

bryant

Day & Night



# installation, start-up and service instructions

## PACKAGED AIR CONDITIONERS

564A  
Sizes 024-060  
764A  
Sizes 024-060

Cancels: New

II 564A-24-1  
12/15/95

### IMPORTANT — READ BEFORE INSTALLING

1. Read and become familiar with these installation instructions before installing this unit (Fig. 1). Retain these instructions for future maintenance and repair.
2. Be sure the installation conforms to all applicable local and national codes. Wear safety glasses and work gloves. Use quenching cloth for unbrazing operations. Have fire extinguisher available for all brazing operations.

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### SAFETY CONSIDERATIONS

**⚠ WARNING:** Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electric shock, or other occurrences which may injure you or damage your property. Consult a qualified installer or service agency for information or assistance. The qualified installer or agency must use only factory-authorized kits or accessories when modifying this product.

Recognize safety information. This is the safety-alert symbol (⚠). When you see this symbol on the unit 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

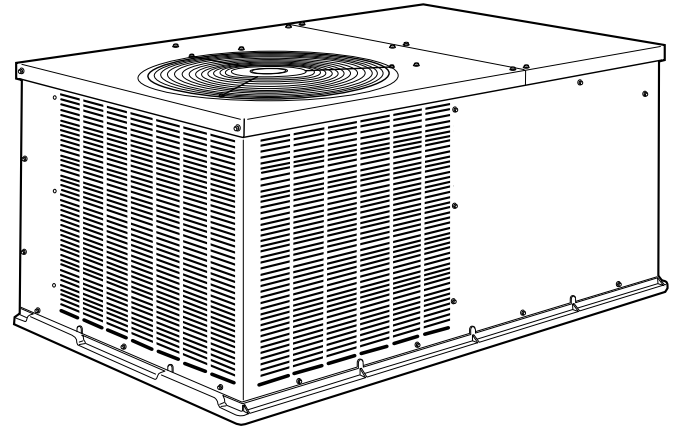


Fig. 1 — Unit 564A and 764A (Size 036 Shown)

symbol ⚠. Danger identifies the most serious hazards which will result in severe personal injury or death. Warning indicates a condition that could result in personal injury. Caution is used to identify unsafe practices which would result in minor personal injury or product and property damage.

**⚠ WARNING:** Before performing service or maintenance operations on system, turn off main power switches to unit. Turn off accessory heater power switch if applicable. Electric shock can cause personal injury.

1. The power supply (volts, phase, and hertz) must correspond to that specified on unit rating plate.
2. The electrical supply provided by the utility must be sufficient to handle load imposed by this unit.
3. Refer to Installation, Locate the Unit section (page 5) and Fig. 2-4 for locations of electrical inlets, condensate drain, duct connections, and required clearances before setting unit in place.
4. This installation must conform with local building codes and with NEC (National Electrical Code) or NFPA (National Fire Protection Association) 54 TIA-54-84-1. Refer to provincial and local plumbing or wastewater codes and other applicable local codes.
5. Approved for outdoor installation on wood flooring or on class A, B, or C roof covering materials.

### INSTALLATION

All units can be connected into existing duct systems *that are sized properly and designed to handle the airflow shown in the Air Delivery table.*

**NOTE:** When installing any accessory item, see the manufacturer's installation instructions packaged with the accessory. Use factory-authorized kits or accessories when modifying this unit.

UNIT 564A/764A	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CENTER OF GRAVITY mm [in.]		
		Lb	Kg	X	Y	Z
024	208/230-1-60	222	101	355.6 [14.00]	508.0 [20.00]	241.3 [9.50]
030	208/230-1-60	236	107	355.6 [14.00]	508.0 [20.00]	241.3 [9.50]
036	208/230-1-60, 208/230-3-60	250	114	355.6 [14.00]	508.0 [20.00]	241.3 [9.50]

**LEGEND**

NEC — National Electrical Code

**REQUIRED CLEARANCES TO COMBUSTIBLE MATERIAL, mm [in.]**

Top of Unit	0
Duct Side of Unit	0
Side Opposite Ducts	0
Bottom of Unit	0

**NEC REQUIRED CLEARANCES, mm [in.]**

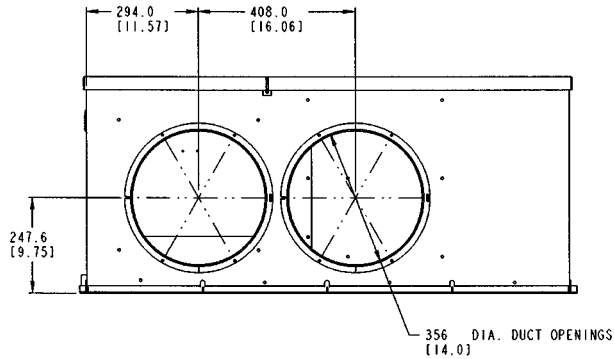
Between Units, Power Entry Side	1066.8 [42.00]
Unit and Ungrounded Surfaces, Power Entry Side	914.0 [36.00]
Unit and Block or Concrete Walls and Other Grounded Surfaces, Power Entry Side	1066.8 [42.00]

**REQUIRED CLEARANCES FOR SERVICING, mm [in.]**

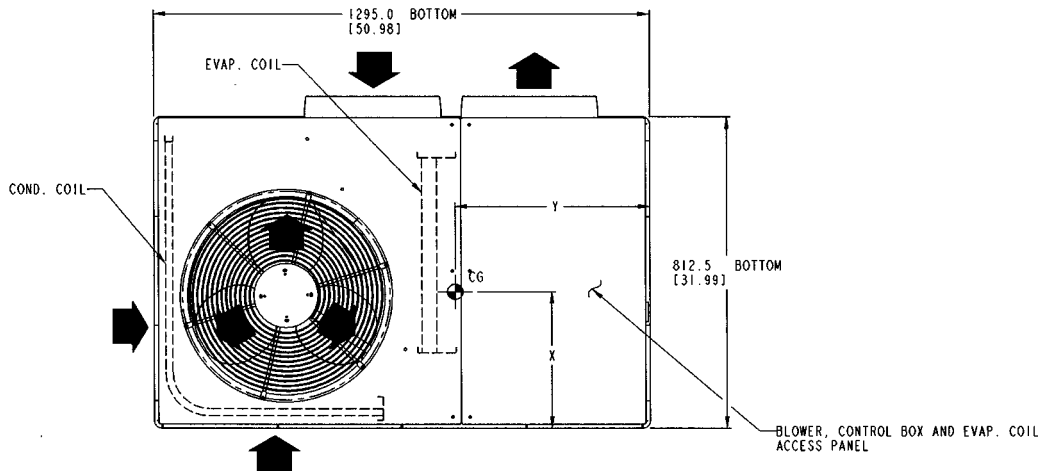
Evaporator Coil Access Side	762.0 [30.00]
Power Entry Side (Except for NEC Requirements)	762.0 [30.00]
Unit Top	914.0 [36.00]
Side Opposite Ducts	762.0 [30.00]

**NOTES:**

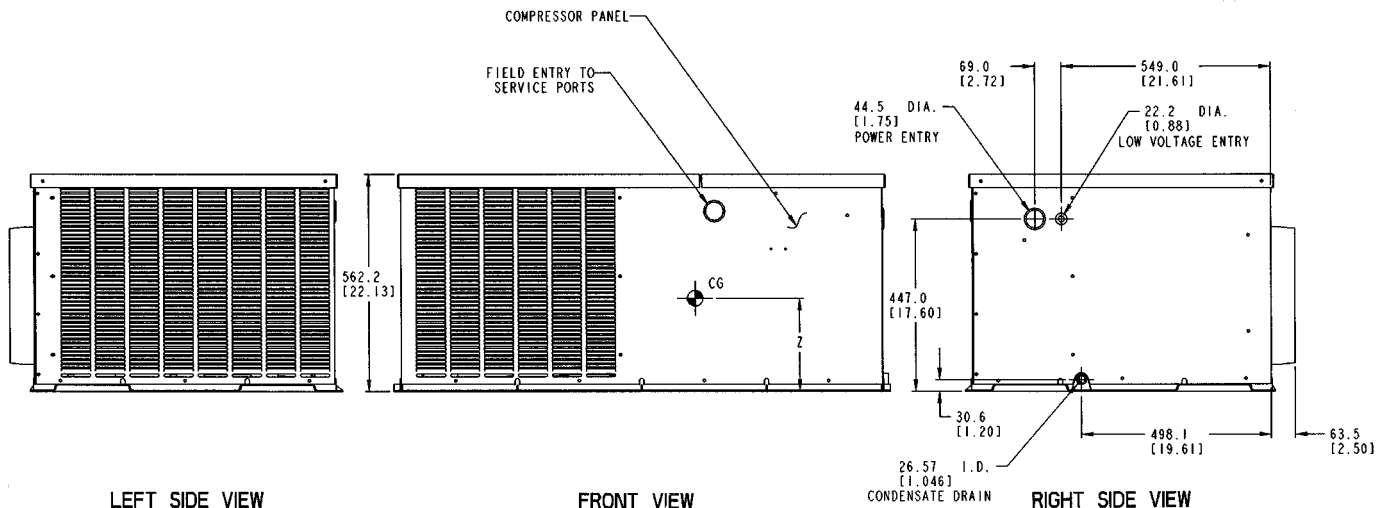
- Clearances must be maintained to prevent recirculation of air from outdoor-fan discharge. With the exception of the condenser coil (914 mm [36 in.]), a removable fence or barricade requires no clearance.
- Dimensions are in millimeters. Dimensions in [ ] are in inches.



**REAR VIEW**



**BLOWER, CONTROL BOX AND EVAP. COIL ACCESS PANEL**



**LEFT SIDE VIEW**

**FRONT VIEW**

**RIGHT SIDE VIEW**

**Fig. 2 — Base unit Dimensions — 564A/764A024-036**

UNIT 564A/764A	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CENTER OF GRAVITY mm [in.]		
		Lb	Kg	X	Y	Z
042	208/230-1-60, 208/230-3-60	297	135	355.6 [14.00]	508.0 [20.00]	304.8 [12.00]
048	208/230-1-60, 208/230-3-60	310	114	355.6 [14.00]	508.0 [20.00]	304.8 [12.00]

**LEGEND**

NEC — National Electrical Code

**REQUIRED CLEARANCES TO COMBUSTIBLE MATERIAL, mm [in.]**

Top of Unit	0
Duct Side of Unit	0
Side Opposite Ducts	0
Bottom of Unit	0

**NEC REQUIRED CLEARANCES, mm [in.]**

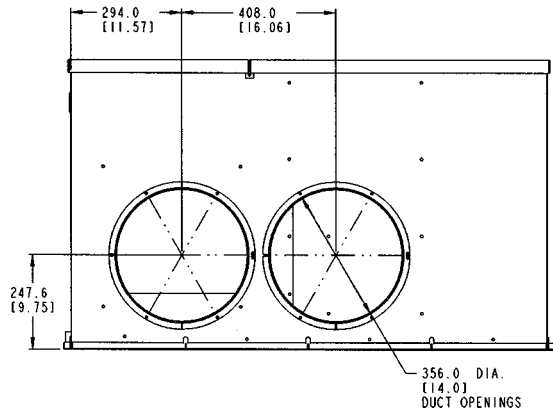
Between Units, Power Entry Side	1066.8 [42.00]
Unit and Ungrounded Surfaces, Power Entry Side	914.0 [36.00]
Unit and Block or Concrete Walls and Other Grounded Surfaces, Power Entry Side	1066.8 [42.00]

**REQUIRED CLEARANCES FOR SERVICING, mm [in.]**

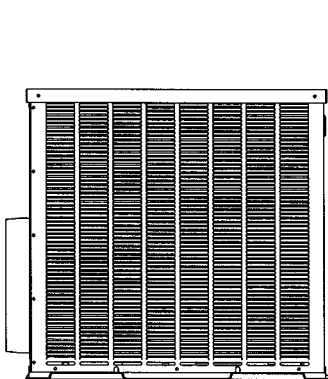
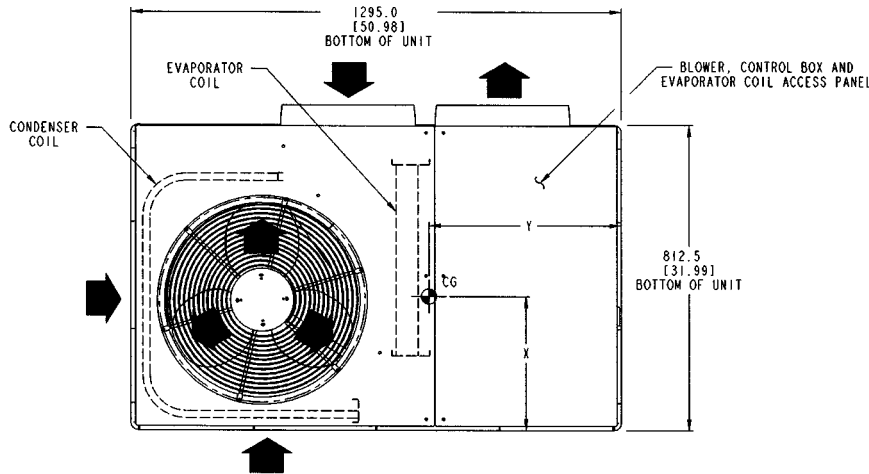
Evaporator Coil Access Side	762.0 [30.00]
Power Entry Side (Except for NEC Requirements)	762.0 [30.00]
Unit Top	914.0 [36.00]
Side Opposite Ducts	762.0 [30.00]

**NOTES:**

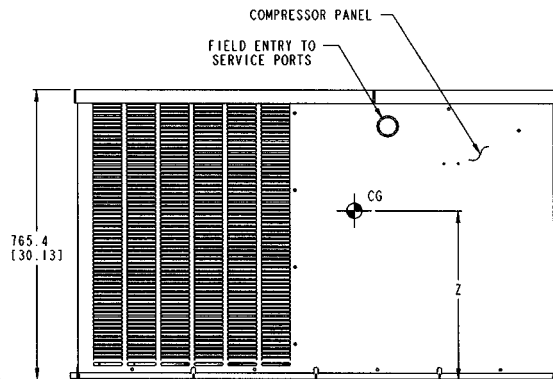
- Clearances must be maintained to prevent recirculation of air from outdoor-fan discharge. With the exception of the condenser coil (914 mm [36 in.]), a removable fence or barricade requires no clearance.
- Dimensions are in millimeters. Dimensions in [ ] are in inches.



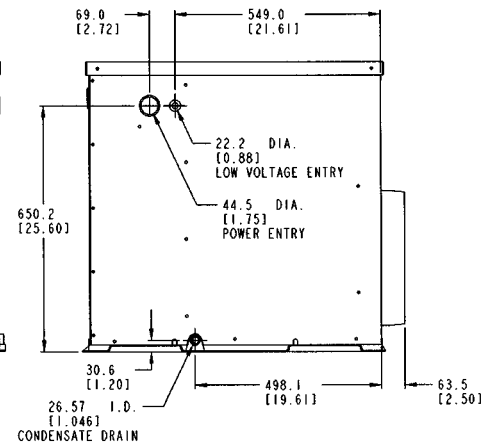
REAR VIEW



LEFT SIDE VIEW



FRONT VIEW



RIGHT SIDE VIEW

Fig. 3 — Base Unit Dimensions — 564A/764A042,048

UNIT 564A/764A	ELECTRICAL CHARACTERISTICS	UNIT WEIGHT		CENTER OF GRAVITY mm [in.]		
		Lb	Kg	X	Y	Z
060	230-1-60, 208/230-3-60, 460-3-60	350	159	355.6 [14.00]	508.0 [20.00]	355.6 [14.00]

**LEGEND**

NEC — National Electrical Code

**REQUIRED CLEARANCES TO COMBUSTIBLE MATERIAL, mm [in.]**

Top of Unit	0
Duct Side of Unit	0
Side Opposite Ducts	0
Bottom of Unit	0

**NEC REQUIRED CLEARANCES, mm [in.]**

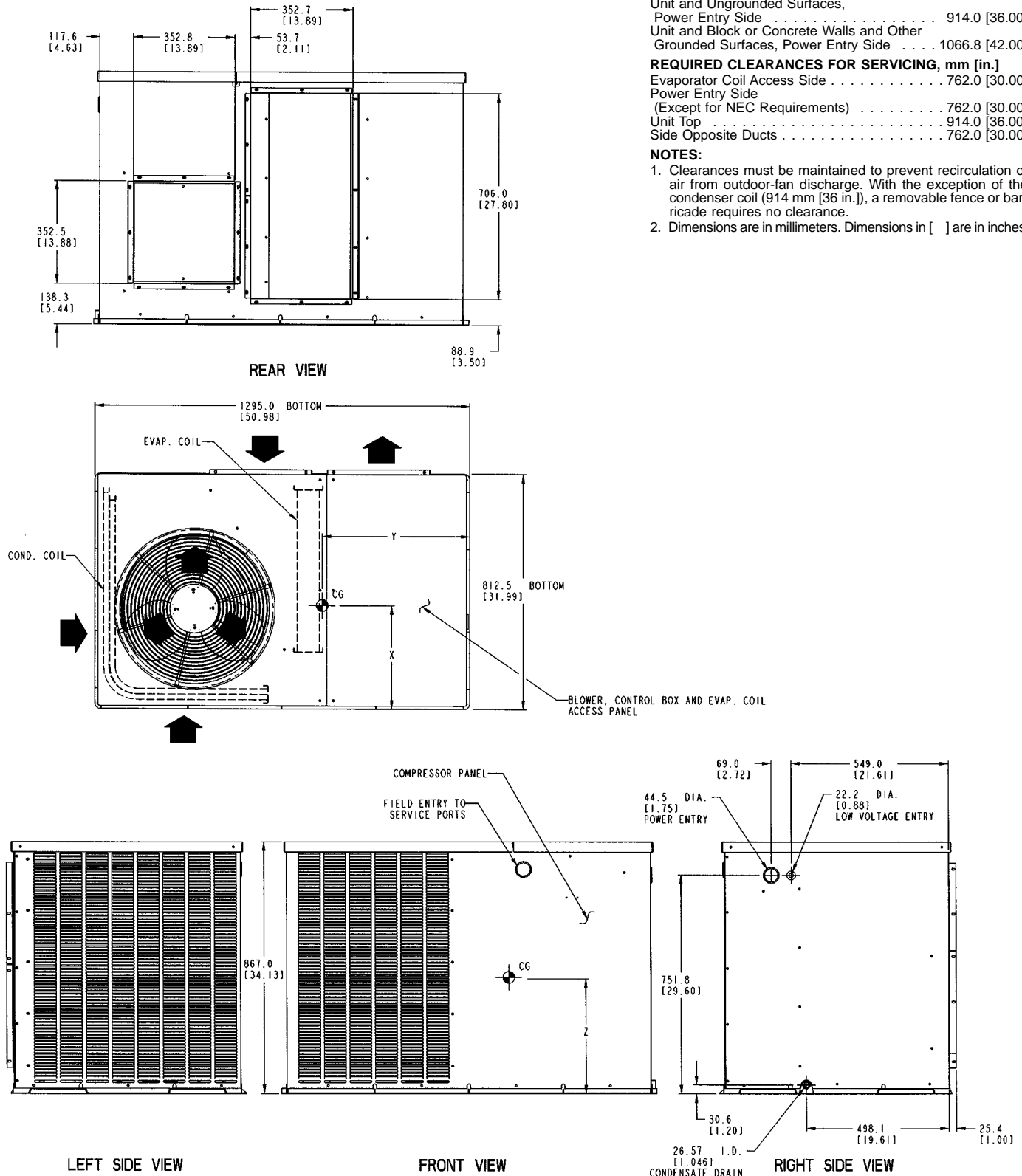
Between Units, Power Entry Side	1066.8 [42.00]
Unit and Ungrounded Surfaces, Power Entry Side	914.0 [36.00]
Unit and Block or Concrete Walls and Other Grounded Surfaces, Power Entry Side	1066.8 [42.00]

**REQUIRED CLEARANCES FOR SERVICING, mm [in.]**

Evaporator Coil Access Side	762.0 [30.00]
Power Entry Side (Except for NEC Requirements)	762.0 [30.00]
Unit Top	914.0 [36.00]
Side Opposite Ducts	762.0 [30.00]

**NOTES:**

- Clearances must be maintained to prevent recirculation of air from outdoor-fan discharge. With the exception of the condenser coil (914 mm [36 in.]), a removable fence or barricade requires no clearance.
- Dimensions are in millimeters. Dimensions in [ ] are in inches.



**Fig. 4 — Base Unit Dimensions — 564A/764A060**

## I. LOCATE THE UNIT

### A. Clearance

Provide sufficient space for condenser airflow clearance, wiring, and servicing unit. See Fig. 2-4. Locate unit where supply and return-air ducts can be conveniently brought out to unit duct connections.

**Unit may be placed with duct side as close to building as top removal, duct connections, and power connections permit.** Position unit so water or ice from roof does not drop directly on top of unit or in front of coil. Make provisions for condensate drainage. Maintain a 4 ft clearance above unit for vertical air discharge.

Roof installation method for units depends on building construction and special requirements of local building codes.

Be sure that roof can support unit weight.

Maintain clearance around and above unit to provide proper airflow and service access. See Fig. 2-4.

**⚠ CAUTION:** Do not restrict condenser airflow. An air restriction at either the condenser air inlet (the entire surface of the condenser coil) or the fan discharge can be detrimental to compressor life.

The condenser fan discharges through the top of the unit. Ensure that the fan discharge does not recirculate to the condenser coil. Do not locate the unit either in a corner or under a complete overhead obstruction, and ensure the following clearances are provided:

On roof overhangs, provide a minimum clearance of 48 in. above the top of the unit for partial overhangs (such as a normal house roof overhang). If there is a horizontal extension on the partial overhang, extension must not exceed 48 inches. For extended overhangs, provide a minimum clearance of 36 in. between unit and overhang.

Provide a minimum clearance of 42 in. for the control box side next to a block wall or any other grounded surface. Provide a minimum clearance of 48 in. between the control box side of the unit and any electrically live parts.

Do not install unit on carpeting, tile, or other combustible material. Unit may be installed on wood flooring, or on Class A, B, or C roof covering materials.

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

Units should be at least 4 in. above the highest expected water, flood, and runoff levels. Do not use the unit if it has been under water.

### B. Ground-Level Installation

Mount unit on a solid, level pad. See Fig. 5 for unit leveling tolerances. Construct pad as shown in Fig. 6. Side of unit with condensate trap should be flush with pad for proper trap positioning (see Fig. 2-4). Extend a 24-in. gravel apron around pad for condensate drainage.

## II. RIG AND PLACE UNIT

Inspect unit for transportation damage. File any claim with transportation agency. Keep upright and do not drop. Level by using unit frame as a reference. See Table 1 for additional information. Weight is shown in Fig. 2-4. Unit can be moved with handholds provided in the unit basepan.

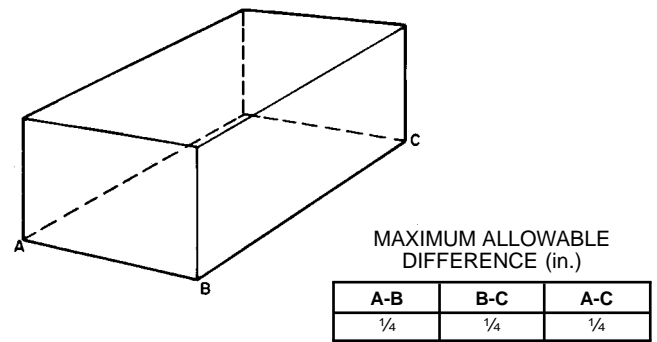
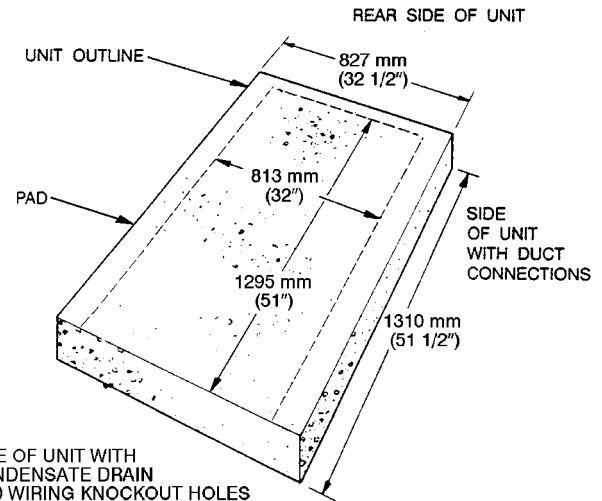


Fig. 5 — Unit Leveling Tolerances



#### NOTES:

1. Extend a 24-in. gravel apron around pad.
2. Provide a 3-ft service clearance at front and rear sides of unit.

Fig. 6 — Pad Dimensions

## III. UNIT DUCT AND FIELD CONNECTIONS

### A. Condensate Disposal

**NOTE:** Ensure that condensate-water disposal methods comply with local codes, restrictions, and practices.

Units remove condensate water through a 3/4-in. ID hole located on the control box side of the unit.

Condensate water can be drained directly onto a gravel apron in ground-level installations. Install a field-supplied condensate trap at end of condensate connection to ensure proper drainage. See Fig. 7. Make sure that the outlet of the trap is at least 1 in. lower than the drain pan condensate connection to prevent the pan from overflowing. See Fig. 8. Prime the trap with water. When using a gravel apron, make sure it slopes away from the unit.

Table 1 — Physical Data

UNIT 564A AND 764A	024	030	036	042	048	060	
OPERATING WEIGHT (lb)	222	236	250	297	310	350	
COMPRESSOR TYPE	Reciprocating						
REFRIGERANT Charge (lb)	R-22						
REFRIGERANT METERING DEVICE	Acutrol™ System						
CONDENSER Rows...Fins/in. Total Face Area (sq ft)	1...17 6.7	1...17 7.9	Copper Tubes, Aluminum Plate Fins 2...17 6.2		1...17 11.1	2...17 8.6	
CONDENSER FAN CFM Nominal Rpm Motor Hp Diameter (in.)	Propeller						
	1600 825 1/8 20	2000 1100 1/4 20	2000 1100 1/4 20	2600 1100 1/4 20	2600 1100 1/4 20	2800 1100 1/4 20	
EVAPORATOR COIL Rows...Fins/in. Total Face Area (sq ft)	2...15 2.8	3...15 2.8	Copper Tubes, Aluminum Plate Fins 3...15 3.1				3...15 4.3
EVAPORATOR FAN MOTOR Blower Motor Size (in.) Nominal Cfm Rpm Range Number of Speeds Factory Speed Setting Motor Hp	Direct Drive						
	10 x 8 800 550-1000 3 Low 1/4	10 x 8 1000 550-1000 3 Med 1/4	10 x 8 1200 800-1050 3 Low 1/2	10 x 9 1400 800-1050 3 Med 1/2	10 x 9 1600 1000-1100 2 Low 3/4	10 x 10 2000 950-1100 3† Low 1	
CONNECTING DUCT SIZES Supply Air (in.) Return Air (in.)	Round 14 14					Square 13.9 x 13.9 13.9 x 27.8	
FIELD-SUPPLIED RETURN AIR FILTER* Throwaway (in.)	24 x 24	24 x 24	24 x 24	24 x 24	24 x 30	24 x 30	

\*Required filter sizes shown are based on the ARI (Air Conditioning and Refrigeration Institute) rated airflow at a velocity of 300 ft/min for throwaway type or 450 ft/min for high capacity type. Recommended filters are 1-in. thick.

†460-v motors are 2-speed only.

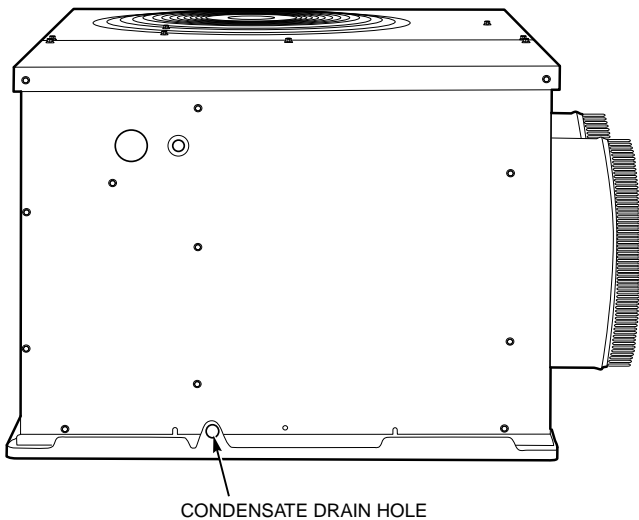


Fig. 7 — Condensate Connection Details

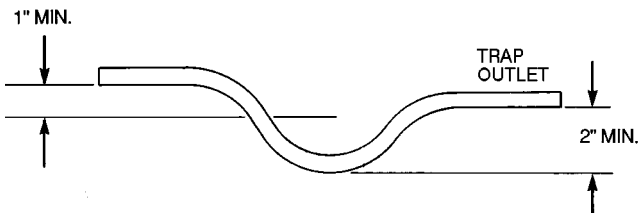


Fig. 8 — Condensate Trap

If the installation requires draining the condensate water away from the unit, install a field-supplied 2-in. trap using a 3/4-in. FPT connection to ensure proper drainage. See Fig. 8. Make sure that the outlet of the trap is at least one in. lower than the unit drain pan condensate connection to prevent the pan from overflowing. Connect a drain tube using a minimum of 3/4-in. PVC, 3/4-in. CPVC, or 3/4-in. copper pipe (all field-supplied). *Do not undersize the tube.* Pitch the drain tube downward at a slope of at least 1 inch in every 10 ft of horizontal run. Be sure to check the drain tube for leaks. Prime trap at the beginning of cooling season start-up. Allowable glues for condensate trap connection are: Standard ABS, CPVC, or PVC cement.

**B. Field-Duct Connections**

**NOTE:** The design and installation of the duct system must be in accordance with the standards of NFPA for the installation of nonresidence-type air conditioning and ventilating systems, NFPA 90A or residence-type, NFPA 90B, and/or local codes and ordinances.

Units have duct flanges on the supply- and return-air openings on the side of the unit. See Fig. 2-4 for connection sizes and locations.

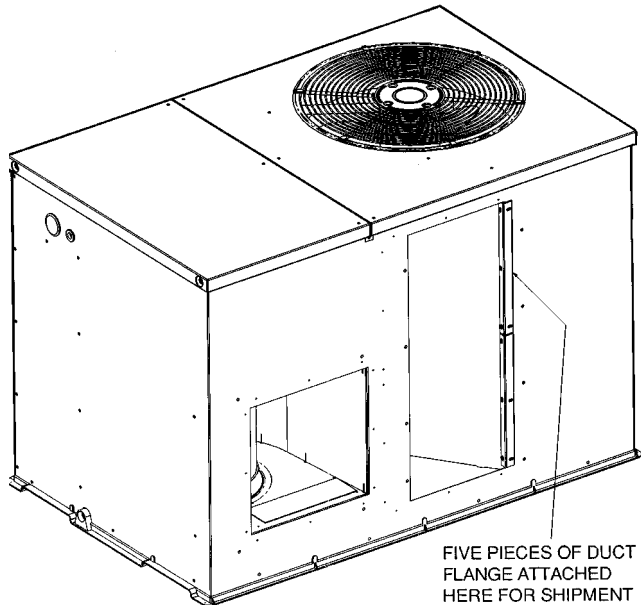
Install Flanges for Ductwork Connections (564A/764A060 only)

The size 060 units are shipped with flanges which must be field-installed on the unit.

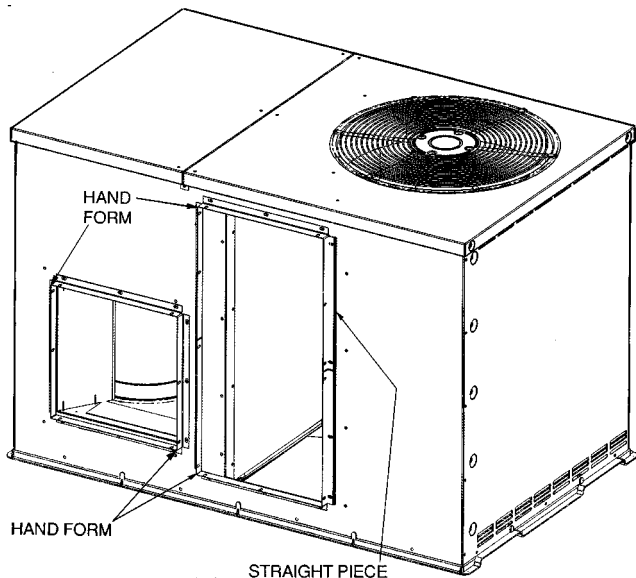
To install unit flanges:

1. Five pieces of flange are shipped on the return air opening of the unit. Remove the flanges from the shipping position. See Fig. 9. Screws are field-supplied.
2. One piece of flange is used as it is shipped (straight). Bend the other 4 pieces at right angles.

3. Install the straight flange on the right side of the return air opening in holes provided. See Fig. 10. Flanges should stick out from unit to allow for connection of ductwork.
4. Install 2 hand-formed flanges onto return air opening in holes provided to form rectangle around the return air opening.
5. Install remaining 2 hand-formed flanges around discharge air opening in holes provided.
6. Ductwork can now be attached to flanges.



**Fig. 9 — Shipping Location of Duct Flanges (Size 060 Only)**



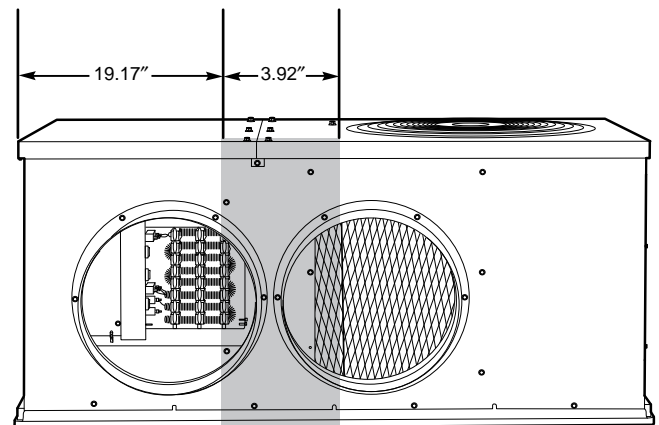
**Fig. 10 — Installation of Duct Flanges (Size 060 Only)**

Adhere to the following criteria when selecting, sizing, and installing the duct system:

1. Select and size ductwork, supply-air registers, and return-air grilles according to ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) recommendations.

**⚠ CAUTION:** When drilling the duct system fastening holes into the side of the unit for duct flanges, do not drill deeper than  $\frac{3}{4}$  in., and use extreme care not to puncture the coil or coil tubes. See Fig. 11.

2. Use flexible transition between rigid ductwork and unit to prevent transmission of vibration. The transition may be screwed or bolted to duct flanges. Use suitable gaskets to ensure weathertight and airtight seal.

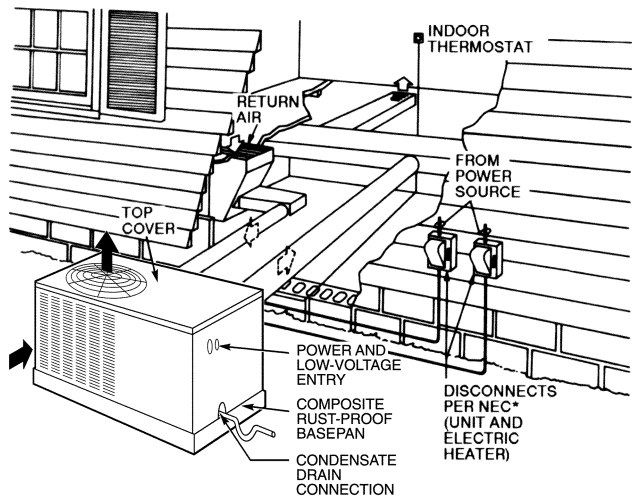


**Fig. 11 — Area Not To Be Drilled More Than  $\frac{3}{4}$ -in.**

**IMPORTANT:** When electric heater is installed, use fire-proof canvas (or similar heat resistant material) connector between ductwork and unit discharge connection. If flexible duct is used, insert a sheet metal sleeve inside duct. Heat-resistant duct connector (or sheet metal sleeve) should extend 24 in. from electric heater element.

3. Size ductwork for cooling air quantity (cfm).
4. Adequately insulate and weatherproof all ductwork located outdoors. Insulate ducts passing through unconditioned space, and use vapor barrier in accordance with latest issue of SMACNA (Sheet Metal and Air Conditioning Contractors National Association) and ACCA (Air Conditioning Contractors of America) minimum installation standards for heating and air conditioning systems. Secure all ducts to building structure.
5. Flash, weatherproof, and vibration-isolate all openings in building structure in accordance with local codes and good building practices.
6. Air filters should be installed in return-air ductwork. Return-air filter grille or filter tracks in duct may be used.

Figure 12 shows a typical duct system with unit installed.



LEGEND

- NEC — National Electrical Code
- Power Wiring
- Control Wiring
- Outdoor Airflow
- Indoor Airflow

\*Required for electric heater when single-point connection is not used.

Fig. 12 — Typical Installation

C. Converting Horizontal Discharge Units to Downflow (Vertical) Discharge

**⚠ WARNING:** Before performing service or maintenance operations on system, turn off main power to unit. Turn off accessory heater power switch if applicable. Electrical shock can cause personal injury.

Units are shipped in a horizontal configuration. To convert a horizontal unit for downflow (vertical) discharge, the accessory vertical discharge installation kit must be purchased. Refer to the accessory instructions for the installation procedure.

D. Electrical Connections

**⚠ WARNING:** The 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 an electrical wire connected to the unit ground in the control compartment, or conduit approved for electrical ground when installed in accordance with NEC, ANSI (American National Standards Institute)/NFPA (latest edition) (in Canada, Canadian Electrical Code CSA [Canadian Standards Association] C22.1) and local electrical codes. Failure to adhere to this warning could result in personal injury or death.

**⚠ CAUTION:** Failure to follow these precautions could result in damage to the unit being installed:

1. Make all electrical connections in accordance with NEC ANSI/NFPA (latest edition) and local electrical codes governing such wiring. In Canada, all electrical connections must be in accordance with CSA Standard C22.1 Canadian Electrical Code Part 1 and applicable local codes. Refer to unit wiring diagram.
2. Use only *copper* conductor for connections between field-supplied electrical disconnect switch and unit. **DO NOT USE ALUMINUM WIRE.**
3. Be sure that high-voltage power to unit is within operating voltage range indicated on unit rating plate. On 3-phase units, ensure that phases are balanced within 2%. Consult local power company for correction of improper voltage and/or phase imbalance.
4. Insulate low-voltage wires for highest voltage contained within conduit when low-voltage control wires are run in same conduit as high-voltage wires.
5. Do not damage internal components when drilling through any panel to mount electrical hardware, conduit, etc.

High-Voltage Connections

The unit must have a separate electrical service with a field-supplied, waterproof disconnect switch mounted at, or within sight from the unit. Refer to the unit rating plate for maximum fuse/circuit breaker size and minimum circuit amps (ampacity) for wire sizing. See Table 2 for electrical data.

The field-supplied disconnect may be mounted on the unit over the high-voltage inlet hole. See Fig. 2-4.

**⚠ CAUTION:** Operation of unit on improper line voltage constitutes abuse and may cause unit damage that could affect warranty.

Routing Power Leads Into Unit

Use only copper wire between disconnect and unit. The high-voltage leads should be in a conduit until they enter the unit; conduit termination at the unit must be watertight. Run the high-voltage leads through the hole on the side of the unit (see Fig. 13 for location). When the leads are inside the unit, run leads to the control box (Fig. 14). For single-phase units, connect leads to the black and yellow wires; for 3-phase units, connect the leads to the black, yellow, and blue wires (see Fig. 15).

Connecting Ground Lead to Unit Ground

Refer to Fig. 14 and 15. Connect the ground lead to the chassis using the unit ground screw in the control box.

Routing Control Power Wires

Form a drip-loop with the thermostat leads before routing them into the unit. Route the thermostat leads through grommeted hole provided in unit (see Fig. 13) into unit control box. Connect thermostat leads to unit control power leads as shown in Fig. 16.



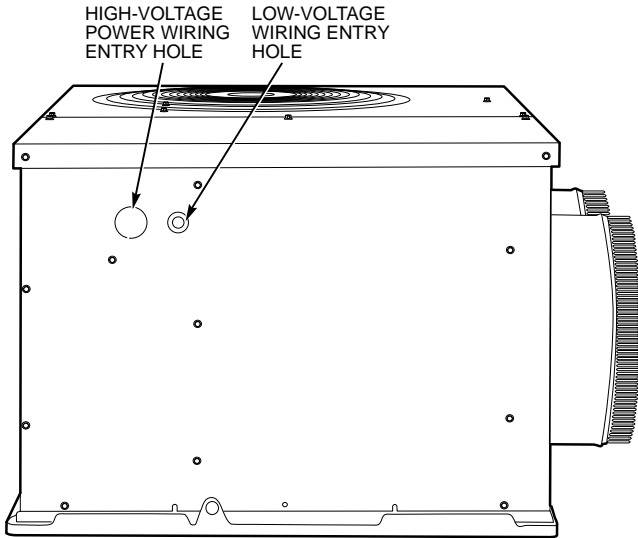
Route thermostat wires through grommet providing a drip loop at the panel. Connect low-voltage leads to the thermostat as shown in Fig. 16.

The unit transformer supplies 24-v power for complete system including accessory electrical heater. Transformer is factory wired for 230-v operation. If supply voltage is 208 v,

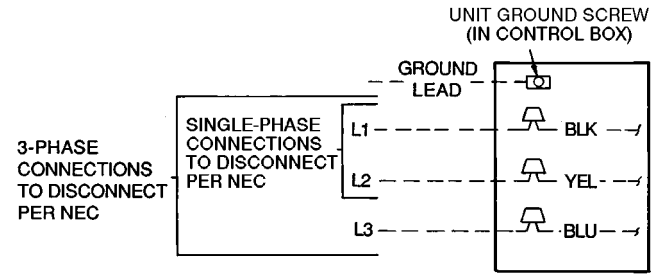
rewire transformer primary as described in Special Procedures for 208-V Operation section on page 11.


Accessory Electric Heat Wiring

Refer to accessory electric heat installation instructions for information on installing accessory electric heat. Accessory electric heat wiring is shown in Fig. 17.

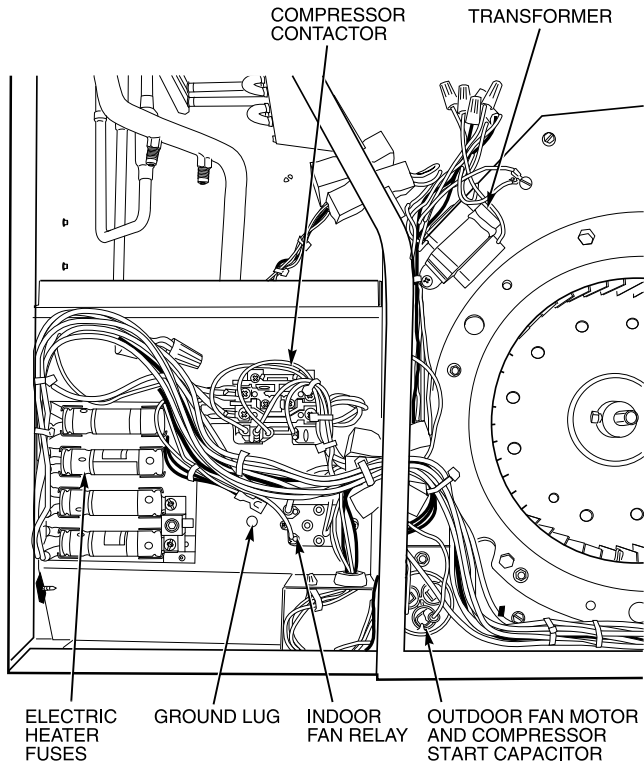


**Fig. 13 — Unit Electrical Connection Entry Holes**

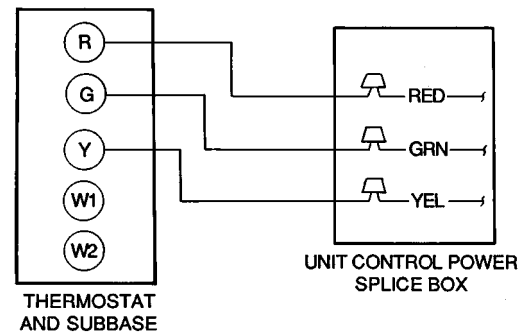


**LEGEND**  
**NEC** — National Electrical Code  
 - - - - Field Control Wiring  
 Field Splice

**Fig. 15 — Line Power Connections**



**Fig. 14 — Control Box Wiring**



**Fig. 16 — Control Connections**

Table 2 — Electrical Data

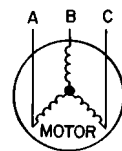
UNIT 564A/764A	NOMINAL VOLTAGE (V-Ph-Hz)	VOLTAGE RANGE		COMPRESSOR		OFM	IFM	ELECTRIC HEAT		POWER SUPPLY		DISCONNECT SIZE	
		Min	Max	RLA	LRA	FLA	FLA	Nominal kW*	FLA	MCA	MOCP	FLA	LRA
024	208/230-1-60	187	254	10.9	61.0	0.9	2.4	—/—	—/—	16.9/ 16.9	20/ 20	16/ 16	68
								3.8/ 5.0	18.1/20.8	25.6/ 29.0	30/ 30	24/ 27	
030	208/230-1-60	187	254	15.2	69.4	1.5	2.4	—/—	—/—	22.9/ 22.9	30/ 30	22/ 22	79
								3.8/ 5.0	18.1/20.8	25.6/ 29.0	30/ 30	24/ 27	
036	208/230-1-60	187	254	15.9	86.0	1.5	2.8	—/—	—/—	24.2/ 24.2	30/ 30	23/ 23	96
								3.8/ 5.0	18.1/20.8	26.1/ 29.5	30/ 30	24/ 27	
	208/230-3-60	187	254	8.9	64.5	1.5	2.8	—/—	—/—	15.4/ 15.4	20/ 20	15/ 15	74
								3.8/ 5.0	10.4/12.0	16.5/ 18.5	20/ 20	15/ 17	
042	208/230-1-60	187	254	18.5	97.6	1.5	2.8	—/—	—/—	27.4/ 27.4	35/ 35	26/ 27	107
								3.8/ 5.0	18.1/20.8	27.4/ 29.5	35/ 35	26/ 27	
	208/230-3-60	187	254	10.9	73.0	1.5	2.8	—/—	—/—	17.9/ 17.9	25/ 25	17/ 17	83
								3.8/ 5.0	10.4/12.0	17.9/ 18.5	25/ 25	17/ 17	
048	208/230-1-60	187	254	21.3	107.0	1.5	4.2	—/—	—/—	32.3/ 32.3	40/ 40	31/ 31	121
								3.8/ 5.0	18.1/20.8	32.3/ 32.3	40/ 40	31/ 31	
	208/230-3-60	187	254	12.3	73.0	1.5	4.2	—/—	—/—	21.1/ 21.1	25/ 25	21/ 21	87
								3.8/ 5.0	10.4/12.0	21.1/ 21.1	25/ 25	21/ 21	
060	230-1-60	207	254	26.9	128.0	1.4	6.2	—	—	41.2	50	40	141
								5.0	20.8	41.2	50	40	
								10.0	41.7	59.8	60	55	
	208/230-3-60	187	254	17.7	128.0	1.4	6.2	—/—	—/—	29.7/ 29.7	35/ 35	29/ 29	146
								3.8/ 5.0	10.4/12.0	29.7/ 29.7	35/ 35	29/ 29	
								7.5/10.0	20.8/24.1	33.8/ 37.8	35/ 40	31/ 35	
460-3-60	414	508	9.0	63.0	0.7	3.2	—	—	15.2	20	15	71	
							5.0	6.0	15.2	20	15		
							10.0	12.0	19.0	20	18		

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



EXAMPLE: Supply voltage is 460-3-60



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

$$\text{Average voltage} = \frac{452 + 464 + 455}{3} = 457$$

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 percentage 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.

\*Heater capacity (kW) is based on heater voltage of 208 v, 240 v, or 480 v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly.

†Fuse or HACR circuit breaker.

NOTES:

1. In compliance with NEC requirements for multimotor and combination load and equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR 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.

% Voltage Imbalance

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

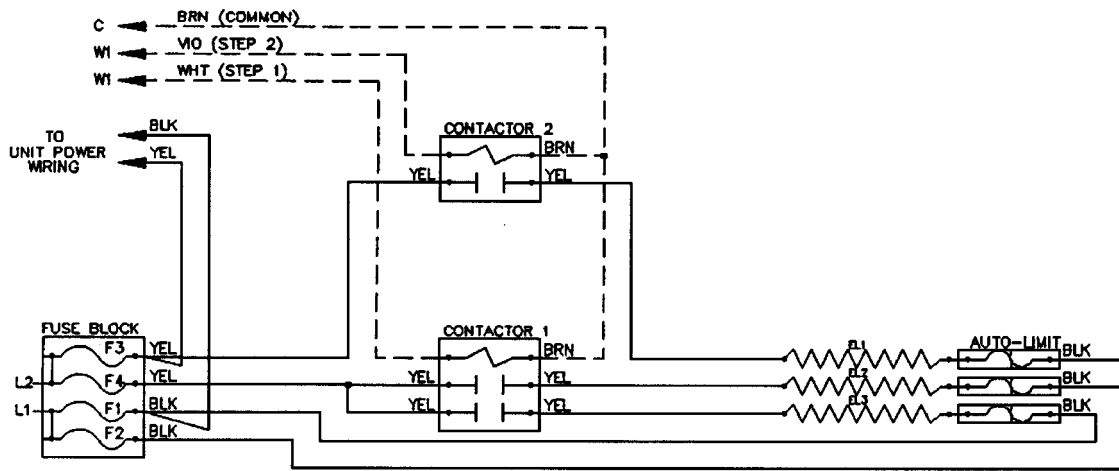


Fig. 17 — Electric Heater Wiring

### Special Procedures for 208-V Operation

**⚠ WARNING:** Make sure that the power supply to the unit is switched OFF before making any wiring changes. Electrical shock can cause personal injury or death.

1. Disconnect the orange transformer-primary lead from the contactor. See unit wiring label.
2. Remove the wirenut from the terminal on the end of the red transformer-primary lead.
3. Save the wirenut.
4. Connect the red lead to the contactor terminal from which the orange lead was disconnected.
5. Using the wirenut removed from the red lead, insulate the loose terminal on the orange lead.
6. Wrap the wirenut with electrical tape so that the metal terminal cannot be seen.

Indoor blower-motor speeds may need to be changed for 208-v operation. Refer to Indoor Airflow and Airflow Adjustments section on page 13.

### Heat Anticipator Setting

The room thermostat heat anticipator must be adjusted properly to ensure proper heating performance. Set anticipator settings for room thermostat according to separate Accessory Electric Heater Installation Instructions.

Failure to make a proper heat anticipator adjustment will result in improper operation, discomfort to the occupants of the conditioned space, and inefficient energy utilization; however, the required setting may be changed slightly to provide a greater degree of comfort for a particular installation.

### E. Accessory Installation

At this time, any required accessories should be installed on the unit. Refer to separate accessory installation instructions.

### PRE-START-UP

**⚠ WARNING:** Failure to observe the following warnings could result in serious personal injury:

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

For unit compressors equipped with accessory crankcase heaters, heaters are energized as long as there is power to the unit. Energize crankcase heater 24 hours prior to unit start-up. To energize heater only, set thermostat at OFF position and turn on unit main power at disconnect switch.

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

1. Remove all access panels.
2. Read and follow instructions on all WARNING, CAUTION, and INFORMATION labels attached to, or shipped with, unit.
3. Make the following inspections:
  - a. Inspect for shipping and handling damages such as broken lines, loose parts, disconnected wires, etc.
  - b. Inspect for oil at all refrigerant tubing connections and on unit base. Detecting oil generally indicates a refrigerant leak. Leak-test all refrigerant tubing connections using electronic leak detector, halide torch, or liquid-soap solution. If refrigerant leak is detected, see Repairing Refrigerant Leaks section on page 15.
  - c. Inspect all field- and factory-wiring connections. Be sure that connections are completed and tight.
  - d. Inspect coil fins. If damaged during shipping and handling, carefully straighten fins with a fin comb.
4. Verify the following conditions:
  - a. Make sure that condenser fan blade is correctly positioned in fan orifice. Top edge of blade should be 3.5 in. from condenser outlet grille.
  - b. Make sure that air filter(s) is in place.
  - c. Make sure that condensate drain pan and trap are filled with water to ensure proper drainage.
  - d. Make sure that all tools and miscellaneous loose parts have been removed.
5. Compressors are internally spring mounted. Do not loosen or remove compressor hold-down bolts.
6. Each unit system has 2 Schrader-type ports, one low-side Schrader fitting located on the suction line, and one high-side Schrader fitting located on the compressor discharge line. Be sure that caps on the ports are tight.

See Start-Up Checklist in back of book. Unit is now ready for initial start-up.

## START-UP

### I. HEATING SECTION START-UP AND ADJUSTMENTS

(For units with accessory electric heaters.)

**⚠ CAUTION:** Complete the required procedures given in Pre-Start-Up section on this page before starting unit.

Do not jumper any safety devices when operating the unit.

#### A. Checking Heating Control Operation

Start and check the unit for proper heating control operation as follows:

1. Turn on unit electrical supply.
2. Set system switch selector at HEAT position and fan switch at AUTO. or ON position. Set heating temperature lever above room temperature.
3. The evaporator fan and first-stage heat will start immediately. If unit is equipped with 2-stage heaters, second-stage heat will energize upon a call from W2. Check for heating effect at supply diffusers.

4. After the call for heat has been satisfied, the evaporator fan will stop. For units equipped with time-delay relay, evaporator fan will stop after a 30-second time delay.

To shut off unit, set system selector switch at OFF position or set heating set point lever below room temperature.

#### B. Heating Sequence of Operation

When power is supplied to unit, transformer (TRAN) is energized.

With thermostat set to call for heating, sequence of operation is as follows:

On a call for heat, circuit R-W and R-G are made through first-stage thermostat bulb. If accessory electric heaters are used, a relay is energized, bringing on first stage of supplemental electric heat and fan. When thermostat is satisfied, contacts open, deenergizing relay (on all units) and time-delay relay (on units equipped with time-delay relay). Heaters deenergize, and evaporator fan stops after a 30-second time delay (on units equipped with time-delay relay).

## II. COOLING SECTION START-UP AND ADJUSTMENTS

**⚠ CAUTION:** Complete the required procedures given in Pre-Start-Up section, page 11, before starting the unit. Do not jumper any safety devices when operating the unit.

Do not operate the compressor when the outdoor temperature is below 40 F (unless accessory low ambient kit is installed).

Do not rapid-cycle the compressor.

#### A. Checking Cooling Control Operation

Start and check the unit for proper cooling control operation as follows:

1. Place room thermostat SYSTEM switch in OFF position. Observe that evaporator-fan motor starts when FAN switch is placed in ON position and shuts down after a 30-second time delay when FAN switch is placed in AUTO. position.
2. Place SYSTEM switch in COOL position and FAN switch in AUTO. position. Set cooling control below room temperature. Observe that compressor, condenser fan, and evaporator-fan motors start. Observe that cooling cycle shuts down when control setting is satisfied. Evaporator-fan motor has off-delay (on units equipped with time-delay relay) of approximately 30 seconds on shutdown.
3. When using an auto. changeover room thermostat, place both SYSTEM and FAN switches in AUTO. positions. Observe that unit operates in Heating mode when temperature control is set to "call for heating" (above room temperature) and operates in Cooling mode when temperature control is set to "call for cooling" (below room temperature).

#### B. Checking and Adjusting Refrigerant Charge

The refrigerant system is fully charged with R-22 refrigerant, and is tested and factory-sealed.

**NOTE:** Adjustment of the refrigerant charge is not required unless the unit is suspected of not having the proper R-22 charge. See Refrigerant Charge section on page 16 for further details.

### C. Unit Controls

#### Compressor

**High-Pressure Relief Valve** — Valve is located in compressor. Relief valve opens at a pressure differential of approximately 450 psi between suction (low side) and discharge (high side) to allow pressure equalization.

**Internal Current and Temperature Sensing Overload** — Device resets automatically when internal compressor motor temperature drops to a safe level. When an internal overload is suspected of being open, check by using an ohmmeter or continuity tester.

#### D. Cooling Sequence of Operation

**NOTE:** With the FAN switch in the ON position, 24 v is supplied to the time-delay relay (TDR) through the G terminal on the thermostat. This voltage energizes the coil of the relay, closing the normally-open set of contacts which provide continuous power to the indoor (evaporator) fan motor (IFM). Moving the FAN switch back to the AUTO. position (providing there is not a call for cooling) deenergizes the TDR (when applicable) which deenergizes the IFM after a 30-second delay. The FAN switch in AUTO. position cycles upon a call for cooling.

On a call for cooling, 24 v is supplied to the compressor contactor (C) and TDR simultaneously through the Y and G terminals of the thermostat, respectively. On units with a compressor TDR, there is a built-in, 5-minute (±45 seconds) delay between compressor starts. Energizing the contactor closes the normally-open set of contacts supplying power to both the compressor and outdoor (condenser) fan motor (OFM). Energizing the TDR closes the normally-open set of contacts providing power to the IFM. On the loss of the call for cooling, 24 v is removed from both the Y and G terminals of the thermostat (providing the FAN switch is in the AUTO. position), deenergizing both the compressor and TDR and opening both the contacts supplying power to compressor and OFM. IFM has a 30-second delay.

### III. INDOOR AIRFLOW AND AIRFLOW ADJUSTMENTS

**⚠ CAUTION:** For cooling operation, the recommended airflow is 350 to 450 cfm per each 12,000 Btuh of rated cooling capacity.

Table 3 shows dry coil air delivery for horizontal discharge units.

**⚠ WARNING:** Disconnect electrical power to the unit before changing blower speed. Electrical shock can cause personal injury or death.

Airflow can be changed by changing the lead connections of the blower motor.

Units 564A/764A024, 036, 048, and 060 blower motors are factory wired for low speed operation. Units 564A/764A030 and 042 are factory wired for medium speed operation.

**Table 3 — Dry Coil Air Delivery — Horizontal Discharge**

UNIT 564A/764A	IFM SPEED SETTING	AIRFLOW (Cfm)	ESP (in. wg)	POWER (Watts)
024	Low	800	0.30	282
	Med	800	0.65	349
	High	800	0.80	439
030	Low*	1000	—	—
	Med	1000	0.35	370
	High	1000	0.65	460
036	Low	1200	0.30	445
	Med	1200	0.50	480
	High	1200	0.65	530
042	Low*	1400	—	—
	Med	1400	0.30	495
	High	1400	0.60	571
048†	—	—	—	—
	High	1600	0.65	720
060	Low	2000	0.15	900
	Med**	2000	0.60	850
	High	2000	0.65	945

\*Unit is factory set on medium speed, this airflow is not obtainable at low speed.

†Size 048 has low and high speed only.

\*\*460 volt motors do not have a medium speed.

**NOTE:** Values are at 230 v; deduct 10% for 208 v.

#### A. For 208/230-v Blower Motors:

The motor leads are color-coded as follows:

3-SPEED		2-SPEED	
black	= high speed	black	= high speed
blue	= medium speed	red	= low speed
red	= low speed		

To change the speed of the blower motor, remove the fan motor speed leg lead from the indoor (evaporator) fan relay (IFR) and replace with lead for desired blower motor speed. *Insulate the removed lead to avoid contact with chassis parts.*

#### B. For 460-v (2-Speed) GE Motors:

The motor leads are color coded as follows:

black	= high
yellow	= jumper
purple	= jumper
red	= low

To change the speed of the blower motor from low speed to high speed, remove the red lead from the indoor fan relay (IFR). Insulate the red lead to avoid contact with any chassis parts. Separate the black lead from the purple jumper. Connect the black lead to the IFR. Insulate the purple lead to avoid contact with any chassis parts.

## CARE AND MAINTENANCE

**NOTE:** *The following steps should be performed by a qualified service person.*

**⚠ WARNING:** Before installing or servicing unit, turn off main power to system to avoid shock hazard or injury from rotating parts. There may be more than one disconnect switch. Turn off accessory heater power if applicable. Electrical shock can cause personal injury or death.

To ensure continuing high performance, and to reduce the possibility of premature equipment failure, periodic maintenance must be performed on this equipment. Unit should be inspected at least once each year by a qualified service person.

**NOTE TO EQUIPMENT OWNER:** Consult your local dealer about the availability of a maintenance contract.

**⚠ WARNING:** The ability to properly perform maintenance on this equipment requires certain expertise, mechanical skills, tools, and equipment. If you do not possess these, do not attempt to perform any maintenance on this equipment other than those procedures recommended in the User's Manual. **FAILURE TO HEED THIS WARNING COULD RESULT IN SERIOUS PERSONAL INJURY AND POSSIBLE DAMAGE TO THIS EQUIPMENT.**

The minimum maintenance requirements for this equipment are as follows:

1. Inspect air filter(s) each month. Clean or replace when necessary.
2. Inspect condensing coil, drain pan, and condensate drain each cooling season for cleanliness. Clean when necessary.
3. Inspect evaporator-fan motor and wheel for cleanliness each heating and cooling season. Clean when necessary. For first heating season, inspect evaporator-fan motor bimonthly to determine proper cleaning frequency.
4. Check electrical connections for tightness and controls for proper operation each heating and cooling season. Service when necessary.
5. Check the drain channel in the top cover periodically for blockage (leaves, insects). Clean as needed.

**⚠ WARNING:** Failure to follow these warnings could result in serious personal injury:

1. Turn off all electrical power to the unit before performing any maintenance or service on the unit.
2. Use extreme caution when removing panels and parts. As with any mechanical equipment, personal injury can result from sharp edges, etc.
3. Never place anything combustible either on, or in contact with, the unit.
4. Should overheating occur, shut off all of the electrical supply(s).

## I. AIR FILTER

**⚠ CAUTION:** Never operate the unit without a suitable air filter in the return-air duct system. Always replace the filter with the same dimensional size and type as originally installed. See Tables 1 and 2 for recommended filter sizes.

Inspect air filter(s) at least once each month and replace (throwaway-type) or clean (permanent-type) at least twice during each cooling season or whenever the filter(s) becomes clogged with dust and lint.

## II. EVAPORATOR FAN AND MOTOR

**NOTE:** Motors without oilers are permanently lubricated. Do not attempt to lubricate these motors.

For longer life, operating economy, and continued efficiency, clean accumulated dirt and grease from the evaporator-fan wheel and motor annually.

Lubricate the motor every 5 years if the motor is used intermittently (thermostat FAN switch in AUTO. position), or every 2 years if the motor is used continuously (thermostat FAN switch in ON position).

**⚠ WARNING:** Disconnect and tag all electrical power to the unit before cleaning the evaporator-fan and wheel. Failure to adhere to this warning could cause personal injury or death.

To clean the blower wheel:

1. Access the blower assembly as follows:
  - a. Remove top access panel.
  - b. Remove 3 screws that hold blower orifice ring to blower housing. Save screws.
  - c. Loosen set screw(s) which secure wheel to motor shaft.
2. Remove and clean blower wheel as follows:
  - a. Lift wheel from housing. When handling and/or cleaning blower wheel, be sure not to disturb balance weights (clips) on blower wheel vanes.
  - b. Remove caked-on dirt from wheel and housing with a brush. Remove lint and/or dirt accumulations from wheel and housing with vacuum cleaner, using a soft brush attachment. Remove grease and oil with a mild solvent.
  - c. Reassemble blower into housing. Place upper orifice ring on blower to judge location of the blower wheel. Blower wheel should be approximately .2 in. below bottom of orifice ring when centered correctly. Be sure set screws are tightened on motor and are not on round part of shaft.
  - d. Set upper orifice ring in place with 3 screws removed in Step 1.
  - e. Replace top access panel.

## SERVICE

**NOTE:** The following steps should be performed by a qualified service person.

**⚠ WARNING:** Before installing or servicing unit, turn off main power to system to avoid shock hazard or injury from rotating parts. There may be more than one disconnect switch. Turn off accessory heater power if applicable. Electrical shock can cause personal injury or death.

### I. CLEANING

Inspect unit interior at the beginning of each heating and cooling season or as operating conditions require. To inspect and clean, the unit top must be removed.

#### A. Unit Top Removal

**NOTE:** When performing maintenance or service procedures that require removal of the unit top, be sure to perform *all* of the routine maintenance procedures that require top removal, including: coil inspection and cleaning, and condensate drain pan inspection and cleaning.

Only qualified service personnel should perform maintenance and service procedures that require unit top removal. Refer to the following top removal procedures:

1. Remove 7 screws on unit top cover surface. Save all screws.
2. Remove 2 screws that secure unit top cover flange. Save all screws.
3. Lift top from unit carefully. Set top on edge and ensure that top is supported by unit side that is opposite duct side.

When maintenance and/or service procedures are concluded, carefully replace and secure unit top to unit, using screws removed in Steps 1 and 2.

#### B. Repairing Refrigerant Leaks

Proceed as follows to repair a refrigerant leak and to charge the unit.

1. Locate leak and ensure that refrigerant system pressure has been relieved and reclaimed from both high- and low-pressure ports.
2. Repair leak following accepted practices.

**NOTE:** Install a filter drier whenever the system has been opened for repair.

3. Add a small charge of nitrogen vapor to system and leak-test unit.
4. Evacuate refrigerant system if additional leaks are not found.
5. Charge unit with R-22 refrigerant, using a volumetric-charging cylinder or accurate scale. *Refer to unit rating plate for required charge.* Be sure to add extra refrigerant to compensate for internal volume of filter drier.

**NOTE:** See Adjusting Refrigerant Charge on page 16.

#### C. Condenser Coil, Evaporator Coil, and Condensate Drain Pan

**⚠ WARNING:** Be careful! Coil fins are sharp. Protect hands with gloves when cleaning or handling coil.

Inspect the condenser coil, evaporator coil, and condensate drain pan at least once each year. Proper inspection and cleaning requires the removal of the unit top. See Unit Top Removal section above.

The coils are easily cleaned when dry; therefore, inspect and clean the coils either before or after each cooling season. Remove all obstructions (including weeds and shrubs) that interfere with the airflow through the condenser coil. Straighten bent fins with a fin comb. If coated with dirt or lint, clean the coils with a vacuum cleaner, using a soft brush attachment. Be careful not to bend the fins. If coated with oil or grease, clean the coils with a mild detergent-and-water solution. Rinse coils with clear water, using a garden hose. Be careful not to splash water on motors, insulation, wiring, or air filter(s). For best results, spray condenser-coil fins from inside to outside the unit. On units with an outer and inner condenser coil, be sure to clean between the coils. Be sure to flush all dirt and debris from the unit base.

Inspect the drain pan and condensate drain line when inspecting the coils. Clean the drain pan and condensate drain by removing all foreign matter from the pan. Flush the pan and drain tube with clear water. Do not splash water on the insulation, motor, wiring, or air filter(s). If the drain tube is restricted, clear it with a “plumbers snake” or similar probe device. Ensure that the auxiliary drain port above the drain tube is also clear.

### II. EVAPORATOR FAN AND MOTOR

Refer to Care and Maintenance section for procedure.

### III. CONDENSER FAN

**⚠ CAUTION:** Keep the condenser fan free from all obstructions to ensure proper cooling operation. Never place articles on top of the unit. Damage to unit may result.

1. Shut off unit power supply.
2. Remove outdoor-fan assembly (grille, motor, motor cover, and fan) by removing screws and flipping assembly onto unit top cover.
3. Loosen fan hub setscrews.
4. Adjust fan height as shown in Fig. 18.
5. Tighten setscrews.
6. Replace outdoor-fan assembly.

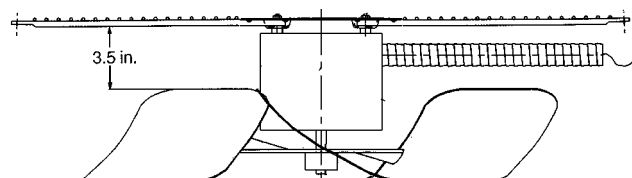


Fig. 18 — Outdoor-Fan Adjustment

#### IV. ELECTRICAL CONTROLS AND WIRING

Inspect and check the electrical controls and wiring annually. *Be sure to turn off all electrical power to the unit.*

Remove the control, evaporator fan, and compressor compartment access panels to locate all the electrical controls and wiring. Check all electrical connections for tightness. Tighten all screw connections. If any smoky or burned connections are noticed, disassemble the connection and clean all the parts. Then restrip the wire end, and reassemble the connection properly and securely.

After inspecting the electrical controls and wiring, replace all the panels. Start the unit, and observe at least one complete heating cycle (if accessory electric heaters are field installed in unit) and one complete cooling cycle to ensure proper operation. If discrepancies are observed in either or both operating cycles, or if a suspected malfunction has occurred, check each electrical component with the proper electrical instrumentation. Refer to unit wiring label when performing these checkouts.

**NOTE:** Refer to the Cooling Sequence of Operation on page 13 as an aid in determining proper control operation.

#### V. INDOOR AIRFLOW

The airflow does not require checking unless improper performance is suspected. *If a problem exists, be sure that all supply- and return-air grilles are open and free from obstructions, and that the air filter is clean.* When necessary, refer to Indoor Airflow and Airflow Adjustments section on page 13 to check the system airflow.

#### VI. METERING DEVICE SERVICING

Refrigerant metering devices are fixed orifices and are located in the inlet header to the evaporator coil.

#### VII. LIQUID LINE STRAINER

Strainer is made of wire mesh and is located in the liquid line on inlet side. Remove strainer by cutting it from the liquid line. Braze a new strainer into liquid line with nitrogen gas flowing through the refrigerant system.

#### VIII. REFRIGERANT CHARGE

**⚠ WARNING:** Avoid contact with hot gas discharge line to prevent a burn when working on compressor.

**⚠ CAUTION:** To prevent personal injury, wear safety glasses and gloves when handling refrigerant.

Do not overcharge system. An overcharge can cause compressor damage.

Unit refrigerant system is factory charged. When recharging is necessary, weigh in total charge indicated on unit nameplate. Remove and recover any refrigerant remaining in system before recharging. If system has lost complete charge, evacuate system to 500 microns (29.90-in. Hg vacuum) before recharging. Schrader fitting connections are provided on unit suction and discharge lines for evacuation and charging. Dial-a-Charge charging cylinder is an accurate device used to charge systems by weight; these cylinders are available at refrigeration supply firms.

#### A. Adjusting Refrigerant Charge

Amount of refrigerant charge is listed on unit nameplate (also refer to Table 1). Refer to Carrier Refrigerant Service Techniques Manual, 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. 19-24. Vary refrigerant until the conditions of the appropriate chart are met. Note that charging charts are different from the 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.

To measure suction pressure, perform the following:

1. Connect the pressure gage to the service port on the suction line.
2. 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

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

**EXAMPLE:** (Fig. 19)

Outdoor Temperature . . . . . 85 F  
Suction Pressure . . . . . 80 psig  
Suction Temperature should be . . . . . 70 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 chart.

#### IX. REPLACEMENT PARTS

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



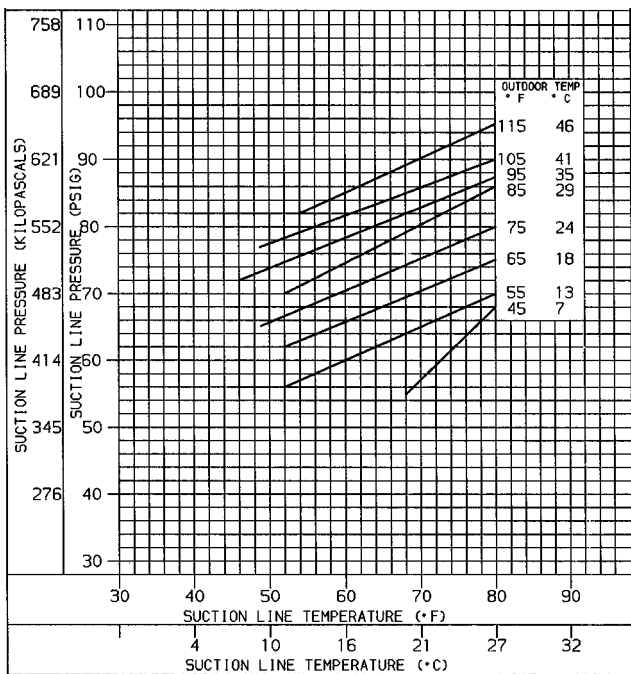


Fig. 19 — Cooling Charging Chart — 564A/764A024

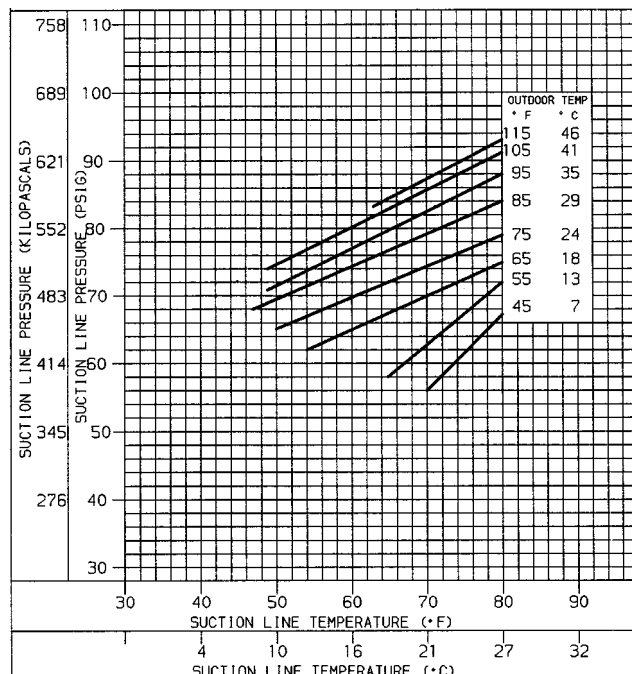


Fig. 21 — Cooling Charging Chart — 564A/764A036

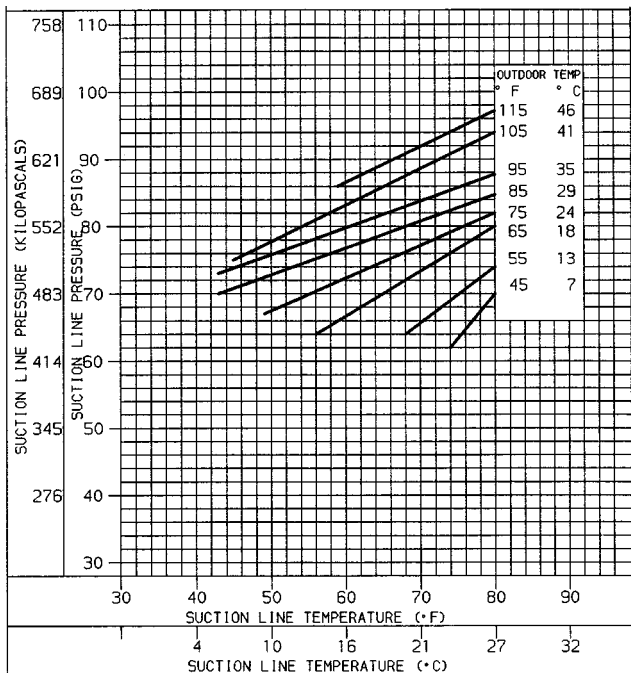


Fig. 20 — Cooling Charging Chart 564A/764A030

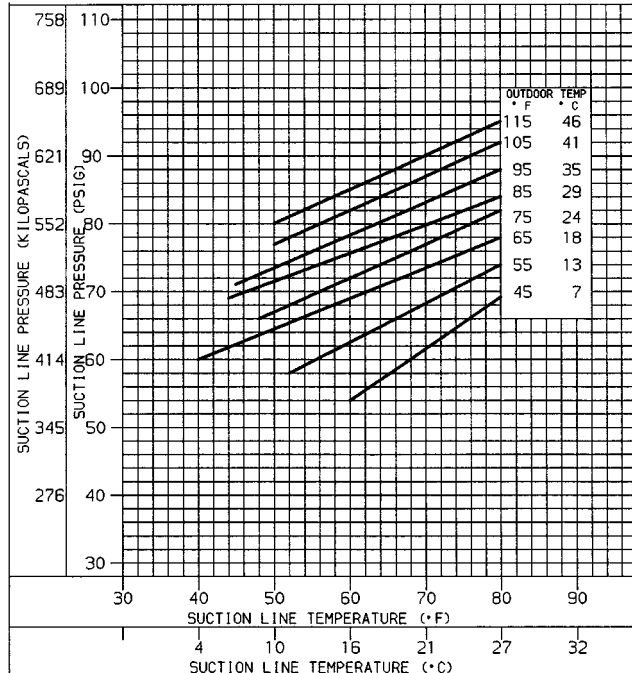


Fig. 22 — Cooling Charging Chart — 564A/764A042

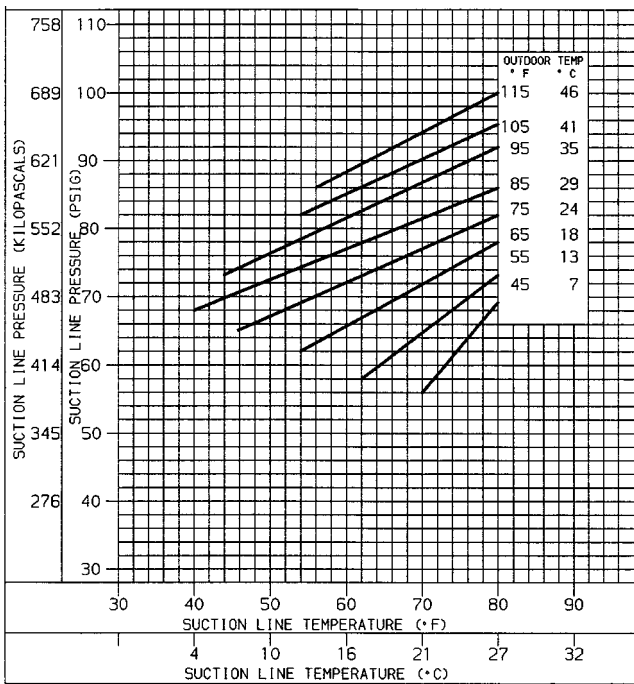


Fig. 23 — Cooling Charging Chart — 564A/764A048

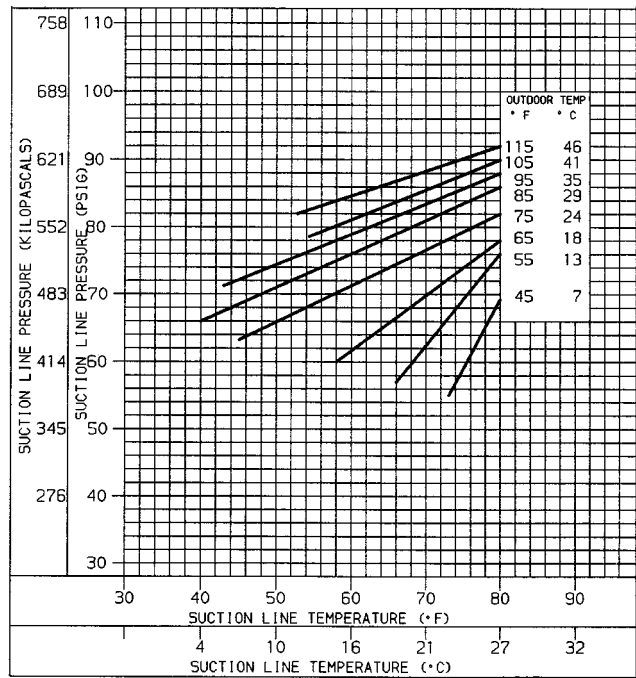


Fig. 24 — Cooling Charging Chart — 564A/764A060

## COOLING TROUBLESHOOTING CHART

SYMPTOM	CAUSE	REMEDY
<b>Compressor and condenser fan will not start.</b>	Power failure	Call power company.
	Fuse blown or circuit breaker tripped	Replace fuse or reset circuit breaker.
	Defective thermostat, contactor, transformer, or control relay	Replace component.
	Insufficient line voltage	Determine cause and correct.
	Incorrect or faulty wiring	Check wiring diagram and rewire correctly.
	Thermostat setting too high	Lower thermostat setting below room temperature.
<b>Compressor will not start but condenser fan runs.</b>	Faulty wiring or loose connections in compressor circuit	Check wiring and repair or replace.
	Compressor motor burned out, seized, or internal overload open	Determine cause. Replace compressor.
	Defective run/start capacitor, overload, or start relay	Determine cause and replace.
	One leg of 3-phase power dead	Replace fuse or reset circuit breaker. Determine cause.
<b>Compressor cycles (other than normally satisfying thermostat).</b>	Refrigerant overcharge or undercharge	Recover refrigerant, evacuate system, and recharge to capacities shown on nameplate.
	Defective compressor	Replace and determine cause.
	Insufficient line voltage	Determine cause and correct.
	Blocked condenser	Determine cause and correct.
	Defective run/start capacitor, overload, or start relay	Determine cause and replace.
	Defective thermostat	Replace thermostat.
	Faulty condenser-fan motor or capacitor	Replace.
	Restriction in refrigerant system	Locate restriction and remove.
<b>Compressor operates continuously.</b>	Dirty air filter	Replace filter.
	Unit undersized for load	Decrease load or increase unit size.
	Thermostat set too low	Reset thermostat.
	Low refrigerant charge	Locate leak, repair, and recharge.
	Leaking valves in compressor	Replace compressor.
	Air in system	Recover refrigerant, evacuate system, and recharge.
	Condenser coil dirty or restricted	Clean coil or remove restriction.
<b>Excessive head pressure.</b>	Dirty air filter	Replace filter.
	Dirty condenser coil	Clean coil.
	Refrigerant overcharged	Recover excess refrigerant.
	Air in system	Recover refrigerant, evacuate system, and recharge.
	Condenser air restricted or air short-cycling	Determine cause and correct.
<b>Head pressure too low.</b>	Low refrigerant charge	Check for leaks, repair and recharge.
	Compressor valves leaking	Replace compressor.
	Restriction in liquid tube	Remove restriction.
<b>Excessive suction pressure.</b>	High heat load	Check for source and eliminate.
	Compressor valves leaking	Replace compressor.
	Refrigerant overcharged	Recover excess refrigerant.
<b>Suction pressure too low.</b>	Dirty air filter	Replace filter.
	Low refrigerant charge	Check for leaks, repair, and recharge.
	Metering device or low side restricted	Remove source of restriction.
	Insufficient evaporator airflow	Increase air quantity. Check filter, and replace if necessary.
	Temperature too low in conditioned area	Reset thermostat.
	Outdoor ambient below 40 F	Install low-ambient kit.
	Field-installed filter-drier restricted	Replace.





## PACKAGED SERVICE TRAINING

Our packaged service training programs provide an excellent way to increase your knowledge of the equipment discussed in this manual. Product programs cover:

- Unit Familiarization
- Maintenance
- Installation Overview
- Operating Sequence

A large selection of product, theory, and skills programs is available. All programs include a video cassette and/or slides and a companion booklet. Use these for self teaching or to conduct full training sessions.

For a free Service Training Material Catalog (STM), call 1-800-962-9212. Ordering instructions are included.



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

**I. PRELIMINARY INFORMATION**

MODEL NO.: \_\_\_\_\_ SERIAL NO.: \_\_\_\_\_  
DATE: \_\_\_\_\_ TECHNICIAN: \_\_\_\_\_

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

- VERIFY THAT ALL PACKING MATERIALS HAVE BEEN REMOVED FROM UNIT
- VERIFY THAT CONDENSATE CONNECTION IS INSTALLED PER INSTALLATION INSTRUCTIONS
- CHECK ALL ELECTRICAL CONNECTIONS AND TERMINALS FOR TIGHTNESS
- VERIFY THAT UNIT INSTALLATION IS LEVEL
- CHECK FAN WHEEL AND PROPELLER FOR LOCATION IN HOUSING/ORIFICE AND SETSCREW TIGHTNESS

**III. START-UP**

**ELECTRICAL**

SUPPLY VOLTAGE    L1-L2 \_\_\_\_\_    L2-L3 \_\_\_\_\_    L3-L1 \_\_\_\_\_  
COMPRESSOR AMPS    L1 \_\_\_\_\_    L2 \_\_\_\_\_    L3 \_\_\_\_\_  
EVAPORATOR-FAN AMPS    \_\_\_\_\_

**TEMPERATURES**

OUTDOOR-AIR TEMPERATURE    \_\_\_\_\_ DB  
RETURN-AIR TEMPERATURE    \_\_\_\_\_ DB    \_\_\_\_\_ WB

**PRESSURES**

REFRIGERANT SUCTION    \_\_\_\_\_ PSIG  
REFRIGERANT DISCHARGE    \_\_\_\_\_ PSIG

- VERIFY REFRIGERANT CHARGE USING CHARGING TABLES

CUT ALONG DOTTED LINE