

# **INSTALLATION INSTRUCTIONS**

## **WALL MOUNTED PACKAGE AIR CONDITIONERS**

### **MODELS**

**WA421**

**WA482**

**WA602**

**DATE: 05-15-96**

**MANUAL 2100-218 REV. G  
SUPERSEDES REV. F  
FILE VOL. III, TAB 16**

## SECTION 1 --GETTING OTHER INFORMATION AND PUBLICATIONS

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 Of Air Conditioning and Ventilating Systems	-ANSI/NFPA 90A
Standard For Warm Air Heating and Air Conditioning Systems	-ANSI/NFPA 90B
Load Calculation For Residential Winter and Summer Air Conditioning	-ACCA Manual J
Duct Design For Residential Winter and Summer Air Conditioning and Equipment Selection	-ACCA Manual D

---

### FOR MORE INFORMATION, CONTACT THESE PUBLISHERS

- ACCA:** AIR CONDITIONING CONTRACTORS OF AMERICA  
1513 16th Street NW  
Washington, DC 20036  
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

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.

COPYRIGHT MAY, 1994  
BARD MANUFACTURING COMPANY  
BRYAN, OH 43506 USA

# TABLE OF CONTENTS

## PART 1 -- WALL MOUNT--GENERAL INSTALLATION INFORMATION

Air Conditioner Wall Mount Model Nomenclature . . . . .	1
Shipping Damage . . . . .	1
General . . . . .	4
Duct Work . . . . .	4
Filters . . . . .	5
Fresh Air Intake . . . . .	5
Condensate Drain . . . . .	5

## PART 2 -- INSTALLATION INSTRUCTIONS

Wall Mounting Information . . . . .	6
Mounting The Unit . . . . .	6

### WIRING

Wiring--Main Power . . . . .	11
Wiring: Low Voltage Wiring . . . . .	11

## PART 3 -- START-UP

Important Installer Note . . . . .	13
Crankcase Heaters . . . . .	13
High Pressure Switch. . . . .	13
Three Phase Scroll Compressor Start Up. . . . .	13
Service Hints . . . . .	14
Sequence of Operation . . . . .	14
Pressure Service Ports . . . . .	14

## PART 4 -- TROUBLESHOOTING

Fan Blade Setting Dimensions . . . . .	14
Removal of The Fan Shroud . . . . .	15
Refrigerant Charge . . . . .	15
Pressure Table . . . . .	16
Optional Accessories. . . . .	17

## FIGURES AND TABLES

Figure 1	Unit Dimensions . . . . .	2
Figure 2	Fresh Air Damper Assembly . . . . .	5
Figure 3	Mounting Locations . . . . .	7
Figure 3A	Electric Heat Clearance . . . . .	8
Figure 4	Wall-Mounting Instructions . . . . .	9
Figure 5	Wall-Mounting Instructions . . . . .	9
Figure 6	Common Wall-Mounting Installation . . . . .	10
Figure 7	Unit 24V Terminal Board . . . . .	12
Figure 8	Start-Up . . . . .	13
Figure 9	Fan Blade Setting . . . . .	14

Table 1	Electric Heat Table . . . . .	1
Table 2	Electrical Specifications . . . . .	3
Table 3	Thermostat Wire Sizes and Thermostat Combinations . . . . .	11
Table 3A	Wall Thermostat and Subbase Combinations. . . . .	11
Table 4	Fan Blade Settings. . . . .	14
Table 5	Refrigerant Charge . . . . .	15
Table 6	Indoor Blower Performance . . . . .	15
Table 7	Recommended Operating Ranges. . . . .	16
Table 8	Maximum ESP of Operation . . . . .	16
Table 9	Cooling--Pressure (PSI) . . . . .	16
Table 10	Optional Accessories . . . . .	17

# PART 1 -- WALL MOUNT GENERAL INFORMATION

## AIR CONDITIONER WALL MOUNT MODEL NOMENCLATURE

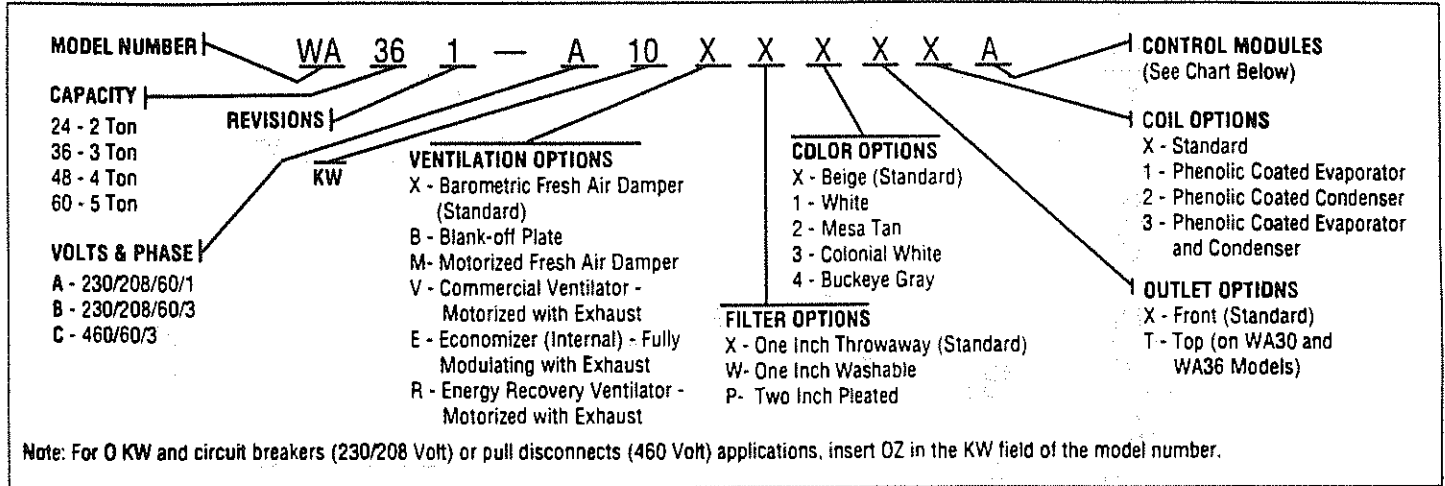


TABLE 1 ELECTRIC HEAT TABLE

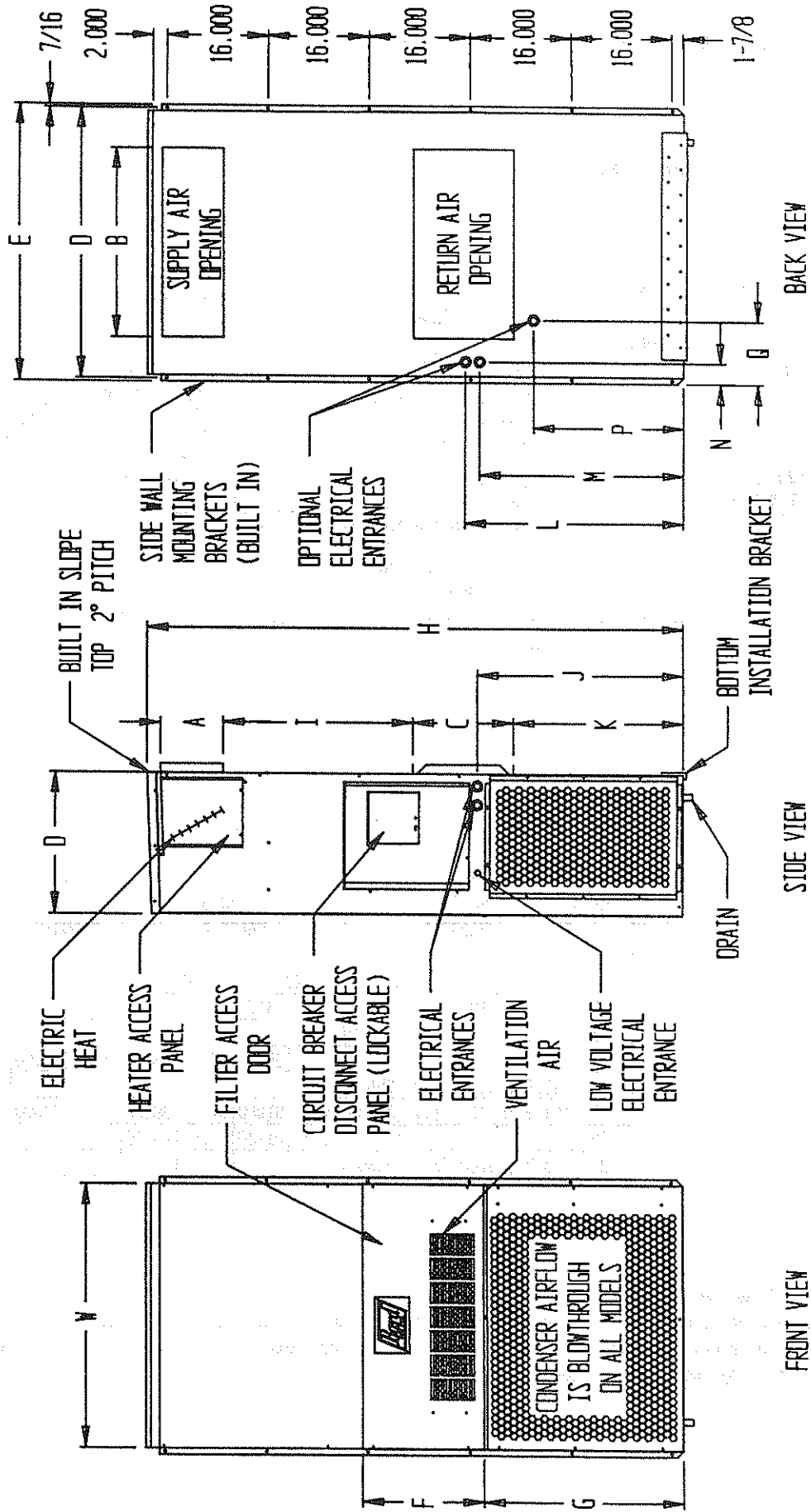
Models	WA421-A		WA421-B		WA421-C					
	WA482-A		WA482-B		WA482-C					
	WA602-A		WA602-B		WA602-C					
KW	240-1		208-1		240-3		208-3		460-3	
	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU
5	20.8	17050	18.1	12800						
9					21.7	30600	18.7	23030	10.8	30700
10	41.6	34130	36.2	25600						
15	62.5	51200	54.1	38400	36.2	51200	31.2	38400	17.3	47000
18					43.3	61430	37.5	46100		
20	83.2	68260	72.1	51200						

### 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.

FIGURE 1  
UNIT DIMENSIONS  
SIZE SPECS FOR MIS-411

UNIT	WIDTH (W)	DEPTH (D)	HEIGHT (H)	SUPPLY		RETURN		E	F	G	I	J	K	L	M	N	O	P	Q
				A	B	C	B												
42 & 60	42	22-1/4	84-7/8	9-7/8	29-7/8	15-7/8	29-7/8	43-7/8	19	31-5/8	30	32-11/16	27	34-3/4	32-1/2	3-1/4	43	23-7/8	10



ELECTRICAL SPECIFICATIONS

TABLE 2

SINGLE CIRCUIT							DUAL CIRCUIT							
Model	Rated Volts and Phase	No. Field Power Ckts.	(3) Minimum Circuit Ampacity	(1) Maximum External Fuse Or Circuit 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	
							Ckt A	Ckt B	Ckt A	Ckt B	Ckt A	Ckt B	Ckt A	Ckt B
WA421-A00,A0Z A05 A10 A15 A20	230/208-1	1	33	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	33	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	59	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1 or 2	85	90	4	8	56	26	60	30	6	10	10	10
		1 or 2	110	110	2	6	56	52	60	60	6	6	10	10
WA421-B00,BOZ B09 B15 B18	230/208-3	1	24	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	34	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	52	50	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	60	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA421-C00,COZ C09 C15	460-3	1	12	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	26	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA482-A00,A0Z A05 A10 A15 A20	230/208-1	1	38	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	38	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	59	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1 or 2	85	90	4	8	59	26	60	30	6	10	10	10
		1 or 2	110	110	2	6	59	52	60	60	6	6	10	10
WA482-B00,BOZ B09 B15 B18	230/208-3	1	26	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	34	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	52	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	60	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA482-C00,COZ C09 C15	460-3	1	13	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	26	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA602-A00,A0Z A05 A10 A15 A20	230/208-1	1	44	60	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	44	60	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	55	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1 or 2	85	90	4	8	59	26	60	30	6	10	10	10
		1 or 2	110	110	2	6	59	52	60	60	6	6	10	10
WA602-B00,BOZ B09 B15 B18	230/208-3	1	32	45	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	34	45	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	52	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	60	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA602-C00,COZ C09 C15	460-3	1	16	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		1	26	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

- (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 NEC 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 thru one conduit, the conductors must be derated. Pay special attention to note 8 of Table 310 regarding Ampacity Adjustment Factors when more than 3 conductors are in a raceway.

## 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

Any heat pump is more critical of proper operating charge and an adequate duct system than a straight air conditioning unit. 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 one 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 combustable material for the first three feet of duct attached to the outlet air frame is required. See Wall Mounting Instructions and Figures 3 and 3A 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 duct. A metallic return air grille is required with installations not requiring a return air duct. The spacing between louvers on the grille shall not be larger than 5/8 inches.

Any grille that meets the 5/8 inch louver criteria, may be used. It is recommended that Bard Return Air Grille Kit RG2 thru RG5 or REG2 thru REG5 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.

**NOTE:** If no return air duct is used, applicable installation codes may limit this cabinet to installation only in a single story structure.



## FILTERS

A 1-inch throwaway 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 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 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.

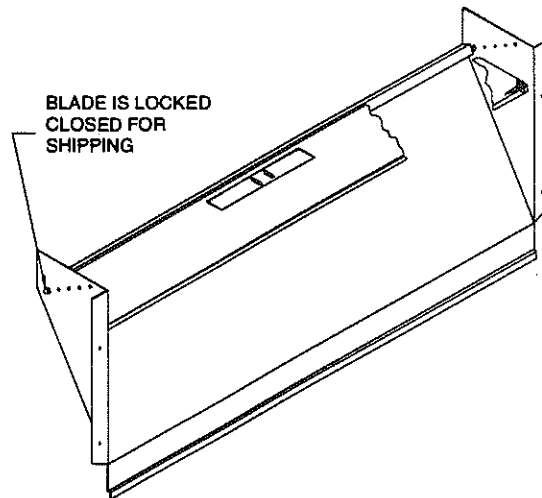
All capacity, efficiency and cost of operation information as required for Department of Energy "Energyguide" Fact Sheets is based upon the fresh air blank-off plate in place and is recommended for maximum energy efficiency.

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



## PART 2 -- 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 combustibile 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.

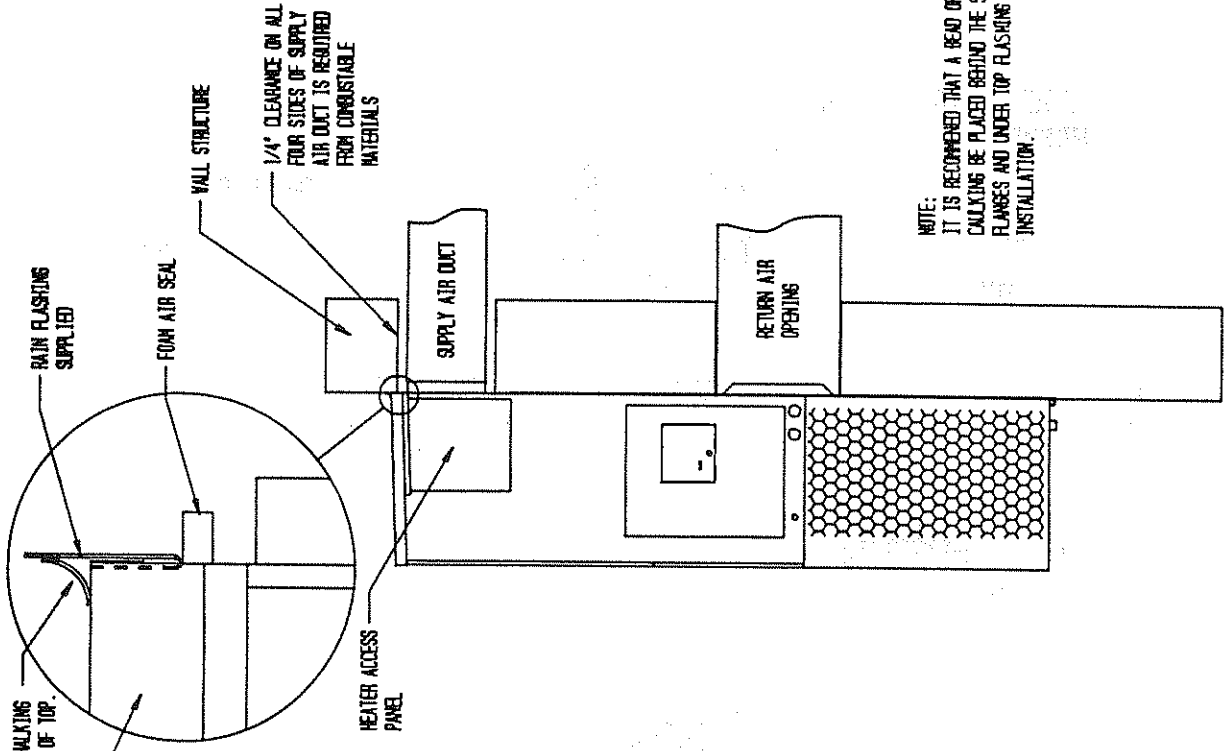
### MOUNTING THE UNIT

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.
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 combustibile material. If a combustibile wall, use a minimum of 30-1/2" x 10-1/2" 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 combustibile material. The supply air opening would then be 32" x 12". See Figures 3 and 3A for details.

\*\*\*\*\*  
**WARNING:** Failure to provide the 1/4-inch clearance between the supply duct and a combustibile 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.
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 combustibile 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.

FIGURE 3  
MOUNTING INSTRUCTIONS



NOTE:  
IT IS RECOMMENDED THAT A BEAD OF SILICONE  
CAULKING BE PLACED BEHIND THE SIDE MOUNTING  
FLANGES AND UNDER TOP FLASHING AT TIME OF  
INSTALLATION.

	A	B	C	D	E
REQUIRED DIMENSIONS TO MAINTAIN 1/4" MIN. CLEARANCE FROM COMBUSTIBLE MATERIALS	30 1/2	10 1/2	6 1/4	1 5/16	29 1/2
REQUIRED DIMENSIONS TO MAINTAIN RECOMMENDED 1" CLEARANCE FROM COMBUSTIBLE MATERIALS	32	12	5 1/2	9/16	28

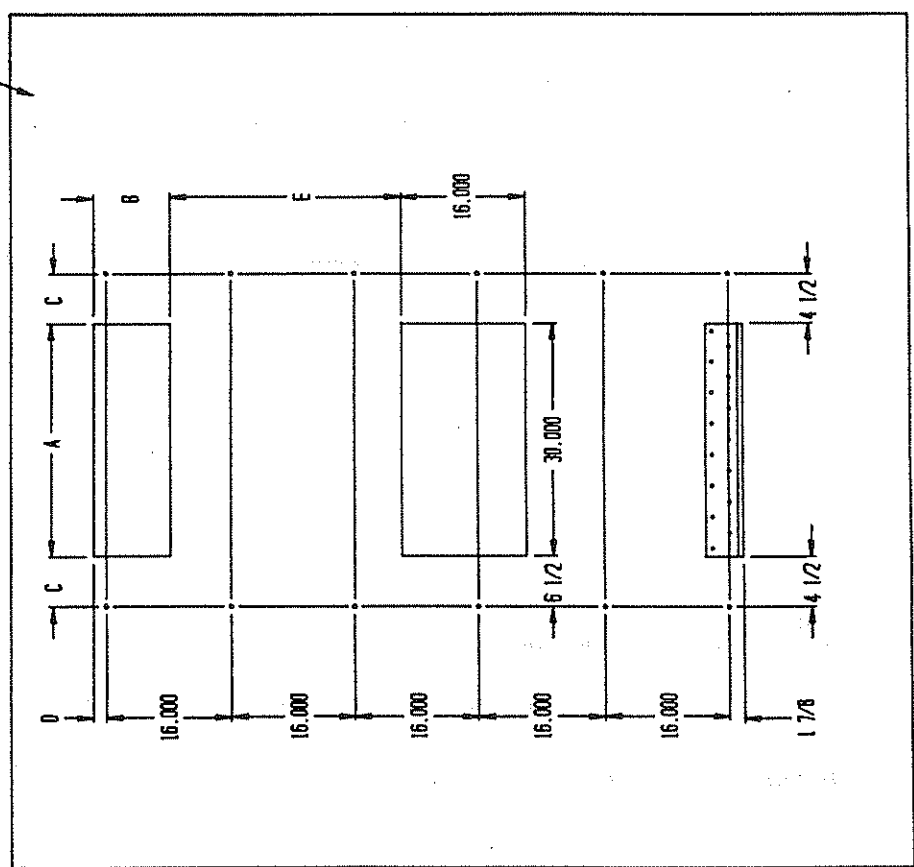
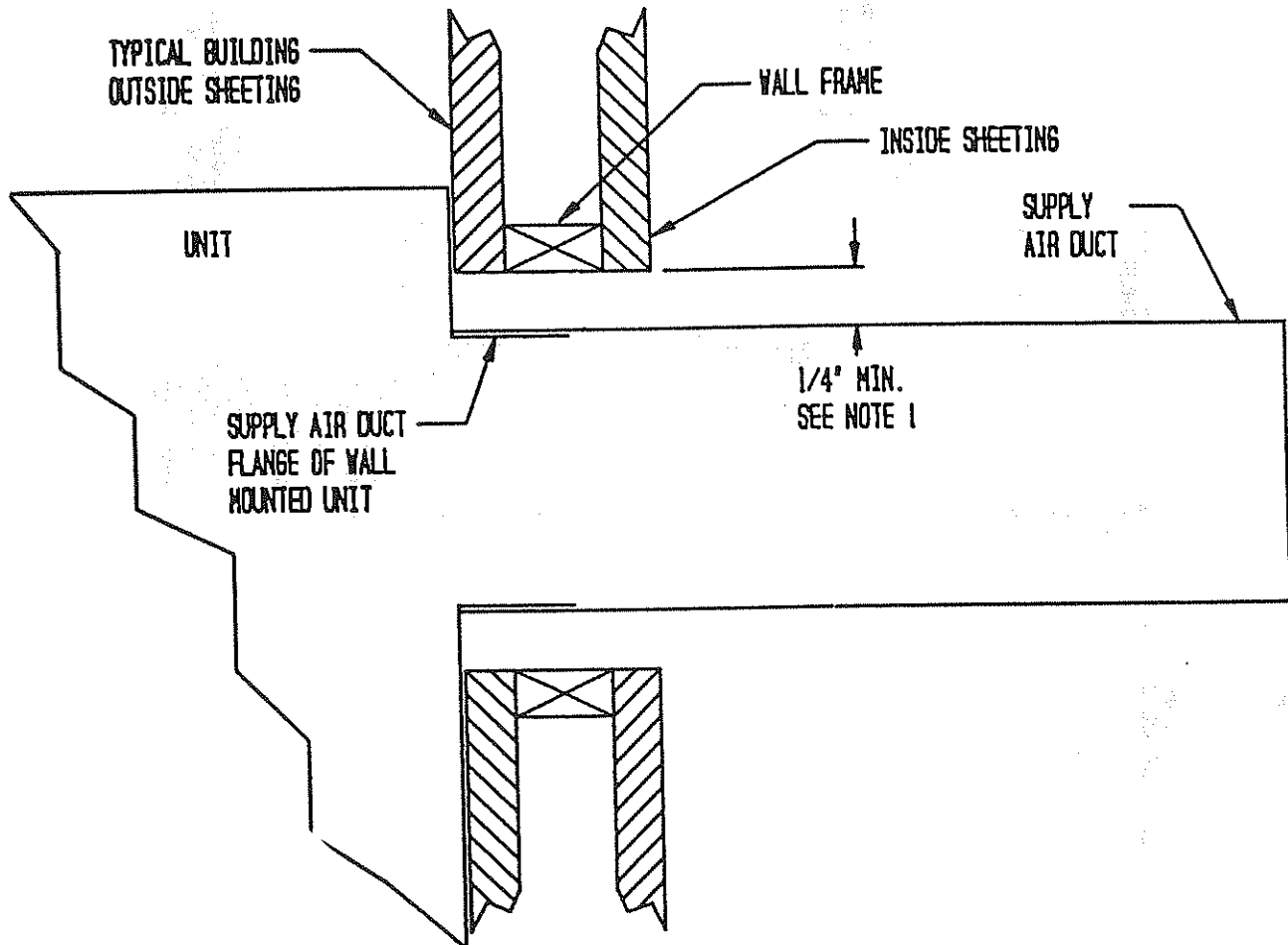


FIGURE 3A  
ELECTRIC HEAT CLEARANCE

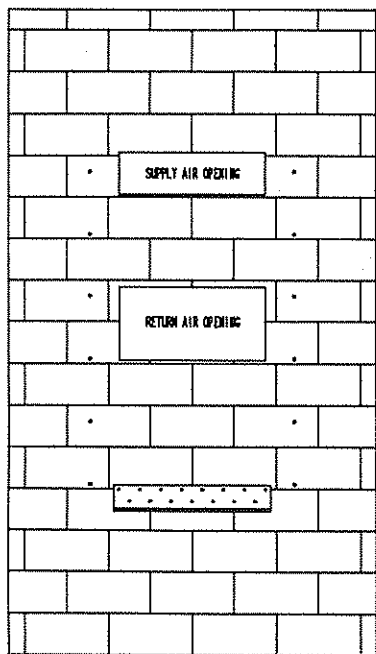


Side section view of supply air duct for wall mounted unit showing 1/4" clearance to combustible surfaces.

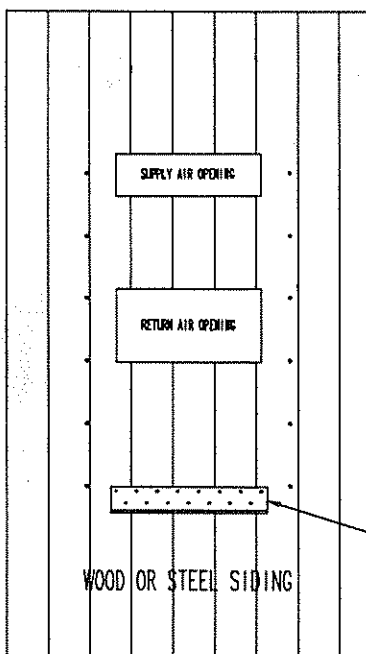
NOTE 1:

<b>WARNING</b>
A <u>minimum</u> of 1/4" 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 a fire.

SEE FIGURE 3 FOR MOUNTING INSTRUCTIONS



CONCRETE BLOCK WALL INSTALLATION



WOOD FRAME WALL INSTALLATION

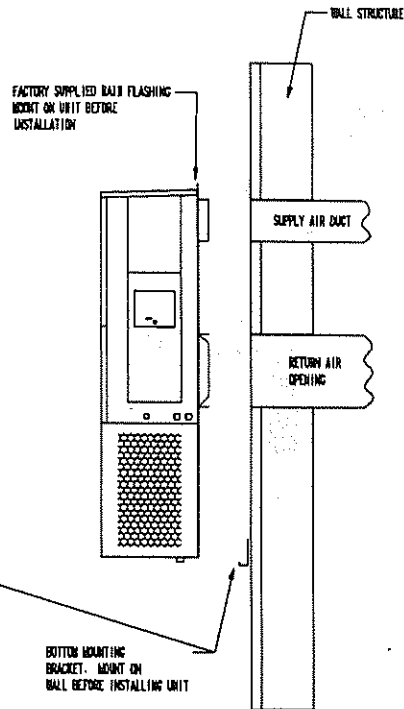


Figure 4 – Wall-Mounting Instructions

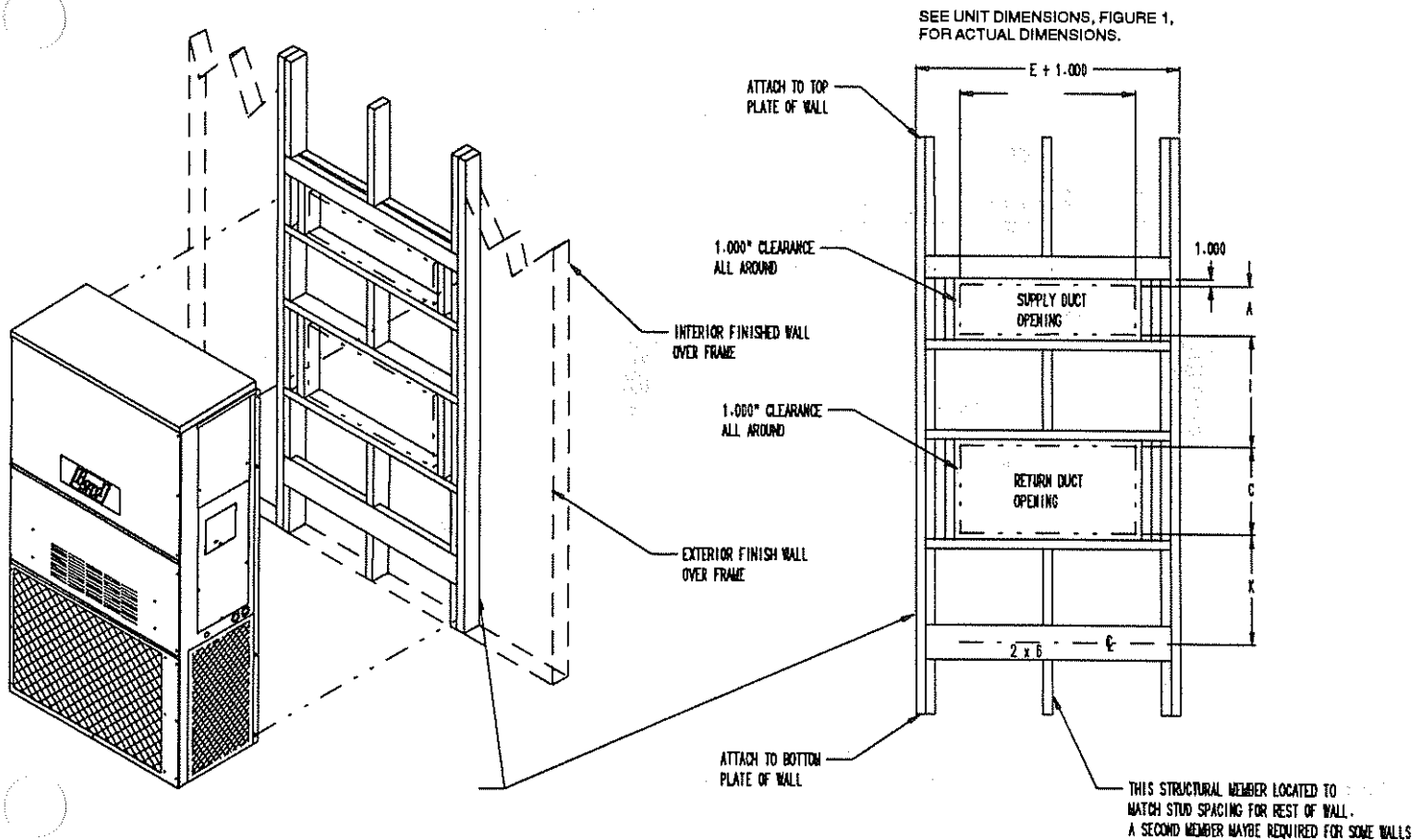
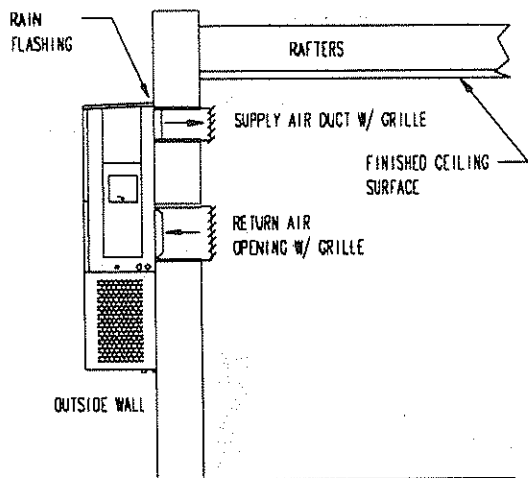
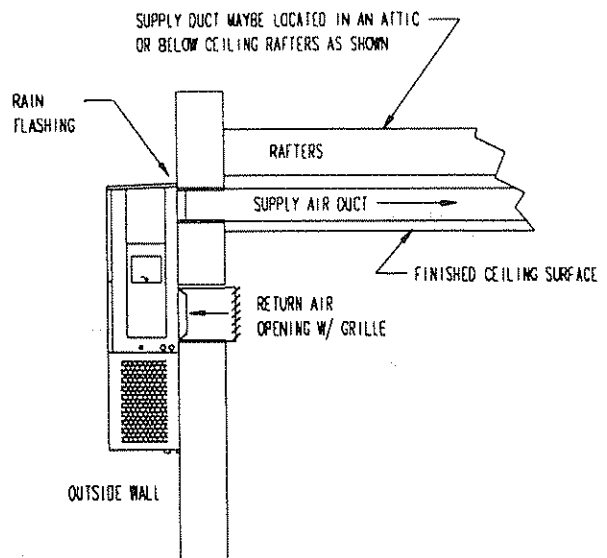


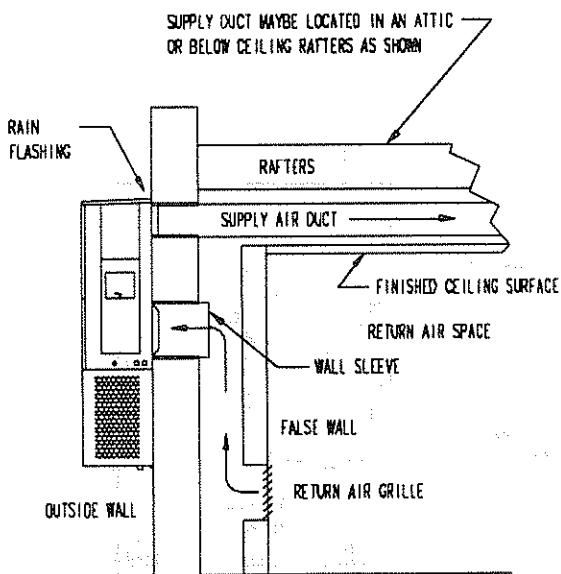
Figure 5 – Wall-Mounting Instructions



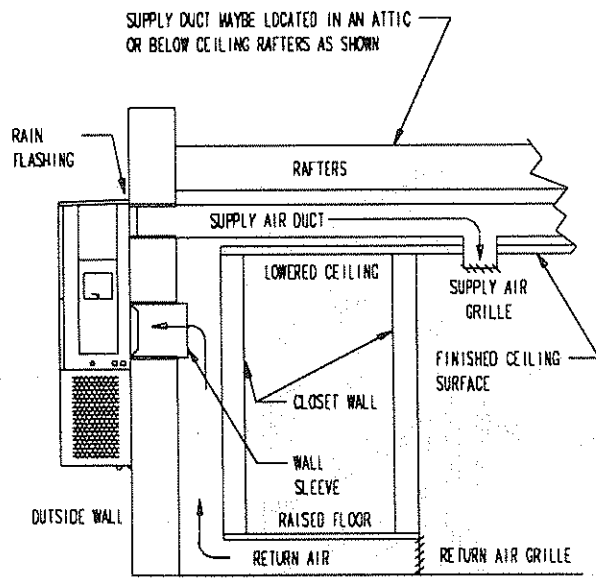
FREE AIR FLOW  
NO DUCT



DUCTED SUPPLY  
RETURN AT UNIT



FALSE WALL INSTALLATION



CLOSET INSTALLATION

Figure 6 — Common Wall-Mounting Installations

**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.

See startup section for information on three phase scroll compressor startups.

**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:

TAP	RANGE
240	253 - 216
208	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 7.

TABLE 3 THERMOSTAT WIRE SIZE

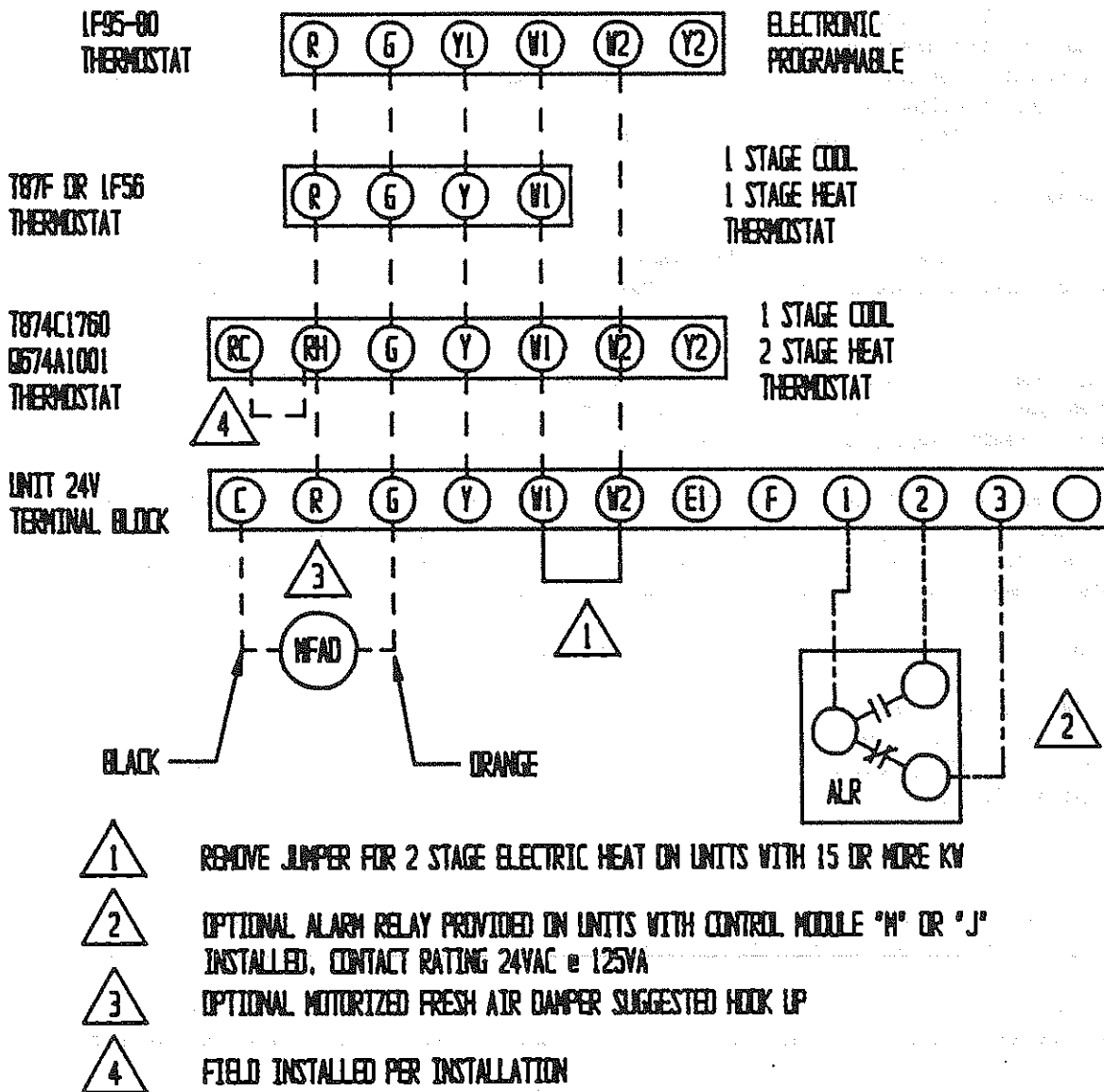
Transformer VA	FLA	Wire Gauge	Maximum Distance In Feet
55	2.3	20 Gauge	45
		18 "	60
		16 "	100
		14 "	160
		12 "	250

TABLE 3A WALL THERMOSTAT AND SUBBASE COMBINATIONS

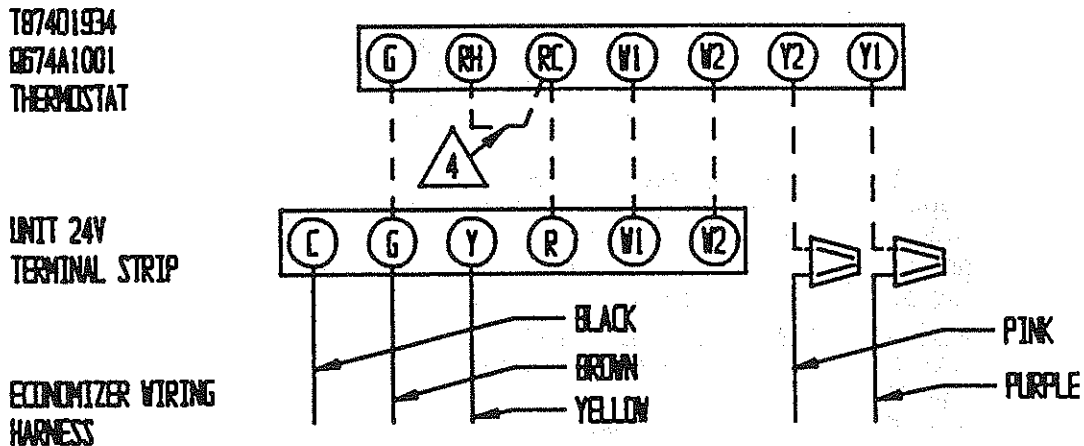
Thermostat	Subbase	Predominate Features
8403-019 T874C1760	8404-012 Q674A1001	1 stage cool, 2 stage heat System: heat-auto-cool Fan: on-auto
8403-002 T87F3111	8404-003 Q539A1220	1 stage heat, 1 stage cool System: heat-off-cool Fan: on-auto
8403-009 1F56-318	----	1 stage heat, 1 stage cool
8403-035 1F95-80	----	Programmable Electronic

Figure 7

LOW VOLTAGE WIRING



OPTIONAL ECONOMIZER LOW VOLTAGE WIRING





## PART 3 -- START-UP

### **IMPORTANT INSTALLER NOTE**

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

### **CRANKCASE HEATERS**

WA421 units are provided with compressor crankcase heat. WA602 and WA482 units are not provided with crankcase heat. These units utilize scroll compressors which do not require crankcase in this application.

The WA421 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 on these units.

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 8 is affixed to all WA421 units detailing start-up procedure. This is very important. Please read carefully.

### **HIGH PRESSURE SWITCH**

The WA482 and WA602 models are supplied with a remote reset high pressure switch. If tripped, this pressure switch may be reset by turning the thermostat off then back on again.

### **THREE PHASE SCROLL COMPRESSOR START UP INFORMATION**

Scroll compressors, like several other types of compressors, will only compress in one rotational direction. Direction of rotation is not an issue with single phase compressors since they will always start and run in the proper direction.

However, three phase compressors will rotate in either direction depending upon phasing of the power. Since there is a 50-50 chance of connecting power in such a way as to cause rotation in the reverse direction, verification of proper rotation must be made. Verification of proper rotation direction is made by observing that suction pressure drops and discharge pressure rises when the compressor is energized. Reverse rotation also results in an elevated sound level over that with correct rotation, as well as, substantially reduced current draw compared to tabulated values.

There is no negative impact on durability caused by operating three phase Compliant Scroll compressors in the reversed direction. However, after several minutes of operation, the compressor's internal protector will trip.

All three phase 3R3 compressors are wired identical internally. As a result, once the correct phasing is determined for a specific system or installation, connecting properly phased power leads to the same Fusite terminal should maintain proper rotation direction.

THE DIRECTION OF ROTATION OF THE MOTOR MAY BE CHANGED BY REVERSING ANY TWO LINE CONNECTIONS TO THE UNIT.

FIGURE 8

## **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. Switching to heating cycle at 75°F or higher outside temperature may cause a nuisance trip of the remote reset high pressure switch. Turn thermostat off, then on to reset the high pressure switch.
3. Check all power fuses or circuit breakers to be sure they are the correct rating.
4. 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.

## PART 4 -- 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 9

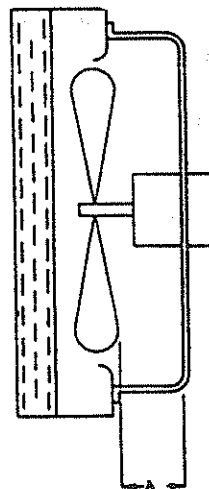


TABLE 4

Model	Dimension A
WA421 WA482 WA602	1.75

## REMOVAL OF THE 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" from compressor) as shown in the following table:

TABLE 5

Model	Rated Airflow	95° F OD Temperature	82° F OD Temperature
WA421	1400	52 - 54	64 - 66
WA482	1550	54 - 56	65 - 67
WA602	1700	53 - 55	60 - 62

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 6 INDOOR BLOWER PERFORMANCE--CFM @ 230V

E.S.P. In H2O	WA421, WA482		WA602	
	Lo 230V	Hi 230V	Lo 230V	Hi 230V
	Dry/Wet Coil	Dry/Wet Coil	Dry/Wet Coil	Dry/Wet Coil
.0	1650 / 1600	1885 / 1800	1600 / 1450	2200 / 2000
.1	1550 / 1500	1770 / 1665	1525 / 1375	2100 / 1900
.2	1450 / 1400	1635 / 1540		2000 / 1800
.3	1350 / 1300	1500 / 1400		1875 / 1700
.4	1300 / 1175	1370 / 1285		1775 / 1600
.5	---	1250 / 1150		1650 / 1475

TABLE 7

Model	Rated CFM*	Rated ESP*	Recommended Airflow Range
WA421	1400	.30	1600 - 1150
WA482	1550	.20	1750 - 1285
WA602	1700	.30	1950 - 1375
*Rated CFM and ESP on high speed tap.			

MAXIMUM ESP OF OPERATION

TABLE 8

ELECTRIC HEAT ONLY

Model Speed KW	WA421		WA482		WA602	
	High Speed	Low Speed	High Speed	Low Speed	High Speed	Low Speed
-A05	.50	.50	.50	.50	.50	.50
-A10	.50	.50	.50	.50	.50	.50
-A15	.50	.50	.50	.50	.50	.50
-A20	.50	.45	.50	.45	.50	.40
-B00	.50	.50	.50	.50	.50	.50
-B09	.50	.50	.50	.50	.50	.50
-B15	.50	.50	.50	.50	.50	.50
-B18	.50	.50	.50	.50	.50	.50
-C09	.50	.50	.50	.50	.50	.50
-C15	.50	.50	.50	.50	.50	.50

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

COOLING

TABLE 9

Air Temperature Entering Outdoor Coil °F

Model	Return Air Temperature	Pressure	75	80	85	90	95	100	105	110	115
			WA421	75 deg. DB	Low Side	68	71	74	76	78	80
62 deg. WB	High Side	213		228	243	259	274	290	305	321	337
80 deg. DB	Low Side	72		76	79	82	84	86	88	89	90
67 deg. WB	High Side	218		234	249	265	281	297	313	330	346
WA482	85 deg. DB	Low Side	78	82	85	88	90	92	94	96	97
	72 deg. WB	High Side	226	242	258	274	290	307	323	341	358
	75 deg. DB	Low Side	73	74	76	78	79	80	82	83	84
	62 deg. WB	High Side	204	217	232	248	265	284	304	325	348
WA602	80 deg. DB	Low Side	78	79	81	82	84	86	87	89	90
	67 deg. WB	High Side	210	223	238	254	272	291	312	334	357
	85 deg. DB	Low Side	84	85	87	88	90	92	93	95	97
	72 deg. WB	High Side	217	231	247	264	282	302	323	345	369
WA602	75 deg. DB	Low Side	71	72	74	75	76	77	78	78	79
	62 deg. WB	High Side	233	247	262	278	295	313	331	351	371
	80 deg. DB	Low Side	76	78	79	80	81	82	83	84	85
	67 deg. WB	High Side	237	253	269	285	303	321	340	360	381
WA602	85 deg. DB	Low Side	84	85	85	86	87	88	89	90	91
	72 deg. WB	High Side	245	261	278	296	314	333	353	373	394

Low side pressure  $\pm$  2 PSIG  
 High side pressure  $\pm$  5 PSIG

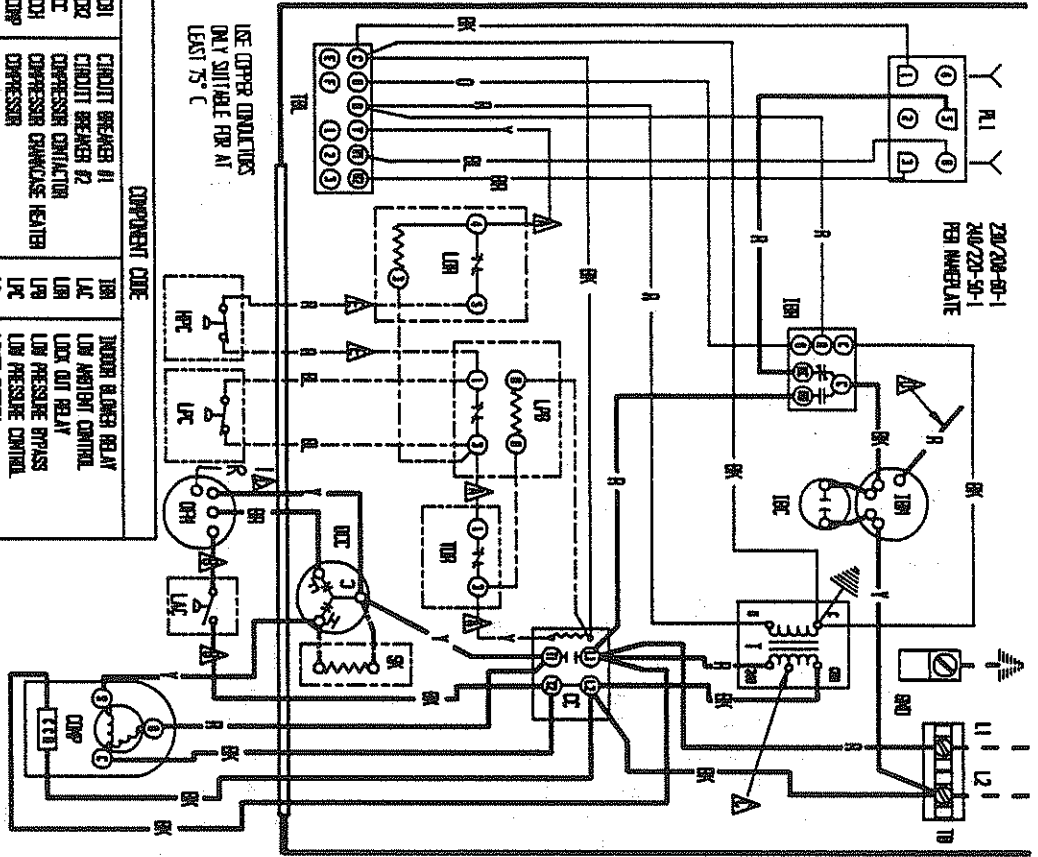
Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged to serial plate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

TABLE 10

## OPTIONAL ACCESSORIES

Model	Description	W	W	W	W	W	W	W	W	W
		A	A	A	A	A	A	A	A	A
		4	4	4	4	4	4	4	6	6
		2	2	2	8	8	8	0	0	0
		1	1	1	2	2	2	2	2	2
		-	-	-	-	-	-	-	-	-
		A	B	C	A	B	C	A	B	C
EBWA05-A05	Heater Packages	X			X			X		
EBWA05-A08	Heater Packages	X			X			X		
EBWA05-A10	Heater Packages	X			X			X		
EBWA05-A15	Heater Packages	X			X			X		
EBWA05-B09	Heater Packages		X			X			X	
EBWA05-B15	Heater Packages		X			X			X	
EBWA05-B18	Heater Packages		X			X			X	
EBWC05-C05	Heater Packages			X			X			X
EBWA05-C15	Heater Packages			X			X			X
BOP-5	Blank Off Plate	X	X	X	X	X	X	X	X	X
BFAD-5	Barometric Fresh Air Damper	X	X	X	X	X	X	X	X	X
MFAD-5	Motorized Fresh Air Damper	X	X	X	X	X	X	X	X	X
CRV-5	Classroom Ventilator With Exhaust	X	X	X	X	X	X	X	X	X
RIFM-5	Economizer With Exhaust	X	X	X	X	X	X	X	X	X
WBRV-A5A	Energy Recovery Ventilator	X	X		X	X		X	X	
WBRV-C5A	Energy Recovery Ventilator			X			X			X
CMA-1	High Pressure Control (HPC)	X	X	X						
CMA-2	Low Pressure Control (LPC)	X	X	X						
CMA-4	Low and High Pressure Control	X	X	X						
CMA-5	Time Delay Relay (TDR)	X	X	X	X	X	X	X	X	X
CMA-6	Low Ambient Control (LAC)	X	X		X	X		X	X	
CMA-8	TDR + HPC	X	X	X						
CMA-10	LPC + HPC + TDR	X	X	X						
CMA-11	LPC + HPC + LAC	X	X							
CMA-12	LAC + TDR	X	X							
CMA-13	LPC + HPC + TDR + LAC + Alarm Relay	X	X							
CMC-15	Start Kit	X								
CMA-16	Low Pressure Control				X	X	X	X	X	X
CMA-17	LPC & TDR				X	X	X	X	X	X
CMA-18	LPC & LAC				X	X		X	X	
CMA-19	LAC & TDR				X	X		X	X	
CMC-20	LAC & TDR & LPC				X	X		X	X	
WMCB-05B	Circuit Breaker Kit		X			X				
WMPD-01C	Pull Disconnect Kit			X			X			X
WMCB-08A	Circuit Breaker Kit	X			X					
WMCB-09A	Circuit Breaker Kit							X		
WMCB-07B	Circuit Breaker Kit								X	

USE COPPER CONDUCTORS  
DUAL SUITABLE FOR AT  
LEAST 75° C



**COMPONENT CODE**

D11	CIRCUIT BREAKER #1	LBR	INDOR BLORER RELAY
D12	CIRCUIT BREAKER #2	LFR	INDOR AIR/IBAT CONTROL
C1	COMPRESSOR CONTACTOR	LPR	LOK OUT RELAY
C2	COMPRESSOR CONTACTOR	LUR	LOK OUT RELAY
COMP	COMPRESSOR	LVR	LOK PRESSURE SWITCH
DIC	DUAL CAPACITOR	LWR	LOK PRESSURE CONTROL
EQ	EQUIPMENT GROUND	LXR	LOK UNIT SWITCH
H1	HEAT STRIP #1	LYR	OUTDOOR FAN MOTOR
H2	HEAT STRIP #2	LYR	PLUG #1
H3	HEATER CONTACTOR #1	LYR	START KIT
H4	HEATER CONTACTOR #2	LYR	TRANSFORMER
H5	HIGH PRESSURE CONTACTOR	LYR	TEMPORAL BLOCK
H6	HIGH PRESSURE CAPACITOR	LYR	TEMPORAL BLOCK
INDOR	INDOR BLORER MOTOR	LYR	THERMAL OUTFIT
		LYR	TIRE RELAY RELAY

**WIRE COLOR CODE**

BLACK	RED	YELLOW	VIOLET	PINK
BROWN	ORANGE	GREEN	PURPLE	PINK
RED	WHITE	BLUE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK

**WIRE SIZE**

18	16	14	12	10	8	6	4	3	2	1	0
----	----	----	----	----	---	---	---	---	---	---	---

**WIRE TYPE**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

**WIRE COLOR CODE**

BLACK	RED	YELLOW	VIOLET	PINK
BROWN	ORANGE	GREEN	PURPLE	PINK
RED	WHITE	BLUE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK

**WIRE SIZE**

18	16	14	12	10	8	6	4	3	2	1	0
----	----	----	----	----	---	---	---	---	---	---	---

**WIRE TYPE**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

**WIRE COLOR CODE**

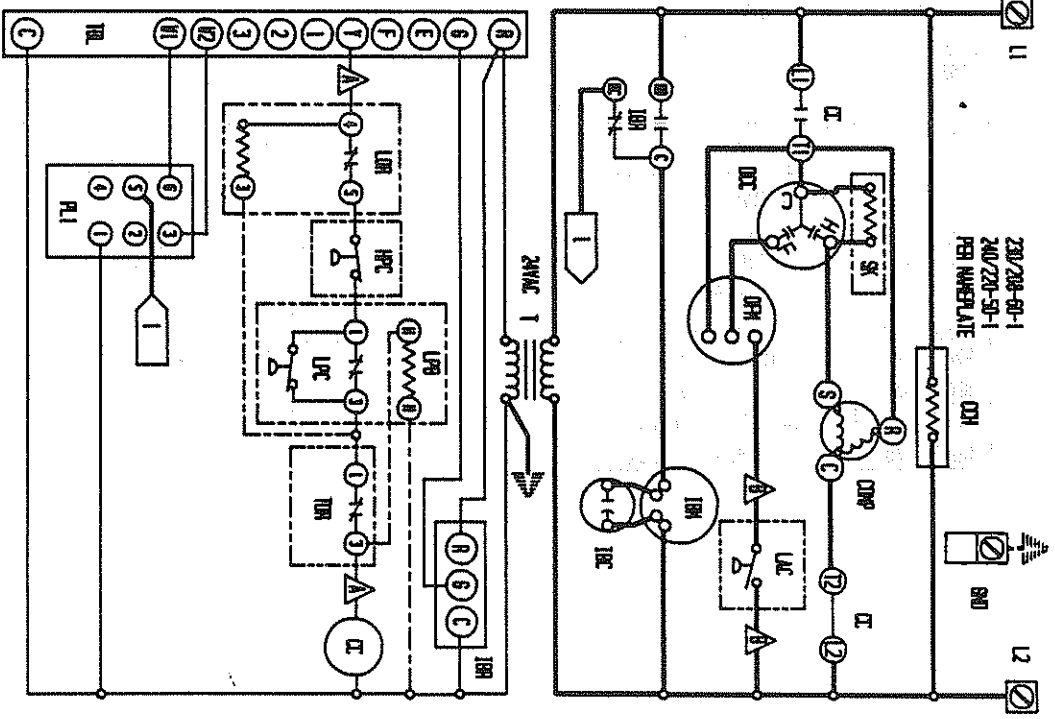
BLACK	RED	YELLOW	VIOLET	PINK
BROWN	ORANGE	GREEN	PURPLE	PINK
RED	WHITE	BLUE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK

**WIRE SIZE**

18	16	14	12	10	8	6	4	3	2	1	0
----	----	----	----	----	---	---	---	---	---	---	---

**WIRE TYPE**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----



**WIRE COLOR CODE**

BLACK	RED	YELLOW	VIOLET	PINK
BROWN	ORANGE	GREEN	PURPLE	PINK
RED	WHITE	BLUE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK

**WIRE SIZE**

18	16	14	12	10	8	6	4	3	2	1	0
----	----	----	----	----	---	---	---	---	---	---	---

**WIRE TYPE**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

**WIRE COLOR CODE**

BLACK	RED	YELLOW	VIOLET	PINK
BROWN	ORANGE	GREEN	PURPLE	PINK
RED	WHITE	BLUE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK
GRAY	GRAY	WHITE	SLATE	PINK

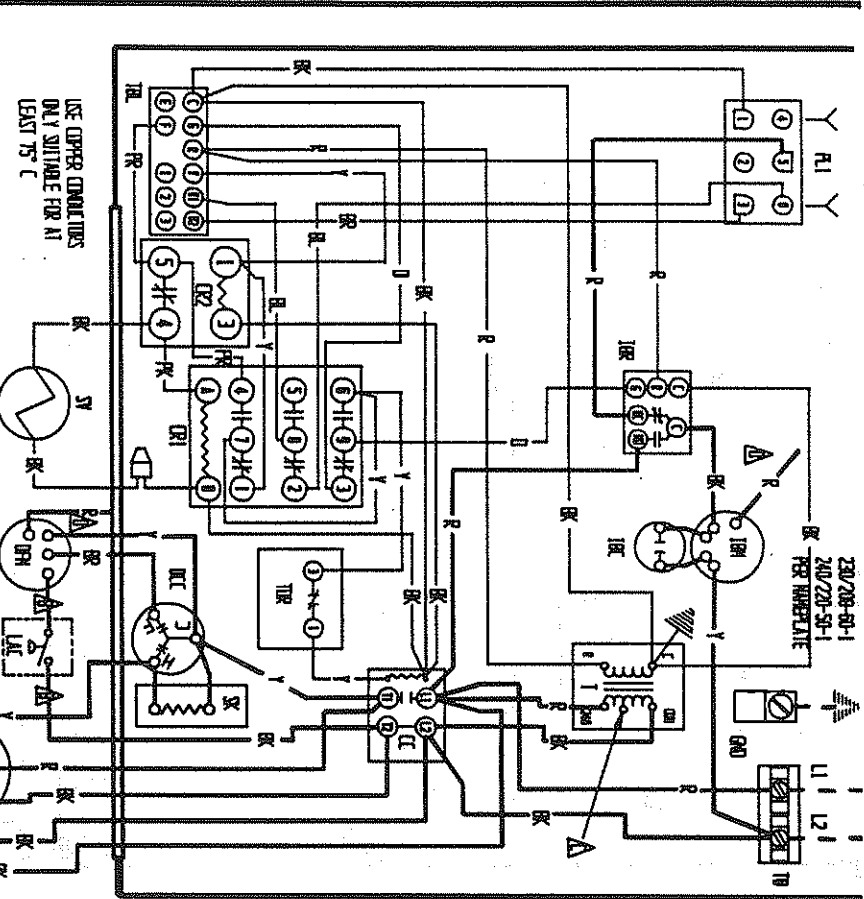
**WIRE SIZE**

18	16	14	12	10	8	6	4	3	2	1	0
----	----	----	----	----	---	---	---	---	---	---	---

**WIRE TYPE**

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----





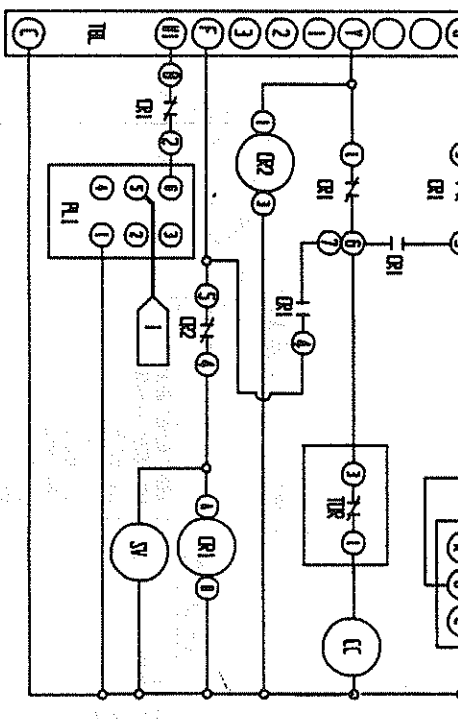
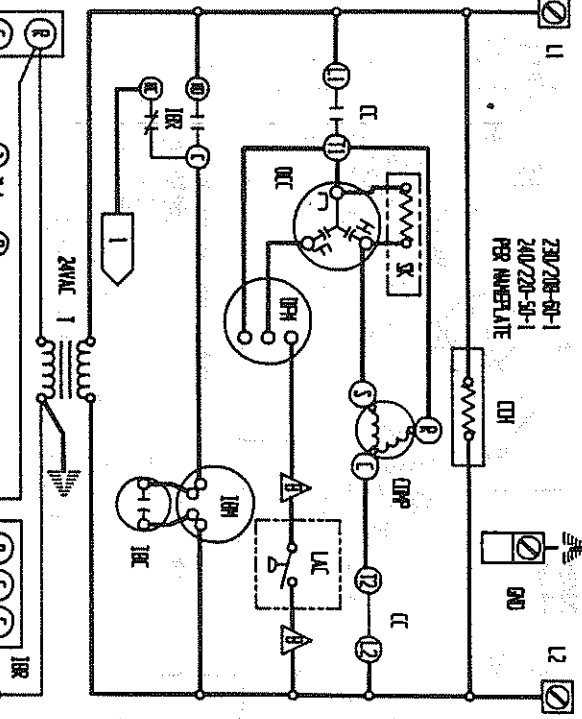
COMPONENT CODE

R1	CIRCUIT BREAKER #1
R2	CIRCUIT BREAKER #2
R3	COMPRESSOR CONTACTOR
R4	COMPRESSOR CONTACTOR HEATER
R5	COMPRESSOR
R6	CONTROL RELAY #1
R7	CONTROL RELAY #2
R8	LOW CAP CAPACITOR
R9	EDUCATION BOARD
R10	HEAT STRIP #1
R11	HEAT STRIP #2
R12	HEATER CONTACTOR #1
R13	HEATER CONTACTOR #2
R14	HIGH PRESSURE CONTROL

WIRE COLOR CODE

RK	BLACK
RBN	BROWN
RBD	RED
RBR	BROWN
RY	YELLOW
RG	GREEN
RB	BLUE
RV	RED (V)
RS	RED (S)
RYL	YELLOW (L)
RYR	YELLOW (R)
RYB	YELLOW (B)
RYG	YELLOW (G)
RYW	YELLOW (W)
RYV	YELLOW (V)
RYS	YELLOW (S)
RYL	YELLOW (L)
RYR	YELLOW (R)
RYB	YELLOW (B)
RYG	YELLOW (G)
RYW	YELLOW (W)
RYV	YELLOW (V)
RYS	YELLOW (S)
RYL	YELLOW (L)
RYR	YELLOW (R)
RYB	YELLOW (B)
RYG	YELLOW (G)
RYW	YELLOW (W)
RYV	YELLOW (V)
RYS	YELLOW (S)

BARB WPC. CO.  
 485-118 B.  
 DCL  
 OK/APP.

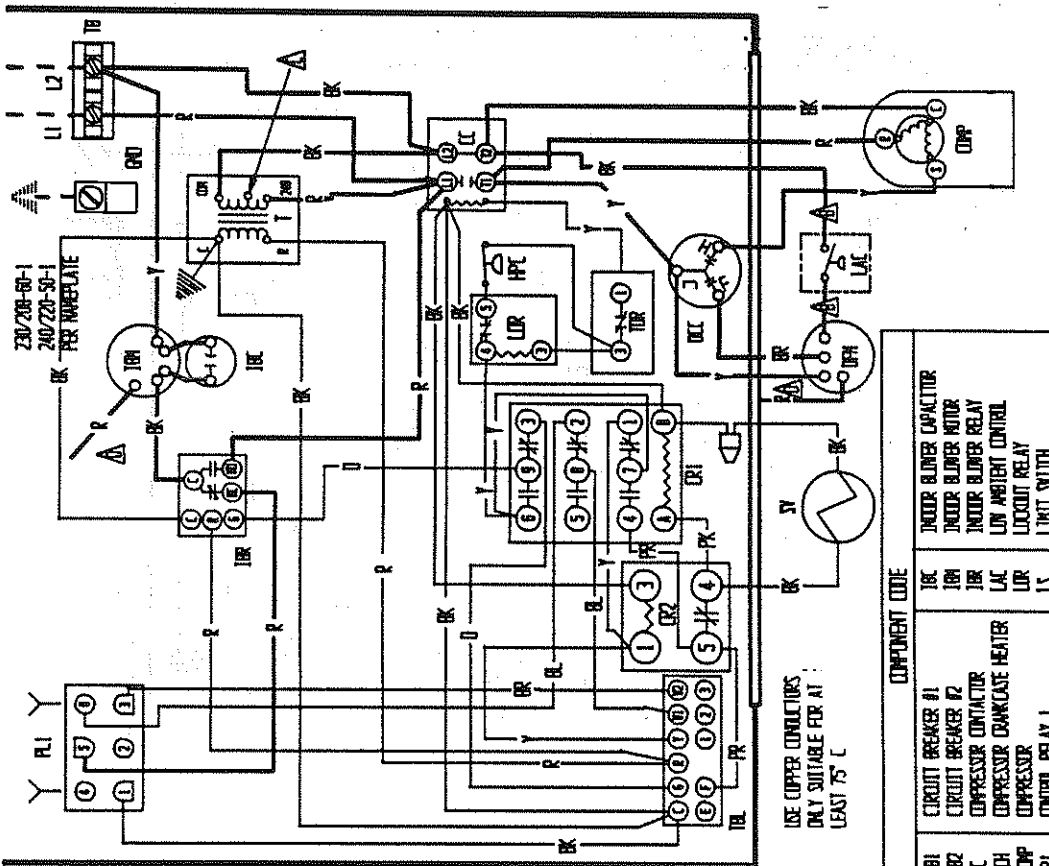
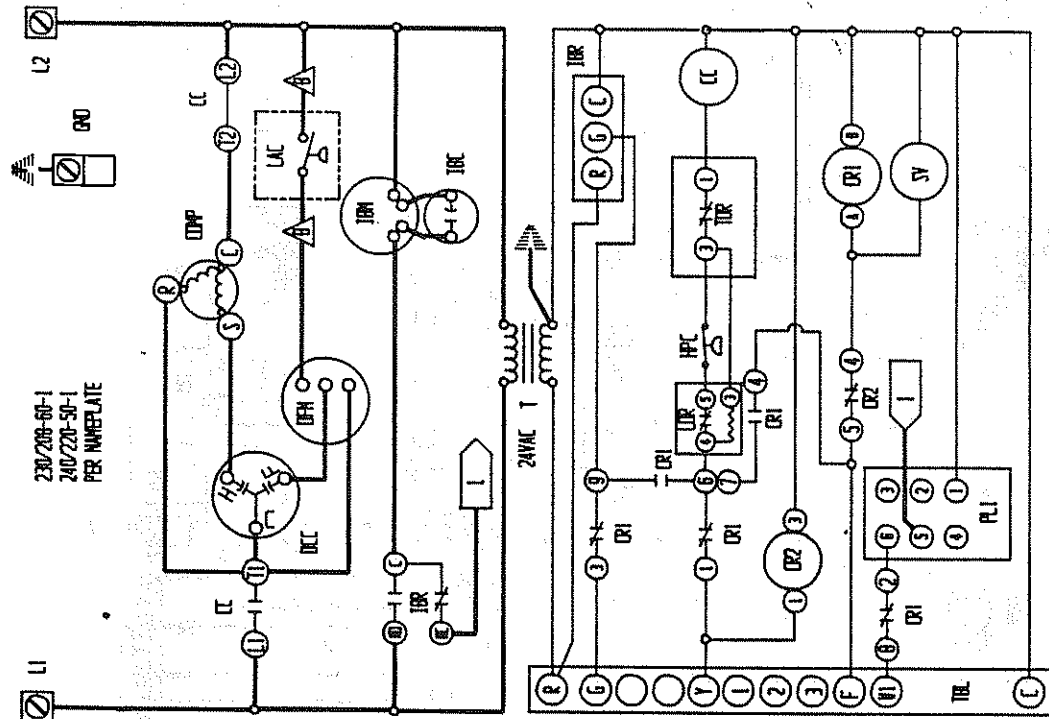


▲ LABEL WIRE CORRECT IF NO OPTIONS USED.

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

RED (LW) BLACK (HIGH) WIRE AVAILABLE





230/208-60-1  
240/220-50-1  
PER WIREPLATE

230/208-60-1  
240/220-50-1  
PER WIREPLATE

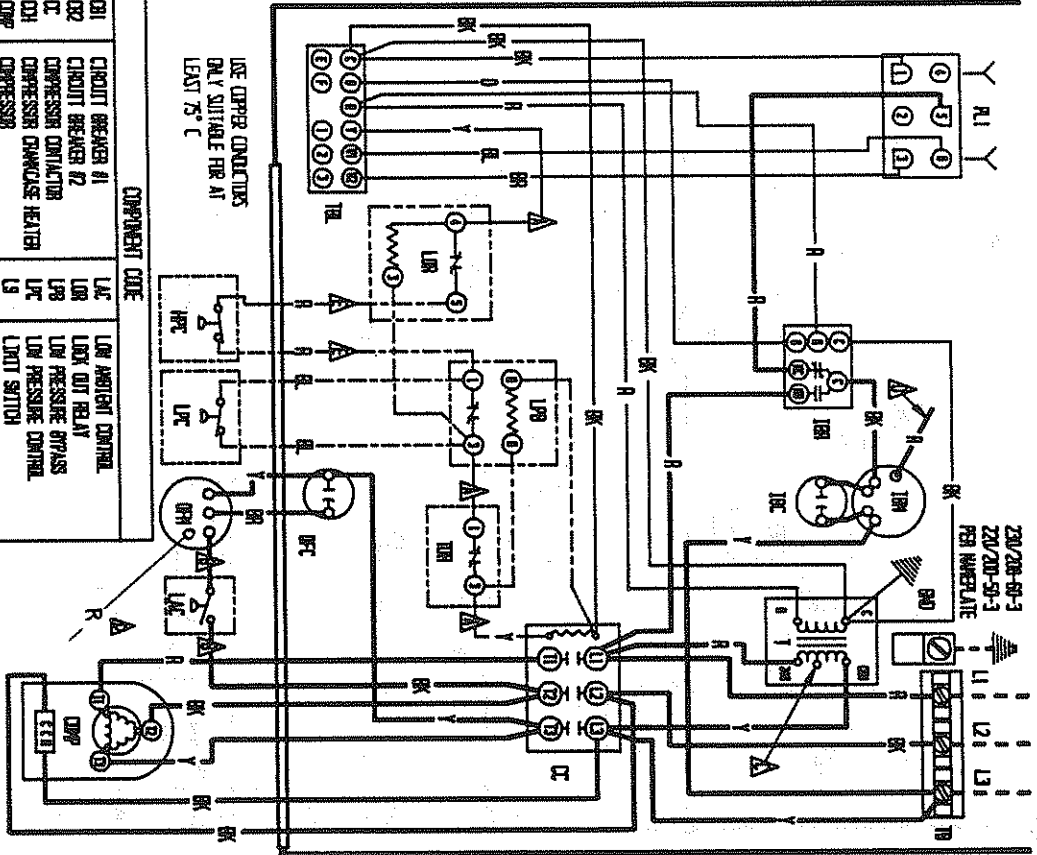
USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75°C

COMPONENT CODE	COMPONENT CODE
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CH	COMPRESSOR CHAMBER HEATER
CCP	COMPRESSOR
CR1	CONTROL RELAY 1
CR2	CONTROL RELAY 2
CU	DUAL CAP CAPACITOR
CU	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HE1	HEATER CONTACTOR #1
HE2	HEATER CONTACTOR #2
IPC	HIGH PRESSURE CONTROL
IRB	INDOOR BLOWER CAPACITOR
IRB	INDOOR BLOWER MOTOR
IRB	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOR	LOCKOUT RELAY
LS	LIMIT SWITCH
DFM	OUTDOOR FAN MOTOR
PL1	PLUG #1
SV	SIL GROUND VALVE
T	TRANSFORMER
TR	TERMINAL BLOCK
TR	LOW VOLTAGE TERMINAL BLOCK
TR	THERMAL CONTACT
TR	TIME DELAY RELAY

FACTORY STD.	FIELD	OPTIONAL
HIGH VOLTAGE	---	---
LOW VOLTAGE	---	---
NECESSARY	---	---

△ Labeled wires connect if no options used.  
△ Move red wire to 208V tap for 208V operation  
△ Red (low) black (high) wire applicable

BARB MFG. CO.  
ING. 4055-121 A  
DRN.  
CHK./APPR.



COMPONENT CODE	
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CH	COMPRESSOR CONTACTOR HEATER
COMP	COMPRESSOR
ENR	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H3	HEATER CONTACTOR #1
H4	HEATER CONTACTOR #2
H5	HIGH PRESSURE CONTACTOR
H6	HIGH PRESSURE CAPACITOR
INDM	INDOOR BLOWER MOTOR
INDR	INDOOR BLOWER RELAY

LOW AMBIENT CONTROL	
LAC	LOW AMBIENT CONTROL
LOR	LOW OUT RELAY
LPS	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTACTOR
LSC	LIMIT SWITCH
ODR	OUTDOOR FAN CAPACITOR
ODM	OUTDOOR FAN MOTOR
PLS #1	START PLT
TRN	TRANSFER
TBL	TERMINAL BLOCK
TVL	LOW VOLTAGE TERMINAL BLOCK
TRD	THERMAL DROFF
TRR	THERMAL DELAY RELAY

RED WOOD BLACK (LH) WHERE APPLICABLE

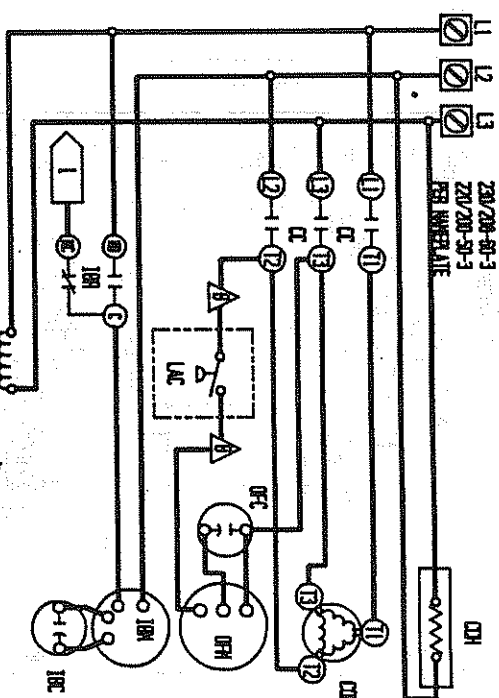
LABELED WIRES CONNECT IF NO OPTIONS USED.

WIRE RED WIRE TO 208V TAP FOR 208V OPERATION

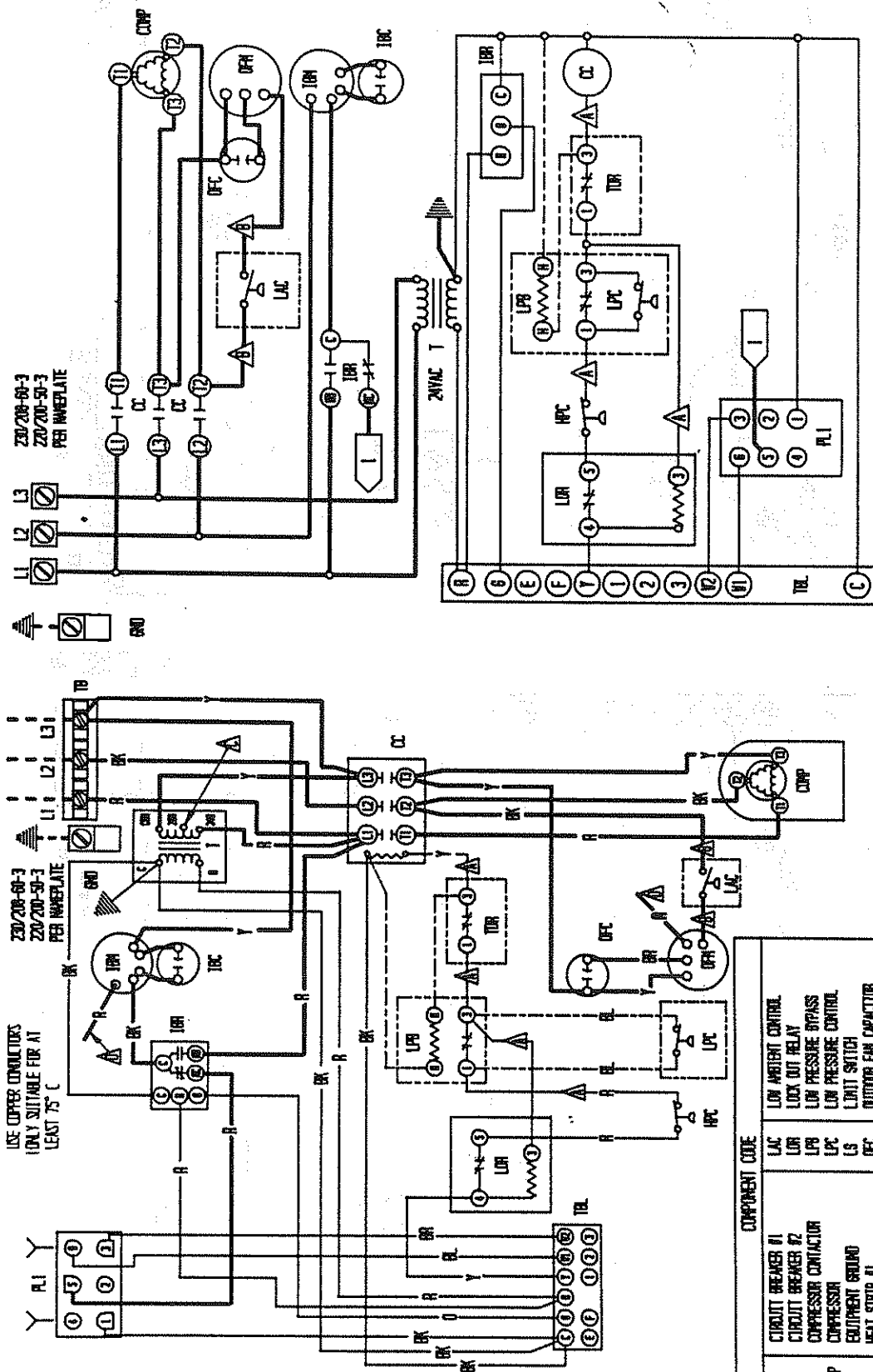
FACTORY SW.	FIELD	OPTIONAL
—	—	—
—	—	—
—	—	—
—	—	—

COLOR CODE	
BK	BLACK
BRN	BROWN
RD	RED
DR	DRAB
Y	YELLOW
BL	BLUE
W	WHITE
V	VIOLET
GRN	GREEN
OR	ORANGE
P	PURPLE
PK	PINK
SL	SLATE
L	LAVENDER

BARD MFG. CO.	
TYPE	4085-210
DRN.	CSB
DRN./APPL.	



COMPONENT CODE	
LAC	LOW AMBIENT CONTROL
LOR	LOW OUT RELAY
LPS	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTACTOR
LSC	LIMIT SWITCH
ODR	OUTDOOR FAN CAPACITOR
ODM	OUTDOOR FAN MOTOR
PLS #1	START PLT
TRN	TRANSFER
TBL	TERMINAL BLOCK
TVL	LOW VOLTAGE TERMINAL BLOCK
TRD	THERMAL DROFF
TRR	THERMAL DELAY RELAY



USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75° C

ZW/208-60-3  
ZW/200-50-3  
PER WAREPLATE

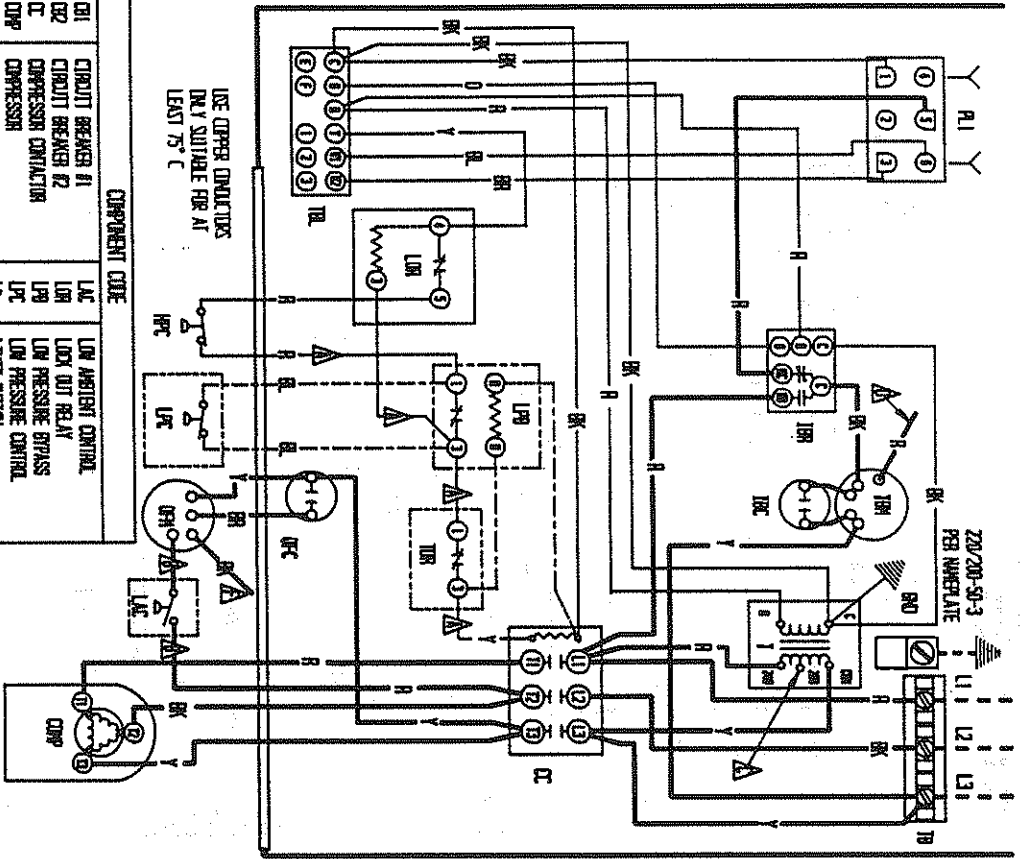
ZW/208-60-3  
ZW/200-50-3  
PER WAREPLATE

END

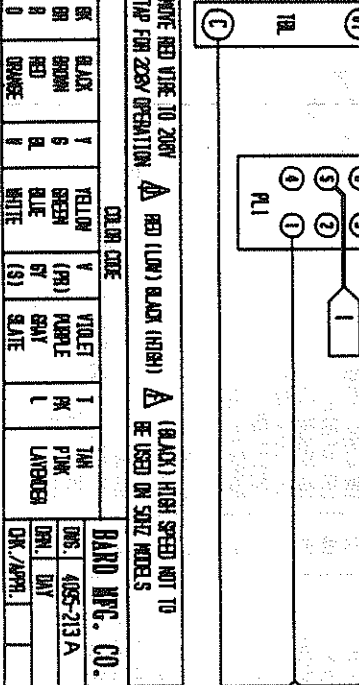
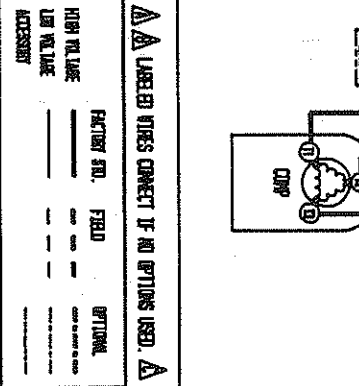
COMPONENT CODE		
CB1	CIRCUIT BREAKER #1	LOW AMBIENT CONTROL
CB2	CIRCUIT BREAKER #2	LOCK OUT RELAY
CC	COMPRESSOR CONTACTOR	LOW PRESSURE BYPASS
COMP	COMPRESSOR	LOW PRESSURE CONTROL
END	EQUIPMENT GROUND	LIMIT SWITCH
HE1	HEAT STRIP #1	INDOOR FAN CAPACITOR
HE2	HEAT STRIP #2	OUTDOOR FAN MOTOR
HFC	HEATER CONTACTOR #1	PLUS #1
IBR	HEATER CONTACTOR #2	START KIT
IBS	HIGH PRESSURE CONTROL	TRANSFORMER
IBL	INDOOR BLOWER CAPACITOR	TERMINAL BLOCK
IBF	INDOOR BLOWER MOTOR	LOW VOLTAGE TERMINAL BLOCK
IBR	INDOOR BLOWER RELAY	THERMAL CUTOFF
		TIME DELAY RELAY

Labeled wires connect if no options used.		Δ	MOVE RED WIRE TO 208V TAP FOR 208V OPERATION	Δ	RED (LOW) BLACK (HIGH)
FACTORY STD.		FIELD	OPTIONAL	COLOR CODE	
HIGH VOLTAGE	---	---	---	Y	YELLOW
LOW VOLTAGE	---	---	---	V	VIOLET
ACCESSORY	---	---	---	P	PURPLE
	---	---	---	R	RED
	---	---	---	B	BROWN
	---	---	---	BL	BLACK
	---	---	---	BR	BROWN
	---	---	---	0	DEGRADE
	---	---	---	W	WHITE
	---	---	---	BL	BLUE
	---	---	---	GY	GRAY
	---	---	---	S	SLATE
	---	---	---	L	LAUREN
	---	---	---	PK	PINK
	---	---	---	LAV	LAVENDER
	---	---	---	TIN	TIN

BARD WFC, CO.  
DNG: 4055-212 A  
URR: CSB  
OK./APPR.



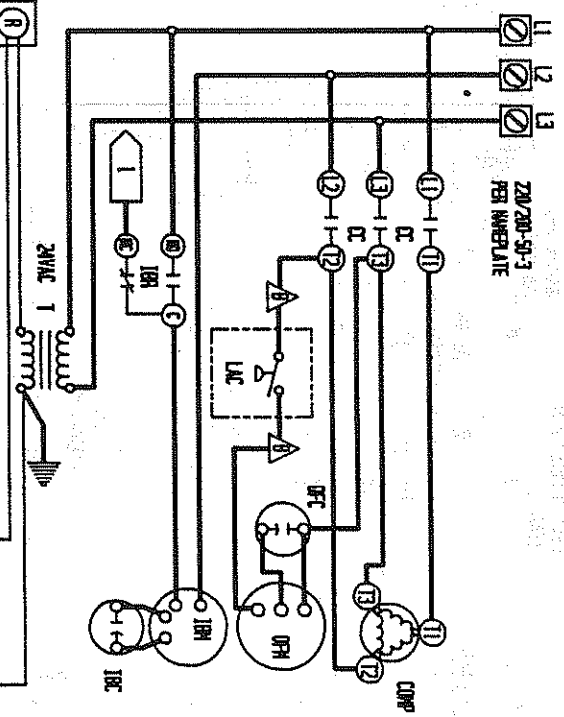
COMPONENT CODE	DESCRIPTION
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CMP	COMPRESSOR
NO	EQUIPMENT SIGNAL
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
IBL	INDOOR BLOWER MOTOR
IBR	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOR	LOCK OUT RELAY
LPP	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OFC	OUTDOOR FAN CAPACITOR
OFM	OUTDOOR FAN MOTOR
RF	RELAY #1
SK	START KIT
ST	TRANSFORMER
TB	TERMINAL BLOCK
TR	LOW VOLTAGE TERMINAL BLOCK
YD	THERMAL CUTOFF
YDR	THERMAL DELAY RELAY

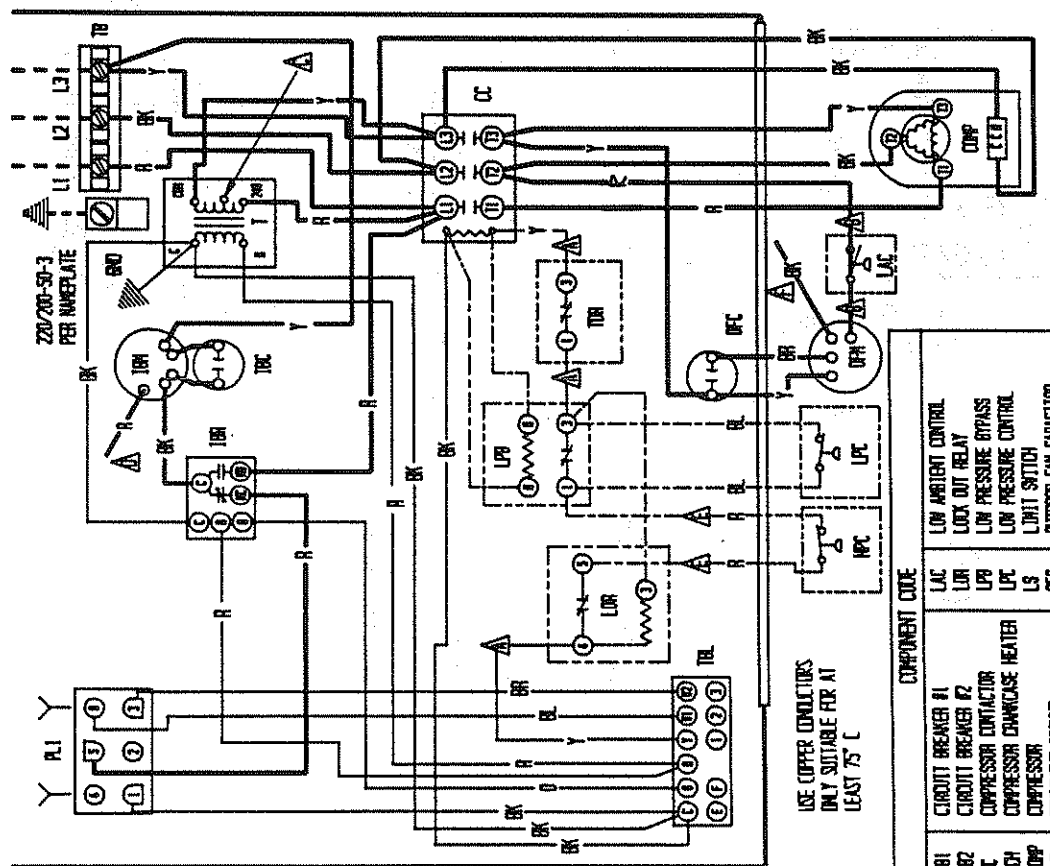
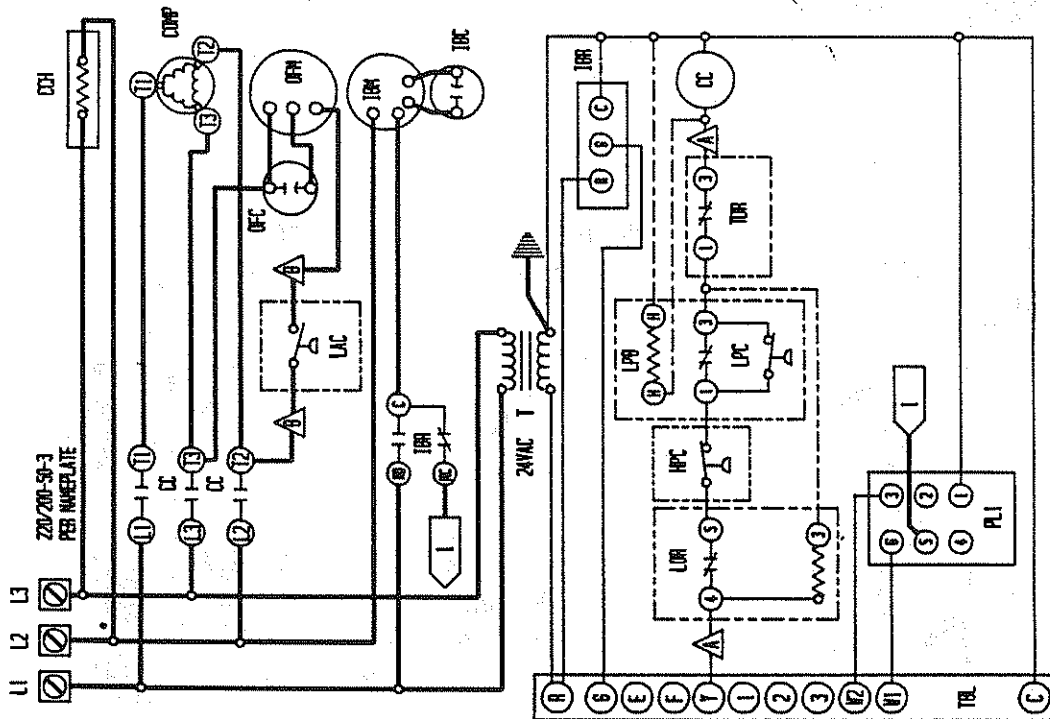


COLOR CODE			
BLACK	Y	V	VIOLET
BROWN	S	(GR)	PURPLE
RED	R	BL	SLAVE
ORANGE	W	WH	SLAVE

BAND INC. CO.			
INC.	405-213 A		
ORNL.	DAY		
DR./APP.			





USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75° C

COMPONENT CODE	COMPONENT CODE
DB1	LOW AMBIENT CONTROL
DB2	LOCK OUT RELAY
CC	LOW PRESSURE BYPASS
COH	LOW PRESSURE CONTROL
COP	LOW PRESSURE CONTROL
GND	LOW VOLTAGE TERMINAL BLOCK
H1	LOW VOLTAGE TERMINAL BLOCK
H2	LOW VOLTAGE TERMINAL BLOCK
H3	LOW VOLTAGE TERMINAL BLOCK
H4	LOW VOLTAGE TERMINAL BLOCK
H5	LOW VOLTAGE TERMINAL BLOCK
H6	LOW VOLTAGE TERMINAL BLOCK
H7	LOW VOLTAGE TERMINAL BLOCK
H8	LOW VOLTAGE TERMINAL BLOCK
H9	LOW VOLTAGE TERMINAL BLOCK
H10	LOW VOLTAGE TERMINAL BLOCK
H11	LOW VOLTAGE TERMINAL BLOCK
H12	LOW VOLTAGE TERMINAL BLOCK
H13	LOW VOLTAGE TERMINAL BLOCK
H14	LOW VOLTAGE TERMINAL BLOCK
H15	LOW VOLTAGE TERMINAL BLOCK
H16	LOW VOLTAGE TERMINAL BLOCK
H17	LOW VOLTAGE TERMINAL BLOCK
H18	LOW VOLTAGE TERMINAL BLOCK
H19	LOW VOLTAGE TERMINAL BLOCK
H20	LOW VOLTAGE TERMINAL BLOCK
H21	LOW VOLTAGE TERMINAL BLOCK
H22	LOW VOLTAGE TERMINAL BLOCK
H23	LOW VOLTAGE TERMINAL BLOCK
H24	LOW VOLTAGE TERMINAL BLOCK
H25	LOW VOLTAGE TERMINAL BLOCK
H26	LOW VOLTAGE TERMINAL BLOCK
H27	LOW VOLTAGE TERMINAL BLOCK
H28	LOW VOLTAGE TERMINAL BLOCK
H29	LOW VOLTAGE TERMINAL BLOCK
H30	LOW VOLTAGE TERMINAL BLOCK
H31	LOW VOLTAGE TERMINAL BLOCK
H32	LOW VOLTAGE TERMINAL BLOCK
H33	LOW VOLTAGE TERMINAL BLOCK
H34	LOW VOLTAGE TERMINAL BLOCK
H35	LOW VOLTAGE TERMINAL BLOCK
H36	LOW VOLTAGE TERMINAL BLOCK
H37	LOW VOLTAGE TERMINAL BLOCK
H38	LOW VOLTAGE TERMINAL BLOCK
H39	LOW VOLTAGE TERMINAL BLOCK
H40	LOW VOLTAGE TERMINAL BLOCK
H41	LOW VOLTAGE TERMINAL BLOCK
H42	LOW VOLTAGE TERMINAL BLOCK
H43	LOW VOLTAGE TERMINAL BLOCK
H44	LOW VOLTAGE TERMINAL BLOCK
H45	LOW VOLTAGE TERMINAL BLOCK
H46	LOW VOLTAGE TERMINAL BLOCK
H47	LOW VOLTAGE TERMINAL BLOCK
H48	LOW VOLTAGE TERMINAL BLOCK
H49	LOW VOLTAGE TERMINAL BLOCK
H50	LOW VOLTAGE TERMINAL BLOCK
H51	LOW VOLTAGE TERMINAL BLOCK
H52	LOW VOLTAGE TERMINAL BLOCK
H53	LOW VOLTAGE TERMINAL BLOCK
H54	LOW VOLTAGE TERMINAL BLOCK
H55	LOW VOLTAGE TERMINAL BLOCK
H56	LOW VOLTAGE TERMINAL BLOCK
H57	LOW VOLTAGE TERMINAL BLOCK
H58	LOW VOLTAGE TERMINAL BLOCK
H59	LOW VOLTAGE TERMINAL BLOCK
H60	LOW VOLTAGE TERMINAL BLOCK
H61	LOW VOLTAGE TERMINAL BLOCK
H62	LOW VOLTAGE TERMINAL BLOCK
H63	LOW VOLTAGE TERMINAL BLOCK
H64	LOW VOLTAGE TERMINAL BLOCK
H65	LOW VOLTAGE TERMINAL BLOCK
H66	LOW VOLTAGE TERMINAL BLOCK
H67	LOW VOLTAGE TERMINAL BLOCK
H68	LOW VOLTAGE TERMINAL BLOCK
H69	LOW VOLTAGE TERMINAL BLOCK
H70	LOW VOLTAGE TERMINAL BLOCK
H71	LOW VOLTAGE TERMINAL BLOCK
H72	LOW VOLTAGE TERMINAL BLOCK
H73	LOW VOLTAGE TERMINAL BLOCK
H74	LOW VOLTAGE TERMINAL BLOCK
H75	LOW VOLTAGE TERMINAL BLOCK
H76	LOW VOLTAGE TERMINAL BLOCK
H77	LOW VOLTAGE TERMINAL BLOCK
H78	LOW VOLTAGE TERMINAL BLOCK
H79	LOW VOLTAGE TERMINAL BLOCK
H80	LOW VOLTAGE TERMINAL BLOCK
H81	LOW VOLTAGE TERMINAL BLOCK
H82	LOW VOLTAGE TERMINAL BLOCK
H83	LOW VOLTAGE TERMINAL BLOCK
H84	LOW VOLTAGE TERMINAL BLOCK
H85	LOW VOLTAGE TERMINAL BLOCK
H86	LOW VOLTAGE TERMINAL BLOCK
H87	LOW VOLTAGE TERMINAL BLOCK
H88	LOW VOLTAGE TERMINAL BLOCK
H89	LOW VOLTAGE TERMINAL BLOCK
H90	LOW VOLTAGE TERMINAL BLOCK
H91	LOW VOLTAGE TERMINAL BLOCK
H92	LOW VOLTAGE TERMINAL BLOCK
H93	LOW VOLTAGE TERMINAL BLOCK
H94	LOW VOLTAGE TERMINAL BLOCK
H95	LOW VOLTAGE TERMINAL BLOCK
H96	LOW VOLTAGE TERMINAL BLOCK
H97	LOW VOLTAGE TERMINAL BLOCK
H98	LOW VOLTAGE TERMINAL BLOCK
H99	LOW VOLTAGE TERMINAL BLOCK
H100	LOW VOLTAGE TERMINAL BLOCK

▲ Labeled wires connect if no options used. ▲ Move red wire to 200V tap for 200V operation. ▲ High speed tap not to be used on 50Hz models.

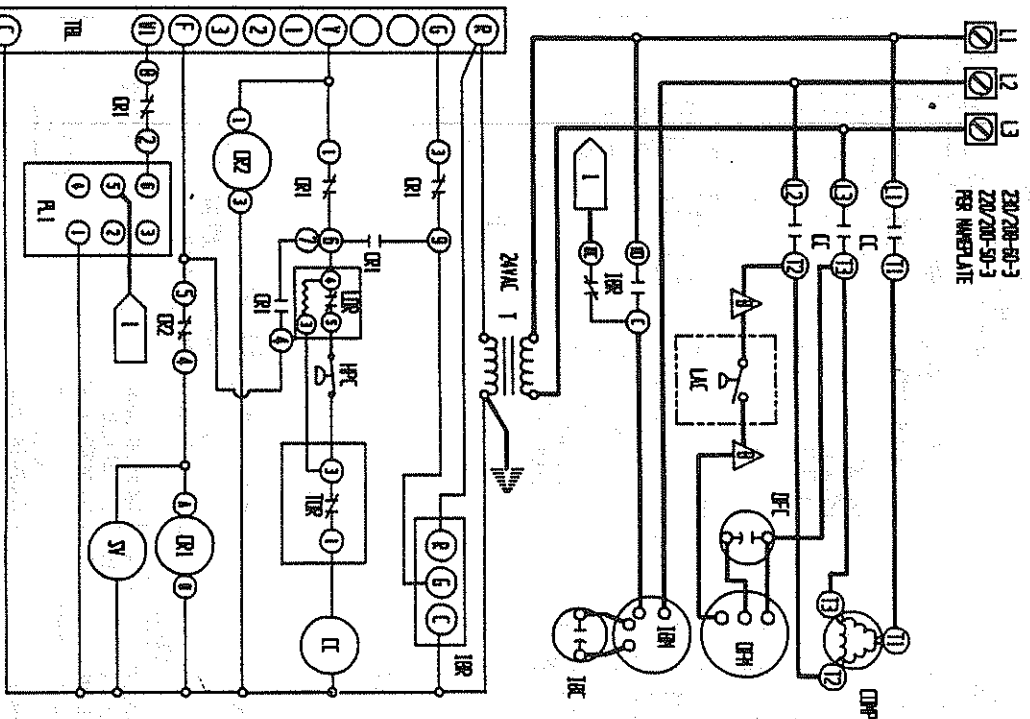
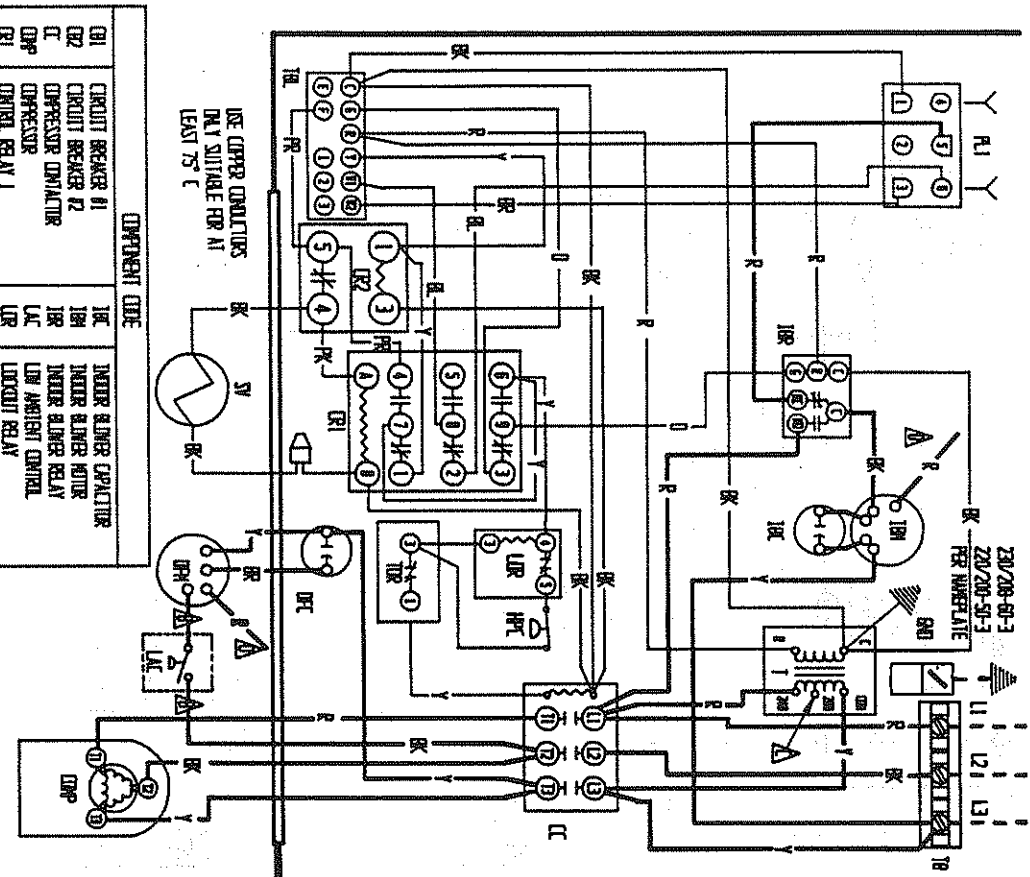
FACTORY STD.	FIELD	OPTIONAL
HIGH VOLTAGE	---	---
LOW VOLTAGE	---	---
ACCESSORY	---	---

COLOR CODE

Y	6	BL	W	Y	V	VI	P	PK	L	TAN
BLACK	BROWN	RED	ORANGE	YELLOW	GREEN	BLUE	WHITE	BLACK	PINK	TAN
BR	R	O	OR	Y	G	B	W	BK	PK	TAN
BRN	RED	ORNG	ORNGE	YEL	GRN	BLU	WH	BK	PNK	TAN
BROWN	RED	ORANGE	ORANGE	YELLOW	GREEN	BLUE	WHITE	BLACK	PINK	TAN
BROWN	RED	ORANGE	ORANGE	YELLOW	GREEN	BLUE	WHITE	BLACK	PINK	TAN

BARB WFG. CO.

DRG.	4085-214 A
DRG.	4085-214 A
DRG.	DAY
DRG.	DR./APPR.

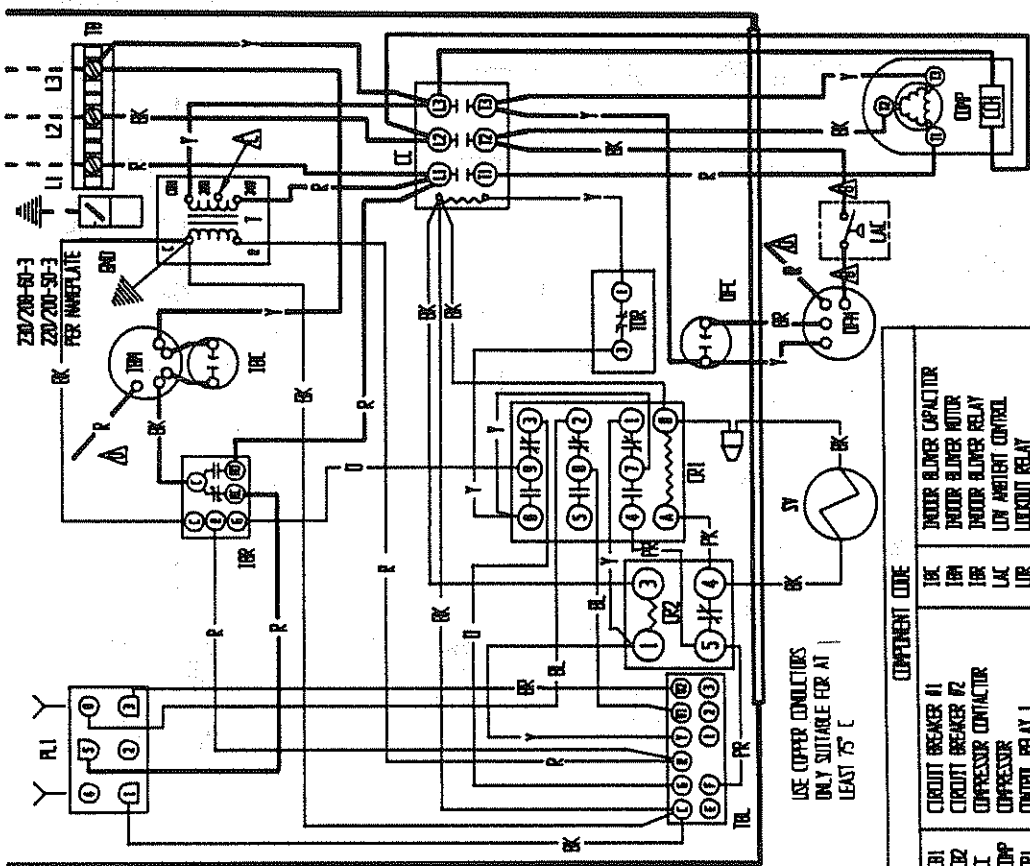
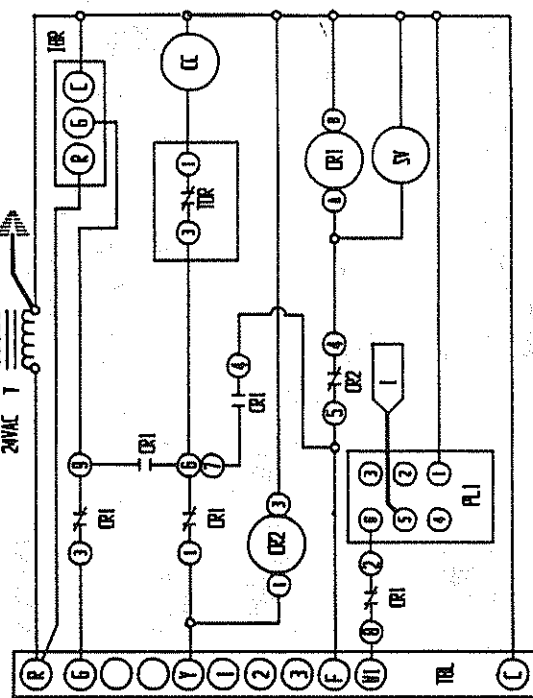
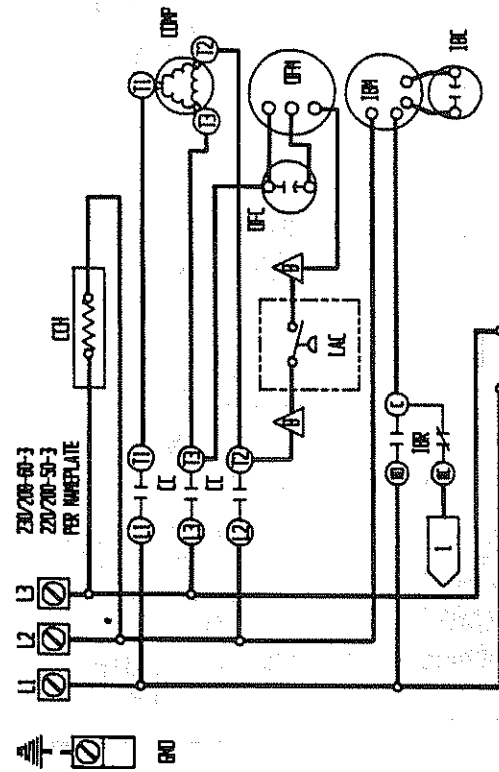


COMPONENT CODE	
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CR1	COMPRESSOR
CR2	CONTROL RELAY 1
CR3	CONTROL RELAY 2
CR4	CONTROL RELAY 3
CR5	CONTROL RELAY 4
CR6	CONTROL RELAY 5
CR7	CONTROL RELAY 6
CR8	CONTROL RELAY 7
CR9	CONTROL RELAY 8
CR10	CONTROL RELAY 9
CR11	CONTROL RELAY 10
CR12	CONTROL RELAY 11
CR13	CONTROL RELAY 12
CR14	CONTROL RELAY 13
CR15	CONTROL RELAY 14
CR16	CONTROL RELAY 15
CR17	CONTROL RELAY 16
CR18	CONTROL RELAY 17
CR19	CONTROL RELAY 18
CR20	CONTROL RELAY 19
CR21	CONTROL RELAY 20
CR22	CONTROL RELAY 21
CR23	CONTROL RELAY 22
CR24	CONTROL RELAY 23
CR25	CONTROL RELAY 24
CR26	CONTROL RELAY 25
CR27	CONTROL RELAY 26
CR28	CONTROL RELAY 27
CR29	CONTROL RELAY 28
CR30	CONTROL RELAY 29
CR31	CONTROL RELAY 30
CR32	CONTROL RELAY 31
CR33	CONTROL RELAY 32
CR34	CONTROL RELAY 33
CR35	CONTROL RELAY 34
CR36	CONTROL RELAY 35
CR37	CONTROL RELAY 36
CR38	CONTROL RELAY 37
CR39	CONTROL RELAY 38
CR40	CONTROL RELAY 39
CR41	CONTROL RELAY 40
CR42	CONTROL RELAY 41
CR43	CONTROL RELAY 42
CR44	CONTROL RELAY 43
CR45	CONTROL RELAY 44
CR46	CONTROL RELAY 45
CR47	CONTROL RELAY 46
CR48	CONTROL RELAY 47
CR49	CONTROL RELAY 48
CR50	CONTROL RELAY 49
CR51	CONTROL RELAY 50
CR52	CONTROL RELAY 51
CR53	CONTROL RELAY 52
CR54	CONTROL RELAY 53
CR55	CONTROL RELAY 54
CR56	CONTROL RELAY 55
CR57	CONTROL RELAY 56
CR58	CONTROL RELAY 57
CR59	CONTROL RELAY 58
CR60	CONTROL RELAY 59
CR61	CONTROL RELAY 60
CR62	CONTROL RELAY 61
CR63	CONTROL RELAY 62
CR64	CONTROL RELAY 63
CR65	CONTROL RELAY 64
CR66	CONTROL RELAY 65
CR67	CONTROL RELAY 66
CR68	CONTROL RELAY 67
CR69	CONTROL RELAY 68
CR70	CONTROL RELAY 69
CR71	CONTROL RELAY 70
CR72	CONTROL RELAY 71
CR73	CONTROL RELAY 72
CR74	CONTROL RELAY 73
CR75	CONTROL RELAY 74
CR76	CONTROL RELAY 75
CR77	CONTROL RELAY 76
CR78	CONTROL RELAY 77
CR79	CONTROL RELAY 78
CR80	CONTROL RELAY 79
CR81	CONTROL RELAY 80
CR82	CONTROL RELAY 81
CR83	CONTROL RELAY 82
CR84	CONTROL RELAY 83
CR85	CONTROL RELAY 84
CR86	CONTROL RELAY 85
CR87	CONTROL RELAY 86
CR88	CONTROL RELAY 87
CR89	CONTROL RELAY 88
CR90	CONTROL RELAY 89
CR91	CONTROL RELAY 90
CR92	CONTROL RELAY 91
CR93	CONTROL RELAY 92
CR94	CONTROL RELAY 93
CR95	CONTROL RELAY 94
CR96	CONTROL RELAY 95
CR97	CONTROL RELAY 96
CR98	CONTROL RELAY 97
CR99	CONTROL RELAY 98
CR100	CONTROL RELAY 99
CR101	CONTROL RELAY 100

COMPONENT CODE	
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CR1	COMPRESSOR
CR2	CONTROL RELAY 1
CR3	CONTROL RELAY 2
CR4	CONTROL RELAY 3
CR5	CONTROL RELAY 4
CR6	CONTROL RELAY 5
CR7	CONTROL RELAY 6
CR8	CONTROL RELAY 7
CR9	CONTROL RELAY 8
CR10	CONTROL RELAY 9
CR11	CONTROL RELAY 10
CR12	CONTROL RELAY 11
CR13	CONTROL RELAY 12
CR14	CONTROL RELAY 13
CR15	CONTROL RELAY 14
CR16	CONTROL RELAY 15
CR17	CONTROL RELAY 16
CR18	CONTROL RELAY 17
CR19	CONTROL RELAY 18
CR20	CONTROL RELAY 19
CR21	CONTROL RELAY 20
CR22	CONTROL RELAY 21
CR23	CONTROL RELAY 22
CR24	CONTROL RELAY 23
CR25	CONTROL RELAY 24
CR26	CONTROL RELAY 25
CR27	CONTROL RELAY 26
CR28	CONTROL RELAY 27
CR29	CONTROL RELAY 28
CR30	CONTROL RELAY 29
CR31	CONTROL RELAY 30
CR32	CONTROL RELAY 31
CR33	CONTROL RELAY 32
CR34	CONTROL RELAY 33
CR35	CONTROL RELAY 34
CR36	CONTROL RELAY 35
CR37	CONTROL RELAY 36
CR38	CONTROL RELAY 37
CR39	CONTROL RELAY 38
CR40	CONTROL RELAY 39
CR41	CONTROL RELAY 40
CR42	CONTROL RELAY 41
CR43	CONTROL RELAY 42
CR44	CONTROL RELAY 43
CR45	CONTROL RELAY 44
CR46	CONTROL RELAY 45
CR47	CONTROL RELAY 46
CR48	CONTROL RELAY 47
CR49	CONTROL RELAY 48
CR50	CONTROL RELAY 49
CR51	CONTROL RELAY 50
CR52	CONTROL RELAY 51
CR53	CONTROL RELAY 52
CR54	CONTROL RELAY 53
CR55	CONTROL RELAY 54
CR56	CONTROL RELAY 55
CR57	CONTROL RELAY 56
CR58	CONTROL RELAY 57
CR59	CONTROL RELAY 58
CR60	CONTROL RELAY 59
CR61	CONTROL RELAY 60
CR62	CONTROL RELAY 61
CR63	CONTROL RELAY 62
CR64	CONTROL RELAY 63
CR65	CONTROL RELAY 64
CR66	CONTROL RELAY 65
CR67	CONTROL RELAY 66
CR68	CONTROL RELAY 67
CR69	CONTROL RELAY 68
CR70	CONTROL RELAY 69
CR71	CONTROL RELAY 70
CR72	CONTROL RELAY 71
CR73	CONTROL RELAY 72
CR74	CONTROL RELAY 73
CR75	CONTROL RELAY 74
CR76	CONTROL RELAY 75
CR77	CONTROL RELAY 76
CR78	CONTROL RELAY 77
CR79	CONTROL RELAY 78
CR80	CONTROL RELAY 79
CR81	CONTROL RELAY 80
CR82	CONTROL RELAY 81
CR83	CONTROL RELAY 82
CR84	CONTROL RELAY 83
CR85	CONTROL RELAY 84
CR86	CONTROL RELAY 85
CR87	CONTROL RELAY 86
CR88	CONTROL RELAY 87
CR89	CONTROL RELAY 88
CR90	CONTROL RELAY 89
CR91	CONTROL RELAY 90
CR92	CONTROL RELAY 91
CR93	CONTROL RELAY 92
CR94	CONTROL RELAY 93
CR95	CONTROL RELAY 94
CR96	CONTROL RELAY 95
CR97	CONTROL RELAY 96
CR98	CONTROL RELAY 97
CR99	CONTROL RELAY 98
CR100	CONTROL RELAY 99

WIRE COLOR CODE	
BLACK	BLACK
RED	RED
WHITE	WHITE
YELLOW	YELLOW
GREEN	GREEN
BLUE	BLUE
PURPLE	PURPLE
ORANGE	ORANGE
GRAY	GRAY
SLATE	SLATE
PINK	PINK
LAURENCE	LAURENCE
OK/APP.	OK/APP.

▲ LABEL BY WIRES CONNECT IF NO OPTIONS USED.  
 ▲ NONE RED WIRE TO 200V TAP FOR 200V OPERATION.  
 ▲ RED (LINE) BLACK (HIGH) WIRE APPLICABLE.



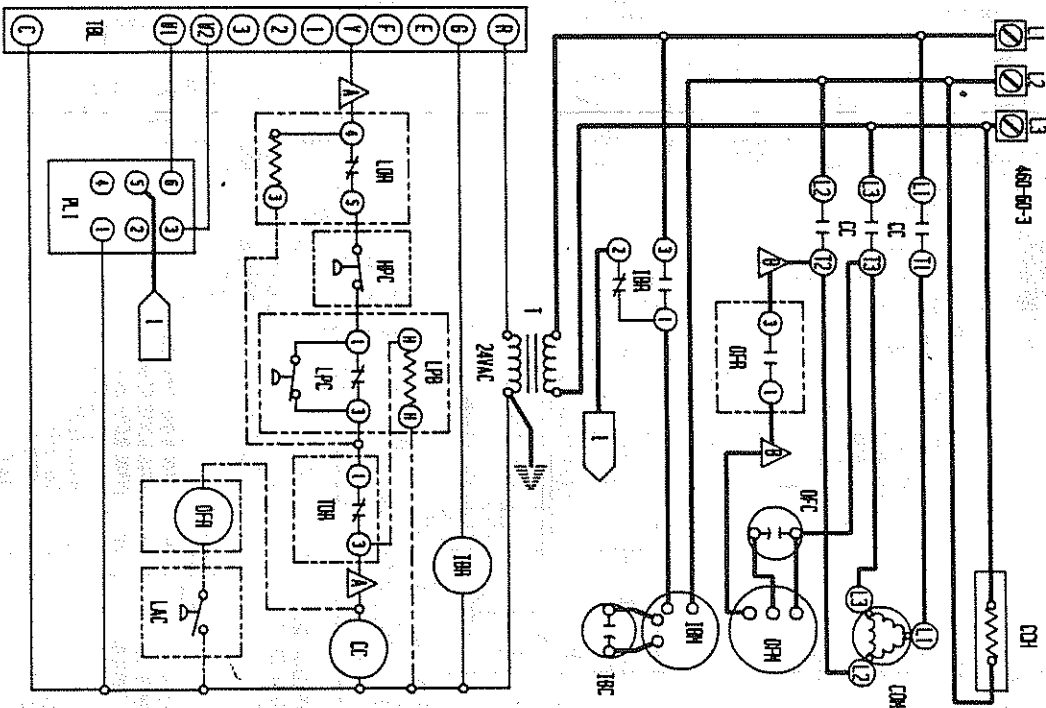
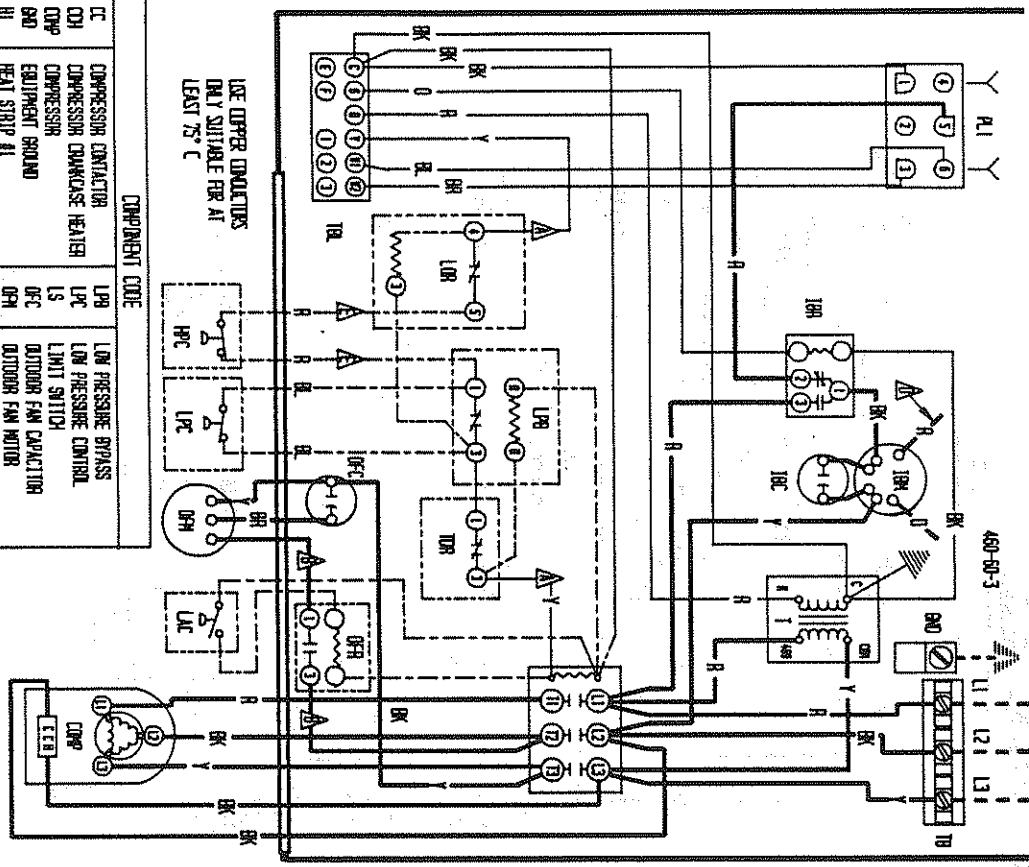
USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75°C

COMPONENT CODE	COMPONENT CODE
C1	INDOR BLOWER CAPACITOR
C2	INDOR BLOWER #1
C3	INDOR BLOWER #2
C4	INDOR BLOWER RELAY
C5	COMPRESSOR CONTACTOR
C6	CONTROL RELAY 1
C7	CONTROL RELAY 2
C8	DUAL CAN CAPACITOR
C9	EQUIPMENT GROUND
C10	HEAT STRIP #1
C11	HEAT STRIP #2
C12	HEATER CONTACTOR #1
C13	HEATER CONTACTOR #2
C14	HIGH PRESSURE CONTROL
C15	INDOR BLOWER CAPACITOR
C16	INDOR BLOWER #1
C17	INDOR BLOWER #2
C18	INDOR BLOWER RELAY
C19	LN AMBIENT CONTROL
C20	LOCKOUT RELAY
C21	LIMIT SWITCH
C22	OUTDOOR FAN MOTOR
C23	PLUG #1
C24	SOLENOID VALVE
C25	TRANSFORMER
C26	TERMINAL BLOCK
C27	LN VOLTAGE TERMINAL BLOCK
C28	TERMINAL OUTLET
C29	TIME DELAY RELAY

Labeled Wires Connect if no Options Used.		Color Code	
High Voltage	Factory Std.	Y	Yellow
Low Voltage	Field	G	Green
Necessary	Optional	B	Blue
		W	White
		(S)	Slate
		R	Red
		BR	Brown
		BL	Black
		DK	Drainage
		P	Pink
		L	Lavender
		T	Tan

NOTE: RED WIRE TO 200V TAP FOR 200V OPERATION. RED (LOW) BLACK (HIGH) WIRE APPLICABLE PERE APPLICABLE.

**BARD MFG. CO.**  
 INC. 4055-221 A  
 DEN.  
 DR./AFFR.



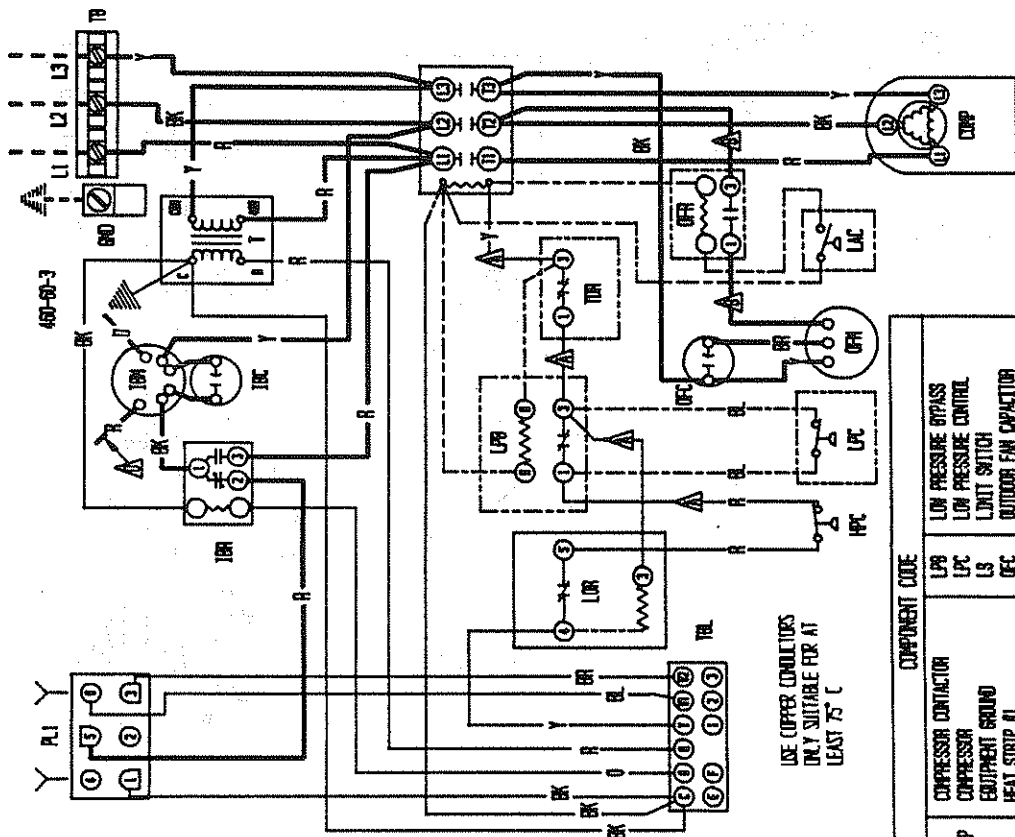
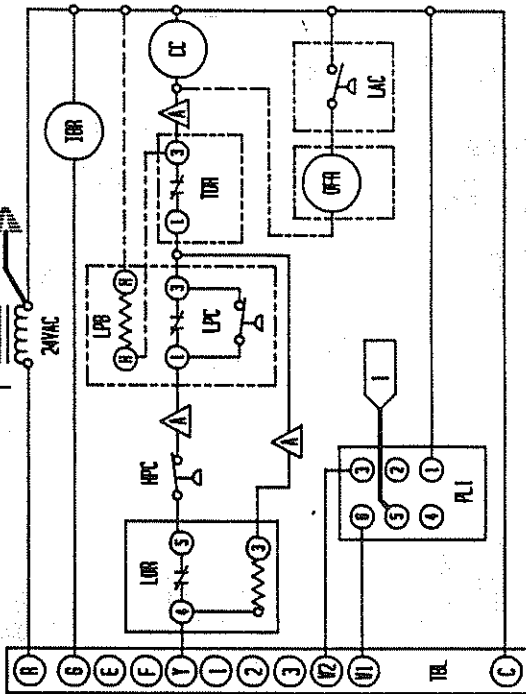
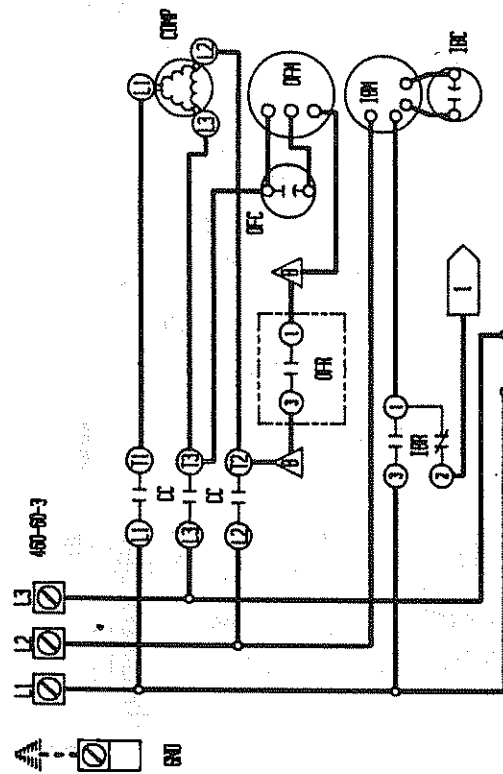
COMPONENT CODE	COMPONENT CODE	COMPONENT CODE	
CC	COMPRESSOR CONTACTOR	LPH	LOW PRESSURE BRASS
COY	COMPRESSOR COMPACTOR HEATER	LPC	LOW PRESSURE CONTROL
CPW	COMPRESSOR	LS	LIMIT SWITCH
EQM	EQUIPMENT SOUND	OFC	OUTDOOR FAN CAPACITOR
HS1	HEAT STRIP #1	OFM	OUTDOOR FAN MOTOR
HS2	HEAT STRIP #2	OFB	OUTDOOR FAN BELAY
HC1	HEATER CONTACTOR #1	PLD	PLUG #1
HC2	HEATER CONTACTOR #2	TRF	TRANSFORMER
HPC	HIGH PRESSURE CONTROL	TBL	TERMINAL BLOCK
IMC	INDOOR BLOWER CAPACITOR	TBR	TERMINAL BLOCK
IMM	INDOOR BLOWER MOTOR	TCO	THERMAL CLOSURE
IMR	INDOOR BLOWER RELAY	TRR	TIME DELAY RELAY
LAC	LOW AMBIENT CONTROL		
LBR	LOOK OUT RELAY		

▲ ▲ Labeled wires connect if no options used. ▲ For low speed connect black and orange wires together and isolate. Connect red wire to terminal I or 1BR.

FACTORY STL.	FIELD	OPTIONAL	
BR	BLACK	BR	BLACK
BRN	BROWN	BRN	BROWN
R	RED	R	RED
OR	ORANGE	OR	ORANGE
Y	YELLOW	Y	YELLOW
G	GREEN	G	GREEN
B	BLUE	B	BLUE
W	WHITE	W	WHITE
V	VIOLET	V	VIOLET
P	PURPLE	P	PURPLE
G	GRAY	G	GRAY
S	SLATE	S	SLATE
T	TEAL	T	TEAL
P	PINK	P	PINK
L	LAVENDER	L	LAVENDER

**BARCO MFC, CO.**  
 ENG: 4035-310 C  
 DWN: CDB  
 CHK: APR/81





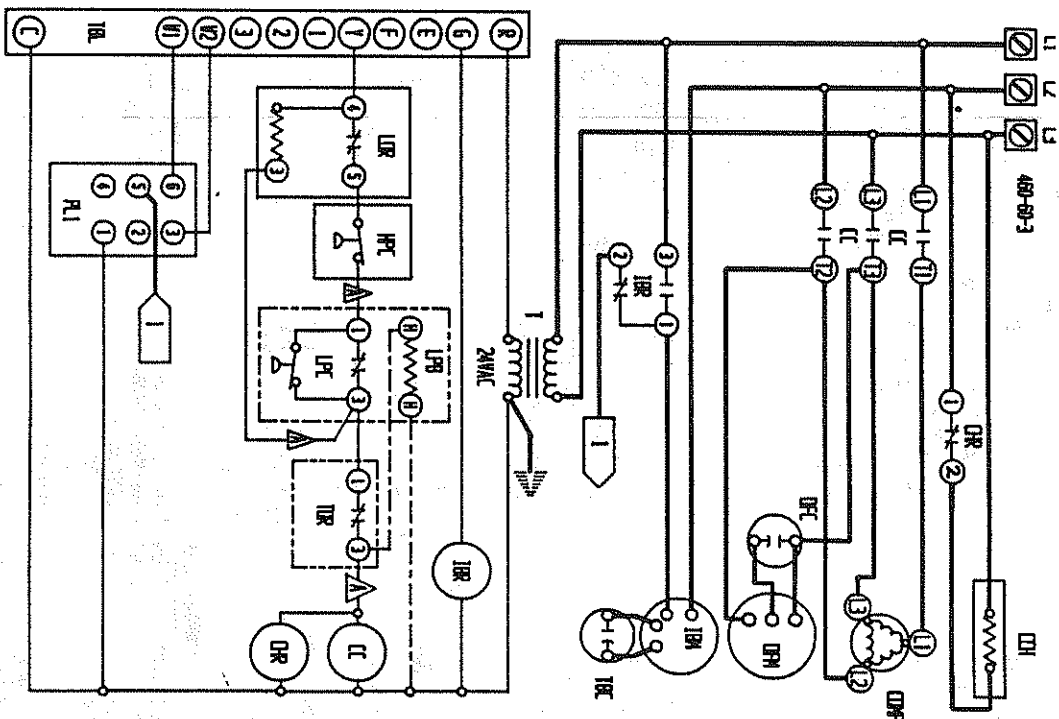
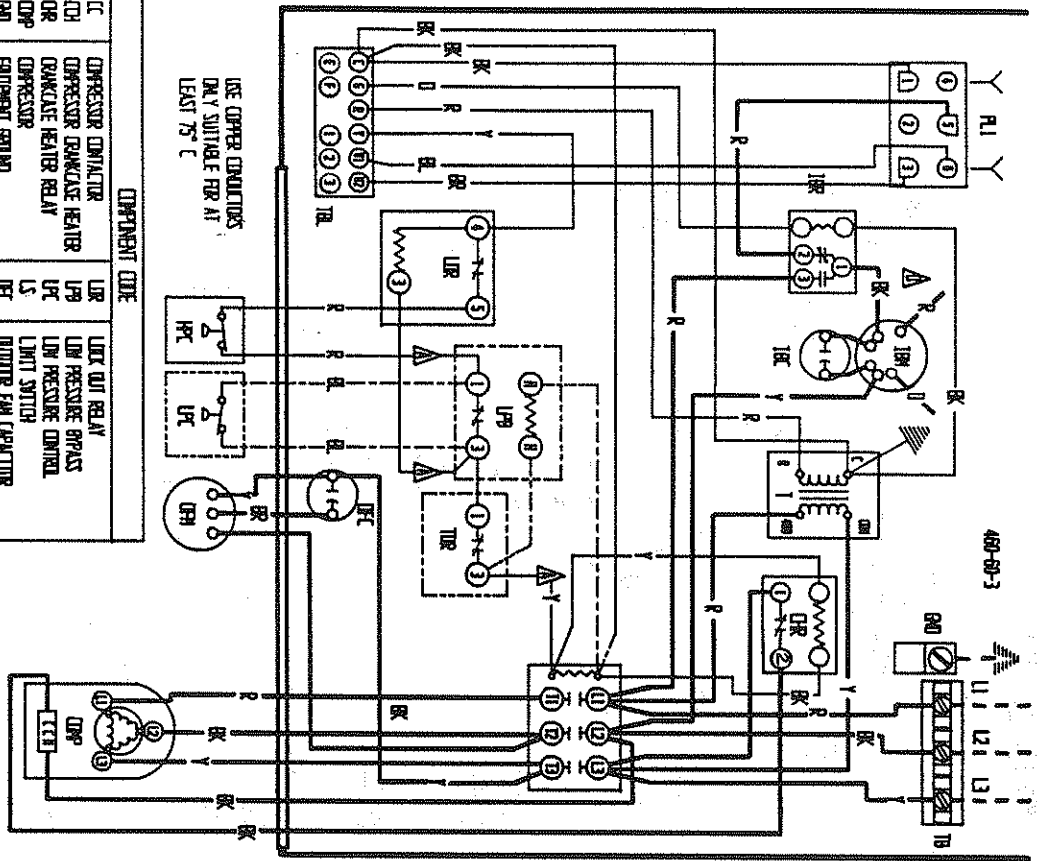
USE COPPER CONDUITS  
ONLY SUITABLE FOR AT  
LEAST 75 °C

COMPONENT CODE	COMPONENT
DC	COMPRESSOR CONTACTOR
COMP	COMPRESSOR
EQND	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
HBC	INDOOR BLOWER CAPACITOR
IBR	INDOOR BLOWER MOTOR
IBR	INDOOR BLOWER RELAY
LAB	LOW AMBIENT CONTROL
LUR	LOCK OUT RELAY
LPC	LOW PRESSURE BYPASS
LSC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OFC	OUTDOOR FAN CAPACITOR
OFR	OUTDOOR FAN RELAY
OR	OUTDOOR FAN MOTOR
PD	PULL DISCONNECT
PL1	PLUG #1
T	TRANSFORMER
TB	TERMINAL BLOCK
TBL	LOW VOLTAGE TERMINAL BLOCK
TCD	THERMAL CUTOFF
TBR	TIME RELAY RELAY

LABELLED WIRES CONNECT IF NO OPTIONS USED.  $\Delta$  FOR LOW SPEED CONNECT BLACK AND ORANGE WIRES TOGETHER AND INSULATE. CONNECT RED WIRE TO TERMINAL I OF ITR.

OPTIONAL	FACTORY WIRE	FIELD	COLOR CODE	TERMINAL	WIRE COLOR
---	---	---	BLACK	BR	PINK
---	---	---	BROWN	BR	ORANGE
---	---	---	RED	R	RED
---	---	---	ORANGE	U	PINK
---	---	---	WHITE	V	ORANGE
---	---	---	BLUE	W	GRAY
---	---	---	GREEN	X	PURPLE
---	---	---	YELLOW	Y	VIOLLET
---	---	---	---	Z	---
---	---	---	---	3	---
---	---	---	---	4	---
---	---	---	---	5	---
---	---	---	---	6	---
---	---	---	---	7	---
---	---	---	---	8	---
---	---	---	---	9	---
---	---	---	---	10	---
---	---	---	---	11	---
---	---	---	---	12	---
---	---	---	---	13	---
---	---	---	---	14	---
---	---	---	---	15	---
---	---	---	---	16	---
---	---	---	---	17	---
---	---	---	---	18	---
---	---	---	---	19	---
---	---	---	---	20	---
---	---	---	---	21	---
---	---	---	---	22	---
---	---	---	---	23	---
---	---	---	---	24	---
---	---	---	---	25	---
---	---	---	---	26	---
---	---	---	---	27	---
---	---	---	---	28	---
---	---	---	---	29	---
---	---	---	---	30	---
---	---	---	---	31	---
---	---	---	---	32	---
---	---	---	---	33	---
---	---	---	---	34	---
---	---	---	---	35	---
---	---	---	---	36	---
---	---	---	---	37	---
---	---	---	---	38	---
---	---	---	---	39	---
---	---	---	---	40	---
---	---	---	---	41	---
---	---	---	---	42	---
---	---	---	---	43	---
---	---	---	---	44	---
---	---	---	---	45	---
---	---	---	---	46	---
---	---	---	---	47	---
---	---	---	---	48	---
---	---	---	---	49	---
---	---	---	---	50	---
---	---	---	---	51	---
---	---	---	---	52	---
---	---	---	---	53	---
---	---	---	---	54	---
---	---	---	---	55	---
---	---	---	---	56	---
---	---	---	---	57	---
---	---	---	---	58	---
---	---	---	---	59	---
---	---	---	---	60	---
---	---	---	---	61	---
---	---	---	---	62	---
---	---	---	---	63	---
---	---	---	---	64	---
---	---	---	---	65	---
---	---	---	---	66	---
---	---	---	---	67	---
---	---	---	---	68	---
---	---	---	---	69	---
---	---	---	---	70	---
---	---	---	---	71	---
---	---	---	---	72	---
---	---	---	---	73	---
---	---	---	---	74	---
---	---	---	---	75	---
---	---	---	---	76	---
---	---	---	---	77	---
---	---	---	---	78	---
---	---	---	---	79	---
---	---	---	---	80	---
---	---	---	---	81	---
---	---	---	---	82	---
---	---	---	---	83	---
---	---	---	---	84	---
---	---	---	---	85	---
---	---	---	---	86	---
---	---	---	---	87	---
---	---	---	---	88	---
---	---	---	---	89	---
---	---	---	---	90	---
---	---	---	---	91	---
---	---	---	---	92	---
---	---	---	---	93	---
---	---	---	---	94	---
---	---	---	---	95	---
---	---	---	---	96	---
---	---	---	---	97	---
---	---	---	---	98	---
---	---	---	---	99	---
---	---	---	---	100	---

405-312 B  
LAVENDER  
L  
SLATE  
GRAY  
PURPLE  
PINK  
PINK  
PINK  
PINK



COMPONENT CODE	DESCRIPTION
LC	COMPRESSOR CONTACTOR
LD	COMPRESSOR OVERHAUSE HEATER
DR	COMPRESSOR HEATER RELAY
DRP	COMPRESSOR
RD	EQUIPMENT BINDING
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H1C	HEATER CONTACTOR #1
H2C	HEATER CONTACTOR #2
H1R	HIGH PRESSURE CAPACITOR
H2R	HIGH PRESSURE CAPACITOR
H1R	INDOR BLURER MOTOR
H2R	INDOR BLURER RELAY

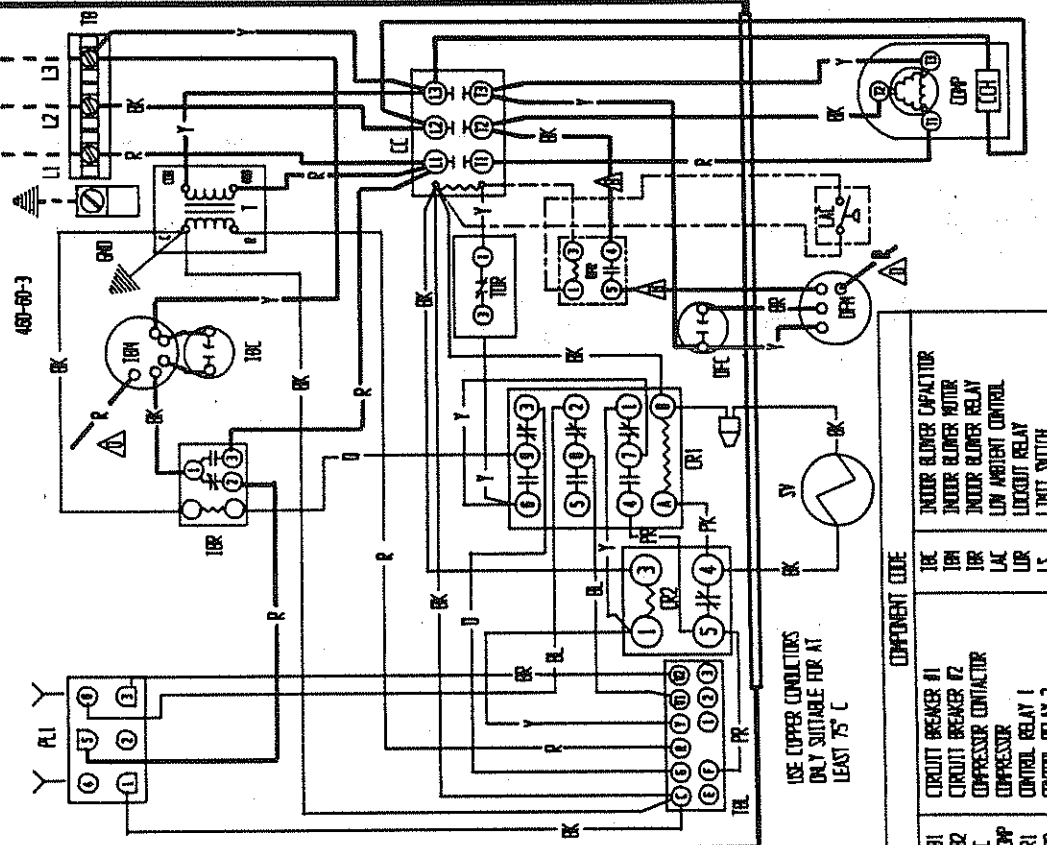
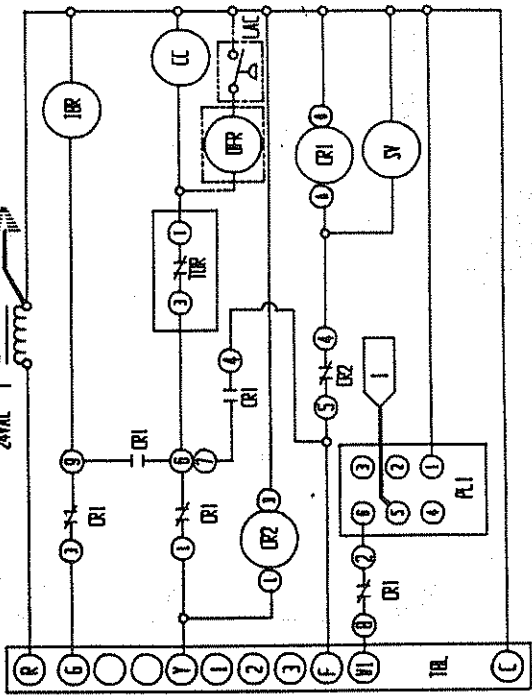
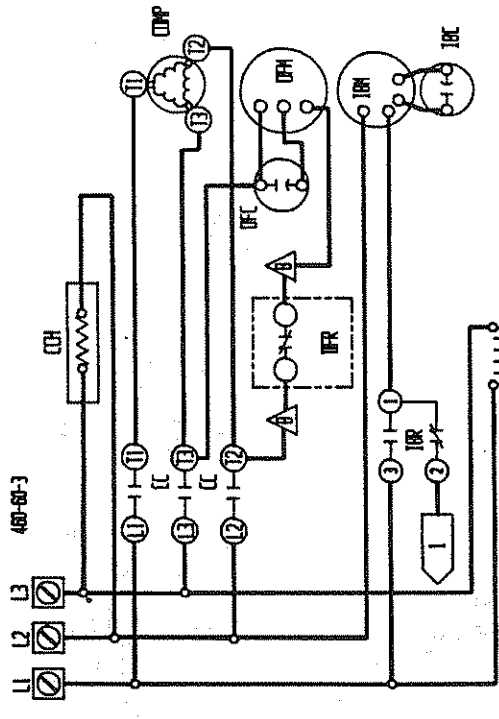
COMPONENT CODE	DESCRIPTION
LUR	LOW VOLT RELAY
LUR	LOW PRESSURE PRESS
LUR	LOW PRESSURE CONTROL
LUR	LIMIT SWITCH
LUR	OUTDOOR FAN CAPACITOR
LUR	OUTDOOR FAN MOTOR
LUR	FILL DISCONNECT
LUR	FLUE #1
LUR	TRANSFORMER
LUR	TERMINAL BLOCK
LUR	LOW VOLTAGE TERMINAL BLOCK
LUR	THERMAL CUT-OFF
LUR	TIME DELAY RELAY

▲ LABELLED WIRES CONNECT IF NO OPTIONS USED.

▲ FOR LOW SPEED CONNECT BLACK AND BROWN WIRES TOGETHER AND ISOLATE. CONNECT RED WIRE TO TERMINAL 1 OF LIR.

FACTORY STD.	FIELD	OPTIONAL
BLACK	BLACK	BLACK
BROWN	BROWN	BROWN
RED	RED	RED
WHITE	WHITE	WHITE
YELLOW	YELLOW	YELLOW
GREEN	GREEN	GREEN
BLUE	BLUE	BLUE
OR	OR	OR
(S)	(S)	(S)
VIOLET	VIOLET	VIOLET
PURPLE	PURPLE	PURPLE
GRAY	GRAY	GRAY
SLATE	SLATE	SLATE
TAN	TAN	TAN
PINK	PINK	PINK
LAVENDER	LAVENDER	LAVENDER

BARO MFG. CO.	DATE	480-50-3
DRG.	DRG.	DRG.
CHK.	CHK.	CHK.
APP.	APP.	APP.



**FOR LOW SPEED CONNECT BLACK AND ORANGE WIRES TOGETHER AND INSULATE.**  
**CONNECT RED WIRE TO TERMINAL 1 OF TR.**

COLOR CODE	
BLACK	RED
BROWN	ORANGE
RED	ORANGE
ORANGE	ORANGE
YELLOW	GREEN
GREEN	BLUE
PURPLE	GRAY
VIOLET	GRAY
PINK	SLATE
TAN	LAYER
PINK	LAYER

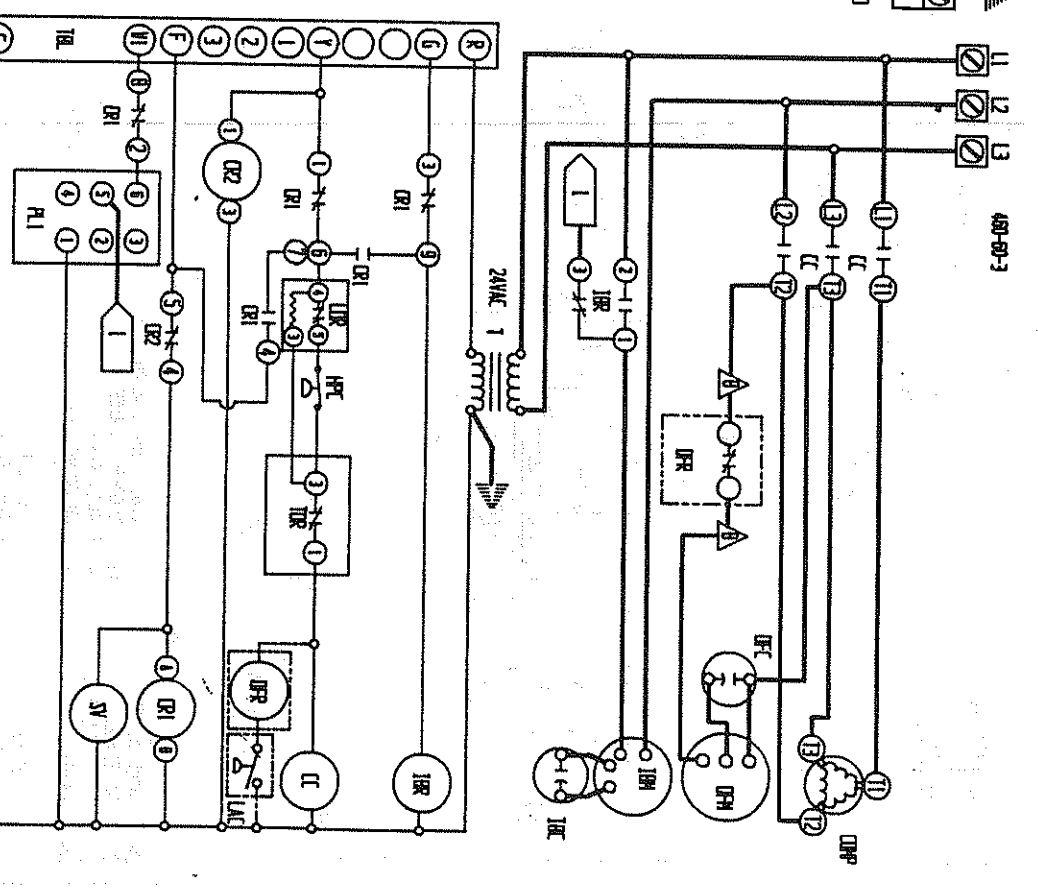
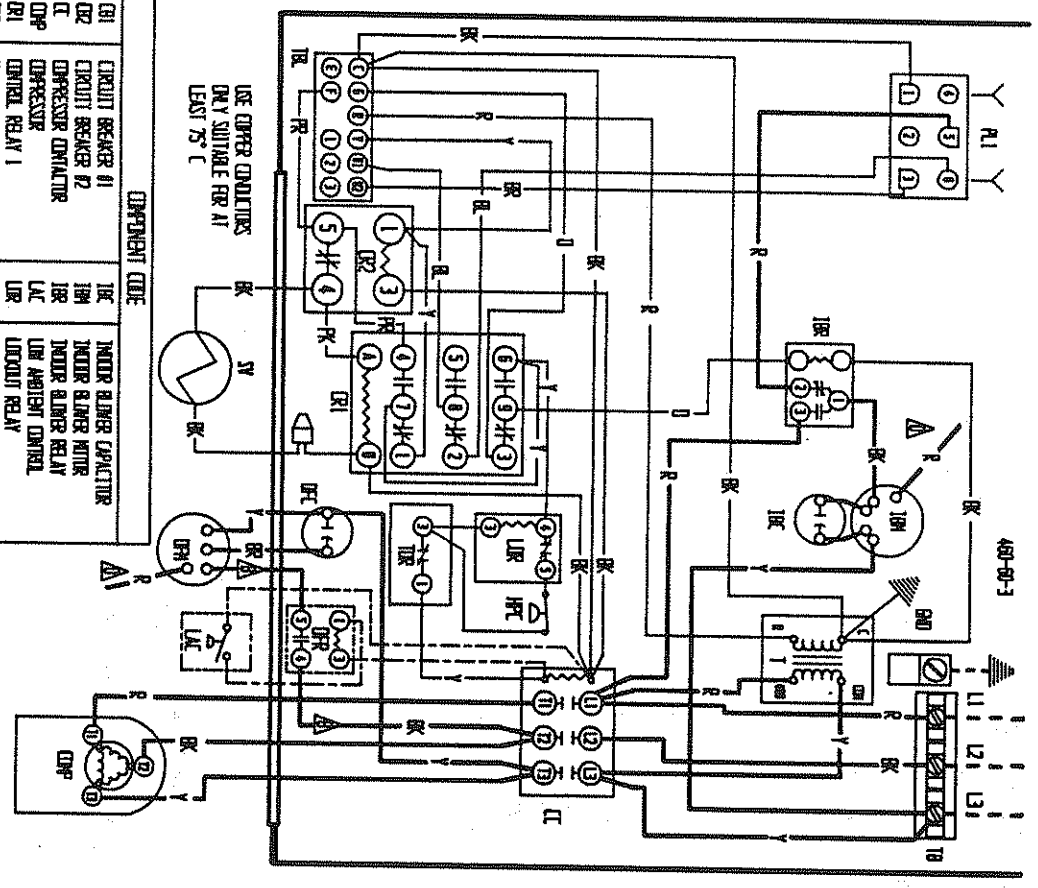
**BARD MFG. CO.**  
 Dwg. 485-315 B  
 DRN.  
 CHK./APPR.

**LABELLED WIRES CONNECT IF NO OPTIONS USED.**

HIGH VOLTAGE ACCESSORY	LOW VOLTAGE ACCESSORY	FIELD	OPTIONAL
---	---	---	---

**USE COPPER CONDUCTORS ONLY SUITABLE FOR AT LEAST 75° C**

COMPONENT CODE	DESCRIPTION
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CCP	COMPRESSOR
CR1	CONTROL RELAY 1
CR2	CONTROL RELAY 2
DC	DUAL CAP CAPACITOR
EO	EQUIPMENT GROUND
NI	HEAT STRIP #1
N2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
PC	HIGH PRESSURE CONTROL
IR	INDOOR BLOWER CAPACITOR
IRB	INDOOR BLOWER MOTOR
IRL	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LUR	LOCKOUT RELAY
LS	LIMIT SWITCH
DFM	OUTDOOR FAN MOTOR
PL1	PLUG #1
SV	SOLENOID VALVE
T	TRANSFORMER
TR	TERMINAL BLOCK
TRB	LOW VOLTAGE TERMINAL BLOCK
TRC	THERMAL CUTOFF
TRD	TIME DELAY RELAY



**COMPONENT CODE**

CR1	CIRCUIT BREAKER #1
CR2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CCP	COMPRESSOR
CR1	CONTROL RELAY 1
CR2	CONTROL RELAY 2
CCM	CLM CAPACITOR
EQD	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H1C	HEATER CONTACTOR #1
H2C	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
IR1	INDOOR BLOWER CAPACITOR
IR2	INDOOR BLOWER MOTOR
IR3	INDOOR BLOWER RELAY
UR	LINE AMBIENT CONTROL
LS	LIMIT SWITCH
DFM	OUTDOOR FAN MOTOR
FLS #1	SOLENOID VALVE
TR	TRANSFORMER
TS	TERMINAL BLOCK
UV	LINE VOLTAGE TERMINAL BLOCK
TC	THEIRAL COMPE
TR	TIME DELAY RELAY

**WIRE COLOR CODE**

BLACK	FIELD	OPTIONAL
BROWN	---	---
RED	---	---
BLUE	---	---
WHITE	---	---

**WIRE COLOR CODE**

BLACK	FIELD	OPTIONAL
BROWN	---	---
RED	---	---
BLUE	---	---
WHITE	---	---

**WIRE COLOR CODE**

BLACK	FIELD	OPTIONAL
BROWN	---	---
RED	---	---
BLUE	---	---
WHITE	---	---

**WIRE COLOR CODE**

BLACK	FIELD	OPTIONAL
BROWN	---	---
RED	---	---
BLUE	---	---
WHITE	---	---

**WIRE COLOR CODE**

BLACK	FIELD	OPTIONAL
BROWN	---	---
RED	---	---
BLUE	---	---
WHITE	---	---

**WIRE COLOR CODE**

BLACK	FIELD	OPTIONAL
BROWN	---	---
RED	---	---
BLUE	---	---
WHITE	---	---

△ LABELLED WIRES CONNECT IF NO OPTIONS USED.

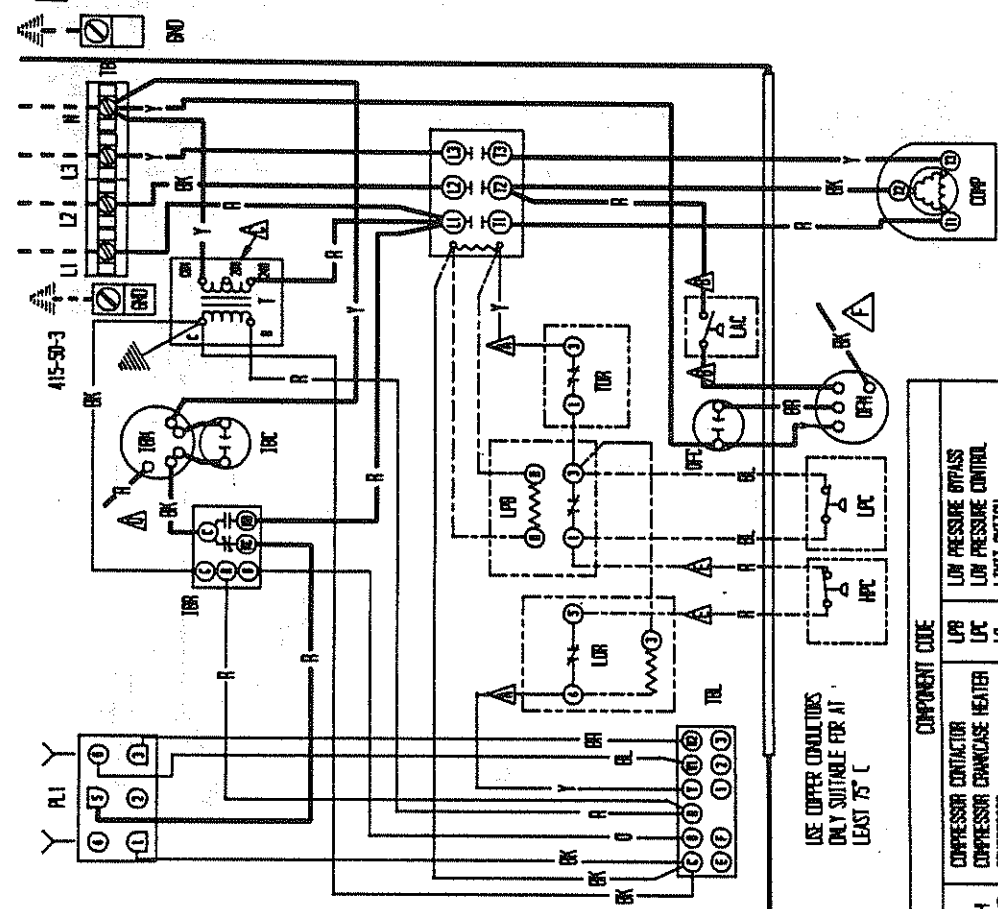
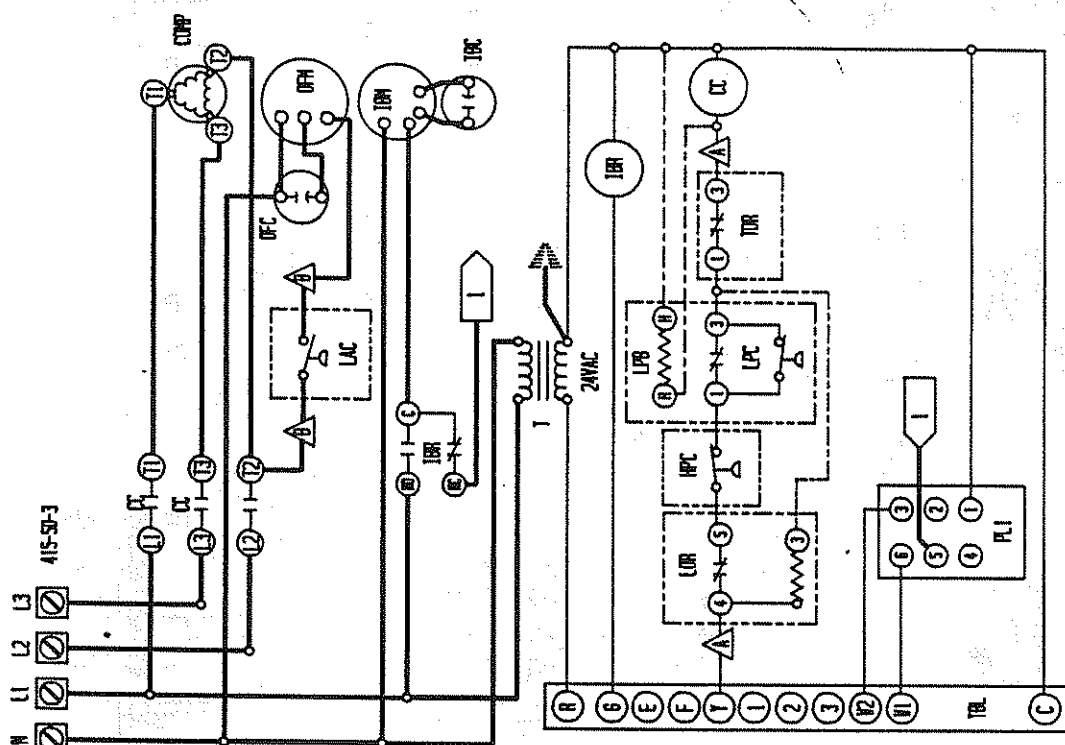
△ FOR LOW SPEED CONNECT BLACK AND BROWN WIRES TOGETHER AND INSULATE. CONNECT RED WIRE TO TERMINAL 1 OF 1XR.

USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75° C

489-01-3

489-01-3

**BAIRD MFG. CO.**  
Dwg. 489-316 B  
DRN.  
CHK./APP.



USE COPPER CONDUCTORS  
ONLY SUITABLE PER A1  
LEAST 75 °C

▲ LABELLED WIRES CONNECT IF NO OPTIONS USED. ▲ RED (LOW) BLACK (HIGH) ▲ WHITE RED WIRE TO ZERBY ▲ (BLACK) HIGH SPEED TAP NOT TO BE USED ON 50HZ MODELS

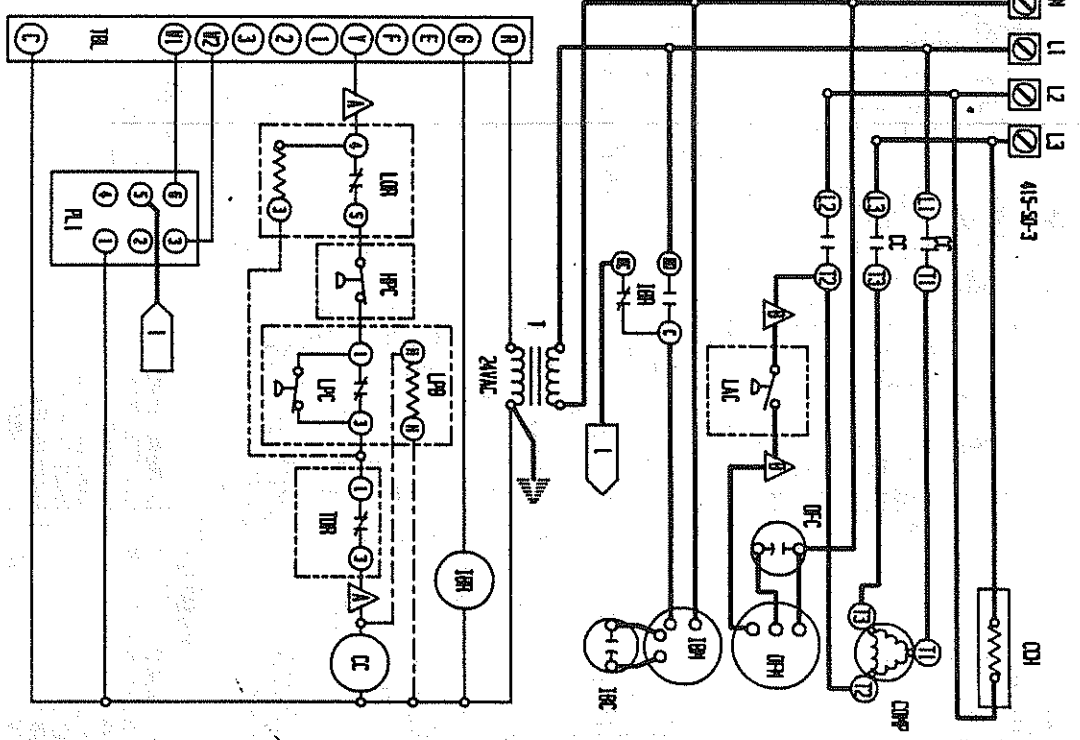
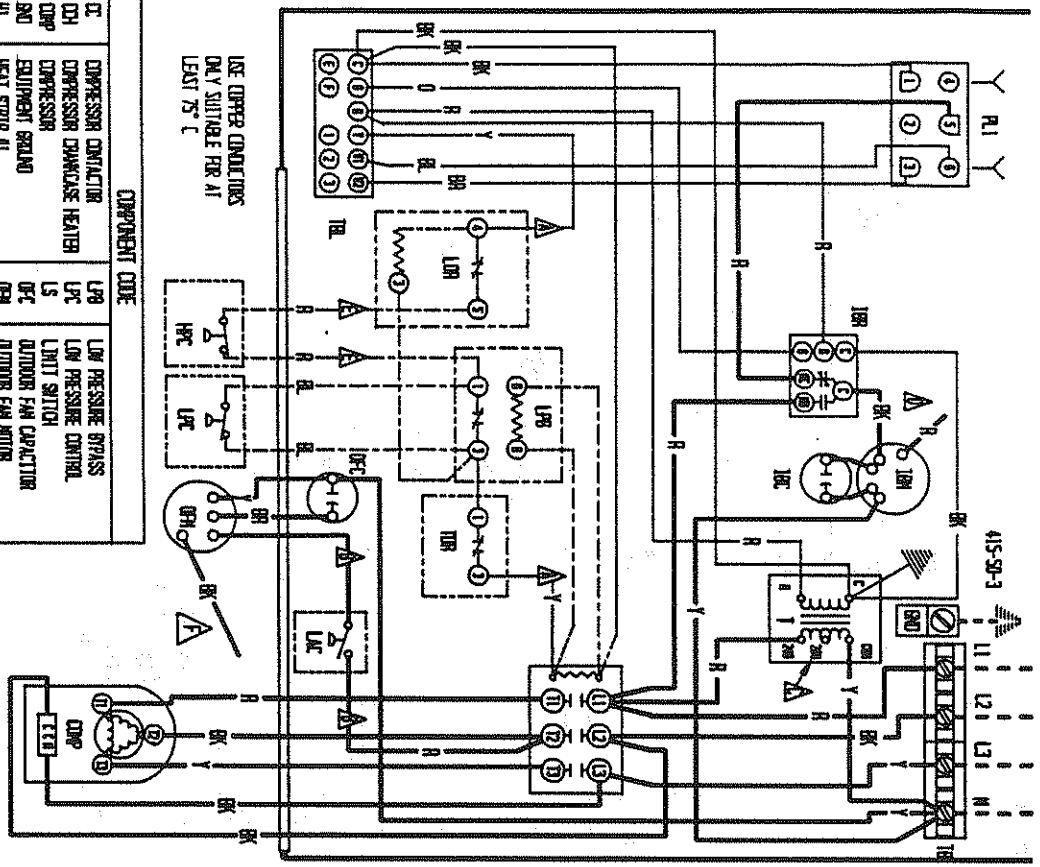
COMPONENT CODE	
CC	COMPRESSOR CONTACTOR
CH	CHILLER CONTACTOR
COMP	COMPRESSOR
END	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HPC	HEATER CONTACTOR #1
HPC	HEATER CONTACTOR #2
IBM	INDOOR BLOWER MOTOR
IBM	INDOOR BLOWER RELAY
LPC	LOW AMBIENT CONTROL
LPC	LOCK OUT RELAY
LPR	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OFM	OUTDOOR FAN MOTOR
OFM	OUTDOOR FAN RELAY
ODF	PULL OUT DISCONNECT
PL1	PLUG #1
Y	TRANSFORMER
TR	TERMINAL BLOCK
TR	LOW VOLTAGE TERMINAL BLOCK
TR	THERMAL OUTDIFF
TR	TIME DELAY RELAY

COLOR CODE	
Y	YELLOW
G	GREEN
B	BLUE
W	WHITE
V	VIOLET
P	PURPLE
GR	GRAY
S	SLATE

TAP	
T	TAP
P	PINK
L	LAVENDER

FACTORY WIRE	
H	HIGH VOLTAGE
L	LOW VOLTAGE
B	NECESSARY

BARD MFG. CO.  
DWS 4855-511 B  
DATE 3-8-93  
CHK/APP.



COMPONENT CODE	DESCRIPTION
LC	COMPRESSOR CONTACTOR
CH	COMPRESSOR CHAMBER HEATER
CHP	COMPRESSOR
CHD	EQUIPMENT SIGNAL
HI	HEAT STRIP #1
H2	HEAT STRIP #2
H21	HEATER CONTACTOR #1
H22	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
HBC	INDOOR BLOWER MOTOR
HBR	INDOOR BLOWER RELAY
LAC	LOW AIRFIGHT CONTROL
LOR	LOCK OUT RELAY

COMPONENT CODE	DESCRIPTION
LPR	LOW PRESSURE SWITCH
LPC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OPC	OUTDOOR FAN CAPACITOR
OFM	OUTDOOR FAN MOTOR
OFB	OUTDOOR FAN RELAY
FD	FULL DISCONNECT
FL1	FLUOR #1
TB	TRANSFORMER
TB1	TERMINAL BLOCK
TB2	LOW VOLTAGE TERMINAL BLOCK
TD	THERMAL OVER-TIME DELAY RELAY

WIRE RED WIRE TO 200V. RED (LWR) BLACK (HWR) TO BE USED ON 50HZ MODELS

COLOR CODE	WIRE COLOR
Y	YELLOW
GN	GREEN (GN)
BL	BLUE
W	WHITE
V	VIOLET
PK	PINK
L	LAVENDER

FACTORY STD. FIELD OPTIONAL

WIRE COLOR	WIRE COLOR	WIRE COLOR
BLACK	BROWN	RED
BROWN	RED	ORANGE

BARCO MFC. CO. DATE: 4085-612 A DRN. I. DAY DRN. APRIL