

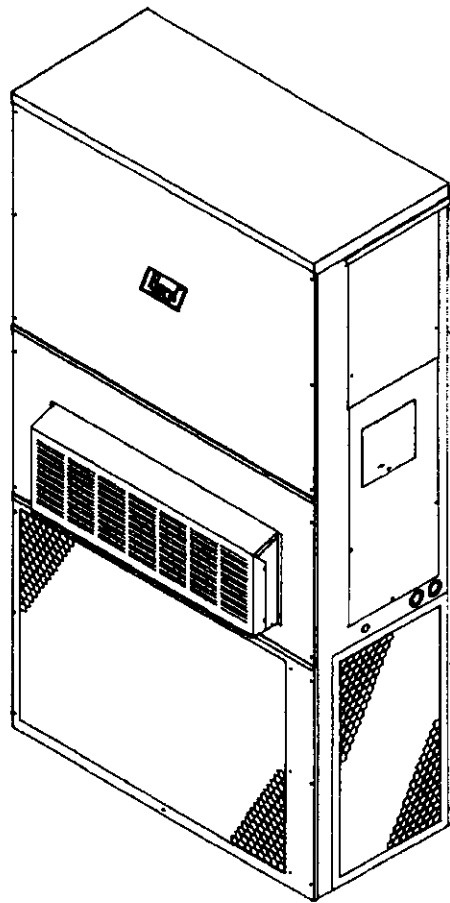
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**Installation  
Instructions**

**Wall Mounted  
Packaged Air Conditioner**

**Models: WA301, WA361**

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Bard Manufacturing Company  
Bryan, Ohio 43506

*Since 1914...Moving ahead, just as  
planned.*

Manual No.: 2100-192 Rev J  
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Date: 01/20/97

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# Getting Other Information and Publications

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These publications can help you install the air conditioner or heat pump. You can usually find these at your local library or purchase them directly from the publisher. Be sure to consult current edition of each standard.

- National Electrical Code ..... ANSI/NFPA 70
- Standard for the Installation ..... ANSI/NFPA 90A  
of Air Conditioning and  
Ventilating Systems
- Standard for Warm Air ..... ANSI/NFPA 90B  
Heating and Air  
Conditioning Systems
- Load Calculation for ..... ACCA Manual J  
Residential Winter and  
Summer Air Conditioning
- Duct Design for Residential ..... ACCA Manual D  
Winter and Summer Air  
Conditioning and Equipment  
Selection

## For more information, contact these publishers:

**ACCA — Air Conditioning Contractors of America**  
1712 New Hampshire Avenue NW  
Washington, DC 20009  
Telephone: (202) 483-9370  
Fax: (202) 234-4721

**ANSI — American National Standards Institute**  
11 West Street, 13th Floor  
New York, NY 10036  
Telephone: (212) 642-4900  
Fax: (212) 302-1286

**ASHRAE — American Society of Heating Refrigerating, and  
Air Conditioning Engineers, Incorporated**  
1791 Tullie Circle, N.E.  
Atlanta, GA 30329-2305  
Telephone: (404) 636-8400  
Fax: (404) 321-5478

**NFPA — National Fire Protection Association**  
Batterymarch Park  
P.O. Box 9101  
Quincy, MA 02269-9901  
Telephone: (800) 344-3555  
Fax: (617) 984-7057

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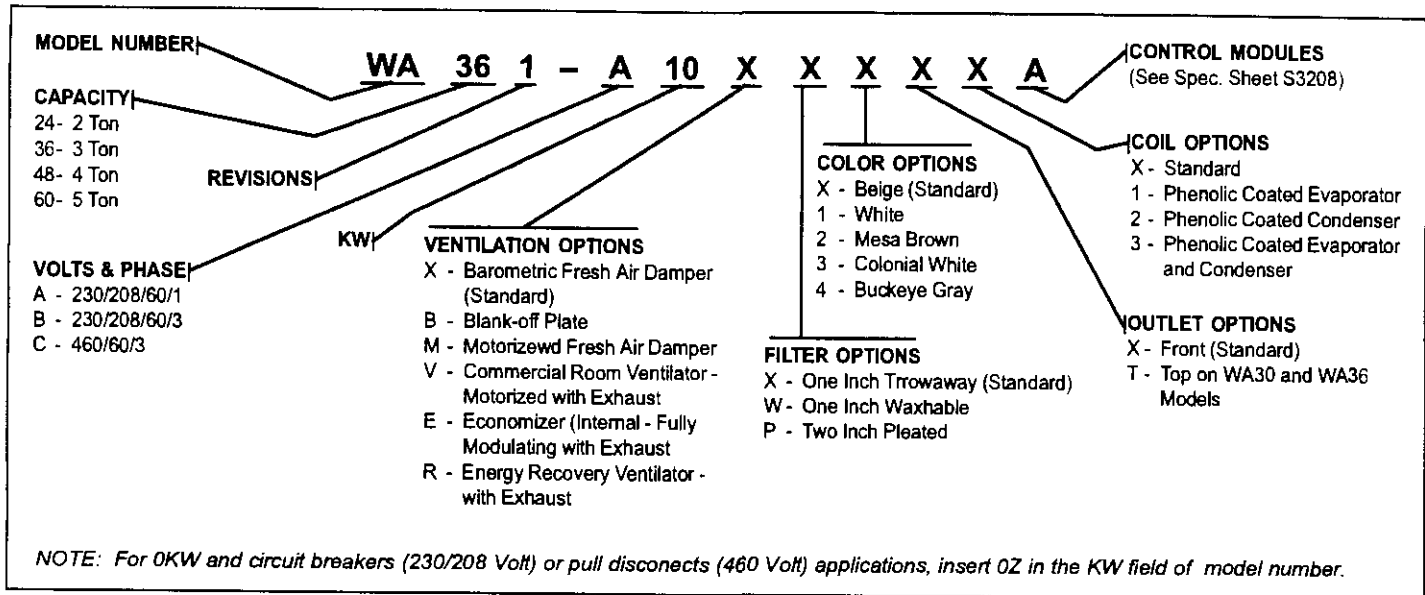
Manufactured under the following U.S. patent numbers:

5,301,744; 5,002,116; 4,924,934; 4,875,520; 4,825,936; 4,432,409

Other patents pending.

# Wall Mount General Information

## Air Conditioner Wall Mount Model Nomenclature



**Table 1 — Electrical Specifications**

MODELS	RATED VOLTS & PHASE	NO. FIELD POWER CIRCUITS	③ MINIMUM CIRCUIT AMPACITY	① MAXIMUM EXTERNAL FUSE OR CKT. BREAKER	② FIELD POWER WIRE SIZE	② GROUND WIRE SIZE	③ MINIMUM CIRCUIT AMPACITY		① MAXIMUM EXTERNAL FUSE OR CKT. BREAKER		② FIELD POWER WIRE SIZE		② GROUND WIRE SIZE	
							CKTA	CKTB	CKTA	CKTB	CKTA	CKTB	CKTA	CKTB
WA301-A00, A0Z	230/208-1	1	24	35	8	10	—	—	—	—	—	—	—	—
A05		1	31	35	8	10	—	—	—	—	—	—	—	
A10		1	57	60	6	10	—	—	—	—	—	—	—	
A15		1 or 2	83	90	4	8	55	26	60	30	4	10	8	10
WA301-B00, B0Z	230/208-3	1	17	20	12	12	—	—	—	—	—	—	—	—
B09		1	32	35	8	10	—	—	—	—	—	—	—	
B15		1	50	50	8	10	—	—	—	—	—	—	—	
WA301-C00, C0Z	460-3	1	10	15	14	14	—	—	—	—	—	—	—	—
C09		1	17	20	12	12	—	—	—	—	—	—	—	
C15		1	26	30	10	10	—	—	—	—	—	—	—	
WA361-A00, A0Z	230/208-1	1	27	35	8	10	—	—	—	—	—	—	—	—
A05		1	31	35	8	10	—	—	—	—	—	—	—	
A10		1	57	60	6	10	—	—	—	—	—	—	—	
A15		1 or 2	83	90	4	8	55	26	60	30	4	10	8	10
WA361-B00, B0Z	230/208-3	1	20	25	10	10	—	—	—	—	—	—	—	—
B09		1	32	35	8	10	—	—	—	—	—	—	—	
B15		1	50	50	8	10	—	—	—	—	—	—	—	
WA361-C00, C0Z	460-3	1	10	15	14	14	—	—	—	—	—	—	—	—
C09		1	17	20	12	12	—	—	—	—	—	—	—	
C15		1	26	30	10	10	—	—	—	—	—	—	—	

① Maximum size of the time delay fuse or HACR type circuit breaker for protection of field wiring conductors.

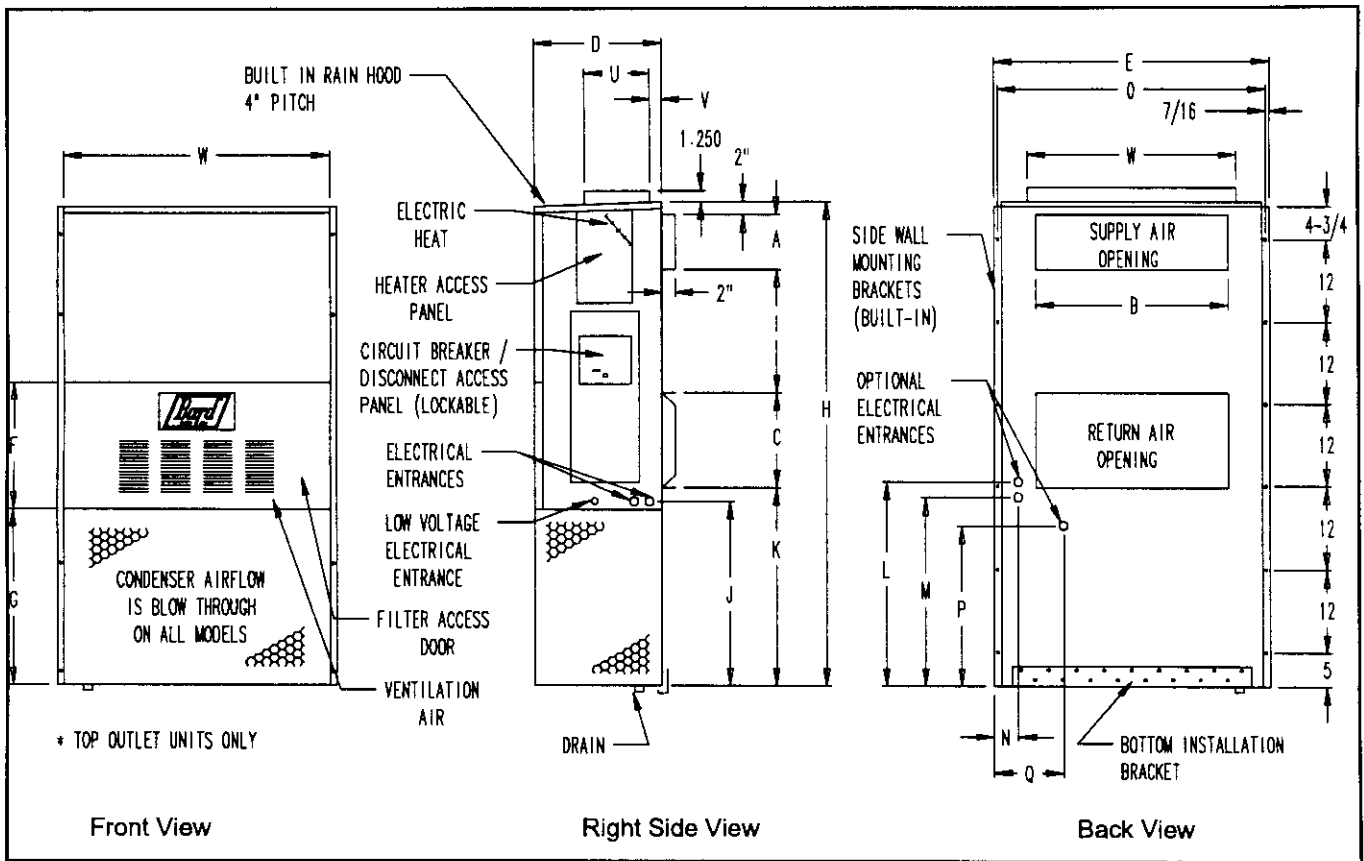
② Based on 75°C copper wire. All wiring must conform to the National Electrical Code and all local codes.

③ These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electric Code (latest revision), article 310 for power conductor sizing. Caution: When more than one field power conductor circuit is run through one conduit, the conductors must be derated. Pay special attention to note 8 of table 310 regarding Ampacity Adjustment Factors when more than three conductors are in a raceway.

**Table 2 — Dimensions of Basic Unit for Architectural and Installation Requirements (Nominal)**

UNIT	WIDTH	DEPTH	HEIGHT	SUPPLY		RETURN		E	F	G	I	J	K	L	M	N	O	P	Q	U*	V*	W*
	(W)	(D)	(H)	A	B	C	B															
WA301 VA361	37-7/8	16-7/8	70-1/2	7-7/8	27-7/8	13-7/8	27-7/8	39-7/8	18-1/4	25-3/4	18	26-3/4	28-3/4	29-1/4	27	2-9/16	39	22-3/4	9	7-7/8	1	31-7/8

All dimensions are in inches



**Figure 1 — Unit Dimensions**

**Table 3 — Electric Heat Table**

MODELS	WA301-A		WA301-B		WA301-C		WA361-A		WA361-B		WA361-C					
	240V-1	208V-1	240V-3	208V-3	460V-3	240V-1	208V-1	240V-3	208V-3	460V-3						
KW	AMPS	BTUH	AMPS	BTUH	AMPS	BTUH	AMPS	BTUH	AMPS	BTUH	AMPS	BTUH				
5.0	20.8	17,065	18.1	12,800			20.8	17,065	18.1	12,800						
8.0	33.3	27,300	28.8	20,475			33.3	27,300	28.8	20,475						
10.0	41.6	34,130	36.2	25,600			41.6	34,130	36.2	25,600						
15.0							62.5	51,200	54.1	38,400						
6.0			14.4	20,500	12.5	15,360	7.2	20,475			14.4	20,500	12.5	15,360	7.2	20,475
9.0			21.7	30,600	18.7	23,030	10.8	30,700			21.7	30,600	18.7	23,030	10.8	30,700
15.0							18.0	51,200			36.2	51,200	31.2	38,400	18.0	51,200

## Shipping Damage

Upon receipt of equipment, the carton should be checked for external signs of shipping damage. If damage is found, the receiving party must contact the last carrier immediately, preferably in writing, requesting inspection by the carrier's agent.

## General

The equipment covered in this manual is to be installed by trained, experienced service and installation technicians.

The refrigerant system is completely assembled and charged. All internal wiring is complete.

The unit is designed for use with or without duct work. Flanges are provided for attaching the supply and return ducts.

These instructions explain the recommended method to install the air cooled self-contained unit and the electrical wiring connections to the unit.

These instructions and any instructions packaged with any separate equipment required to make up the entire air conditioning system should be carefully read before beginning the installation. Note particularly "Starting Procedure" and any tags and/or labels attached to the equipment.

While these instructions are intended as a general recommended guide, they do not supersede any national and/or local codes in any way. Authorities having jurisdiction should be consulted before the installation is made. See Page 1 for information on codes and standards.

Size of unit for a proposed installation should be based on heat loss calculation made according to methods of Air Conditioning Contractors of America (ACCA). The air duct should be installed in accordance with the Standards of the National Fire Protection Association for the Installation of Air Conditioning and Ventilating Systems of Other Than Residence Type, NFPA No. 90A, and Residence Type Warm Air Heating and Air Conditioning Systems, NFPA No. 90B. Where local regulations are at a variance with instructions, installer should adhere to local codes.

## Duct Work

All duct work, supply and return, must be properly sized for the design air flow requirement of the equipment. Air Conditioning Contractors of America (ACCA) is an excellent guide to proper sizing. All duct work or portions thereof not in the conditioned space should be properly insulated in order to both conserve energy and prevent condensation or moisture damage.

Refer to Table 10 for maximum static pressure available for duct design.

Design the duct work according to methods given by the Air Conditioning Contractors of America (ACCA). When duct runs through unheated spaces, it should be insulated with a minimum of 1 inch of insulation. Use insulation with a vapor barrier on the outside of the insulation. Flexible joints should be used to connect the duct work to the equipment in order to keep the noise transmission to a minimum.

A 1/4-inch clearance to combustible material for the first 3 feet of duct attached to the outlet air frame is required. See Wall Mounting Instructions and Figures 3 and 4 for further details.

Ducts through the walls must be insulated and all joints taped or sealed to prevent air or moisture entering the wall cavity.



## CAUTION

Some installations may not require any return air bracket assembly and sliding the brackets apart to the required width and retightening the 4 screws.

Any grille that meets the 5/8 inch louver criteria may be used. It is recommended that Bard Return Air Grille Kit RG-2 through RG-5 or RFG-2 through RFG-5 be installed when no return duct is used. Contact distributor or factory for ordering information. If using a return air filter grille, filters must be of sufficient size to allow a maximum velocity of 400 fpm.

## Filters

A 1 inch throw away filter is supplied with each unit. The filter slides into position making it easy to service. This filter can be serviced from the outside by removing the service door. A 1 inch washable filter and a 2 inch pleated filter are also available as optional accessories. The internal filter brackets are adjustable to accommodate the 2 inch filter by loosening 2 screws in each bracket assembly and sliding the brackets apart to the required width and retightening the 4 screws.

## Fresh Air Intake

All units are built with fresh air inlet slots punched in the service panel.

If the unit is equipped with the fresh air damper assembly, the assembly is shipped already attached to the unit. The damper blade is locked in the closed position. To allow the damper to operate, the maximum and minimum blade position stops must be installed. See Figure 2.

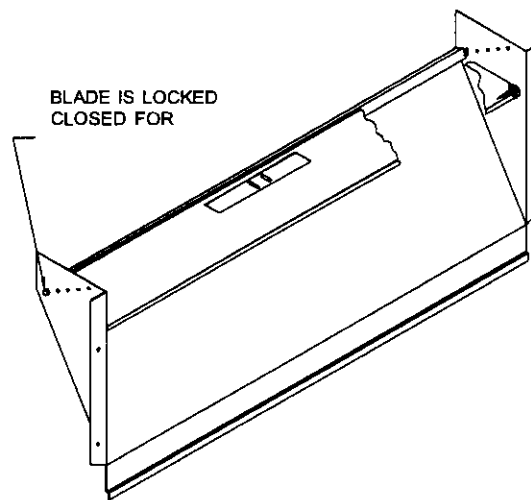
All capacity, efficiency and cost of operation information as required for Department of Energy "Energyguide" Fact Sheets is

based upon the fresh air blank-off plate in place and is recommended for maximum energy efficiency.

The blank-off plate is available upon request from the factory and is installed in place of the fresh air damper shipped with each unit.

## Condensate Drain

A plastic drain hose extends from the drain pan at the top of the unit down to the unit base. There are openings in the unit base for the drain hose to pass through. In the event the drain hose is connected to a drain system of some type, it must be an open or vented type system to assure proper drainage.



**FIGURE 2 - FRESH AIR DAMPER ASSEMBLY**

# Installation Instructions

## Wall Mounting Information

1. Two holes, for the supply and return air openings, must be cut through the wall as shown in Figure 3.
2. On wood-frame walls, the wall construction must be strong and rigid enough to carry the weight of the unit without transmitting any unit vibration.



## WARNING

Fire hazard can result if 1/4-inch clearance to combustible materials for supply air duct is not maintained. See Figure 3.

3. Concrete block walls must be thoroughly inspected to insure that they are capable of carrying the weight of the installing unit.

## Mounting the Unit

1. These units are secured by wall mounting brackets which secure the unit to the outside wall surface at both sides. A bottom mounting bracket is provided for ease of installation, but is not required.
2. The unit itself is suitable for "0" inch clearance, but the supply air duct flange and the first 3 feet of supply air duct require a minimum of 1/4-inch clearance to combustible material. If a combustible wall, use a minimum of 28-1/2" x 8-1/2" dimensions for sizing. However, it is generally recommended that a 1-inch clearance is used for ease of installation and maintaining the required clearance to combustible material. The supply air opening would then be 30" x 10". See Figures 3 and 4 for details.



## WARNING

Failure to provide the 1/4-inch clearance between the supply duct and a combustible surface for the first 3 feet of duct can result in fire.

3. Locate and mark lag bolt locations and bottom mounting bracket location. See Figure 3.
4. Mount bottom mounting bracket, if used.
5. Hook top rain flashing under back bend of top. Top rain flashing is shipped secured to the right side of the back.
6. Position unit in opening and secure with 5/16 lag bolts; use 7/8-inch diameter flat washers on the lag bolts.
7. Secure rain flashing to wall and caulk across entire length of top. See Figure 3.
8. For additional mounting rigidity, the return air and supply air frames or collars can be drilled and screwed or welded to the structural wall itself (depending upon wall construction). Be sure to observe required clearance if combustible wall.

9. On side by side installations, maintain a minimum of 20-inches clearance on right side to allow access to heat strips and control panel and to allow proper airflow to the outdoor coil. Additional clearance may be required to meet local or national codes.

## Top Outlet Only

1. Remove airframe angles from the back of the unit.
2. Coat angles with two 1/8" beads of silicone as shown. Silicone is shipped in the control panel. See Figure 5.
3. Secure angles to the top of the unit with 14 screws provided. Use of prepunched holes provided. Do not relocate. See Figure 5.
4. After installation ductwork, seal around airframe and ductwork to provide a rain tight seal.
5. It is strongly recommended, but not required, that this unit be installed under a soffit area large enough to shield the top of the unit. See Figure 6.

## Wiring — Main Power

Refer to the unit rating plate for wire sizing information and maximum fuse or "HACR Type" circuit breaker size. Each outdoor unit is marked with a "Minimum Circuit Ampacity". This means that the field wiring used must be sized to carry that amount of current. Depending on the installed KW of electric heat, there may be two field power circuits required. If this is the case, the unit serial plate will so indicate. All models are suitable only for connection with copper wire. Each unit and/or wiring diagram will be marked "Use Copper Conductors Only". These instructions **must be adhered to**. Refer to the National Electrical Code (NEC) for complete current carrying capacity data on the various insulation grades of wiring material. All wiring must conform to NEC and all local codes.

The electrical data lists fuse and wire sizes (75°C copper) for all models, including the most commonly used heater sizes. Also shown are the number of field power circuits required for the various models with heaters.

The unit rating plate lists a "Maximum Time Delay Relay Fuse" or "HACR Type" circuit breaker that is to be used with the equipment. The correct size must be used for proper circuit protection and also to assure that there will be no nuisance tripping due to the momentary high starting current of the compressor motor.

The disconnect access door on this unit may be locked to prevent unauthorized access to the disconnect. To convert for the locking capability, bend the tab located in the bottom left hand corner of the disconnect opening under the disconnect access panel straight out. This tab will now line up with the slot in the door. When shut, a padlock may be placed through the hole in the tab preventing entry.



## Wiring — Low Voltage Wiring

230/208V, 1 phase and 3 phase equipment dual primary voltage transformers. All equipment leaves the factory wired on 240V tap. For 208V operation, reconnect from 240V to 208V tap. The acceptable operating voltage range for the 240 and 208V taps are:

**Table 4 — Operating Voltage Range**

TAP	RANGE
240V	253 - 216
208V	220 - 187

NOTE: The voltage should be measured at the field power connection point in the unit and while the unit is operating at full load (maximum amperage operating condition).

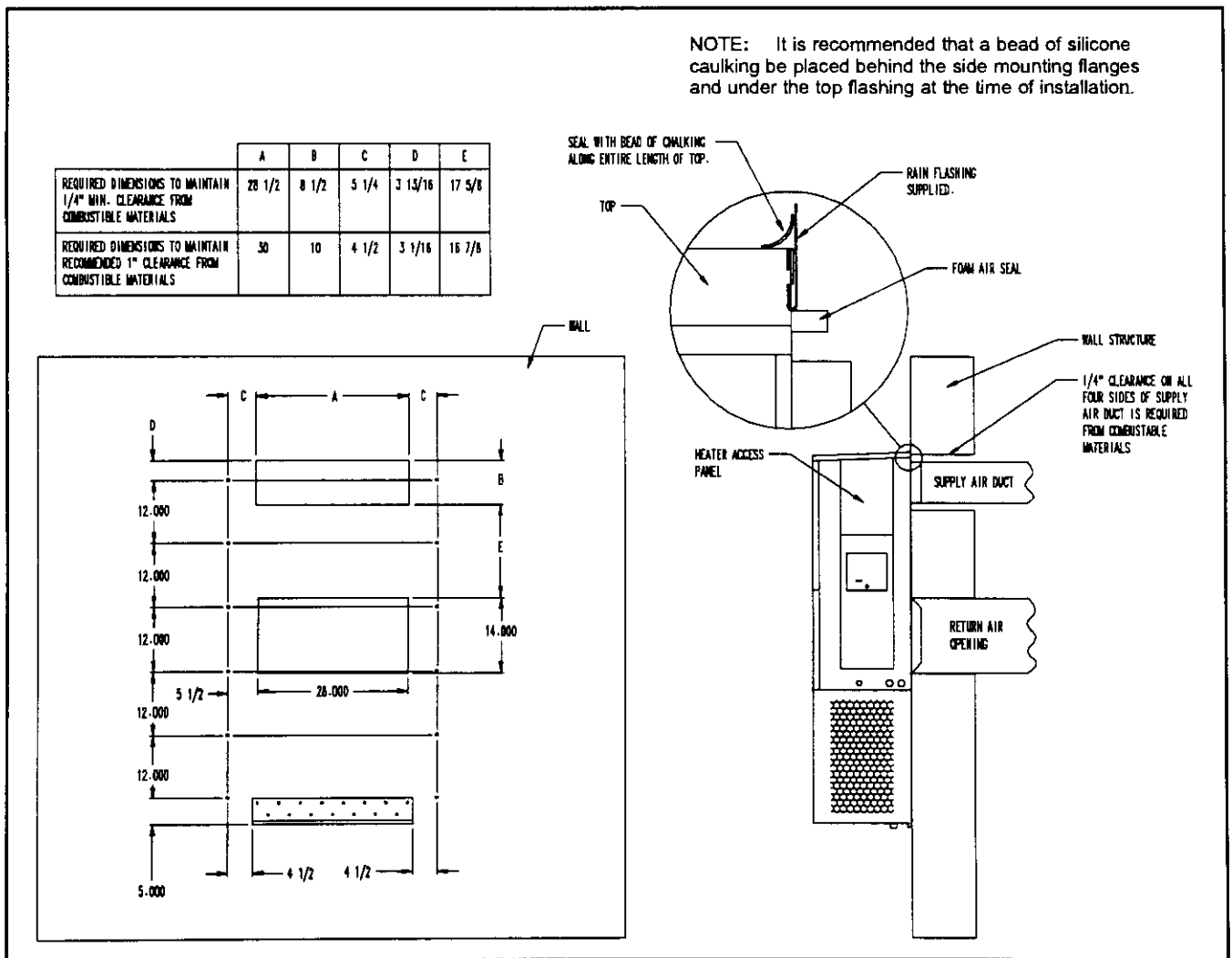
Five (5) wires should be run from thermostat subbase to the 24V terminal board in the unit. A five conductor, 18 gauge copper, color-coded thermostat cable is recommended. The connection points are shown in Figure 10.

**Table 5 — Thermostat Wire Size**

TRANSFORMER VA	FLA	WIRE GAUGE	MAXIMUM DISTANCE IN FEET
55	2.3	20 gauge	45
		18 gauge	60
		16 gauge	100
		14 gauge	160
		12 gauge	250

**Table 6 — Wall Thermostat and Subbase Combinations**

THERMOSTAT	SUBBASE	PREDOMINATE FEATURES
8403-002	8404-003	1 stage heat, 1 stage cool
T87F3111	Q539A1220	System: heat-off-cool Fan: auto-on
8403-009	—	1 stage heat, 1 stage cool
1F56-318	—	System: heat-off-cool Fan: auto-on
8403-019	8404-012	1 stage cool, 2 stage heat
T874C1760	Q674A1001	System: heat-auto-cool Fan: auto-on
8403-035	—	2 stage cool, 2 stage heat
1F95-80	—	Programmable Electronic



**Figure 3 — Mounting Instructions**

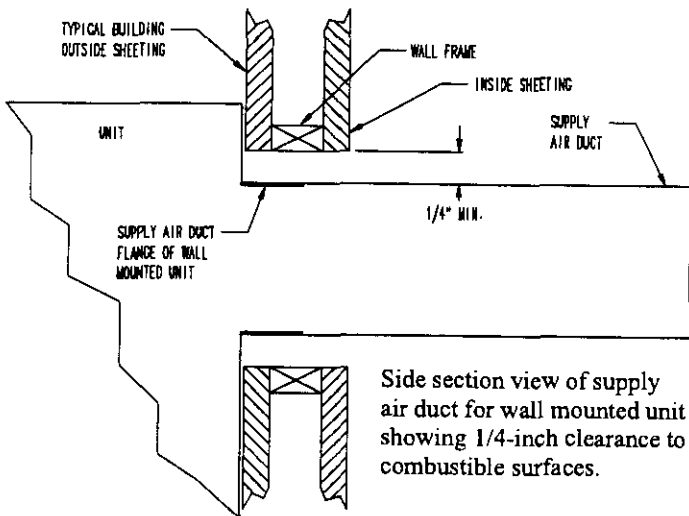


Figure 4 — Electric Heat Clearance

# ⚠ WARNING

- A minimum of 1/4-inch clearance must be maintained between the supply air duct and combustible materials. This is required for the first 3 feet of ducting.
- It is important to insure that the 1/4-inch minimum spacing is maintained at all points.
- Failure to do this could result in overheating the combustible material and may result in fire.

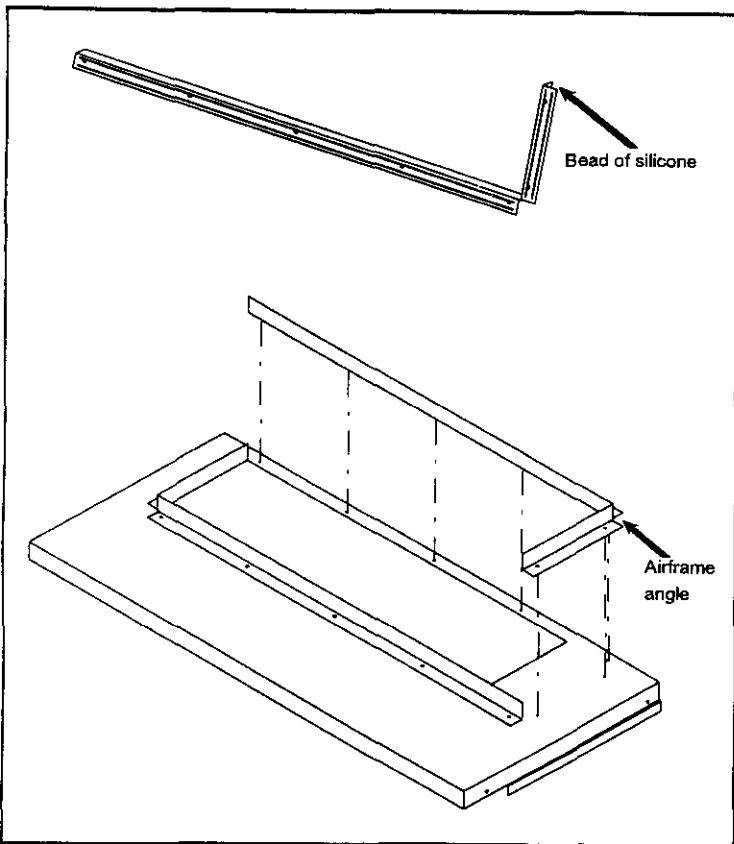


Figure 5 — Air Frame Angles

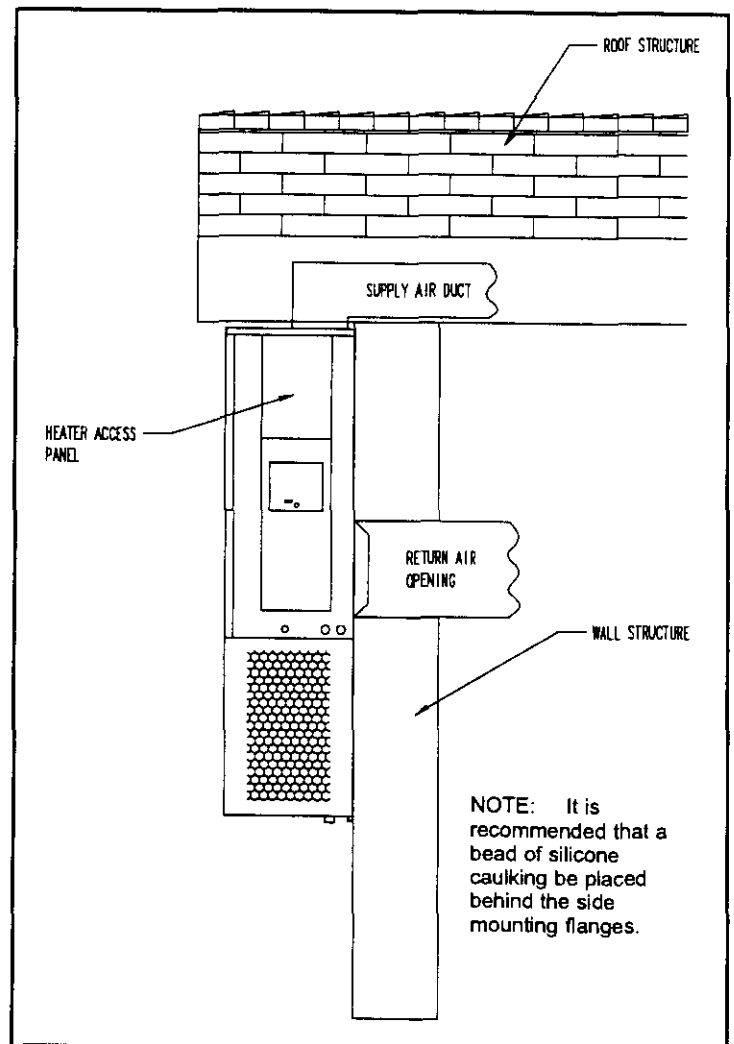
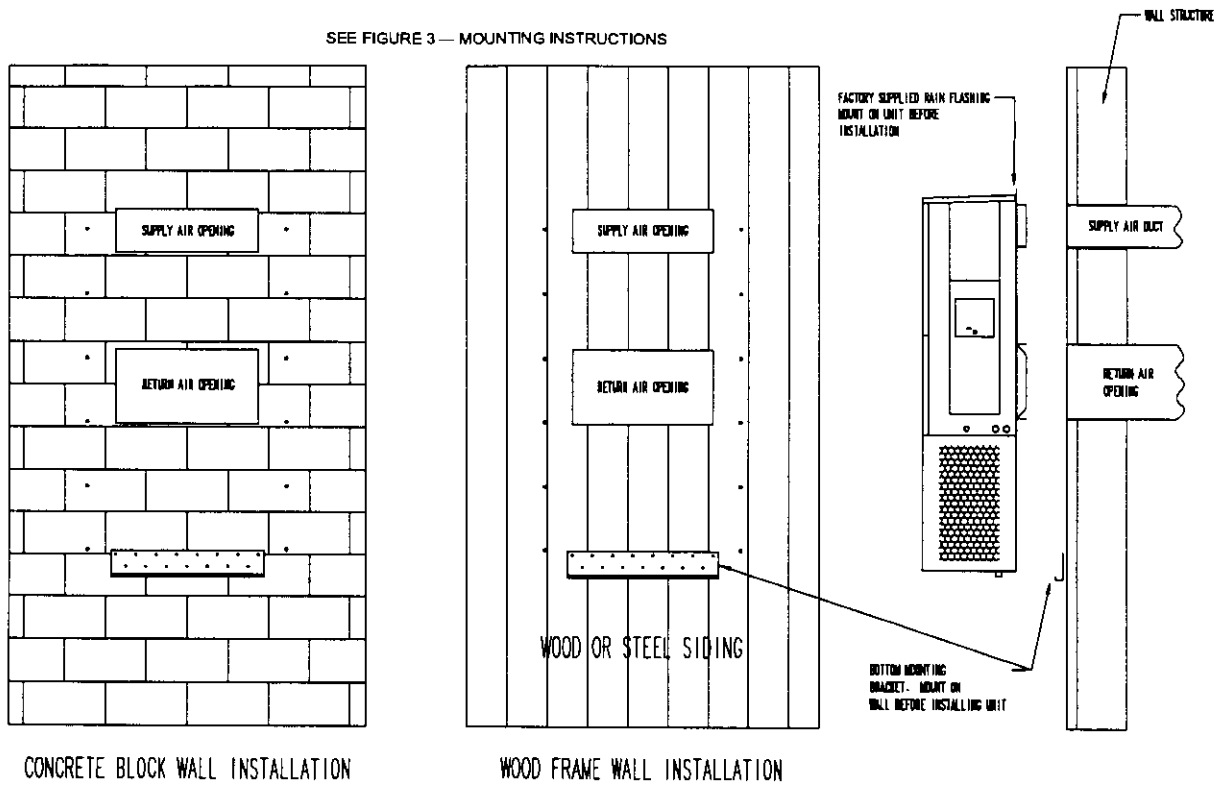
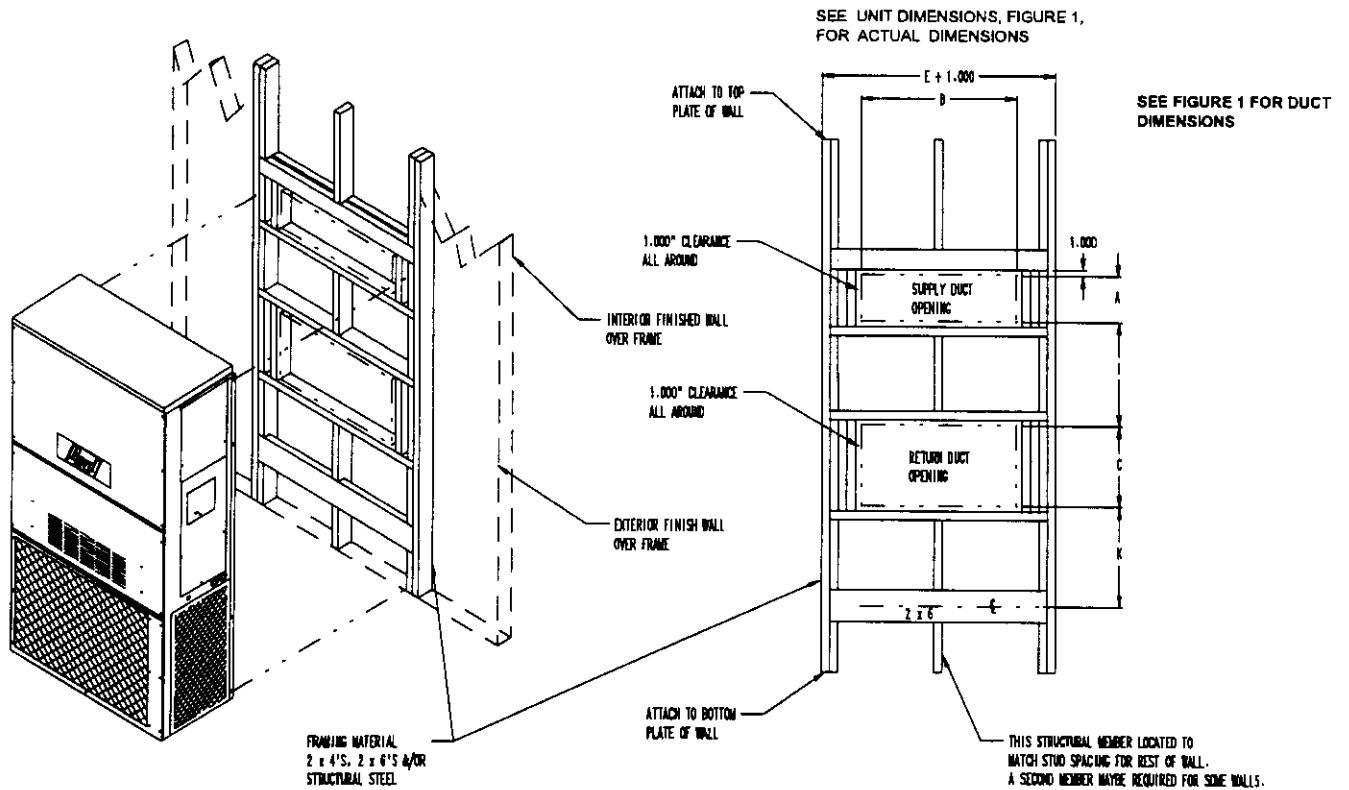


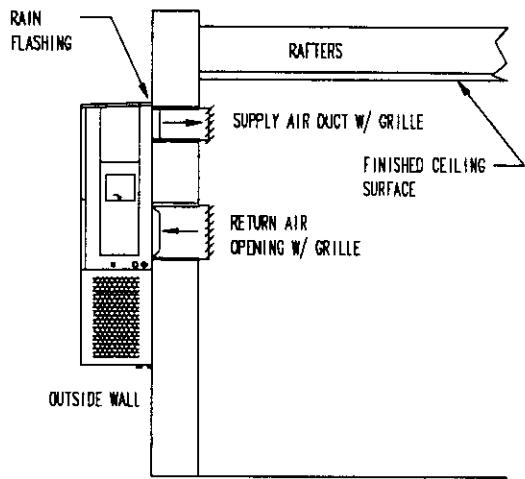
Figure 6 — Soffit Installation



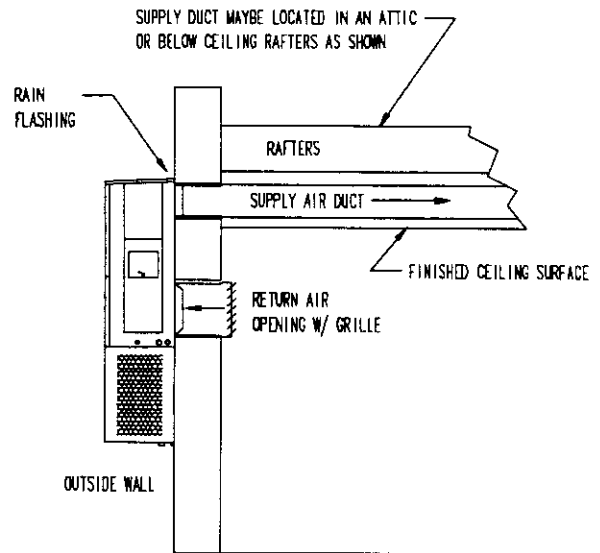
**Figure 7 — Wall-Mounting Instructions**



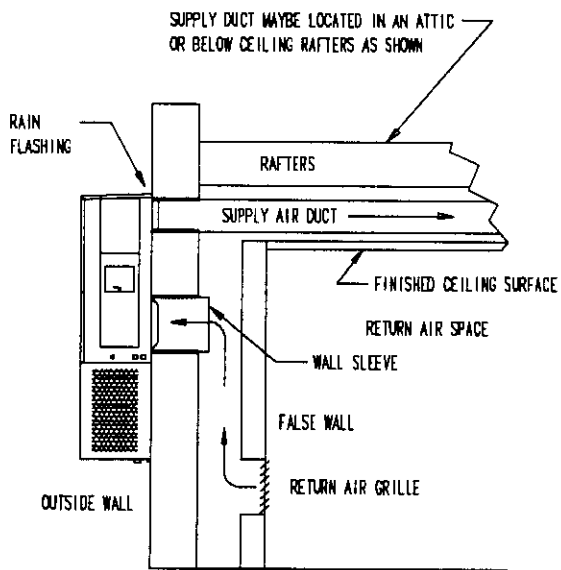
**Figure 8 — Wall-Mounting Instructions**



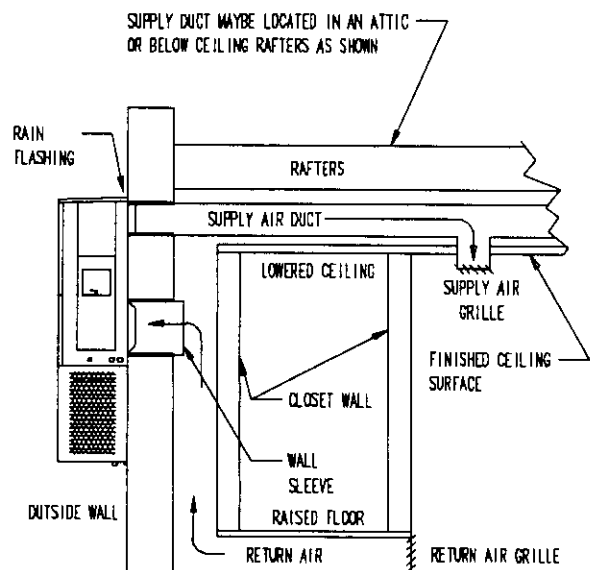
FREE AIR FLOW  
NO DUCT



DUCTED SUPPLY  
RETURN AT UNIT



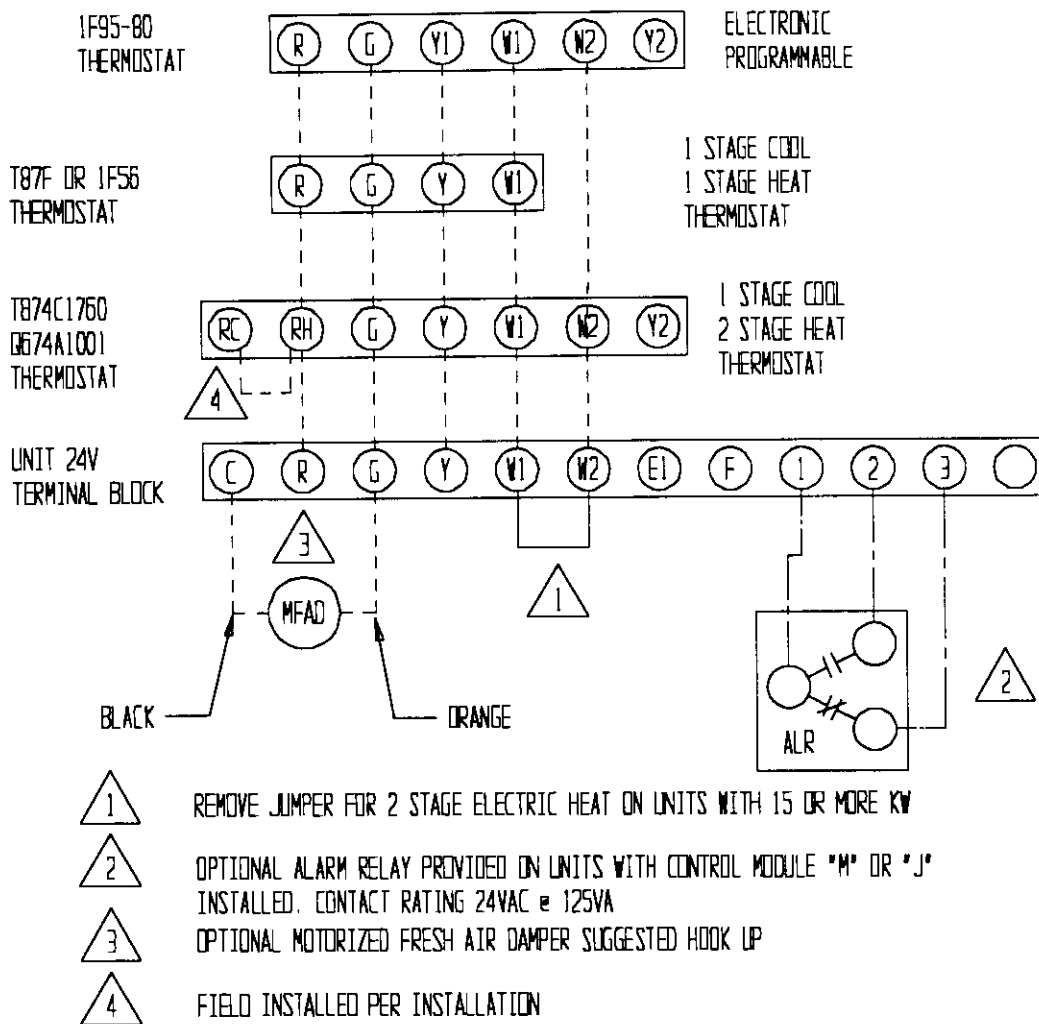
FALSE WALL INSTALLATION



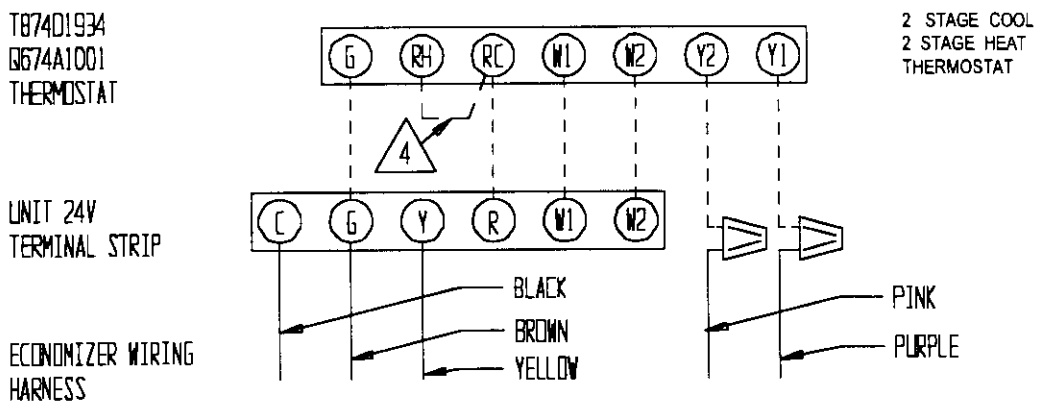
CLOSET INSTALLATION

Figure 9 – Common Wall-Mounting Installations

Figure 10 — Low Voltage Wiring



OPTIONAL ECONOMIZER LOW VOLTAGE WIRING



# Start Up

## Important Installer Note

For improved start-up performance, wash the indoor coil with a dishwasher detergent.

## Crankcase Heaters

All units are provided with some form of compressor crankcase heat.

All single and three phase models have an insertion well-type heater located in the lower section of the compressor housing. This is a self-regulating type heater that draws only enough power to maintain the compressor at a safe temperature.

Some form of crankcase heat is essential to prevent liquid refrigerant from migrating to the compressor, causing oil pump out on compressor start-up and possible valve failure due to compressing a liquid.

The decal in Figure 11 is affixed to all outdoor units detailing start-up procedure. This is very important. Please read carefully.

Figure 11 — Start-Up Label

## **IMPORTANT**

**These procedures must be followed at initial start-up and at any time power has been removed for 12 hours or longer.**

To prevent compressor damage which may result from the presence of liquid refrigerant in the compressor crankcase.

1. Make certain the room thermostat is in the "off" position (the compressor is not to operate).
2. Apply power by closing the system disconnect switch. This energizes the compressor heater which evaporates the liquid refrigerant in the crankcase.
3. Allow 4 hours or 60 minutes per pound of refrigerant in the system as noted on the unit rating plate, whichever is greater.
4. After properly elapsed time, the thermostat may be set to operate the compressor.
5. Except as required for safety while servicing—Do not open system disconnect switch.

7961-061

## Service Hints

1. Caution homeowner to maintain clean air filters at all times. Also, not to needlessly close off supply and return air registers. This reduces air flow through the system, which shortens equipment service life as well as increasing operating costs.
2. Check all power fuses or circuit breakers to be sure they are the correct rating.
3. Periodic cleaning of the outdoor coil to permit full and unrestricted airflow circulation is essential.

## Sequence of Operation

Cooling—Circuit R-Y makes at thermostat pulling in compressor contactor, starting the compressor and outdoor motor. The G (indoor motor) circuit is automatically completed on any call for cooling operation or can be energized by manual fan switch on subbase for constant air circulation. On a call for heating, circuit R-W1 make at the thermostat pulling in heat contact for the strip heat and blower operation. On a call for second stage heat, R-W2 makes bringing on second heat contactor, if so equipped.

## Pressure Service Ports

High and low pressure service ports are installed on all units so that the system operating pressures can be observed. Pressure curves can be found later in the manual covering all models. It is imperative to match the correct pressure curve to the unit by model number.

# Troubleshooting

## Fan Blade Setting Dimensions

Shown in the drawing below are the correct fan blade setting dimensions for proper air delivery across the outdoor coil.

Any service work requiring removal or adjustment in the fan and/or motor area will require that the dimensions below be checked and blade adjusted in or out on the motor shaft accordingly.

Figure 12 — Fan Blade Setting

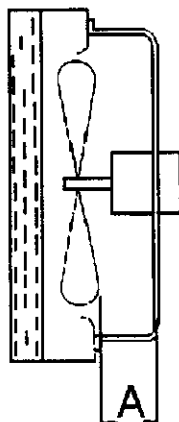


Table 7 — Fan Blade Dimensions

MODEL	DIMENSION A
WA301	1.25
WA361	1.25

## Removal of Fan Shroud

1. Disconnect all power to unit.
2. Remove the screws holding both grills — one on each side of unit — and remove grills.
3. Remove screws holding fan shroud to condenser and bottom — 9 screws.
4. Unwire condenser fan motor.
5. Slide complete motor, fan blade, and shroud assembly out the left side of the unit.
6. Service motor/fan as needed.
7. Reverse steps to reinstall.

## Refrigerant Charge

The correct system R-22 charge is shown on the unit rating plate. Optimum unit performance will occur with a refrigerant charge resulting in a suction line temperature (6-inches from compressor) as shown in Table 8.

Table 8 — Suction Line Temperatures

MODEL	RATED AIRFLOW	95°F	82°F
		OD TEMPERATURE	OD TEMPERATURE
WA301	1,100	55 - 57	64 - 66
WA361	1,100	57 - 59	62 - 64

The above suction line temperatures are based upon 80°F dry bulb/ 67°F wet bulb (50 percent R.H.) temperature and rated airflow across the evaporator during cooling cycle.

Table 9 — Indoor Blower Performance — CFM at 230 Volts

E.S.P. In H <sub>2</sub> O	WA301	
	WA361	
	HIGH SPEED DRY / WET COIL	LOW SPEED DRY / WET COIL
.0	1,395 / 1,315	950/935
.1	1,340 / 1,270	930/915
.2	1,285 / 1,190	910/885
.3	1,205 / 1,100	855/830
.4	1,110 / 1,000	800/755
.5	1,005 / 870	—

Table 10 — CFM and ESP

Model	Rated CFM <sup>Ⓛ</sup>	Rated ESP <sup>Ⓛ</sup>	Recommended Airflow Range
WA301	1,100	.30	930 - 1,300
WA361	1,100	.30	930 - 1,350

Ⓛ Rated CFM and ESP on high speed tap.

Table 11 — Maximum ESP of Operation Electric Heat Only

Model	Front Outlet		Top Outlet	
	Low	High	Low	High
	Speed	Speed	Speed	Speed
A00	.50	.50	.50	.50
A05	.50	.50	.45	.50
A08	.50	.50	—	—
A10	.45	.50	.35	.50
A15	.35	.40	—	—
B00	.50	.50	.50	.50
B06	.40	.50	—	—
B09	.50	.50	.40	.45
B15	.30	.45	—	—
C00	.50	.50	.50	.50
C06	.50	.50	—	—
C09	.40	.50	.40	.45
C15	.35	.45	—	—

Values shown are for units equipped with STD 1-inch throwaway filter or 1-inch washable filter. Derate ESP by .15 for 2-inch pleated filters.

**Table 12 – Cooling Pressure – Outdoor Temperature °F**

Model	Return Air Temperature	Pressure	75°	80°	85°	90°	95°	100°	105°	110°	115°	120°	125°
WA301	75° DB 62° WB	Low Side	74	77	79	81	82	84	85	85	86	87	88
		High Side	218	232	247	262	277	292	306	325	341	357	373
	80° DB 67° WB	Low Side	80	82	84	86	88	89	91	91	92	93	94
		High Side	223	238	253	268	284	300	316	333	350	366	383
	85° DB 72° WB	Low Side	85	88	91	93	95	96	97	96	99	100	101
		High Side	231	246	262	278	294	310	327	345	362	379	396
WA361	75° DB 62° WB	Low Side	70	72	74	76	78	79	80	81	82	83	84
		High Side	224	242	259	275	290	304	316	328	339	351	363
	80° DB 67° WB	Low Side	75	77	79	81	83	85	86	87	88	89	90
		High Side	229	248	265	272	297	311	325	337	348	360	373
	85° DB 72° WB	Low Side	80	83	85	87	89	91	92	94	95	96	98
		High Side	238	257	275	292	307	322	336	349	360	373	386

Low side pressure ± 2 psig

High side pressure ± 5 psig

Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "refrigerant charge" elsewhere in manual. If there is any doubt as to correct charge being in the system, the charge should be removed, system evacuated and recharged to serial plate instructions.

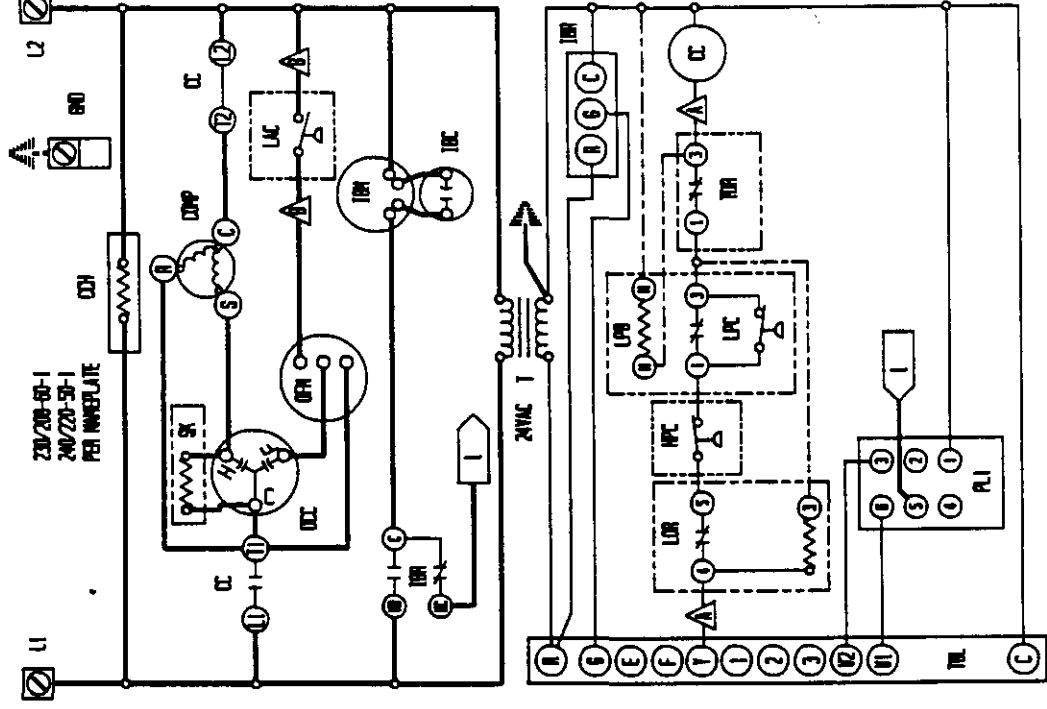
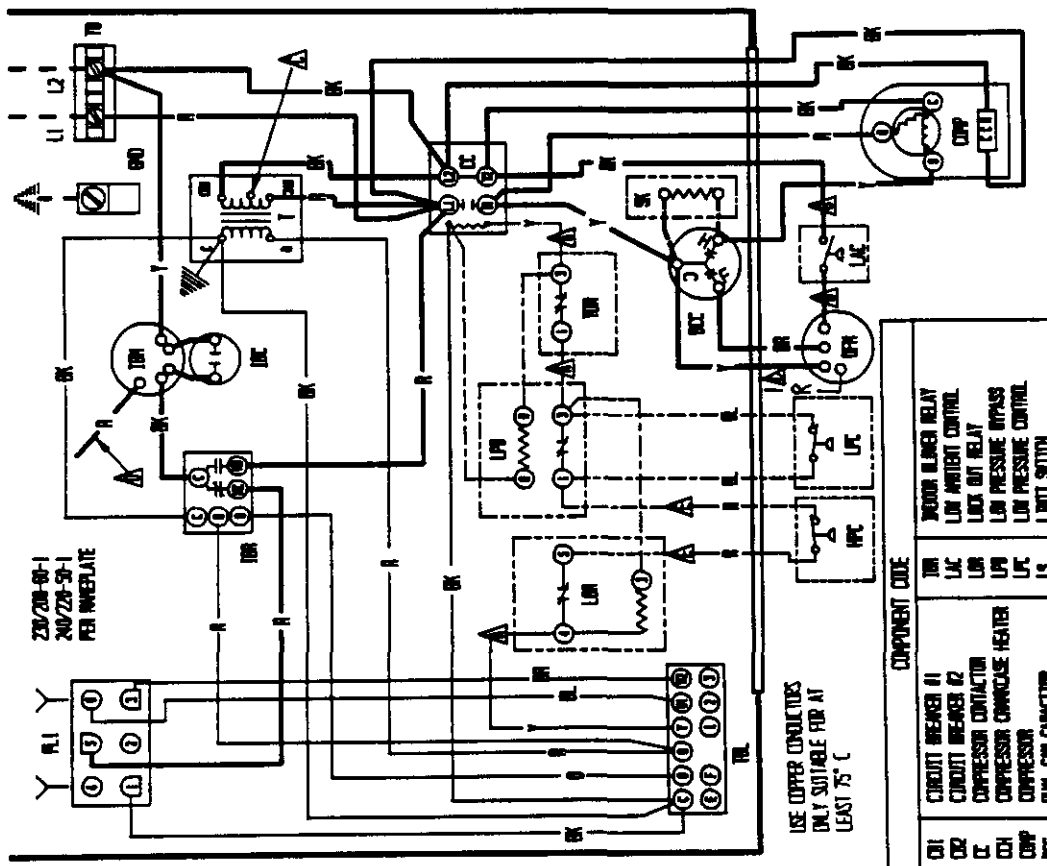
**Table 13 — Optional Accessories**

MODEL	DESCRIPTION	WA301-A	WA301-B	WA301-C	WA361-A	WA361-B	WA361-C
EHWA03-A05	Heater Packages ①	X			X		
EHWA03-A08	Heater Packages ①	X			X		
EHWA03-A10	Heater Packages ①	X			X		
EHWA03-A15	Heater Packages ①	X			X		
EHWA03-B06	Heater Packages ①		X			X	
EHWA03-B09	Heater Packages ①		X			X	
EHWA03-B15	Heater Packages ①		X			X	
EHWA03-C06	Heater Packages ①			X			X
EHWA03-C09	Heater Packages ①			X			X
EHWA03-C12	Heater Packages ①						X
EHWA03-C15	Heater Packages ①			X			X
BOP-3	Blank Off Plate	X	X	X	X	X	X
BFAD-3	Barometric Fresh Air Damper	X	X	X	X	X	X
MFAD-3	Motorized Fresh Air Damper	X	X	X	X	X	X
CRV-3	Commercial Ventilator with Exhaust	X	X	X	X	X	X
EIFM-3	Economizer with Exhaust	X	X	X	X	X	X
WERV-A3A	Energy Recovery Ventilator	X	X		X	X	
WERV-C3A	Energy Recovery Ventilator			X			X
CMA-1	High Pressure Control (HPC)	X	X	X	X	X	X
CMA-2	Low Pressure Control (LPC)	X	X	X	X	X	X
CMA-4	Low and High Pressure Control	X	X	X	X	X	X
CMA-5	Time Delay Relay (TDR)	X	X	X	X	X	X
CMA-6	Low Ambient Control (LAC)	X	X		X	X	
CMA-8	TDR + HPC	X	X	X	X	X	X
CMA-10	LPC + HPC + TDR	X	X	X	X	X	X
CMA-11	LPC + HPC + LAC	X	X		X	X	
CMA-12	LAC + TDR	X	X		X	X	
CMA-13	LPC + HPC + TDR + LAC	X	X		X	X	
CMC-15	Start Kit	X			X		
WMCB-05A	Circuit Breaker Kit	X			X		
WMCB-02B	Circuit Breaker Kit		X				
WMPD-01C	Pull Disconnect Kit			X			
WMCB-03B	Circuit Breaker Kit					X	

① These heater packages not suitable for installation in top outlet units.

**Note:** Top outlet models are available only as factory built.





USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75° C

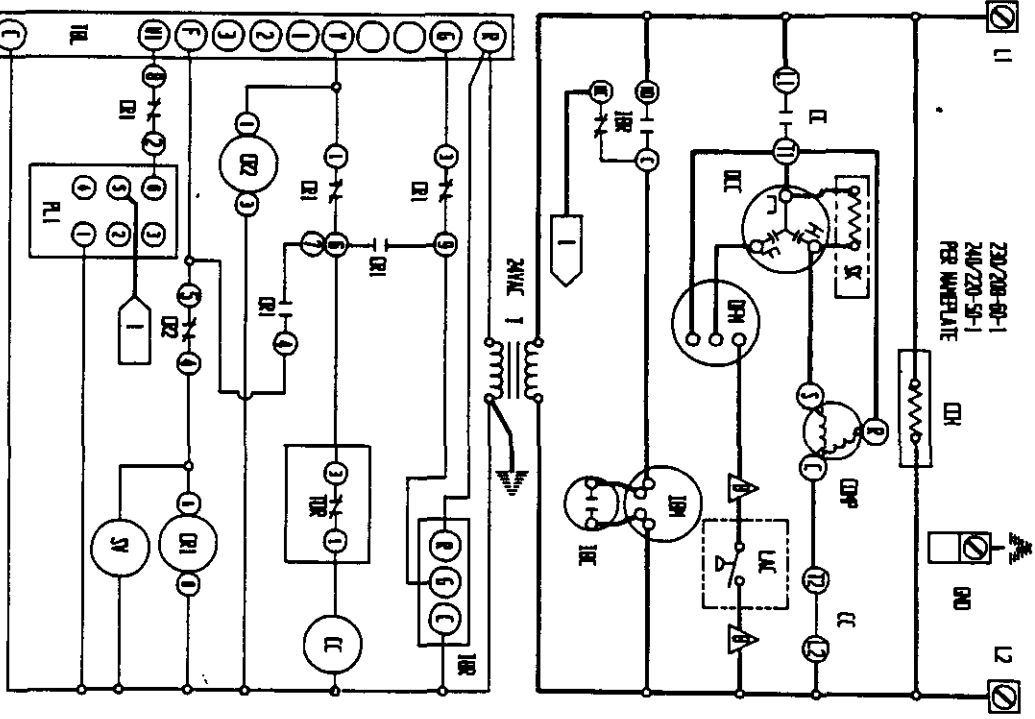
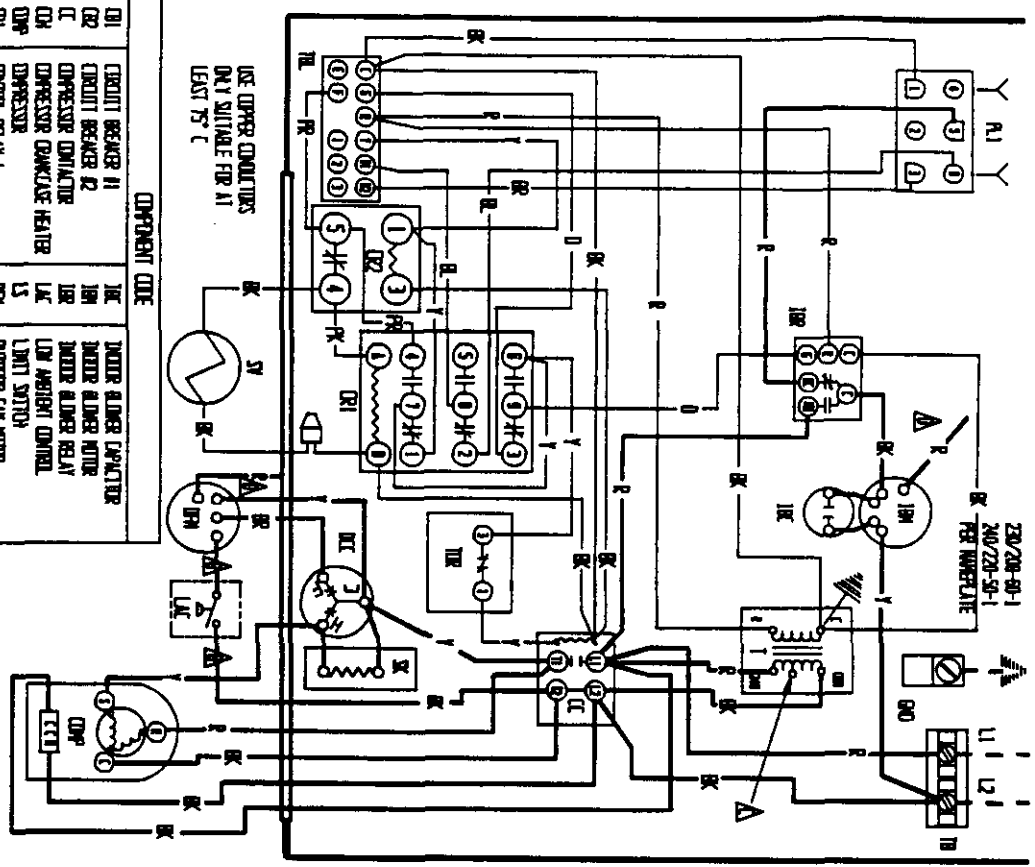
230/208-01-1  
240/220-51-1  
PER INWERPLATE

COMPONENT CODE	
CR1	CIRCUIT BREAKER #1
CR2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CD	COMPRESSOR COMPRESSOR HEATER
CCP	COMPRESSOR
CC2	COMPRESSOR
CG	CUIL CAN CAPACITOR
GO	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H1C	HEATER CONTACTOR #1
H2C	HEATER CONTACTOR #2
HTC	HIGH PRESSURE CONTROL
IR	INDOOR BLOWER MOTOR
IR2	INDOOR BLOWER RELAY
IAC	INDOOR AMBIENT CONTROL
LUR	LOCK OUT RELAY
LUR2	LOCK OUT RELAY
LPC	LOW PRESSURE BYPASS
LPS	LOW PRESSURE CONTROL
LPS2	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
LS2	LIMIT SWITCH
OFM	OUTDOOR FAN MOTOR
PL1	PLUG #1
SK	START KIT
TRNSFRM	TRANSFORMER
TRM	TERMINAL BLOCK
TRM2	TERMINAL BLOCK
TV	LOW VOLTAGE TERMINAL BLOCK
TC	THERMAL CUTOFF
TC2	THERMAL CUTOFF
TR	TRIP DELAY RELAY

▲ ▲ Labeled wires connect if no options used.  
 ▲ NOTE RED WIRE TO 208V TAP FOR 208V OPERATION  
 ▲ RED (24V) BLACK (208V) WHERE APPLICABLE

WIRE	COLOR CODE
BLACK	Y
BROWN	G
RED	R
ORANGE	O
YELLOW	V
GREEN	(GR)
BLUE	BT
WHITE	(S)
PINK	PK
GRAY	L
LAUREL	LA

BARD HFG. CO.  
 DWG. 4025-110 C  
 DWG. LCB  
 CHR./APPL.



COMPONENT CODE	DESCRIPTION
DI1	CIRCUIT BREAKER #1
DI2	CIRCUIT BREAKER #2
DI3	COMPRESSOR CONTACTOR
DI4	COMPRESSOR CONTACTOR HEATER
DI5	COMPRESSOR
DI6	CONTROL RELAY #1
DI7	CONTROL RELAY #2
DI8	CONTROL RELAY #3
DI9	CONTROL RELAY #4
DI10	CONTROL RELAY #5
DI11	CONTROL RELAY #6
DI12	CONTROL RELAY #7
DI13	CONTROL RELAY #8
DI14	CONTROL RELAY #9
DI15	CONTROL RELAY #10
DI16	CONTROL RELAY #11
DI17	CONTROL RELAY #12
DI18	CONTROL RELAY #13
DI19	CONTROL RELAY #14
DI20	CONTROL RELAY #15
DI21	CONTROL RELAY #16
DI22	CONTROL RELAY #17
DI23	CONTROL RELAY #18
DI24	CONTROL RELAY #19
DI25	CONTROL RELAY #20
DI26	CONTROL RELAY #21
DI27	CONTROL RELAY #22
DI28	CONTROL RELAY #23
DI29	CONTROL RELAY #24
DI30	CONTROL RELAY #25
DI31	CONTROL RELAY #26
DI32	CONTROL RELAY #27
DI33	CONTROL RELAY #28
DI34	CONTROL RELAY #29
DI35	CONTROL RELAY #30
DI36	CONTROL RELAY #31
DI37	CONTROL RELAY #32
DI38	CONTROL RELAY #33
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DI40	CONTROL RELAY #35
DI41	CONTROL RELAY #36
DI42	CONTROL RELAY #37
DI43	CONTROL RELAY #38
DI44	CONTROL RELAY #39
DI45	CONTROL RELAY #40
DI46	CONTROL RELAY #41
DI47	CONTROL RELAY #42
DI48	CONTROL RELAY #43
DI49	CONTROL RELAY #44
DI50	CONTROL RELAY #45
DI51	CONTROL RELAY #46
DI52	CONTROL RELAY #47
DI53	CONTROL RELAY #48
DI54	CONTROL RELAY #49
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DI91	CONTROL RELAY #86
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DI93	CONTROL RELAY #88
DI94	CONTROL RELAY #89
DI95	CONTROL RELAY #90
DI96	CONTROL RELAY #91
DI97	CONTROL RELAY #92
DI98	CONTROL RELAY #93
DI99	CONTROL RELAY #94
DI100	CONTROL RELAY #95

COMPONENT CODE	DESCRIPTION
DI1	INDOOR BLOWER CAPACITOR
DI2	INDOOR BLOWER MOTOR
DI3	INDOOR BLOWER RELAY
DI4	LOW AMBERIGHT CONTROL
DI5	LIMIT SWITCH
DI6	OUTDOOR FAN MOTOR
DI7	PLATE #1
DI8	START KIT
DI9	START KIT
DI10	START KIT
DI11	START KIT
DI12	START KIT
DI13	START KIT
DI14	START KIT
DI15	START KIT
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DI99	START KIT
DI100	START KIT

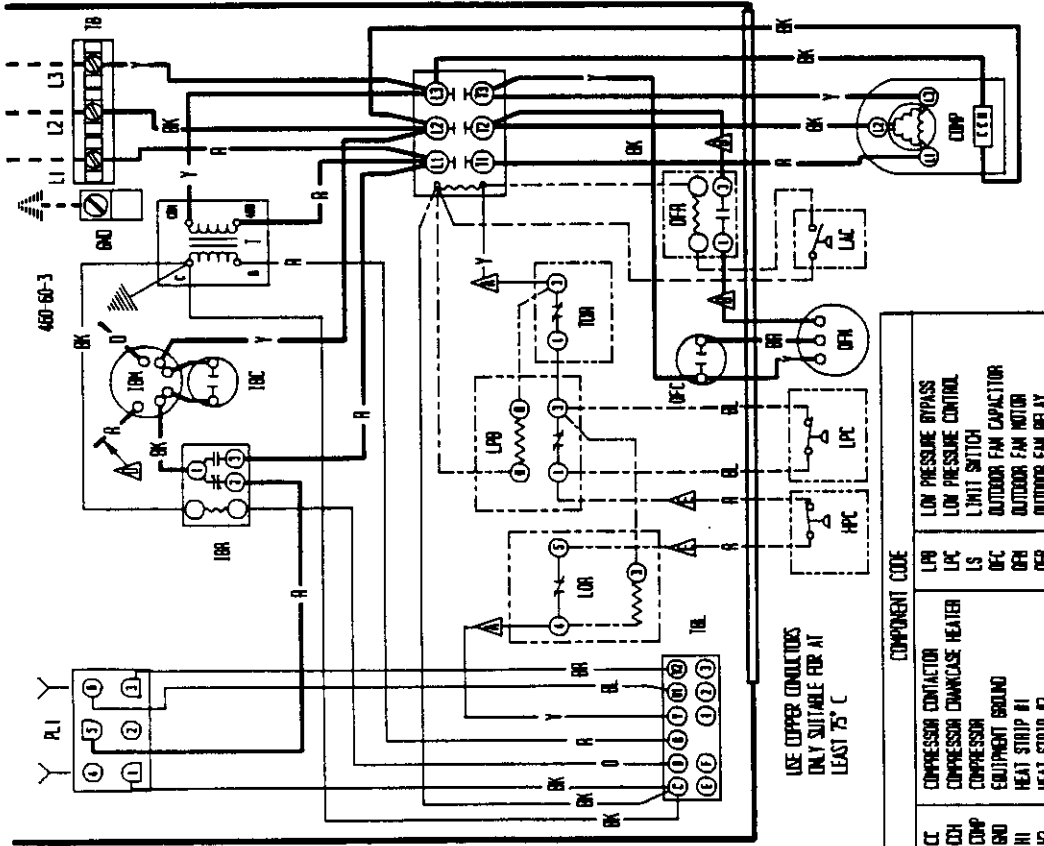
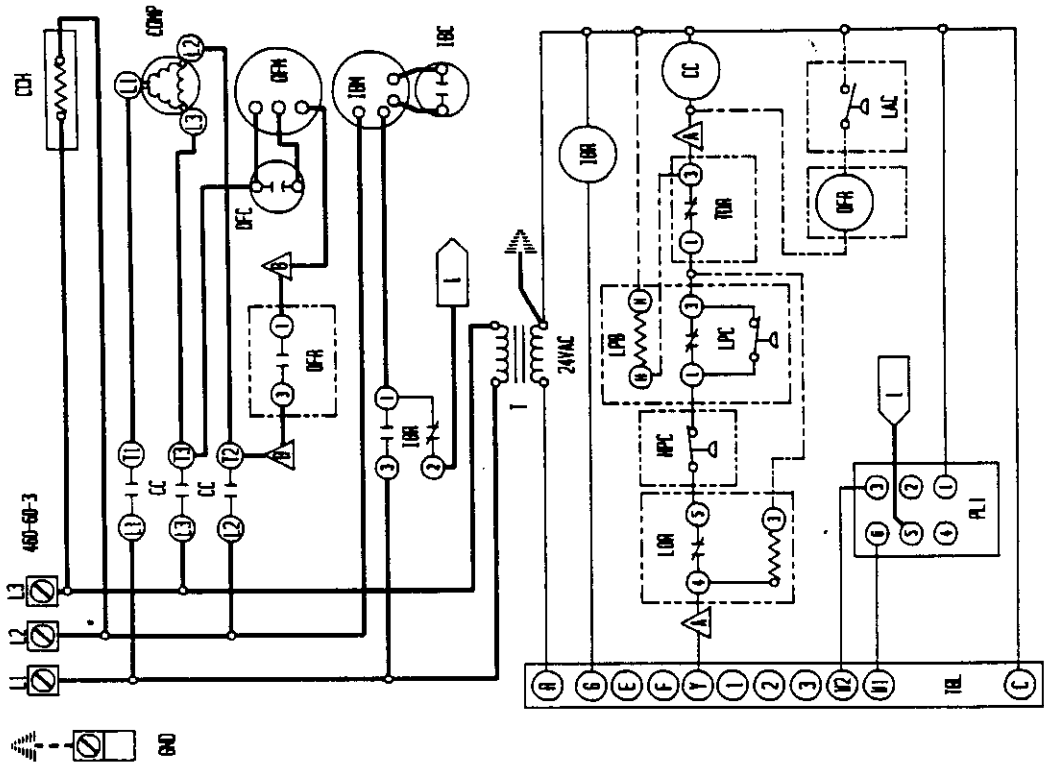
WIRE COLOR	WIRE TYPE	WIRE SIZE	WIRE GAUGE
BLACK	18 AWG	1.02	18
RED	18 AWG	1.02	18
BLUE	18 AWG	1.02	18
GREEN	18 AWG	1.02	18
YELLOW	18 AWG	1.02	18
PINK	18 AWG	1.02	18
WHITE	18 AWG	1.02	18
GRAY	18 AWG	1.02	18
ORANGE	18 AWG	1.02	18
PURPLE	18 AWG	1.02	18
BROWN	18 AWG	1.02	18
TEAL	18 AWG	1.02	18
SLATE	18 AWG	1.02	18
CRIMSON	18 AWG	1.02	18
INDIGO	18 AWG	1.02	18
VIOLET	18 AWG	1.02	18
PINK	18 AWG	1.02	18
RED	18 AWG	1.02	18
ORANGE	18 AWG	1.02	18
YELLOW	18 AWG	1.02	18
GREEN	18 AWG	1.02	18
BLUE	18 AWG	1.02	18
BLACK	18 AWG	1.02	18

240/208-50-1  
 240/208-50-1  
 PER WHERELATE

240/208-50-1  
 240/208-50-1  
 PER WHERELATE

240/208-50-1  
 240/208-50-1  
 PER WHERELATE

240/208-50-1  
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 PER WHERELATE



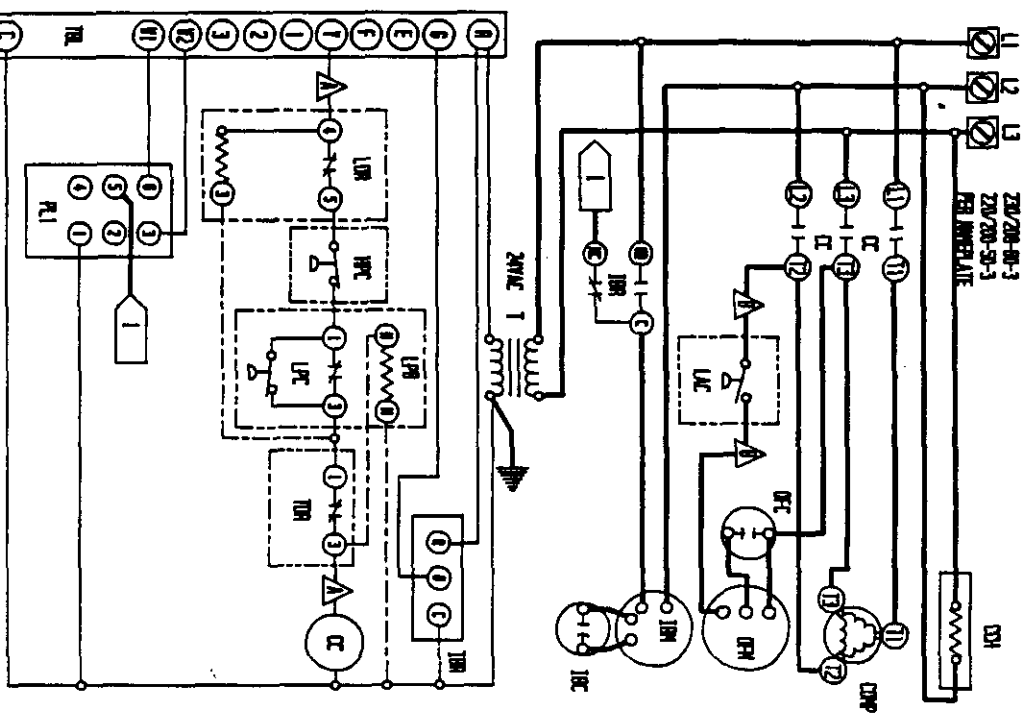
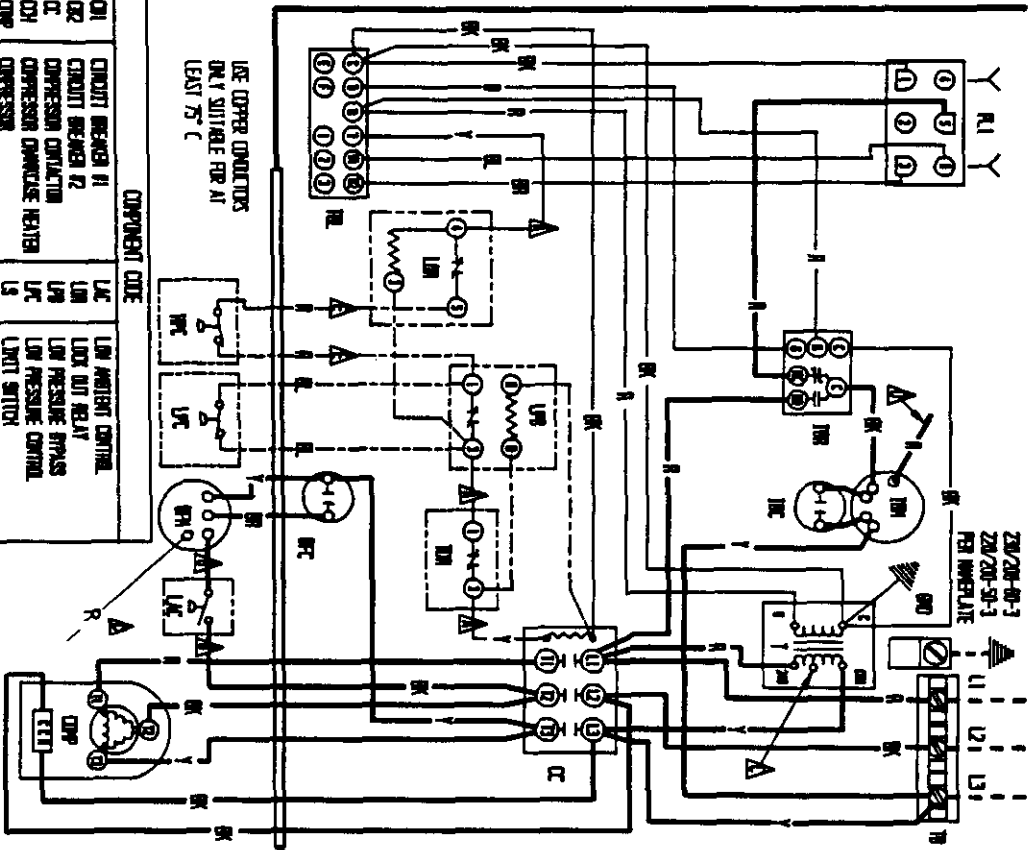
USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75° C

COMPONENT CODE	DESCRIPTION
CC	COMPRESSOR CONTACTOR
CDH	COMPRESSOR CAPACITOR
COMP	COMPRESSOR
EN0	EQUIPMENT GROUND
HI	HEAT STRIP #1
H2	HEAT STRIP #2
H2C	HEATER CONTACTOR #1
H2C	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
IBC	INDOOR BLOWER CAPACITOR
IBH	INDOOR BLOWER MOTOR
IBR	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOR	LOCK OUT RELAY
LPR	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LS	LOW PRESSURE SWITCH
DFC	OUTDOOR FAN CAPACITOR
DFR	OUTDOOR FAN MOTOR
DFR	OUTDOOR FAN RELAY
FD	PULL DISCONNECT
PL1	TRANSFORMER
TB	TERMINAL BLOCK
T20	LOW VOLTAGE TERMINAL BLOCK
TDR	THERMAL CUTOFF
TDR	TIME RELAY RELAY

▲ Labeled wires connect if no options used. ▲ For low speed connect black and orange wires together and insulate. ▲ Connect red wire to terminal 1 of IBC.

HIGH VOLTAGE		LOW VOLTAGE		ACCESSORY		OPTIONAL	
FACTORY STD.	FIELD	FACTORY STD.	FIELD	FACTORY STD.	FIELD	FACTORY STD.	FIELD
Y	Y	BL	BL	OR	OR	---	---
G	G	RD	RD	BR	BR	---	---
V	V	BL	BL	OR	OR	---	---
Y	Y	BL	BL	OR	OR	---	---
G	G	RD	RD	BR	BR	---	---
V	V	BL	BL	OR	OR	---	---

COLOR CODE		BARD MFG. CO.	
Y	V	TRN	TRN
VIOLLET	Y	PINK	PINK
PURPLE	(PR)	LAVENDER	LAVENDER
GRAY	GY	---	---
SLATE	(S)	---	---



**COMPONENT CODE**

01	CIRCUIT BREAKER #1	LM	LOW AMBIENT CONTROL
02	CIRCUIT BREAKER #2	LO	LOCK OUT RELAY
03	COMPRESSOR CONTACTOR	LP	LOW PRESSURE PRESS
04	CONDENSER FAN CONTACTOR	LF	LOW PRESSURE CONTROL
05	CONDENSER FAN MOTOR	LS	LIMIT SWITCH
06	COMPRESSOR	OC	OUTDOOR FAN CONTACTOR
07	EQUIPMENT GROUND	OR	OUTDOOR FAN MOTOR
08	HEAT STRIP #1	PL	PLUS #1
09	HEAT STRIP #2	ST	START KIT
10	HEATER CONTACTOR #1	TR	TEMPERATURE BLOCK
11	HEATER CONTACTOR #2	TL	TEMPERATURE BLOCK
12	HIGH PRESSURE CONTACTOR	TV	TEMPERATURE BLOCK
13	INDOOR BLOWER CONTACTOR	TD	TEMPERATURE OFF
14	INDOOR BLOWER MOTOR	TR	THE RELAY RELAY
15	INDOOR BLOWER RELAY		

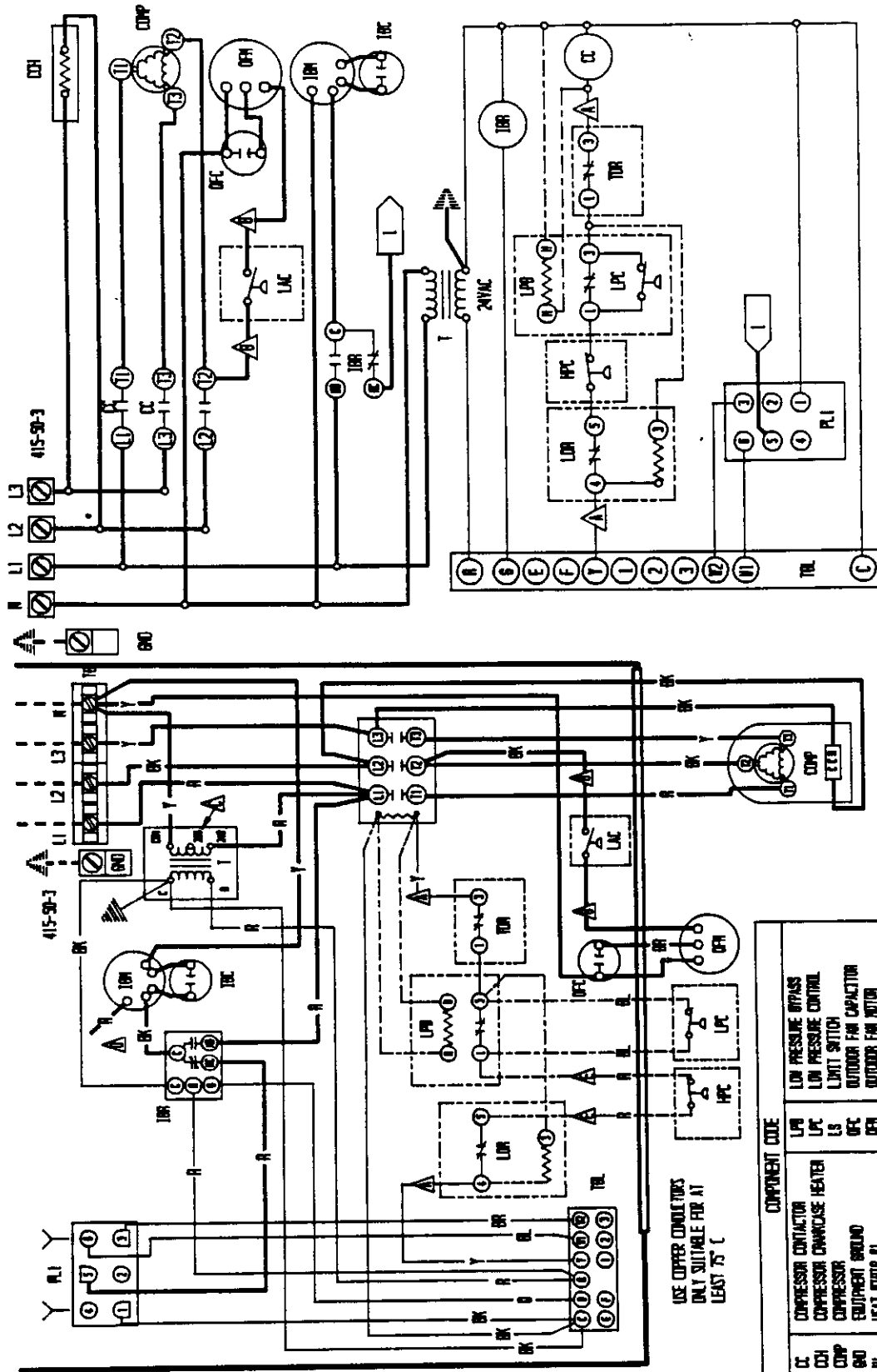
USE COPPER CONDUCTORS  
OR Y SIZEABLE FOR AT  
LEAST 75°C

LM	LOW AMBIENT CONTROL
LO	LOCK OUT RELAY
LP	LOW PRESSURE PRESS
LF	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OC	OUTDOOR FAN CONTACTOR
OR	OUTDOOR FAN MOTOR
PL	PLUS #1
ST	START KIT
TR	TEMPERATURE BLOCK
TL	TEMPERATURE BLOCK
TV	TEMPERATURE BLOCK
TD	TEMPERATURE OFF
TR	THE RELAY RELAY

RED (W/OUT BLACK (H/WH) WHERE APPLICABLE

COLOR CODE			
1	2	3	4
BLACK	BROWN	RED	ORANGE
5	6	7	8
YELLOW	GREEN	BLUE	WHITE
9	10	11	12
VIOLET	PURPLE	GRAY	SLATE
13	14	15	16
TAN	PINK	LANDER	
BARB WPC. CO.			
P/N: 4095-210 D			
P/N: C88			
CR. APPR.:			

UNLESS OTHERWISE SPECIFIED, ALL TERMINALS ARE TO BE CONNECTED TO THE FIELD. FIELD CONNECTIONS ARE TO BE MADE BY THE INSTALLER. FIELD CONNECTIONS ARE TO BE MADE BY THE INSTALLER.



**NOTE RED WIRE TO 200V TAP FOR 200V OPERATION**

<b>BLACK (LOW) BLACK (HIGH)</b>	<b>RED (LOW) BLACK (HIGH)</b>	<b>NOTE RED WIRE TO 200V TAP FOR 200V OPERATION</b>	
<b>BLACK</b>	<b>BLACK</b>	<b>TAN</b>	<b>BROWN</b>
<b>BROWN</b>	<b>BROWN</b>	<b>PINK</b>	<b>PINK</b>
<b>RED</b>	<b>RED</b>	<b>LAVENDER</b>	<b>LAVENDER</b>
<b>ORANGE</b>	<b>ORANGE</b>	<b>SLATE</b>	<b>SLATE</b>
<b>WHITE</b>	<b>WHITE</b>	<b>GRAY</b>	<b>GRAY</b>
<b>GRAY</b>	<b>GRAY</b>	<b>SLATE</b>	<b>SLATE</b>
<b>WHITE</b>	<b>WHITE</b>	<b>SLATE</b>	<b>SLATE</b>

**▲ ▲ Labeled wires connect if no options used.**

<b>FACTORY WIRE</b>	<b>FIELD</b>	<b>OPTIONAL</b>
---	---	---
---	---	---
---	---	---
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COMPONENT CODE	COMPONENT CODE
CC	LOW PRESSURE BYPASS
CC1	LOW PRESSURE CONTROL
CCP	LOW PRESSURE CAPACITOR
GND	LOW VOLTAGE THERMAL BLOCK
H1	LOW VOLTAGE THERMAL BLOCK
H2	LOW VOLTAGE THERMAL BLOCK
HFC	LOW VOLTAGE THERMAL BLOCK
HFC	LOW VOLTAGE THERMAL BLOCK
IM	LOW VOLTAGE THERMAL BLOCK
IR	LOW VOLTAGE THERMAL BLOCK
LAC	LOW VOLTAGE THERMAL BLOCK
LAP	LOW VOLTAGE THERMAL BLOCK
LPB	LOW VOLTAGE THERMAL BLOCK
LPC	LOW VOLTAGE THERMAL BLOCK
LS	LOW VOLTAGE THERMAL BLOCK
OPC	LOW VOLTAGE THERMAL BLOCK
OPM	LOW VOLTAGE THERMAL BLOCK
OPN	LOW VOLTAGE THERMAL BLOCK
OPR	LOW VOLTAGE THERMAL BLOCK
PI	LOW VOLTAGE THERMAL BLOCK
P1	LOW VOLTAGE THERMAL BLOCK
T	LOW VOLTAGE THERMAL BLOCK
T1	LOW VOLTAGE THERMAL BLOCK
T2	LOW VOLTAGE THERMAL BLOCK
T3	LOW VOLTAGE THERMAL BLOCK
T4	LOW VOLTAGE THERMAL BLOCK
T5	LOW VOLTAGE THERMAL BLOCK
T6	LOW VOLTAGE THERMAL BLOCK
T7	LOW VOLTAGE THERMAL BLOCK
T8	LOW VOLTAGE THERMAL BLOCK
T9	LOW VOLTAGE THERMAL BLOCK
T10	LOW VOLTAGE THERMAL BLOCK
T11	LOW VOLTAGE THERMAL BLOCK
T12	LOW VOLTAGE THERMAL BLOCK
T13	LOW VOLTAGE THERMAL BLOCK
T14	LOW VOLTAGE THERMAL BLOCK
T15	LOW VOLTAGE THERMAL BLOCK
T16	LOW VOLTAGE THERMAL BLOCK
T17	LOW VOLTAGE THERMAL BLOCK
T18	LOW VOLTAGE THERMAL BLOCK
T19	LOW VOLTAGE THERMAL BLOCK
T20	LOW VOLTAGE THERMAL BLOCK
T21	LOW VOLTAGE THERMAL BLOCK
T22	LOW VOLTAGE THERMAL BLOCK
T23	LOW VOLTAGE THERMAL BLOCK
T24	LOW VOLTAGE THERMAL BLOCK
T25	LOW VOLTAGE THERMAL BLOCK
T26	LOW VOLTAGE THERMAL BLOCK
T27	LOW VOLTAGE THERMAL BLOCK
T28	LOW VOLTAGE THERMAL BLOCK
T29	LOW VOLTAGE THERMAL BLOCK
T30	LOW VOLTAGE THERMAL BLOCK
T31	LOW VOLTAGE THERMAL BLOCK
T32	LOW VOLTAGE THERMAL BLOCK
T33	LOW VOLTAGE THERMAL BLOCK
T34	LOW VOLTAGE THERMAL BLOCK
T35	LOW VOLTAGE THERMAL BLOCK
T36	LOW VOLTAGE THERMAL BLOCK
T37	LOW VOLTAGE THERMAL BLOCK
T38	LOW VOLTAGE THERMAL BLOCK
T39	LOW VOLTAGE THERMAL BLOCK
T40	LOW VOLTAGE THERMAL BLOCK
T41	LOW VOLTAGE THERMAL BLOCK
T42	LOW VOLTAGE THERMAL BLOCK
T43	LOW VOLTAGE THERMAL BLOCK
T44	LOW VOLTAGE THERMAL BLOCK
T45	LOW VOLTAGE THERMAL BLOCK
T46	LOW VOLTAGE THERMAL BLOCK
T47	LOW VOLTAGE THERMAL BLOCK
T48	LOW VOLTAGE THERMAL BLOCK
T49	LOW VOLTAGE THERMAL BLOCK
T50	LOW VOLTAGE THERMAL BLOCK

