	740	715	690
014	1080	1060	1035	1015	990	970	950	930	905	885	860

**Table 5 – Evaporator-Fan Motor Efficiency**

MOTOR	EFFICIENCY (%)
50LJ008-012	83
50LJ014	85

NOTE: Convert bhp to watts using the following formula:

$$\text{Watts} = \frac{746 \times \text{Bhp}}{\text{Motor Efficiency}}$$

**Table 6 – Accessory Static Pressure Drop (in. wg) 50LJ008-014**

COMPONENT	CFM									
	2200	2500	3000	3500	4000	4500	5000	5500	6000	
1 Heater Module	.020	.030	.050	.065	.080	.100	.120	.140	.155	
2 Heater Modules	.030	.050	.070	.090	.120	.140	.160	.190	.210	
Economizer	.020	.020	.030	.040	.050	.060	.070	.080	.090	

**Table 7 – Fan Performance, 50LJ008,009 – Vertical Discharge Units**

AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2200	503	0.50	585	0.71	653	0.92	716	1.15	772	1.38	824	1.63	884	1.95	934	2.30	916	2.64	1019	3.09
2250	511	0.52	592	0.74	659	0.95	722	1.19	778	1.43	829	1.68	884	1.97	937	2.33	947	2.66	1022	3.10
2300	518	0.55	599	0.77	665	0.98	727	1.22	783	1.47	834	1.72	885	2.00	939	2.36	979	2.69	1025	3.12
2400	534	0.61	613	0.84	677	1.06	738	1.30	794	1.55	844	1.81	892	2.08	944	2.40	987	2.76	1039	3.20
2500	549	0.67	627	0.90	690	1.14	750	1.38	805	1.64	855	1.91	902	2.16	949	2.48	1002	2.84	1041	3.25
2550	557	0.71	633	0.94	697	1.18	756	1.42	811	1.69	861	1.96	908	2.24	953	2.53	1003	2.87	1045	3.26
2600	565	0.74	639	0.97	703	1.22	761	1.46	816	1.74	866	2.01	913	2.29	957	2.58	1004	2.91	1050	3.31
2700	581	0.81	652	1.04	717	1.31	773	1.55	827	1.83	878	2.12	924	2.41	967	2.70	1010	3.01	1056	3.37
2800	597	0.89	665	1.12	731	1.40	786	1.66	839	1.93	889	2.23	935	2.52	978	2.82	1019	3.12	1061	3.47
2900	613	0.97	679	1.20	745	1.50	799	1.76	850	2.04	900	2.34	946	2.65	989	2.96	1030	3.27	—	—
3000	629	1.06	694	1.29	759	1.59	812	1.88	862	2.15	911	2.46	957	2.78	1000	3.09	1040	3.41	—	—
3100	646	1.15	709	1.39	772	1.70	825	1.99	875	2.28	925	2.58	968	2.91	1011	3.24	—	—	—	—
3200	662	1.25	724	1.50	785	1.80	840	2.11	887	2.41	934	2.71	975	3.04	1022	3.38	—	—	—	—
3300	679	1.35	740	1.61	798	1.91	854	2.24	900	2.54	946	2.85	987	3.18	—	—	—	—	—	—
3400	696	1.46	756	1.73	811	2.02	868	2.37	914	2.69	959	3.00	1000	3.32	—	—	—	—	—	—
3500	712	1.57	771	1.85	824	2.14	881	2.50	928	2.84	971	3.16	1014	3.46	—	—	—	—	—	—
3600	729	1.69	787	1.98	839	2.27	894	2.64	942	2.95	984	3.32	—	—	—	—	—	—	—	—
3700	746	1.82	803	2.12	854	2.40	907	2.74	956	3.05	997	3.49	—	—	—	—	—	—	—	—
3750	755	1.89	811	2.20	862	2.49	914	2.83	963	3.13	—	—	—	—	—	—	—	—	—	—
3800	763	1.95	819	2.27	869	2.56	920	2.92	970	3.21	—	—	—	—	—	—	—	—	—	—
3900	780	2.09	835	2.42	884	2.72	935	3.07	983	3.36	—	—	—	—	—	—	—	—	—	—
4000	796	2.23	851	2.56	900	2.86	948	3.20	—	—	—	—	—	—	—	—	—	—	—	—
4100	813	2.39	867	2.74	915	3.06	960	3.40	—	—	—	—	—	—	—	—	—	—	—	—
4200	830	2.55	883	2.9	93	3.24	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4250	838	2.63	892	3.00	939	3.34	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4300	847	2.71	900	3.09	947	3.43	—	—	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

**Bhp** – Brake Horsepower

**NOTES:**

- Boldface** indicates field-supplied drive required
- Shading** indicates field-supplied motor and drive required.
- Maximum usable bhp is 2.4. Extensive motor and electrical testing on the Weathermaker® I units ensures that the full horsepower range of the motor can be utilized with confidence Using

your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected

- Use of field-supplied motor may affect wire sizing. Contact your Carrier representative to verify
- Values include losses for filters, unit casing and wet coils.
- Motor drive range is 590 to 840 rpm. All other rpms require a field-supplied drive

**Table 8 – Fan Performance, 50LJ012 – Vertical Discharge Units**

AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3000	532	0.64	605	0.81	670	0.97	725	1.12	778	1.28	825	1.43	874	1.60	926	1.82	974	2.11	1012	2.36
3100	544	0.70	616	0.86	680	1.03	735	1.20	787	1.36	835	1.52	880	1.68	933	1.87	983	2.16	1017	2.41
3200	557	0.75	628	0.93	690	1.10	746	1.28	796	1.44	844	1.61	888	1.77	934	1.94	988	2.18	1025	2.47
3300	570	0.81	639	0.99	700	1.18	757	1.36	805	1.52	854	1.70	897	1.86	940	2.03	989	2.24	1032	2.52
3400	583	0.88	651	1.06	711	1.25	767	1.44	815	1.61	863	1.79	907	1.97	947	2.14	991	2.32	1038	2.57
3500	596	0.94	663	1.14	721	1.33	777	1.52	826	1.71	871	1.88	916	2.07	956	2.25	997	2.43	1043	2.64
3600	609	1.01	674	1.22	732	1.42	787	1.61	836	1.80	880	1.98	926	2.18	966	2.36	1004	2.54	1048	2.74
3700	622	1.09	686	1.30	744	1.50	797	1.70	847	1.91	890	2.09	934	2.28	976	2.48	1013	2.66	1051	2.85
3800	635	1.16	698	1.39	755	1.59	808	1.80	857	2.01	901	2.20	943	2.39	985	2.60	1023	2.79	1059	2.96
3900	649	1.25	710	1.48	767	1.68	818	1.90	867	2.11	912	2.32	952	2.51	994	2.72	1032	2.92	1066	3.12
4000	662	1.33	722	1.57	778	1.78	829	2.01	878	2.22	922	2.44	962	2.63	1003	2.84	1042	3.06	1078	3.26
4100	675	1.42	734	1.67	790	1.89	839	2.12	888	2.33	933	2.56	973	2.77	1011	2.97	1051	3.20	1087	3.41
4200	689	1.52	746	1.77	801	1.99	851	2.23	898	2.45	943	2.69	983	2.91	1021	3.11	1060	3.34	—	—
4300	702	1.61	759	1.88	813	2.11	862	2.34	908	2.56	953	2.81	994	3.05	1031	3.25	1068	3.48	—	—
4400	715	1.72	772	1.99	825	2.22	873	2.46	919	2.71	963	2.94	1004	3.19	1042	3.41	—	—	—	—
4500	729	1.83	785	2.10	837	2.35	885	2.59	929	2.85	973	3.08	1015	3.33	—	—	—	—	—	—
4600	742	1.94	797	2.22	848	2.48	896	2.72	940	2.96	984	3.22	1025	3.48	—	—	—	—	—	—
4700	756	2.06	810	2.34	860	2.61	908	2.85	951	3.12	994	3.38	—	—	—	—	—	—	—	—
4800	770	2.18	823	2.46	872	2.75	919	3.00	963	3.27	—	—	—	—	—	—	—	—	—	—
4900	783	2.31	836	2.60	884	2.89	927	3.14	974	3.41	—	—	—	—	—	—	—	—	—	—
5000	797	2.44	849	2.73	897	3.04	943	3.30	—	—	—	—	—	—	—	—	—	—	—	—

**LEGEND**

**Bhp** – Brake Horsepower

**NOTES:**

- Boldface** indicates field-supplied drive required
- Shading** indicates field-supplied motor and drive required
- Maximum usable bhp is 2.4. Extensive motor and electrical testing on the Weathermaker® I units ensures that the full horsepower

range of the motor can be utilized with confidence. Using your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

- Use of field-supplied motor may affect wire sizing. Contact your Carrier representative to verify.
- Values include losses for filters, unit casing and wet coils
- Motor drive range is 690 to 935 rpm. All other rpms require a field-supplied drive.

Table 9 – Fan Performance, 50LJ014 – Vertical Discharge Units

AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3700	654	1.12	714	1.31	767	1.50	815	1.67	861	1.85	906	2.08	950	2.27	991	2.47	1030	2.65	1064	2.82
3800	668	1.20	727	1.40	780	1.60	827	1.77	873	1.95	916	2.18	959	2.38	1001	2.58	1040	2.78	1075	2.96
3900	683	1.28	741	1.49	793	1.70	839	1.88	884	2.05	927	2.28	969	2.50	1010	2.70	1049	2.91	<b>1085</b>	<b>3.11</b>
4000	697	1.37	754	1.59	806	1.80	851	1.99	895	2.16	938	2.38	979	2.62	1020	2.83	1059	3.04	<b>1095</b>	<b>3.25</b>
4100	711	1.46	767	1.69	819	1.90	864	2.10	907	2.28	949	2.49	989	2.74	1029	2.96	1068	3.18	<b>1105</b>	<b>3.39</b>
4200	726	1.56	780	1.80	832	2.01	877	2.22	919	2.41	960	2.60	1000	2.86	1039	3.10	1077	3.31	<b>1114</b>	<b>3.54</b>
4300	741	1.66	794	1.91	845	2.12	889	2.35	931	2.54	971	2.72	1011	2.97	1049	3.23	<b>1087</b>	<b>3.46</b>	<b>1124</b>	<b>3.69</b>
4400	755	1.77	808	2.03	858	2.24	902	2.48	943	2.68	983	2.86	1022	3.10	1059	3.37	<b>1097</b>	<b>3.61</b>	<b>1133</b>	<b>3.84</b>
4500	770	1.89	821	2.15	871	2.37	915	2.61	955	2.82	995	3.01	1033	3.23	1070	3.51	<b>1107</b>	<b>3.76</b>	<b>1143</b>	<b>4.00</b>
4600	784	2.00	835	2.27	884	2.49	928	2.75	968	2.96	1006	3.17	1044	3.37	<b>1081</b>	<b>3.64</b>	<b>1117</b>	<b>3.92</b>	<b>1152</b>	<b>4.17</b>
4700	799	2.13	849	2.40	897	2.63	941	2.88	981	3.11	1018	3.32	1056	3.52	<b>1092</b>	<b>3.78</b>	<b>1127</b>	<b>4.07</b>	<b>1162</b>	<b>4.33</b>
4800	814	2.25	863	2.53	910	2.77	954	3.02	993	3.27	1030	3.48	1067	3.69	<b>1103</b>	<b>3.93</b>	<b>1138</b>	<b>4.23</b>	<b>1172</b>	<b>4.50</b>
4900	829	2.39	877	2.67	923	2.92	967	3.17	1006	3.43	1043	3.65	1079	3.87	<b>1114</b>	<b>4.09</b>	<b>1149</b>	<b>4.37</b>	<b>1182</b>	<b>4.68</b>
5000	843	2.52	892	2.81	937	3.08	980	3.32	1019	3.60	1055	3.82	<b>1091</b>	<b>4.05</b>	<b>1125</b>	<b>4.25</b>	<b>1160</b>	<b>4.53</b>	<b>1193</b>	<b>4.85</b>
5100	858	2.67	906	2.95	950	3.24	993	3.48	1032	3.76	1068	4.00	<b>1103</b>	<b>4.23</b>	<b>1137</b>	<b>4.45</b>	<b>1171</b>	<b>4.73</b>	<b>1204</b>	<b>5.07</b>
5200	873	2.82	920	3.10	963	3.40	1006	3.65	1045	3.93	<b>1081</b>	<b>4.19</b>	<b>1115</b>	<b>4.42</b>	<b>1149</b>	<b>4.65</b>	<b>1182</b>	<b>4.93</b>	<b>1215</b>	<b>5.18</b>
5300	888	2.97	934	3.26	977	3.57	1019	3.82	1058	4.11	<b>1094</b>	<b>4.38</b>	<b>1127</b>	<b>4.62</b>	<b>1161</b>	<b>4.85</b>	<b>1194</b>	<b>5.07</b>	<b>1226</b>	<b>5.36</b>
5400	903	3.13	949	3.43	991	3.75	1032	4.00	<b>1071</b>	<b>4.29</b>	<b>1106</b>	<b>4.57</b>	<b>1139</b>	<b>4.82</b>	<b>1173</b>	<b>5.06</b>	<b>1205</b>	<b>5.29</b>	<b>1237</b>	<b>5.55</b>
5500	918	3.30	963	3.59	1004	3.92	1045	4.18	<b>1064</b>	<b>4.47</b>	<b>1119</b>	<b>4.77</b>	<b>1152</b>	<b>5.03</b>	<b>1185</b>	<b>5.27</b>	<b>1217</b>	<b>5.51</b>	<b>1249</b>	<b>5.75</b>
5600	933	3.47	978	3.77	1018	4.11	<b>1055</b>	<b>4.28</b>	<b>1097</b>	<b>4.66</b>	<b>1132</b>	<b>4.97</b>	<b>1165</b>	<b>5.24</b>	<b>1197</b>	<b>5.49</b>	<b>1229</b>	<b>5.74</b>	—	—
5700	948	3.65	992	3.95	<b>1032</b>	<b>4.30</b>	<b>1072</b>	<b>4.58</b>	<b>1110</b>	<b>4.86</b>	<b>1145</b>	<b>5.18</b>	<b>1178</b>	<b>5.46</b>	<b>1209</b>	<b>5.72</b>	—	—	—	—
5800	963	3.83	1006	4.14	<b>1046</b>	<b>4.50</b>	<b>1085</b>	<b>4.78</b>	<b>1123</b>	<b>5.07</b>	<b>1158</b>	<b>5.39</b>	<b>1191</b>	<b>5.69</b>	—	—	—	—	—	—
5900	978	4.00	<b>1021</b>	<b>4.34</b>	<b>1060</b>	<b>4.62</b>	<b>1098</b>	<b>5.01</b>	<b>1136</b>	<b>5.28</b>	<b>1171</b>	<b>5.60</b>	—	—	—	—	—	—	—	—
6000	<b>993</b>	<b>4.22</b>	<b>1035</b>	<b>4.54</b>	<b>1074</b>	<b>4.89</b>	<b>1112</b>	<b>5.23</b>	<b>1149</b>	<b>5.50</b>	—	—	—	—	—	—	—	—	—	—
6100	<b>1008</b>	<b>4.42</b>	<b>1050</b>	<b>4.75</b>	<b>1089</b>	<b>5.10</b>	<b>1125</b>	<b>5.45</b>	<b>1162</b>	<b>5.73</b>	—	—	—	—	—	—	—	—	—	—
6200	<b>1023</b>	<b>4.63</b>	<b>1065</b>	<b>4.96</b>	<b>1105</b>	<b>5.32</b>	<b>1139</b>	<b>5.68</b>	—	—	—	—	—	—	—	—	—	—	—	—
6300	<b>1038</b>	<b>4.85</b>	<b>1079</b>	<b>5.19</b>	<b>1117</b>	<b>5.54</b>	—	—	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

**Bhp** — Brake Horsepower

NOTES:

- 1 Boldface** indicates field-supplied drive required
- 2 Shading** indicates field-supplied motor and drive required.
- Maximum usable bhp is 4.2. Extensive motor and electrical testing on the Weathermaker® I units ensures that the full horsepower range of the motor can be utilized with confidence. Using

your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

- Use of field-supplied motor may affect wire sizing. Contact your Carrier representative to verify
- Values include losses for filters, unit casing and wet coils
- Motor drive range is 860 to 1080 rpm. All other rpms require a field-supplied drive

Table 10 – Fan Performance, 50LJ008,009 – Horizontal Discharge Units

AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
2200	459	0.42	549	0.62	625	0.83	691	1.06	753	1.31	805	1.58	842	1.87	857	2.16	851	2.45	823	2.70
2250	465	0.43	554	0.64	630	0.86	695	1.09	757	1.34	810	1.62	850	1.91	873	2.20	866	2.50	855	2.78
2300	471	0.45	559	0.66	635	0.89	699	1.12	760	1.37	816	1.65	859	1.94	888	2.24	897	2.55	897	2.85
2400	482	0.50	569	0.71	645	0.95	708	1.18	768	1.44	824	1.72	872	2.01	909	2.32	921	2.64	935	2.96
2500	494	0.54	581	0.76	654	1.01	717	1.25	776	1.51	832	1.79	882	2.09	925	2.40	955	2.72	972	3.06
2550	501	0.57	587	0.79	659	1.05	722	1.29	780	1.55	836	1.83	887	2.13	931	2.45	964	2.77	986	3.11
2600	507	0.59	592	0.82	663	1.08	727	1.32	784	1.58	839	1.87	891	2.17	936	2.49	973	2.82	999	3.16
2700	520	0.65	604	0.89	672	1.14	737	1.40	793	1.66	846	1.95	898	2.26	946	2.58	987	2.91	1019	3.26
2800	533	0.71	615	0.95	683	1.20	747	1.49	802	1.75	855	2.04	906	2.35	954	2.67	997	3.01	1034	3.36
2900	546	0.77	626	1.02	693	1.27	756	1.57	813	1.84	863	2.13	913	2.44	961	2.77	1006	3.12	—	—
3000	559	0.83	637	1.09	704	1.35	765	1.66	823	1.94	872	2.22	921	2.54	969	2.86	1014	3.22	—	—
3100	572	0.90	648	1.17	715	1.43	775	1.74	832	2.05	882	2.33	930	2.65	976	2.99	1021	3.34	—	—
3200	585	0.96	660	1.24	727	1.52	785	1.83	841	2.15	892	2.45	939	2.76	984	3.10	—	—	—	—
3300	598	1.03	671	1.32	739	1.62	795	1.91	851	2.26	902	2.57	948	2.88	993	3.21	—	—	—	—
3400	610	1.10	682	1.41	750	1.72	806	2.01	860	2.36	912	2.69	958	3.01	1002	3.34	—	—	—	—
3500	623	1.17	694	1.50	761	1.82	817	2.11	870	2.47	921	2.82	968	3.15	—	—	—	—	—	—
3600	636	1.25	707	1.60	772	1.93	828	2.23	880	2.57	930	2.95	976	3.29	—	—	—	—	—	—
3700	649	1.33	720	1.71	783	2.03	840	2.35	890	2.69	940	3.07	—	—	—	—	—	—	—	—
3750	655	1.37	727	1.77	789	2.09	846	2.42	896	2.75	945	3.14	—	—	—	—	—	—	—	—
3800	661	1.41	733	1.82	795	2.15	852	2.48	901	2.80	949	3.20	—	—	—	—	—	—	—	—
3900	674	1.49	746	1.93	806	2.26	863	2.61	912	2.93	959	3.33	—	—	—	—	—	—	—	—
4000	687	1.57	759	2.05	817	2.38	874	2.75	923	3.08	—	—	—	—	—	—	—	—	—	—
4100	699	1.66	772	2.17	828	2.50	885	2.88	935	3.23	—	—	—	—	—	—	—	—	—	—
4200	712	1.75	785	2.30	840	2.64	897	3.03	947	3.39	—	—	—	—	—	—	—	—	—	—
4250	719	1.80	792	2.37	846	2.71	903	3.10	—	—	—	—	—	—	—	—	—	—	—	—
4300	725	1.85	798	2.43	852	2.77	908	3.17	—	—	—	—	—	—	—	—	—	—	—	—

LEGEND

Bhp – Brake Horsepower

NOTES:

1. **Boldface** indicates field-supplied drive required.
2. **Shading** indicates field-supplied motor and drive required.
3. Maximum usable bhp is 2.4. Extensive motor and electrical testing on the Weathermaker I units ensures that the full horsepower range of the motor can be utilized with confidence. Using

your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected.

4. Use of field-supplied motor may affect wire sizing. Contact your Carrier representative to verify.
5. Values include losses for filters, unit casing and wet coils
6. Motor drive range is 590 to 840 rpm. All other rpms require a field-supplied drive.

**Table 11 – Fan Performance, 50LJ012 – Horizontal Discharge Units**

AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3000	484	0.55	560	0.70	631	0.87	690	1.03	747	1.20	800	1.38	850	1.52	879	1.38	925	1.81	964	1.92
3100	495	0.61	570	0.76	638	0.92	699	1.10	755	1.27	805	1.44	857	1.63	896	1.66	935	1.93	975	1.98
3200	505	0.66	579	0.81	646	0.98	708	1.16	761	1.34	812	1.51	862	1.71	908	1.85	944	2.01	984	2.09
3300	516	0.72	589	0.87	655	1.05	717	1.23	767	1.40	819	1.59	867	1.78	915	1.98	952	2.11	993	2.22
3400	527	0.78	599	0.93	664	1.11	724	1.30	775	1.48	827	1.67	873	1.85	920	2.07	963	2.21	1001	2.31
3500	537	0.85	609	0.99	672	1.18	731	1.36	784	1.56	833	1.75	880	1.94	926	2.15	970	2.36	1007	2.46
3600	548	0.92	619	1.05	680	1.24	738	1.43	794	1.64	840	1.83	888	2.04	931	2.23	975	2.47	1017	2.62
3700	560	1.00	629	1.12	688	1.31	747	1.51	802	1.73	847	1.92	895	2.13	938	2.33	981	2.56	1024	2.77
3800	571	1.08	639	1.19	698	1.39	756	1.60	810	1.81	856	2.02	901	2.23	945	2.54	986	2.65	1025	2.89
3900	582	1.16	649	1.27	708	1.47	764	1.69	816	1.89	865	2.12	908	2.32	953	2.55	992	2.75	1034	3.00
4000	593	1.25	659	1.35	717	1.56	773	1.78	823	1.98	875	2.22	915	2.42	963	2.65	1000	2.87	1039	3.10
4100	605	1.35	670	1.44	727	1.65	781	1.86	832	2.08	883	2.32	924	2.54	966	2.76	1004	2.98	1046	3.21
4200	616	1.45	680	1.53	737	1.74	789	1.95	841	2.18	889	2.41	934	2.65	972	2.87	1015	3.10	1052	3.34
4300	628	1.56	690	1.63	747	1.83	798	2.05	849	2.30	896	2.51	943	2.77	980	2.99	1021	3.23	1061	3.46
4400	639	1.67	701	1.73	757	1.92	807	2.16	858	2.41	903	2.62	951	2.89	989	3.12	1028	3.36	—	—
4500	651	1.78	712	1.84	767	2.02	817	2.27	866	2.51	912	2.74	958	3.00	999	3.26	—	—	—	—
4600	662	1.91	722	1.95	777	2.13	827	2.38	874	2.62	921	2.87	965	3.11	1008	3.39	—	—	—	—
4700	674	2.03	733	2.07	787	2.24	836	2.50	882	2.73	930	3.00	972	3.23	—	—	—	—	—	—
4800	686	2.17	744	2.20	797	2.36	846	2.62	891	2.85	938	3.14	980	3.37	—	—	—	—	—	—
4900	698	2.31	755	2.33	806	2.48	856	2.74	900	2.98	946	3.27	—	—	—	—	—	—	—	—
5000	710	2.45	766	2.47	816	2.61	866	2.86	910	3.12	954	3.39	—	—	—	—	—	—	—	—

**LEGEND**

**Bhp** – Brake Horsepower

**NOTES:**

- 1. Boldface** indicates field-supplied drive required
- 2. Shading** indicates field-supplied motor and drive required
- 3. Maximum usable bhp is 2.4** Extensive motor and electrical testing on the Weathermaker® I units ensure that the full horsepower range of the motor can be utilized with confidence. Using

your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected

- 4. Use of field-supplied motor** may affect wire sizing. Contact your Carrier representative to verify.
- 5. Values include losses** for filters, unit casing and wet coils.
- 6. Motor drive range is 690 to 935 rpm.** All other rpms require a field-supplied drive.

**Table 12 – Fan Performance, 50LJ014 – Horizontal Discharge Units**

AIRFLOW (Cfm)	EXTERNAL STATIC PRESSURE (in. wg)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp	Rpm	Bhp
3700	607	0.97	670	1.18	732	1.37	782	1.56	833	1.73	879	1.95	927	2.17	973	2.38	1013	2.57	1046	2.73
3800	621	1.05	681	1.25	742	1.45	795	1.66	842	1.82	889	2.03	934	2.26	980	2.48	1022	2.69	1058	2.87
3900	636	1.13	693	1.32	751	1.53	808	1.76	851	1.92	898	2.12	942	2.36	987	2.59	1030	2.81	1068	3.01
4000	650	1.21	705	1.40	761	1.61	819	1.86	861	2.02	908	2.21	950	2.46	994	2.70	1037	2.92	1077	3.14
4100	665	1.30	717	1.48	772	1.71	830	1.96	871	2.13	917	2.32	960	2.55	1001	2.81	1045	3.04	1085	3.27
4200	680	1.39	728	1.57	783	1.81	839	2.05	883	2.25	925	2.44	969	2.65	1009	2.92	1051	3.17	1092	3.40
4300	696	1.49	739	1.66	794	1.91	848	2.14	896	2.38	935	2.56	979	2.77	1018	3.03	1058	3.29	1100	3.53
4400	711	1.60	750	1.75	805	2.02	857	2.24	908	2.51	945	2.68	988	2.89	1028	3.14	1066	3.41	1106	3.67
4500	727	1.70	762	1.85	817	2.12	867	2.35	919	2.63	955	2.82	996	3.02	1037	3.25	1074	3.54	1113	3.81
4600	742	1.82	774	1.96	828	2.23	877	2.46	929	2.75	967	2.96	1005	3.16	1046	3.38	1084	3.66	1121	3.95
4700	758	1.94	786	2.07	840	2.34	888	2.59	938	2.87	980	3.11	1015	3.30	1056	3.52	1093	3.79	1129	4.09
4800	773	2.06	799	2.18	852	2.46	899	2.72	947	2.98	992	3.26	1025	3.45	1064	3.67	1103	3.92	1137	4.22
4900	789	2.19	812	2.30	863	2.57	910	2.86	957	3.11	1003	3.41	1036	3.61	1073	3.83	1112	4.07	1147	4.36
5000	805	2.32	826	2.43	875	2.70	921	2.99	966	3.24	1014	3.56	1049	3.79	1083	4.00	1121	4.22	1157	4.50
5100	821	2.47	840	2.57	887	2.83	932	3.13	976	3.38	1024	3.71	1061	3.96	1093	4.17	1129	4.40	1166	4.66
5200	837	2.61	854	2.71	898	2.96	943	3.28	987	3.53	1033	3.84	1073	4.14	1103	4.34	1138	4.58	1175	4.82
5300	853	2.76	868	2.85	909	3.09	955	3.42	998	3.69	1042	3.98	1084	4.31	1115	4.53	1148	4.76	1184	5.01
5400	869	2.92	882	3.01	920	3.24	967	3.57	1009	3.86	1051	4.14	1095	4.49	1128	4.74	1158	4.96	1193	5.20
5500	885	3.09	897	3.17	932	3.38	978	3.72	1020	4.03	1061	4.30	1105	4.66	1140	4.94	1168	5.15	1202	5.40
5600	901	3.26	911	3.33	943	3.54	990	3.87	1031	4.20	1071	4.46	1114	4.81	1152	5.14	1180	5.36	1211	5.60
5700	917	3.44	926	3.50	956	3.70	1002	4.03	1042	4.38	1081	4.64	1123	4.96	1163	5.34	1193	5.59	—	—
5800	933	3.62	941	3.68	968	3.87	1013	4.20	1053	4.56	1092	4.84	1132	5.15	1174	5.54	—	—	—	—
5900	949	3.81	956	3.87	981	4.05	1025	4.37	1065	4.74	1103	5.04	1142	5.34	1183	5.72	—	—	—	—
6000	965	4.01	972	4.06	995	4.23	1037	4.55	1076	4.92	1114	5.24	1152	5.53	—	—	—	—	—	—
6100	981	4.21	987	4.26	1008	4.42	1047	4.73	1088	5.10	1125	5.45	1162	5.73	—	—	—	—	—	—
6200	997	4.42	1002	4.46	1022	4.62	1058	4.91	1100	5.29	1136	5.66	—	—	—	—	—	—	—	—
6300	1014	4.64	1018	4.68	1036	4.83	1070	5.11	1112	5.49	—	—	—	—	—	—	—	—	—	—

**LEGEND**

**Bhp** – Brake Horsepower

**NOTES:**

- 1. Boldface** indicates field-supplied drive required.
- 2. Shading** indicates field-supplied motor and drive required.
- 3. Maximum usable bhp is 4.2.** Extensive motor and electrical testing on the Weathermaker I units ensures that the full horsepower range of the motor can be utilized with confidence. Using

your fan motors up to the horsepower ratings shown will not result in nuisance tripping or premature motor failure. Unit warranty will not be affected

- 4. Use of field-supplied motor** may affect wire sizing. Contact your Carrier representative to verify.
- 5. Values include losses** for filters, unit casing and wet coils.
- 6. Motor drive range is 860 to 1080 rpm.** All other rpms require a field-supplied drive.

To change fan speed:

1. Shut off unit power supply.
2. Loosen belt by loosening fan motor mounting plate nuts (see Fig. 10).
3. Loosen movable pulley flange setscrew (see Fig. 11)
4. Screw movable flange toward fixed flange to increase speed and away from fixed flange to decrease speed. Increasing fan speed increases load on motor. Do not exceed maximum speed specified in Table 1.
5. Set movable flange at nearest keyway of pulley hub and tighten setscrew (see Table 1 for speed change for each full turn of pulley flange).

To align fan and motor pulleys:

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

To adjust belt tension (see Fig. 10):

1. Loosen fan motor mounting nuts.
2. Slide motor mounting plate away from fan scroll for proper belt tension ( $\frac{1}{2}$ -in. deflection with one finger) and tighten mounting nuts. Tension can be applied using  $\frac{1}{2}$ -in. drive

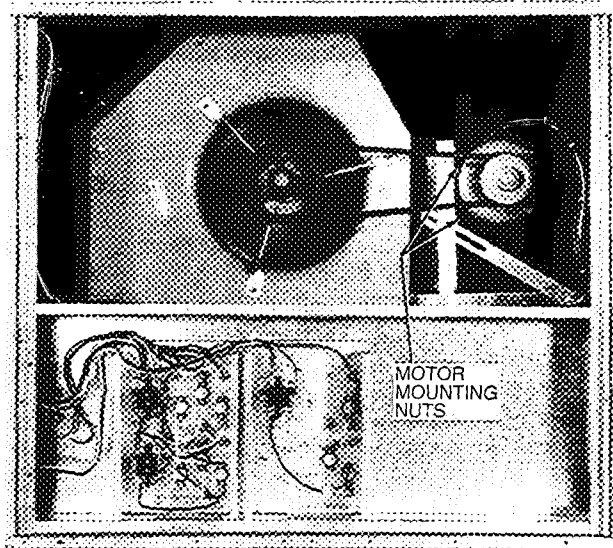


Fig. 10 — Belt-Drive Motor Mounting

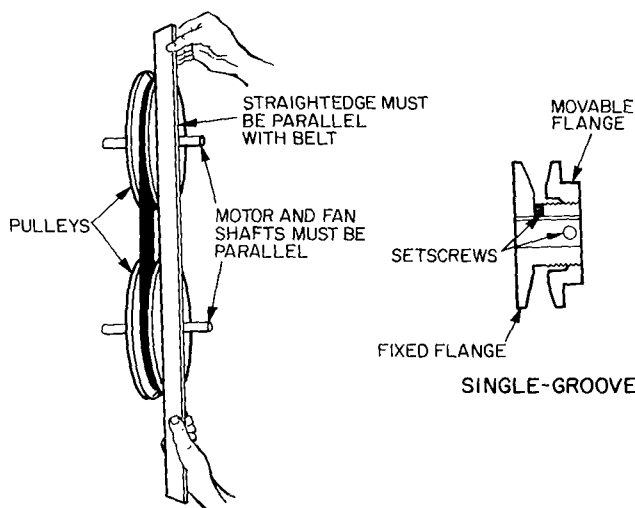


Fig. 11 — Evaporator-Fan Pulley Adjustment

ratchet engaged into  $\frac{1}{2}$ -in. square hole on motor mounting plate.

3. Adjust bolt and nut on mounting plate to secure motor in fixed position.

## START-UP

**IMPORTANT:** Energize crankcase heaters 24 hours prior to base unit start-up to remove entrapped refrigerant from oil. Heaters are energized as long as there is power to unit.

**Unit Preparation** — Make sure that unit has been installed in accordance with these installation instructions and applicable codes.

**Return-Air Filters** — Make sure correct filters are installed in unit (see Table 1). Do not operate unit without return-air filters.

**Compressor Mounting** — Compressors are internally spring mounted. Do not loosen or remove compressor holddown bolts.

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

**Refrigerant Service Ports** — Each refrigerant system has 3 Schrader-type service gage ports: one on the suction line, one on the liquid line and one on the compressor discharge line. Be sure that caps on the ports are tight.

**Cooling** — To start unit, turn on main power supply. Set system selector switch at COOL position and fan switch at AUTO. position. Adjust thermostat to a setting below room temperature. Compressor starts on closure of contactor.

Check unit charge. Refer to Refrigerant Charge section on page 17.

Reset thermostat at a position above room temperature. Compressor will shut off.

**TO SHUT OFF UNIT** — Set system selector switch at OFF position. Resetting thermostat at a position above room temperature shuts unit off temporarily until space temperature exceeds thermostat setting.

**Heating (If Accessory Heater is Installed)** — To start unit, turn on main power supply.

Set thermostat at HEAT position and a setting above room temperature, and set fan at AUTO. position.

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

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

**TO SHUT OFF UNIT** — Set system selector switch at OFF position. Resetting heating selector lever below room temperature will shut unit off temporarily until space temperature falls below thermostat setting

**Safety Relief** — A soft solder joint in the suction line at the low-pressure service port provides pressure relief under abnormal temperature and pressure conditions.

**Ventilation (Continuous Fan)** — Set fan and system selector switches at ON and OFF positions, respectively. Evaporator fan operates continuously to provide air circulation.

## Operating Sequence

**COOLING, UNITS WITHOUT ECONOMIZER** — When thermostat calls for cooling, terminals G and Y1 are energized. The indoor (evaporator) fan contactor (IFC), and compressor contactor no. 1 (C1) are energized and evaporator-fan motor, compressor no. 1 and condenser fan start. The condenser-fan motor runs continuously while unit is cooling. If the thermostat calls for a second stage of cooling by energizing Y2, compressor contactor no. 2 (C2) is energized and compressor no. 2 starts.

**HEATING, UNITS WITHOUT ECONOMIZER** (If Accessory Heater is Installed) — Upon a call for heating through terminal W1, IFC and heater contactor no. 1 (HC1) are energized. On unit equipped for 2 stages of heat, when additional heat is needed HC2 is energized through W2.

**COOLING, UNITS WITH ACCESSORY ECONOMIZER** — When the outdoor-air temperature is above the OAT (outdoor-air thermostat) setting and the room thermostat calls for cooling, compressor contactor no. 1 is energized to start compressor no. 1 and the condenser-fan motor. The evaporator-fan motor is energized and the economizer damper moves to the minimum position. Upon a further call for cooling, compressor contactor no. 2 will be energized, starting compressor no. 2. After the thermostat is satisfied, the damper moves to the fully closed position.

When the outdoor-air temperature is below the OAT setting and the thermostat calls for cooling, the economizer dampers move to the minimum position. If the discharge-air temperature is above 54 F, the damper continues to open until it reaches the fully open position. (The damper will open for 5 seconds and remain stationary for 30 seconds during this period.)

When the discharge-air temperature falls to between 54 F and 50 F, the damper will remain at an intermediate open position. If the discharge-air temperature falls below 50 F, the damper will modulate back to the minimum position. When the thermostat is satisfied, the damper will move to the fully closed position.

If the outdoor air alone cannot satisfy the cooling requirements of the conditioned space, economizer cooling is integrated with mechanical cooling, providing second-stage cooling. Compressor no. 1 and the condenser fan will be energized and the position of the economizer damper will be determined by the discharge-air temperature. Compressor no. 2 is locked out.

When the second stage of cooling is satisfied, the compressor and condenser-fan motor will be deenergized. The damper position will be determined by the discharge-air temperature.

When the first stage of cooling is satisfied, the damper will move to fully closed position.

**HEATING, UNITS WITH ACCESSORY ECONOMIZER** (If Accessory Heater is Installed) — When the room thermostat calls for heat through terminal W1, the evaporator-fan contactor and heater contactor no. 1 are energized. On units equipped for 2 stages of heat, when additional heat is needed, heater contactor no. 2 is energized through W2. The evaporator-fan motor is energized 45 seconds after heating begins, and the economizer damper moves to the minimum position. When the thermostat is satisfied, the damper moves to the fully closed position.

## SERVICE

### ▲ CAUTION

When servicing unit, shut off all electrical power to unit to avoid shock hazard or injury from rotating parts.

**Cleaning** — Inspect unit interior at the beginning of each heating and cooling season or as operating conditions require.

#### EVAPORATOR COIL

1. Turn unit power off. Remove evaporator coil access panel.
2. If accessory economizer is installed, remove economizer by disconnecting Molex plug and removing economizer mounting screws. Refer to Accessory Economizer Installation Instructions for more details.
3. Slide filters out of unit.
4. Clean coil using a commercial coil cleaner or dishwasher detergent in a pressurized spray canister. Wash both sides of coil and flush with clean water. For best results, backflush toward return-air section to remove foreign material.
5. Flush condensate pan after completion.
6. Reinstall economizer and filters.
7. Reconnect wiring.
8. Replace access panels.

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

**Two-Row Coils** — Clean coils as follows:

1. Turn off unit power.
2. Remove top panel screws on condenser end of unit.
3. Remove condenser coil corner post. See Fig. 12. To hold top panel open, place coil corner post between top panel and center post. See Fig. 13.
4. Remove device holding coil sections together at return end of condenser coil. Carefully separate the outer coil section 3 to 4 in. from the inner coil section. See Fig. 14.
5. Use a water hose or other suitable equipment to flush down between the 2 coil sections to remove dirt and debris. Clean the outer surfaces with a stiff brush in the normal manner.

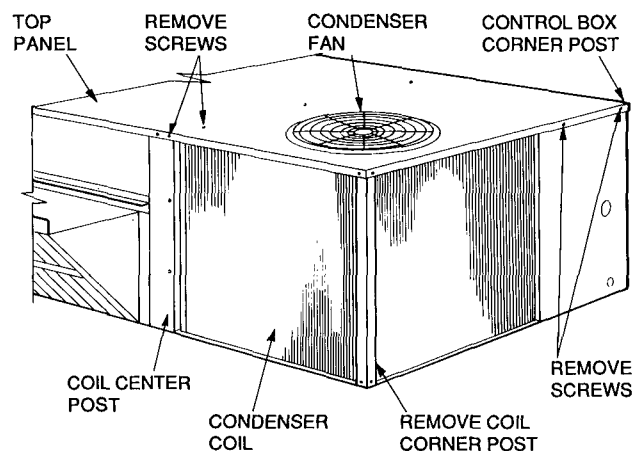
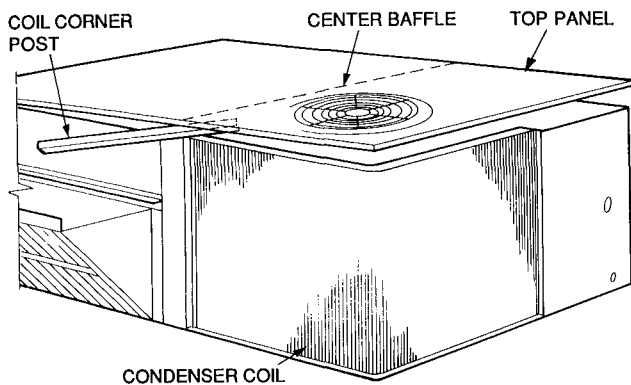
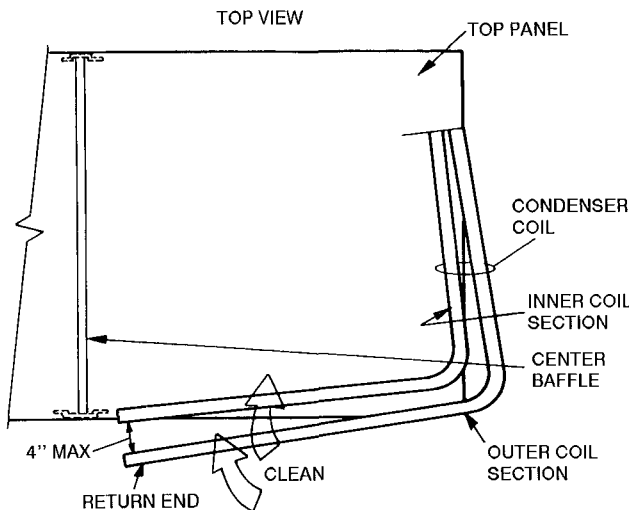


Fig. 12 — Cleaning Condenser Coil





**Fig. 13 — Propping Up Top Panel**



**Fig. 14 — Separating Coil Sections**

6. Reposition the outer coil section and remove the coil corner post between the top panel and center post. Secure the sections together. Install the coil corner post and coil center post, and replace all screws.

**CONDENSATE DRAIN** — Check and clean each year at start of cooling season. In winter, keep drain dry or protect against freeze-up.

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

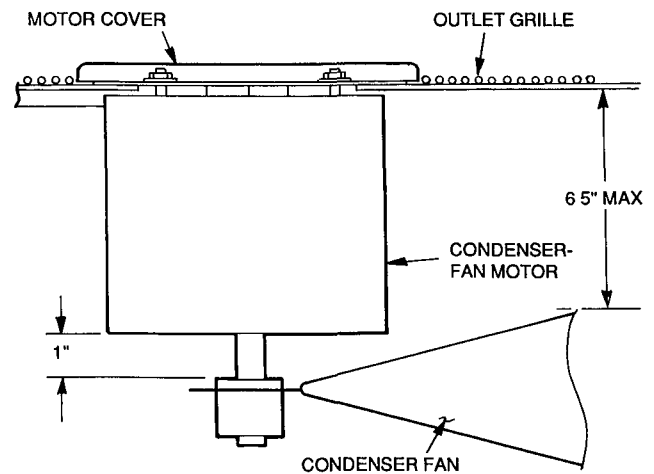
### Lubrication

**COMPRESSORS** — Each compressor is charged with correct amount of oil at the factory.

**FAN-MOTOR BEARINGS** — *Fan-motor bearings are of the permanently lubricated type. No further lubrication is required.* No lubrication of condenser- or evaporator-fan motors is required.

### Condenser-Fan Adjustment (Fig. 15)

1. Shut off unit power supply.
2. Remove condenser-fan assembly (grille, motor, motor cover and fan) and loosen fan hub setscrews.
3. Adjust fan height as shown in Fig. 15.
4. Tighten setscrews.
5. Replace condenser-fan assembly.



**Fig. 15 — Condenser-Fan Adjustment**

**Refrigerant Charge** — Amount of refrigerant charge is listed on unit nameplate (also refer to Table 1). Refer to Carrier Standard Service Techniques Manual, Chapter 1, Refrigerants section.

Unit panels must be in place when unit is operating during charging procedure.

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

**LOW CHARGE COOLING** — Use Cooling Charging Charts, Fig. 16-19. Vary refrigerant until the conditions of the appropriate chart are met. Note the charging charts are different from type normally used. Charts are based on charging the units to the correct superheat for the various operating conditions. Accurate pressure gage and temperature sensing device are required. Connect the pressure gage to the service port on the suction line. Mount the temperature sensing device on the suction line and insulate it so that outdoor ambient temperature does not affect the reading. Indoor-air cfm must be within the normal operating range of the unit.

**TO USE COOLING CHARGING CHARTS** — Take the outdoor ambient temperature and read the suction pressure gage. Refer to appropriate chart to determine what suction temperature should be. If suction temperature is high, add refrigerant. If suction temperature is low, carefully blow some of the charge. Recheck the suction pressure as charge is adjusted.

Example: (Fig. 16)

Outdoor Temperature. . . . .	85 F
Suction Pressure. . . . .	70 psig
Suction Temperature should be. . . . .	42 F

(Suction Temperature may vary  $\pm 5^\circ$  F.)

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

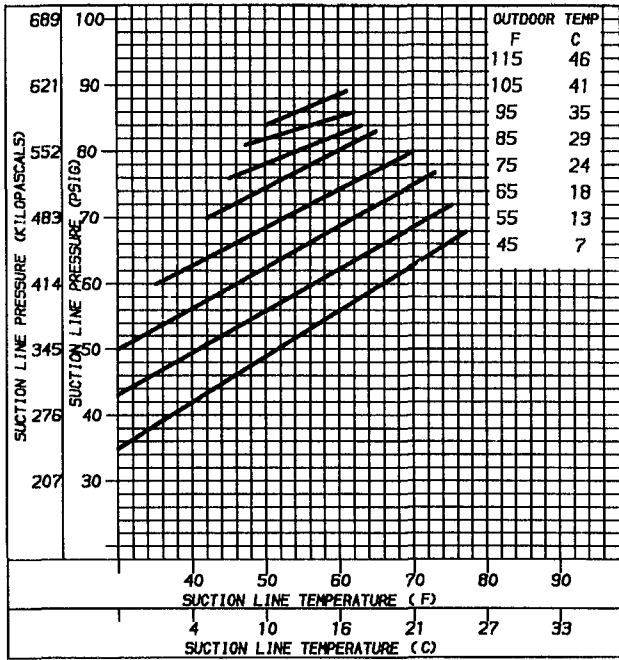


Fig. 16 – Cooling Charging Chart, 50LJ008

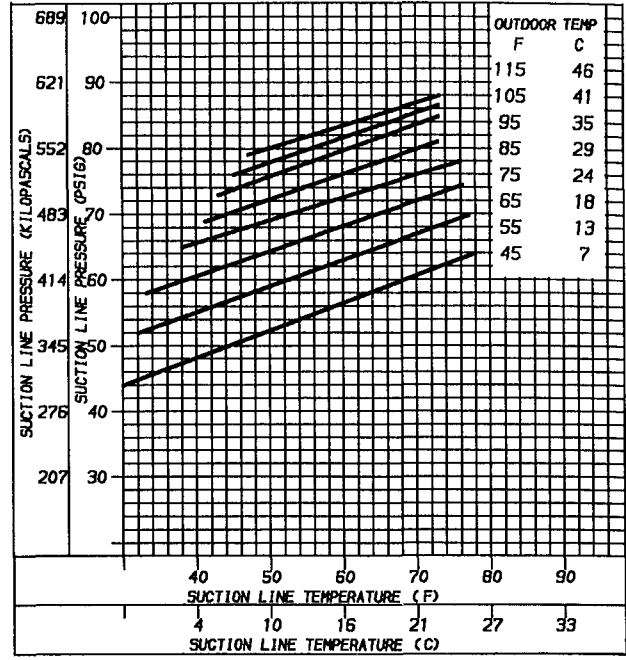


Fig. 18 – Cooling Charging Chart, 50LJ012

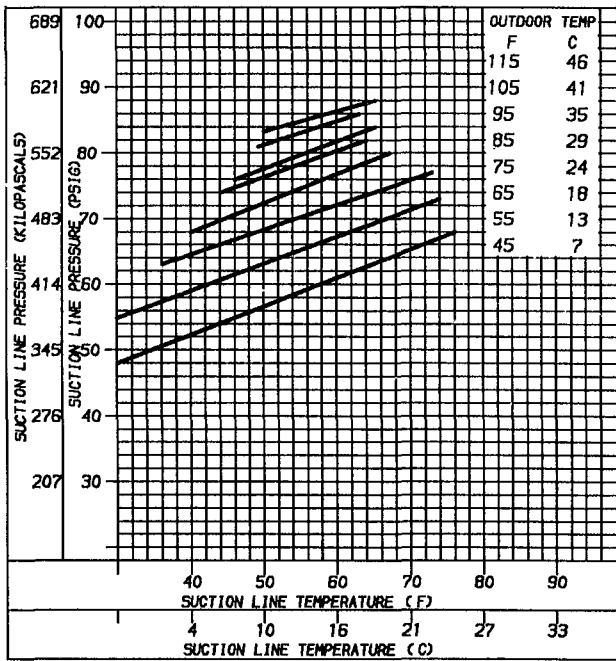


Fig. 17 – Cooling Charging Chart, 50LJ009

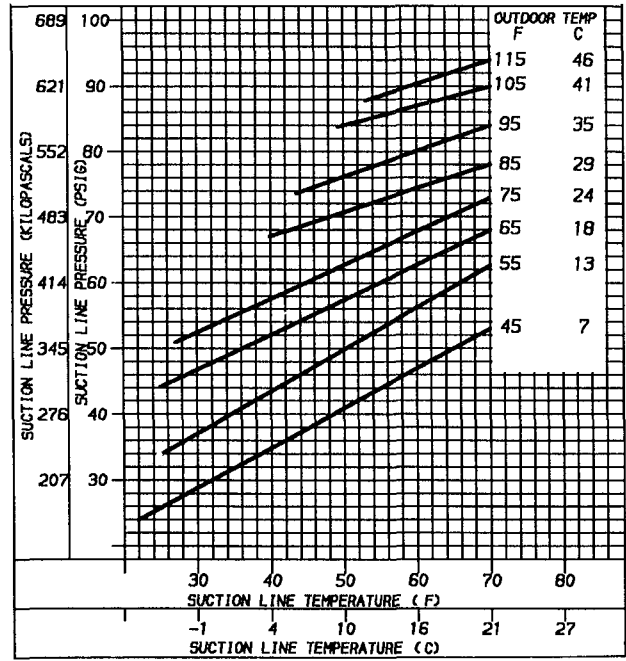


Fig. 19 – Cooling Charging Chart, 50LJ014

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