

# **INSTALLATION INSTRUCTIONS**

## **WALL MOUNTED PACKAGE AIR CONDITIONERS**

### **MODELS**

**WA421**

**WA482**

**WA602**

**DATE: 01-71-96**

**MANUAL 2100-218 REV. F  
SUPERSEDES REV. E  
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

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### FOR MORE INFORMATION, CONTACT THESE PUBLISHERS

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- ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE  
11 West Street, 13th Floor  
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Telephone: (212) 642-4900 Fax: (212) 302-1286
- ASHRAE: AMERICAN SOCIETY OF HEATING REFRIGERATING AND  
AIR CONDITIONING ENGINEERS, INCORPORATED  
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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.

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# PART 1 -- WALL MOUNT GENERAL INFORMATION

## AIR CONDITIONER WALL MOUNT MODEL NOMENCLATURE

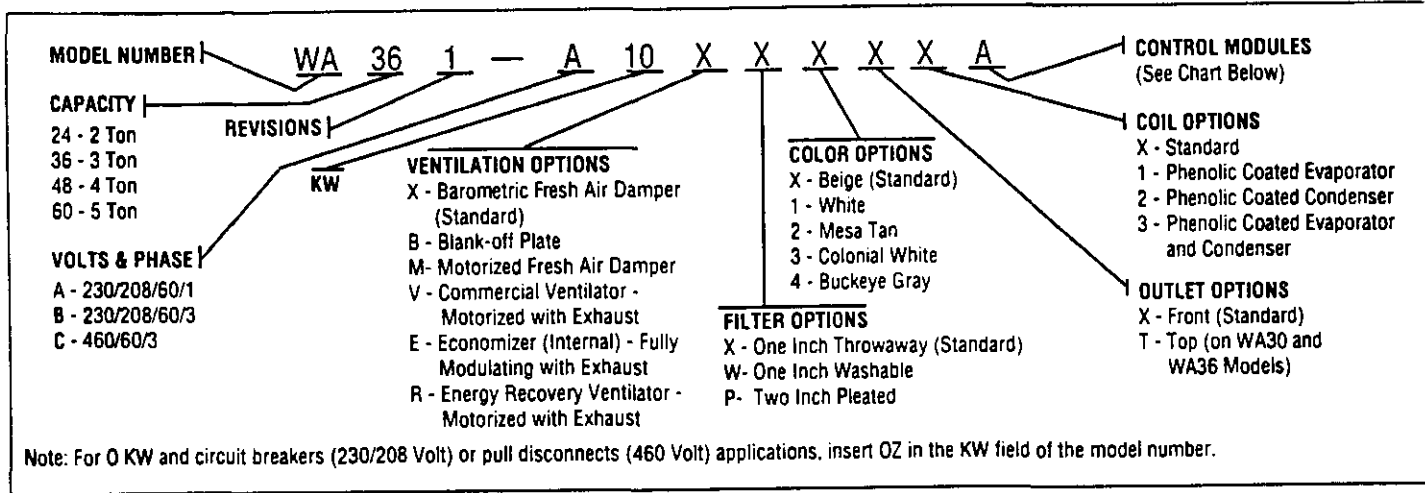


TABLE 1 ELECTRIC HEAT TABLE

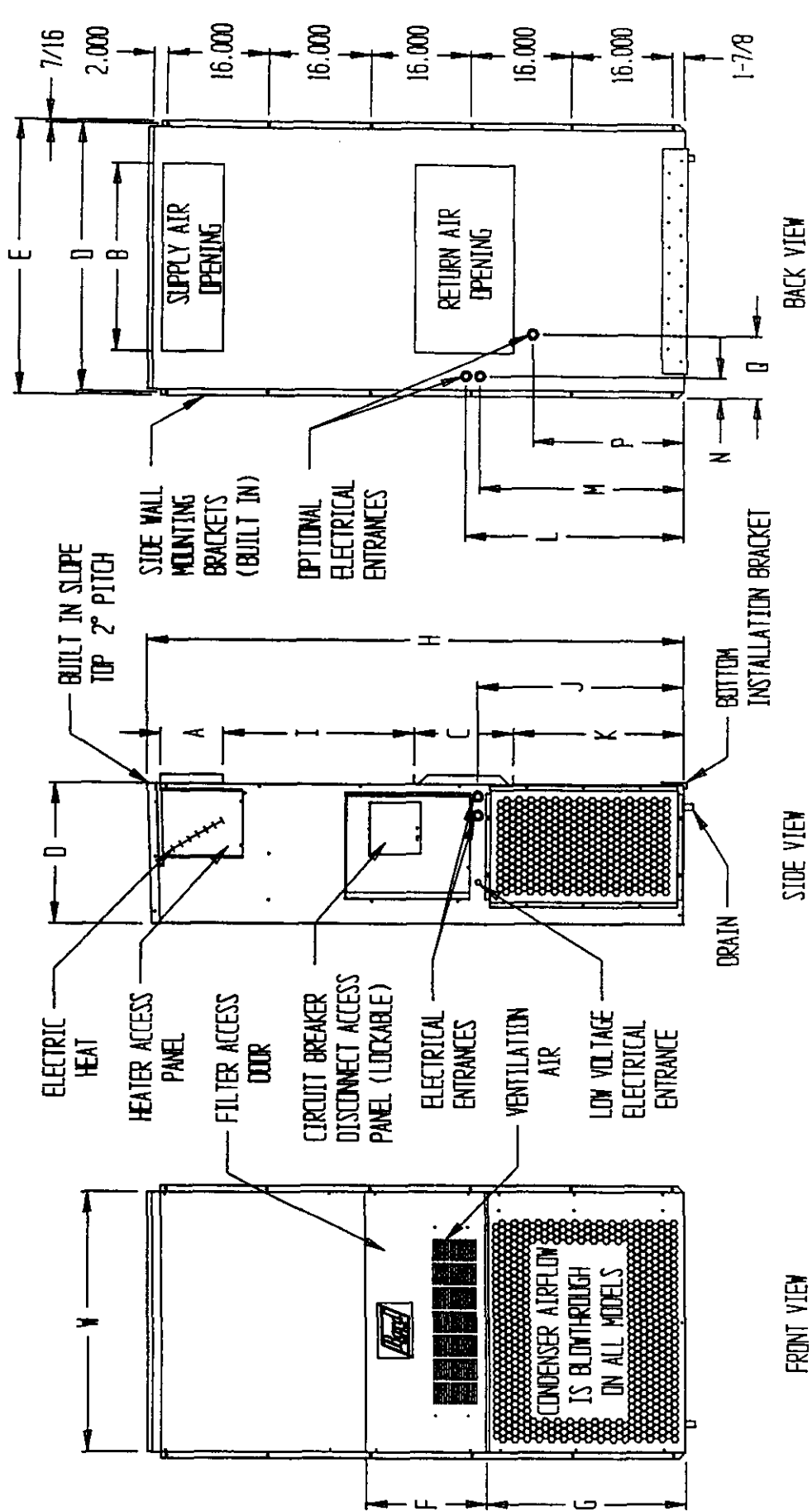
Models	WA421-A		WA421-B		WA421-C					
	WA482-A		WA482-B		WA482-C					
	WA602-A		WA602-B		WA602-C					
KW	240-1		208-1		240-3		208-3		460-3	
	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU
5	20.8	17050	18.1	12800						
9					21.7	30600	18.7	23030	10.8	30700
10	41.6	34130	36.2	25600						
15	62.5	51200	54.1	38400	36.2	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	D	P	O
				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	230/208-1	1	33	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	33	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	59	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15		1 or 2	85	90	4	8	56	26	60	30	6	10	10	10
A20		1 or 2	110	110	2	6	56	52	60	60	6	6	10	10
WA421-B00,BOZ	230/208-3	1	24	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B09		1	34	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B15		1	52	50	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B18		1	60	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA421-C00,COZ	460-3	1	12	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C09		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15		1	26	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA482-A00,A0Z	230/208-1	1	38	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	38	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	59	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15		1 or 2	85	90	4	8	59	26	60	30	6	10	10	10
A20		1 or 2	110	110	2	6	59	52	60	60	6	6	10	10
WA482-B00,BOZ	230/208-3	1	26	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B09		1	34	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B15		1	52	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B18		1	60	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA482-C00,COZ	460-3	1	13	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C09		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15		1	26	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA602-A00,A0Z	230/208-1	1	44	60	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	44	60	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	55	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15		1 or 2	85	90	4	8	59	26	60	30	6	10	10	10
A20		1 or 2	110	110	2	6	59	52	60	60	6	6	10	10
WA602-B00,BOZ	230/208-3	1	32	45	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B09		1	34	45	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B15		1	52	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B18		1	60	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA602-C00,COZ	460-3	1	16	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C09		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15		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 RACR 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 combustible material for the first three feet of duct attached to the outlet air frame is required. See Pages 5, 6 and 7 Wall Mounting Instructions and Figures 2 and 2A 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 RFG2 thru RFG5 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.

The fresh air damper assembly is standard equipment with the unit because of the variety of state or local codes requiring fresh air capability. It is shipped already attached to each unit.

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.

## 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 2.
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 2.
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 combustible material. If a combustible 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 combustible material. The supply air opening would then be 32" x 12". See Figures 2 and 2A 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 2.
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 2.
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.

FIGURE 2  
MOUNTING INSTRUCTIONS

	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	20 1/2
REQUIRED DIMENSIONS TO MAINTAIN RECOMMENDED 1" CLEARANCE FROM COMBUSTIBLE MATERIALS	32	12	5 1/2	9/16	28

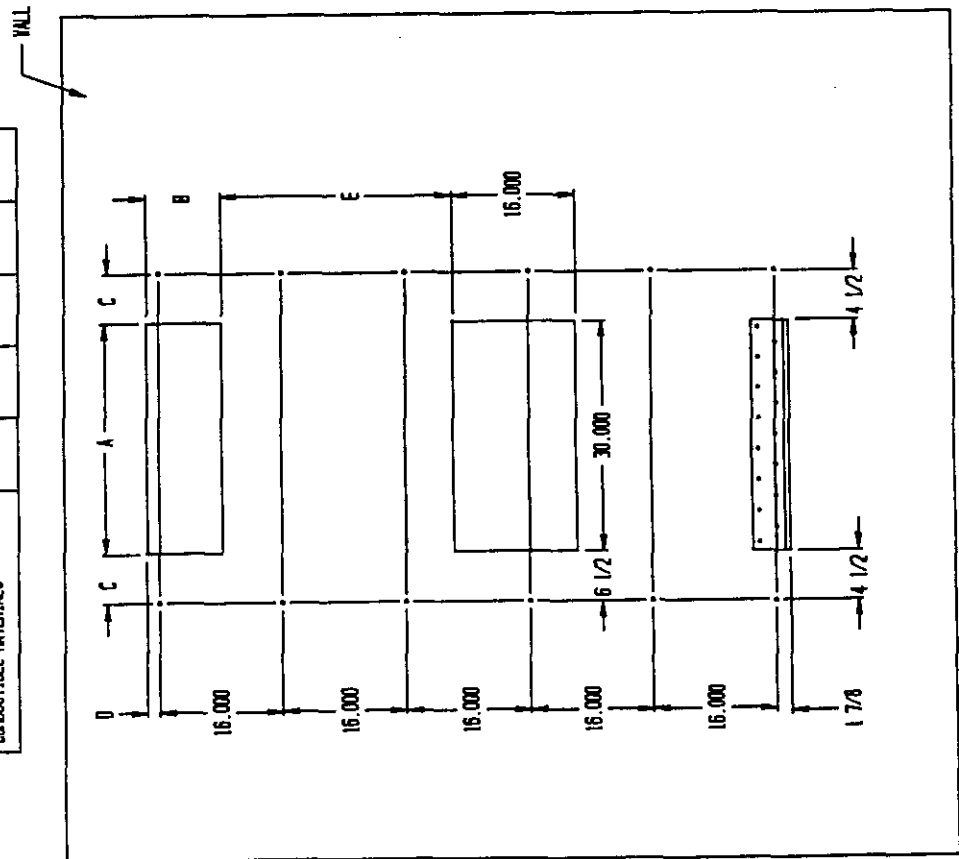
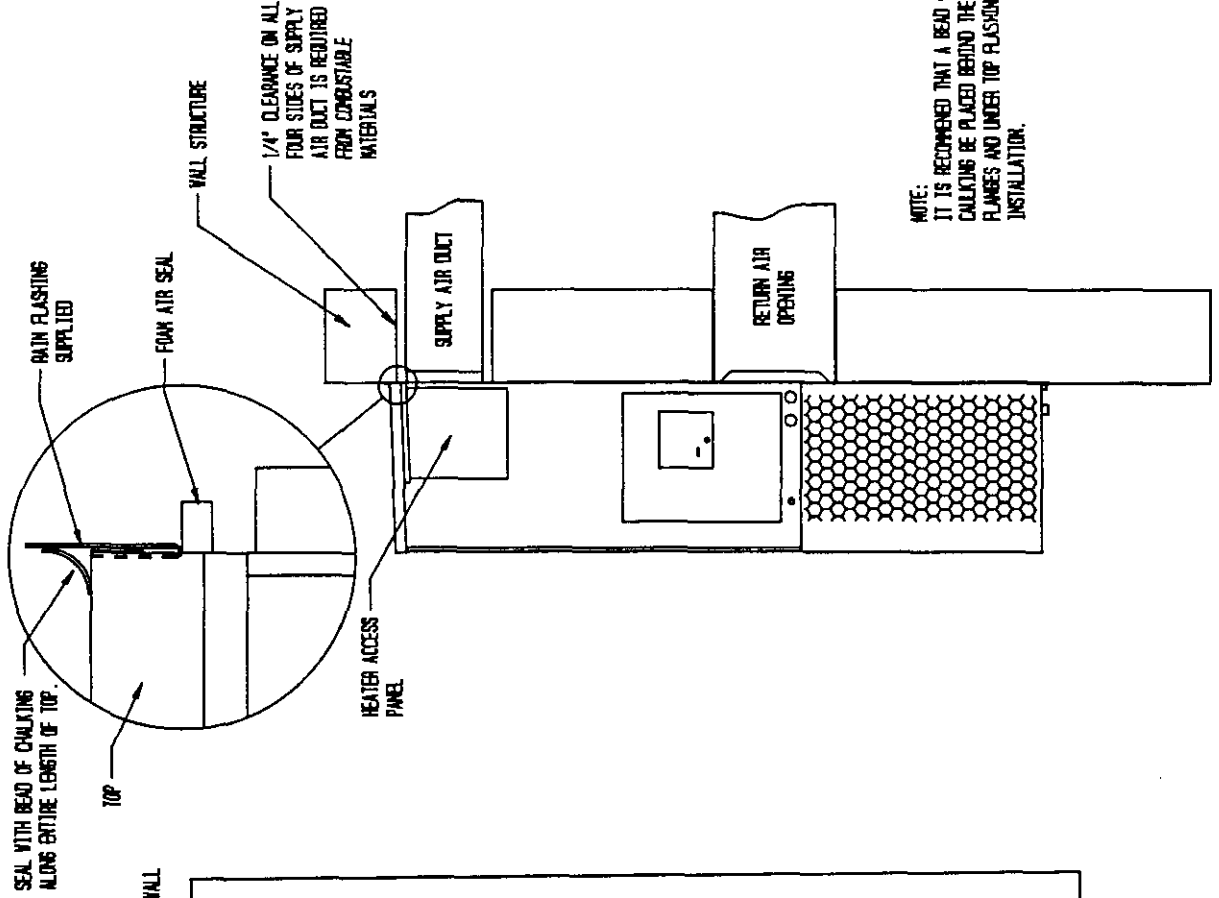
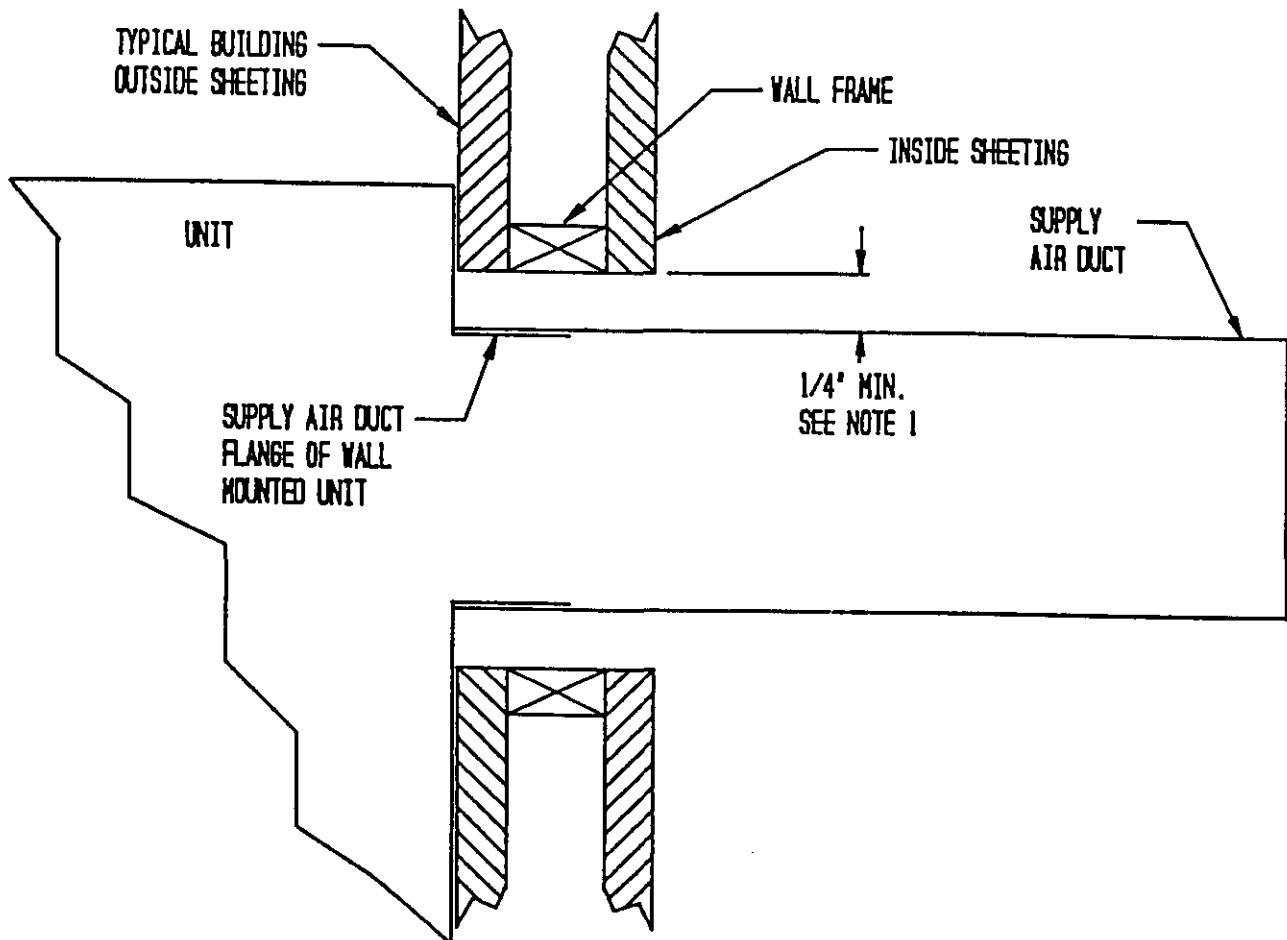


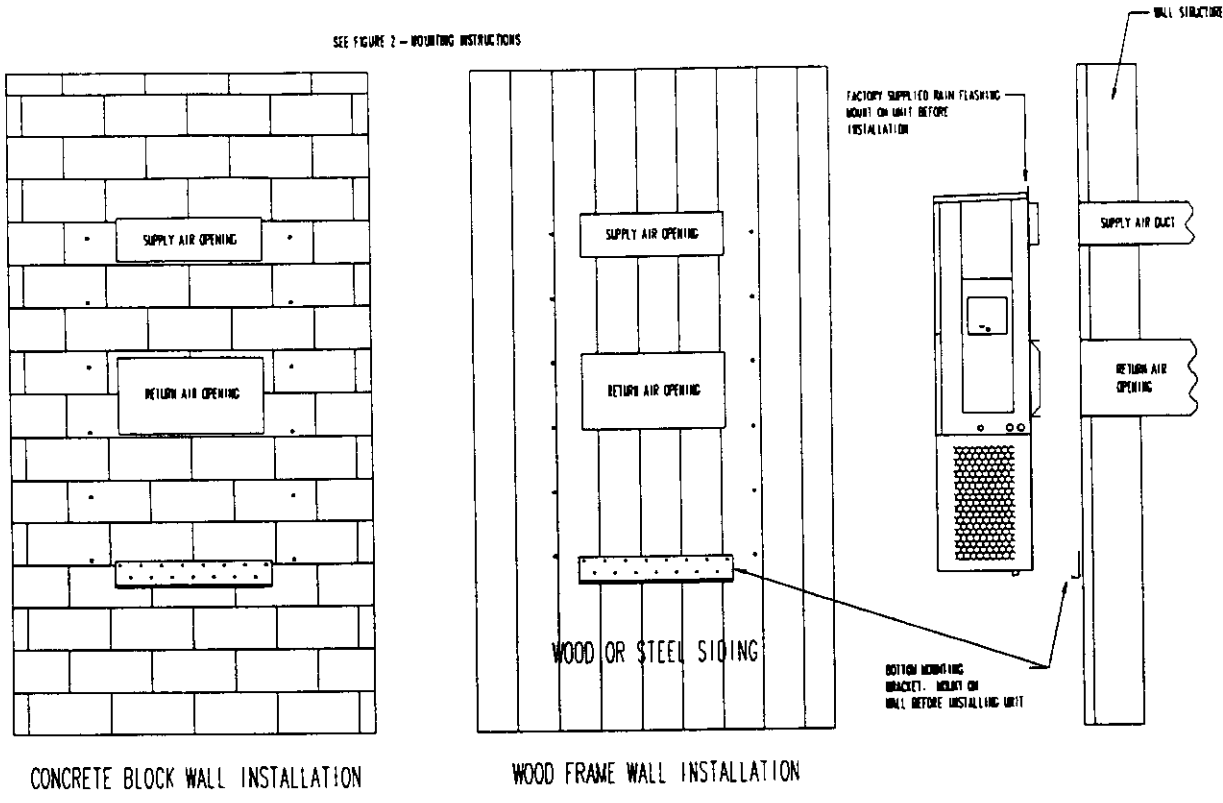
FIGURE 2A  
ELECTRIC HEAT CLEARANCE



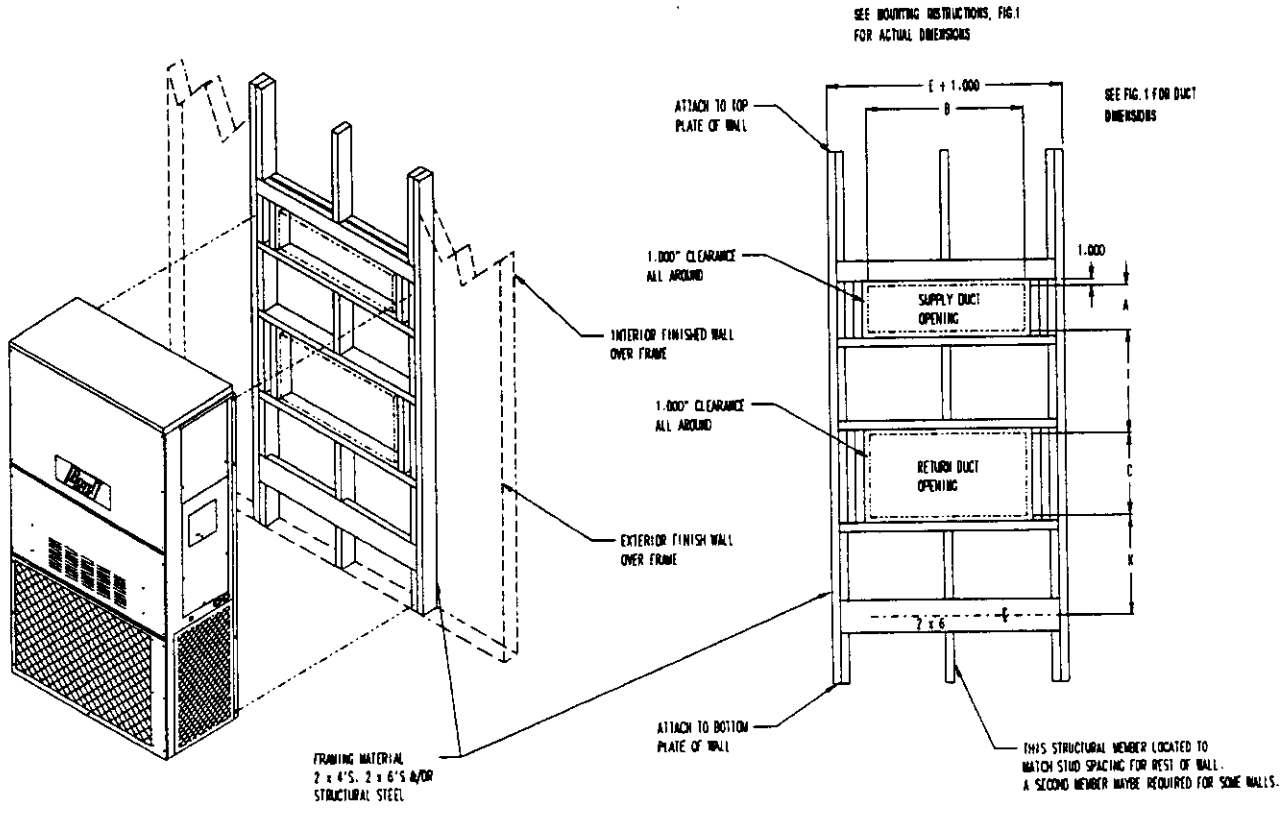
Side section view of supply air duct for wall mounted unit showing 1/4" clearance to combustibles.

NOTE 1:

WARNING
A <u>minimum</u> of 1/4" clearance must be maintained between the supply air duct and combustibles. 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.



**Figure 3 — Wall-Mounting Instructions**



**Figure 4 — Wall-Mounting Instructions**

Figures 3 & 4

### 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 5.

TABLE 3 THERMOSTAT WIRE SIZE

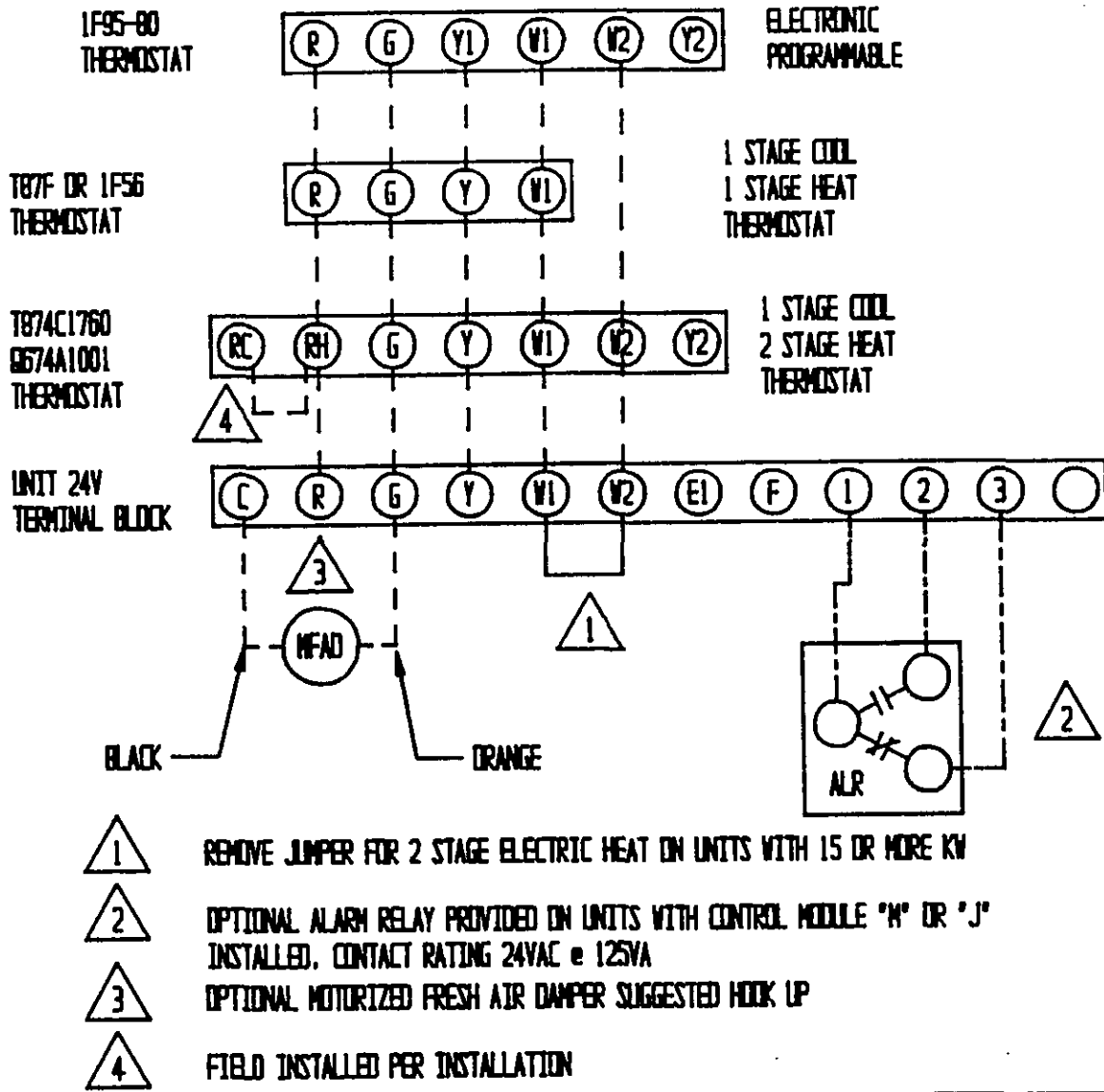
Transformer VA	FLA	Wire Gauge	Maximum Distance In Feet
55	2.3	20 Gauge	45
		18 "	60
		16 "	100
		14 "	160
		12 "	250

TABLE 3A WALL THERMOSTAT AND SUBBASE COMBINATIONS

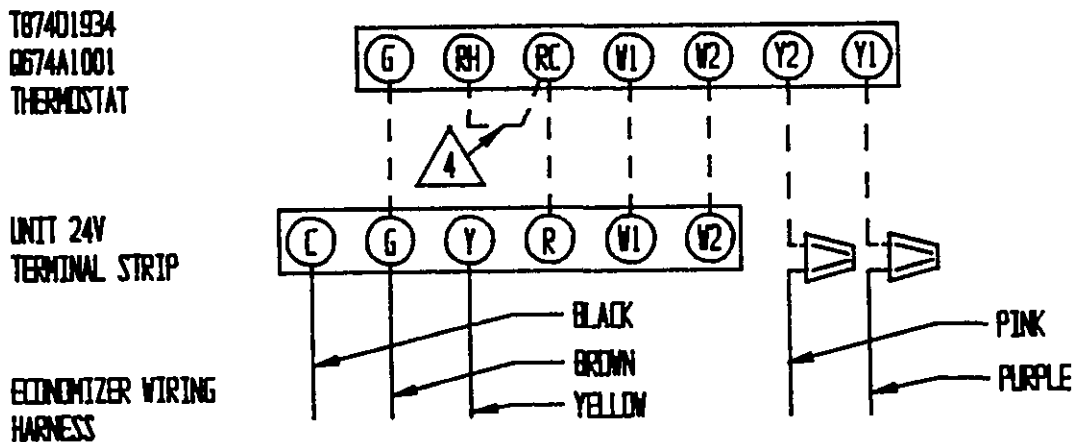
Thermostat	Subbase	Predominate Features
8403-019 T874C1760	8404-012 Q674A1001	1 stage cool, 2 stage heat System: heat-auto-cool Fan: on-auto
8403-002 T87F3111	8404-003 Q539A1220	1 stage heat, 1 stage cool System: heat-off-cool Fan: on-auto
8403-009 1F56-318	----	1 stage heat, 1 stage cool
8403-035 1F95-80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

FIGURE 5

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.

FIGURE 6

### 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 6 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 ZR3 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.

## 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 7

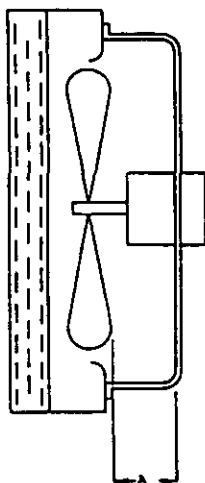


TABLE 4

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

B.S.P. In H <sub>2</sub> O	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  
ELECTRIC HEAT ONLY

TABLE 8

Model	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	81	83	84
	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

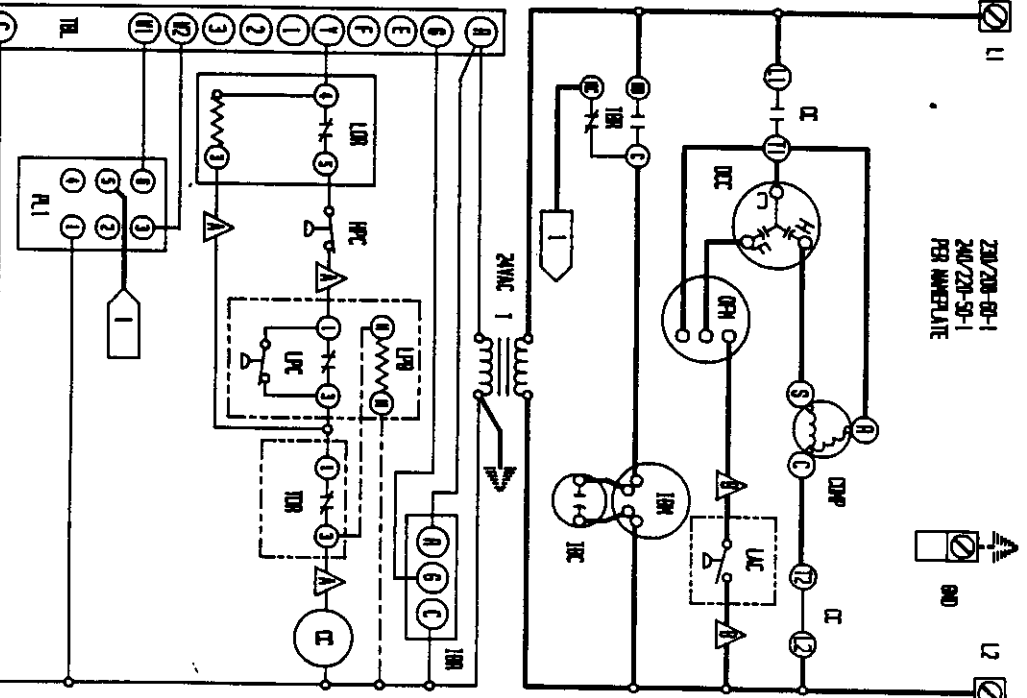
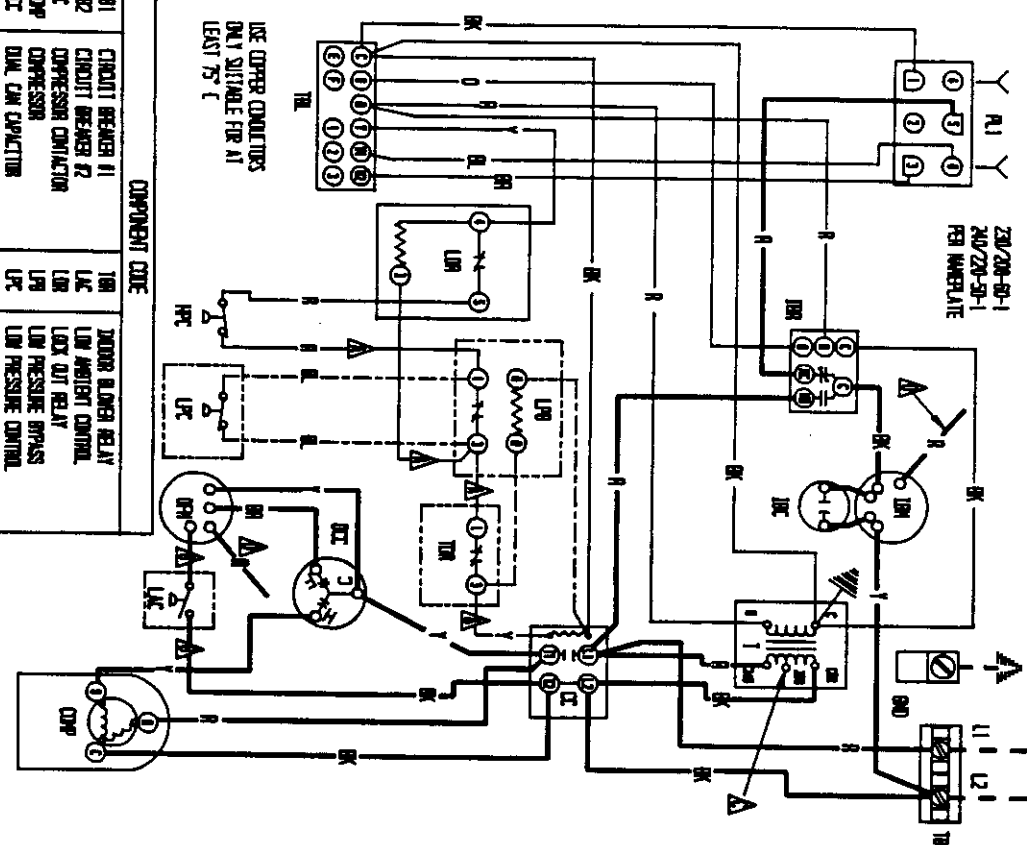
Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged to serial plate 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	6	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
BHWA05-A05	Heater Packages	X			X			X		
BHWA05-A08	Heater Packages	X			X			X		
BHWA05-A10	Heater Packages	X			X			X		
BHWA05-A15	Heater Packages	X			X			X		
BHWA05-B09	Heater Packages		X			X			X	
BHWA05-B15	Heater Packages		X			X			X	
BHWA05-B18	Heater Packages		X			X			X	
BHWC05-C05	Heater Packages			X			X			X
BHWA05-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
WERV-A5A	Energy Recovery Ventilator	X	X		X	X		X	X	
WERV-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	





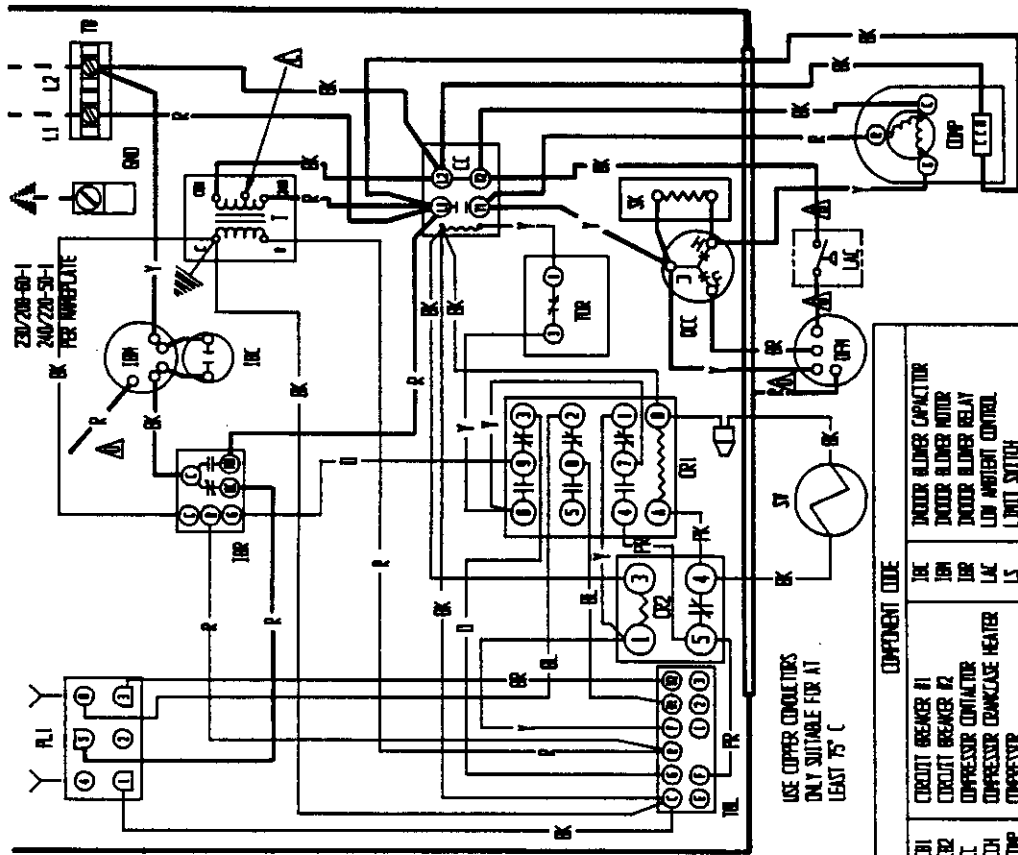
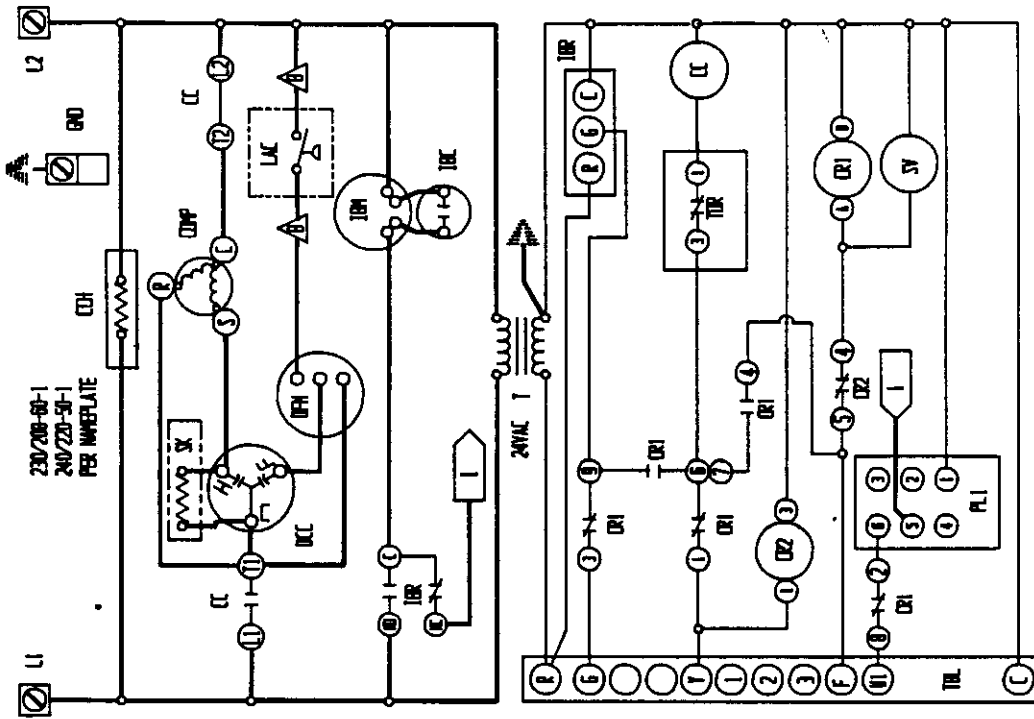
COMPONENT CODE	COMPONENT CODE	COMPONENT CODE
001	002	003
004	005	006
007	008	009
010	011	012
013	014	015
016	017	018
019	020	021
022	023	024
025	026	027
028	029	030
031	032	033
034	035	036
037	038	039
040	041	042
043	044	045
046	047	048
049	050	051
052	053	054
055	056	057
058	059	060
061	062	063
064	065	066
067	068	069
070	071	072
073	074	075
076	077	078
079	080	081
082	083	084
085	086	087
088	089	090
091	092	093
094	095	096
097	098	099
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250	251	252
253	254	255
256	257	258
259	260	261
262	263	264
265	266	267
268	269	270
271	272	273
274	275	276
277	278	279
280	281	282
283	284	285
286	287	288
289	290	291
292	293	294
295	296	297
298	299	300

LABELLED WIRES CONNECT IF NO OPTIONS USED.   
 WIRE RED WIRE TO 200V TAP FOR 200V OPERATION   
 RED (L/N) BLACK (H/BN)

FACTORY EQ.	FIELD	OPTIONAL
---	---	---
---	---	---
---	---	---
---	---	---

COLOR CODE		VOLTAGE		WIRE	
BR	BLACK	1	YELLOW	1	RED
GR	GREEN	2	GREEN	2	GREEN
BL	BLUE	3	BLUE	3	BLUE
RD	RED	4	RED	4	RED
WH	WHITE	5	WHITE	5	WHITE
OR	ORANGE	6	ORANGE	6	ORANGE
PK	PINK	7	PINK	7	PINK
SL	SLATE	8	SLATE	8	SLATE
VT	VIOLET	9	VIOLET	9	VIOLET
AL	ALUMINUM	10	ALUMINUM	10	ALUMINUM
GN	GRAY	11	GRAY	11	GRAY
BRN	BROWN	12	BROWN	12	BROWN
DR	DARK RED	13	DARK RED	13	DARK RED
DRK	DARK GREEN	14	DARK GREEN	14	DARK GREEN
DRK	DARK BLUE	15	DARK BLUE	15	DARK BLUE
DRK	DARK RED	16	DARK RED	16	DARK RED
DRK	DARK GREEN	17	DARK GREEN	17	DARK GREEN
DRK	DARK BLUE	18	DARK BLUE	18	DARK BLUE
DRK	DARK RED	19	DARK RED	19	DARK RED
DRK	DARK GREEN	20	DARK GREEN	20	DARK GREEN
DRK	DARK BLUE	21	DARK BLUE	21	DARK BLUE
DRK	DARK RED	22	DARK RED	22	DARK RED
DRK	DARK GREEN	23	DARK GREEN	23	DARK GREEN
DRK	DARK BLUE	24	DARK BLUE	24	DARK BLUE
DRK	DARK RED	25	DARK RED	25	DARK RED
DRK	DARK GREEN	26	DARK GREEN	26	DARK GREEN
DRK	DARK BLUE	27	DARK BLUE	27	DARK BLUE
DRK	DARK RED	28	DARK RED	28	DARK RED
DRK	DARK GREEN	29	DARK GREEN	29	DARK GREEN
DRK	DARK BLUE	30	DARK BLUE	30	DARK BLUE

**BARCO MFG. CO.**  
 Dwg. 405-112 A  
 Dwg. 038  
 OK / APR.



RED (LOW) BLACK (HIGH)  
WIRE APPLICABLE

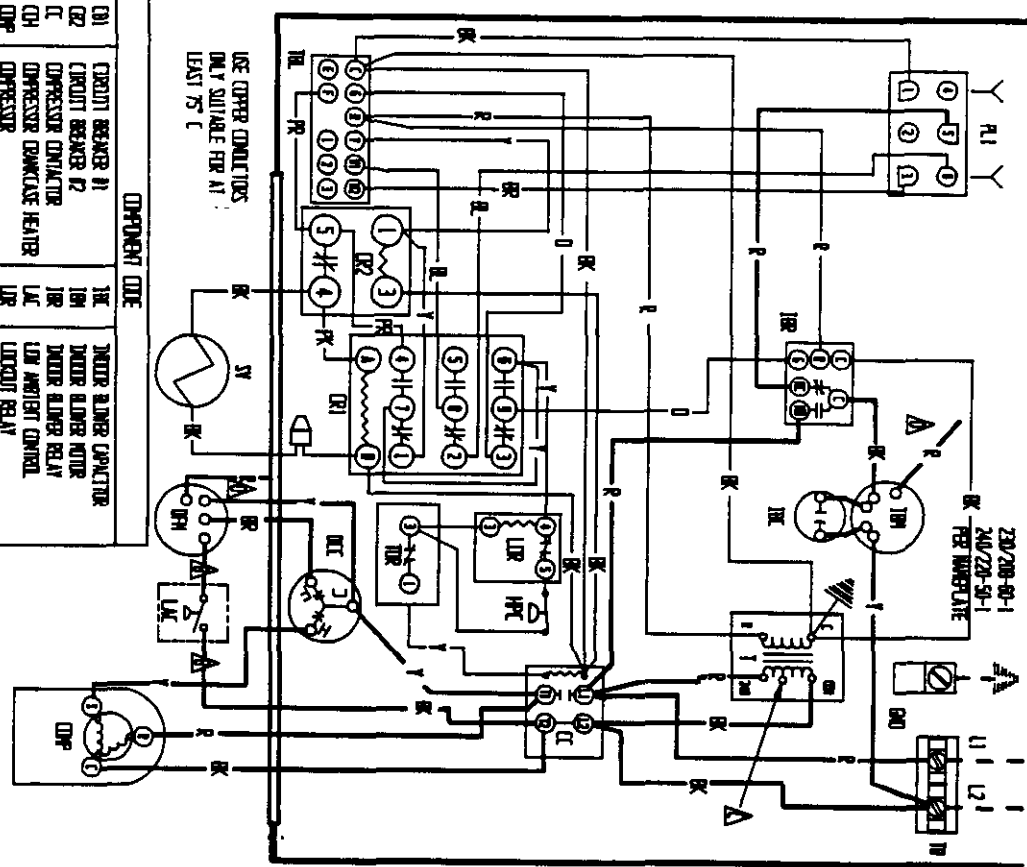
WIRE COLOR CODE		WIRE COLOR CODE	
BLACK	Y	VIOLET	Y
BROWN	G	PURPLE	P
RED	B	GRAY	G
ORANGE	W	SLATE	S
		WHITE	W
		BLUE	B
		GREEN	G
		YELLOW	Y
		(P/P)	
		FAVORITE	F
		PINK	P
		LAVENDER	L

▲ LABELLED WIRES CONNECT IF NO OPTIONS USED.

WIRE	FACTORY STG.	FIELD	OPTIONAL
HI-VOLTAGE			
LO-VOLTAGE			
ACCESSORY			

COMPONENT CODE	COMPONENT CODE
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CD	COMPRESSOR CONTACTOR
CP	COMPRESSOR CONTACTOR
CR	COMPRESSOR CONTACTOR
CS	COMPRESSOR CONTACTOR
CT	COMPRESSOR CONTACTOR
CU	COMPRESSOR CONTACTOR
CV	COMPRESSOR CONTACTOR
CW	COMPRESSOR CONTACTOR
CX	COMPRESSOR CONTACTOR
CY	COMPRESSOR CONTACTOR
CZ	COMPRESSOR CONTACTOR
DA	COMPRESSOR CONTACTOR
DB	COMPRESSOR CONTACTOR
DC	COMPRESSOR CONTACTOR
DD	COMPRESSOR CONTACTOR
DE	COMPRESSOR CONTACTOR
DF	COMPRESSOR CONTACTOR
DG	COMPRESSOR CONTACTOR
DH	COMPRESSOR CONTACTOR
DI	COMPRESSOR CONTACTOR
DJ	COMPRESSOR CONTACTOR
DK	COMPRESSOR CONTACTOR
DL	COMPRESSOR CONTACTOR
DM	COMPRESSOR CONTACTOR
DN	COMPRESSOR CONTACTOR
DO	COMPRESSOR CONTACTOR
DP	COMPRESSOR CONTACTOR
DQ	COMPRESSOR CONTACTOR
DR	COMPRESSOR CONTACTOR
DS	COMPRESSOR CONTACTOR
DT	COMPRESSOR CONTACTOR
DU	COMPRESSOR CONTACTOR
DV	COMPRESSOR CONTACTOR
DW	COMPRESSOR CONTACTOR
DX	COMPRESSOR CONTACTOR
DY	COMPRESSOR CONTACTOR
DZ	COMPRESSOR CONTACTOR
EA	COMPRESSOR CONTACTOR
EB	COMPRESSOR CONTACTOR
EC	COMPRESSOR CONTACTOR
ED	COMPRESSOR CONTACTOR
EE	COMPRESSOR CONTACTOR
EF	COMPRESSOR CONTACTOR
EG	COMPRESSOR CONTACTOR
EH	COMPRESSOR CONTACTOR
EI	COMPRESSOR CONTACTOR
EJ	COMPRESSOR CONTACTOR
EK	COMPRESSOR CONTACTOR
EL	COMPRESSOR CONTACTOR
EM	COMPRESSOR CONTACTOR
EN	COMPRESSOR CONTACTOR
EO	COMPRESSOR CONTACTOR
EP	COMPRESSOR CONTACTOR
EQ	COMPRESSOR CONTACTOR
ER	COMPRESSOR CONTACTOR
ES	COMPRESSOR CONTACTOR
ET	COMPRESSOR CONTACTOR
EU	COMPRESSOR CONTACTOR
EV	COMPRESSOR CONTACTOR
EW	COMPRESSOR CONTACTOR
EX	COMPRESSOR CONTACTOR
EY	COMPRESSOR CONTACTOR
EZ	COMPRESSOR CONTACTOR
FA	COMPRESSOR CONTACTOR
FB	COMPRESSOR CONTACTOR
FC	COMPRESSOR CONTACTOR
FD	COMPRESSOR CONTACTOR
FE	COMPRESSOR CONTACTOR
FF	COMPRESSOR CONTACTOR
FG	COMPRESSOR CONTACTOR
FH	COMPRESSOR CONTACTOR
FI	COMPRESSOR CONTACTOR
FJ	COMPRESSOR CONTACTOR
FK	COMPRESSOR CONTACTOR
FL	COMPRESSOR CONTACTOR
FM	COMPRESSOR CONTACTOR
FN	COMPRESSOR CONTACTOR
FO	COMPRESSOR CONTACTOR
FP	COMPRESSOR CONTACTOR
FR	COMPRESSOR CONTACTOR
FS	COMPRESSOR CONTACTOR
FT	COMPRESSOR CONTACTOR
FU	COMPRESSOR CONTACTOR
FV	COMPRESSOR CONTACTOR
FW	COMPRESSOR CONTACTOR
FX	COMPRESSOR CONTACTOR
FY	COMPRESSOR CONTACTOR
FZ	COMPRESSOR CONTACTOR
GA	COMPRESSOR CONTACTOR
GB	COMPRESSOR CONTACTOR
GC	COMPRESSOR CONTACTOR
GD	COMPRESSOR CONTACTOR
GE	COMPRESSOR CONTACTOR
GF	COMPRESSOR CONTACTOR
GG	COMPRESSOR CONTACTOR
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GI	COMPRESSOR CONTACTOR
GJ	COMPRESSOR CONTACTOR
GK	COMPRESSOR CONTACTOR
GL	COMPRESSOR CONTACTOR
GM	COMPRESSOR CONTACTOR
GN	COMPRESSOR CONTACTOR
GO	COMPRESSOR CONTACTOR
GP	COMPRESSOR CONTACTOR
GQ	COMPRESSOR CONTACTOR
GR	COMPRESSOR CONTACTOR
GS	COMPRESSOR CONTACTOR
GT	COMPRESSOR CONTACTOR
GU	COMPRESSOR CONTACTOR
GV	COMPRESSOR CONTACTOR
GW	COMPRESSOR CONTACTOR
GX	COMPRESSOR CONTACTOR
GY	COMPRESSOR CONTACTOR
GZ	COMPRESSOR CONTACTOR
HA	COMPRESSOR CONTACTOR
HB	COMPRESSOR CONTACTOR
HC	COMPRESSOR CONTACTOR
HD	COMPRESSOR CONTACTOR
HE	COMPRESSOR CONTACTOR
HF	COMPRESSOR CONTACTOR
HG	COMPRESSOR CONTACTOR
HH	COMPRESSOR CONTACTOR
HI	COMPRESSOR CONTACTOR
HJ	COMPRESSOR CONTACTOR
HK	COMPRESSOR CONTACTOR
HL	COMPRESSOR CONTACTOR
HM	COMPRESSOR CONTACTOR
HN	COMPRESSOR CONTACTOR
HO	COMPRESSOR CONTACTOR
HP	COMPRESSOR CONTACTOR
HO	COMPRESSOR CONTACTOR
HO	COMPRESSOR CONTACTOR
HO	COMPRESSOR CONTACTOR
HO	COMPRESSOR CONTACTOR

BARO MFG. CO.  
DNG. 4085-118 B  
DNN. D.L.C.  
DOK. /APP.



USE OTHER CONDUITS  
ONLY SUITABLE FOR AT  
LEAST 75 °C

COMPONENT CODE	
CR1	CIRCUIT BREAKER #1
CR2	CIRCUIT BREAKER #2
CH	COMPRESSOR CONTACTOR
CH	COMPRESSOR CONTACTOR HEATER
CP	COMPRESSOR
CR1	CONTROL RELAY 1
CR2	CONTROL RELAY 2
DC	DCM CAPACITOR
GR	GROUNDING BOARD
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
HT	HIGH PRESSURE CONTROL
IR	INDOOR BLOWER CAPACTOR
IR	INDOOR BLOWER MOTOR
IR	INDOOR BLOWER RELAY
LA	LOW AMBIENT CONTROL
LR	LOW RANGE RELAY
LS	LIMIT SWITCH
OR	OUTDOOR FAN MOTOR
OR	PLS #1
OR	SLIP RING WAVE
OR	TRANSFORMER
OR	TEMPERATURE ALARM
OR	TEMPERATURE CONTROL
OR	TEMPERATURE RELAY
OR	TEMPERATURE SWITCH

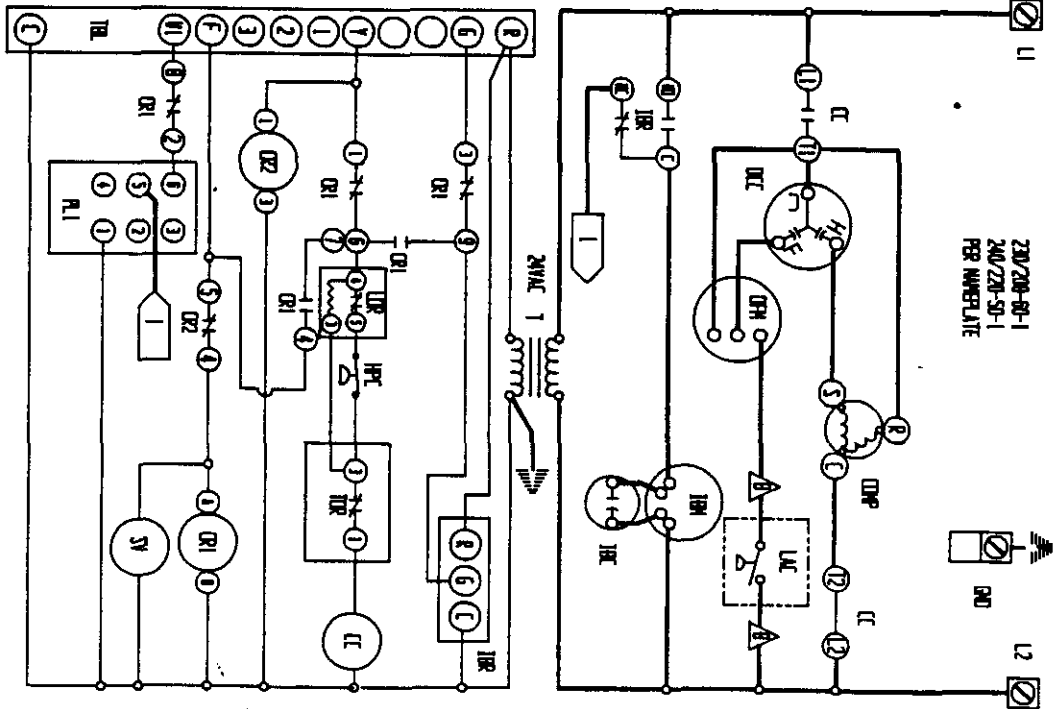
▲ LABELLED WIRES CONNECT IF IN OPTIONS USED.

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

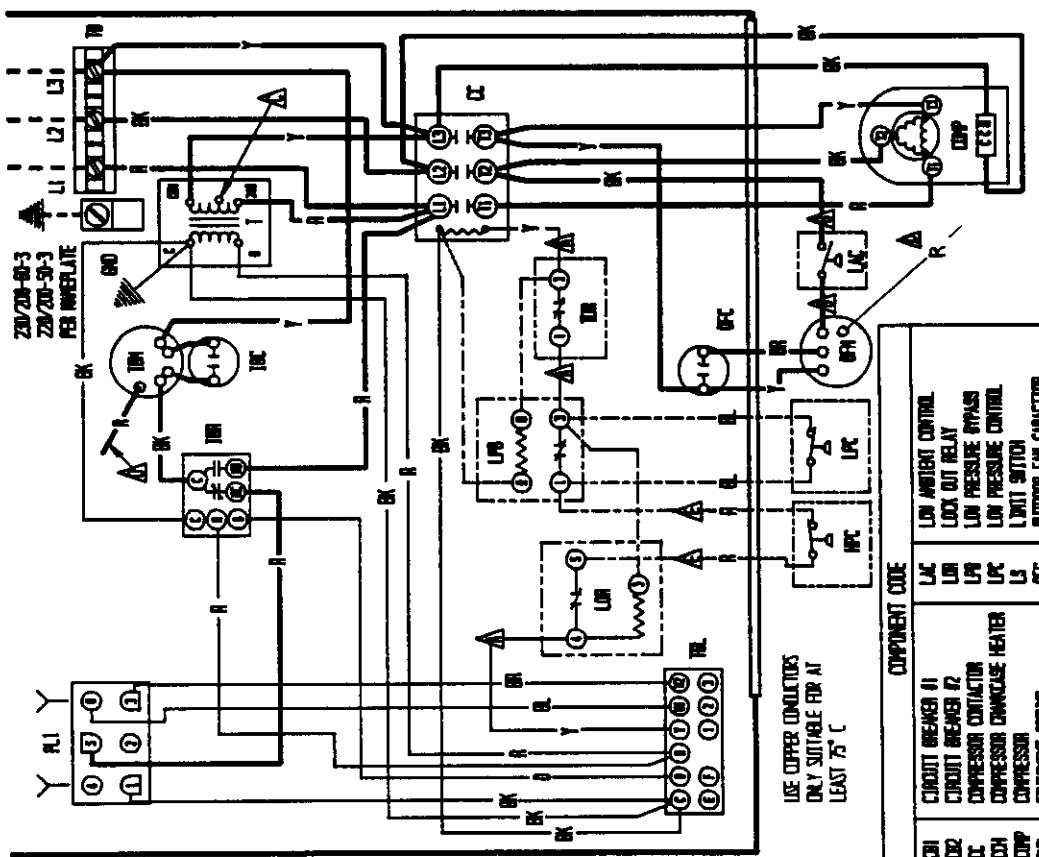
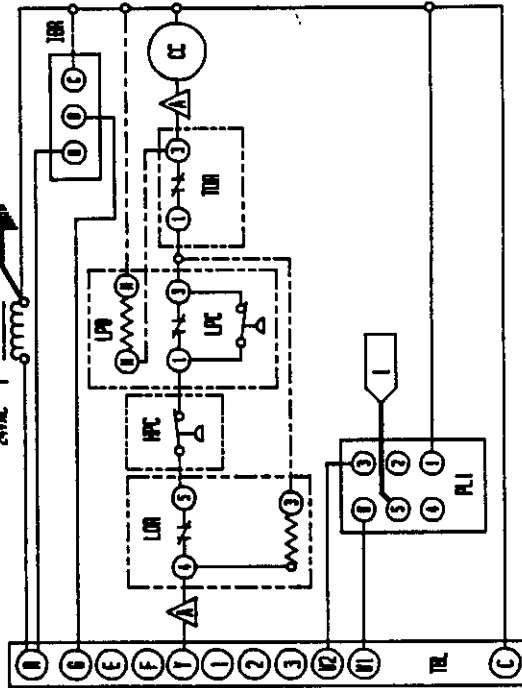
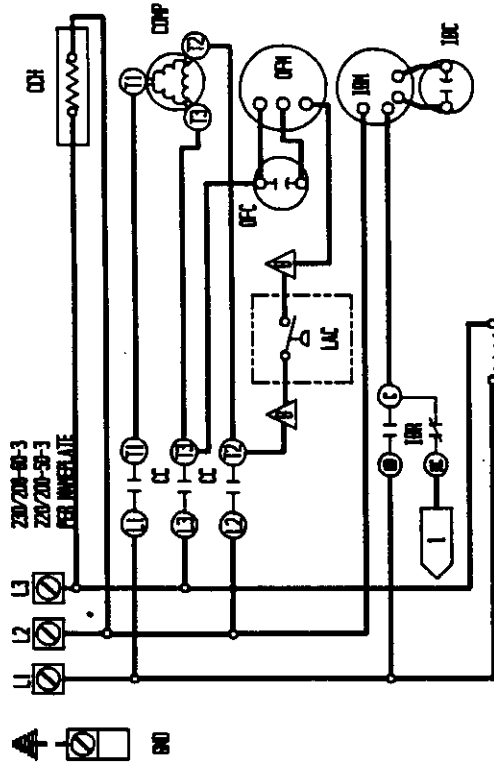
RED (LOW) BLACK (HIGH) WIRE APPLIANCE

FACTORY STD.	FIELD	OPTIONAL
BLACK	BLACK	BLACK
BROWN	BROWN	BROWN
RED	RED	RED
ORANGE	ORANGE	ORANGE
YELLOW	YELLOW	YELLOW
GREEN	GREEN	GREEN
BLUE	BLUE	BLUE
WHITE	WHITE	WHITE
V (FR)	VIOLET	VIOLET
ST	STRIP	STRIP
(S)	SLATE	SLATE
T	TAN	TAN
R	PINK	PINK
L	LANDSCAPE	LANDSCAPE

BARB INC. CO.  
DPT. 4055-121 A  
DN.  
OK/APP.







USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75 °C

COMPONENT CODE	
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CC1	COMPRESSOR CONTACTOR HEATER
COMP	COMPRESSOR
CGND	EQUIPMENT GROUND
F1	HEAT STRIP #1
F2	HEAT STRIP #2
RC1	HEATER CONTACTOR #1
RC2	HEATER CONTACTOR #2
RPC	HIGH PRESSURE CONTROL
TRC	INDOOR BLOWER CAPACITOR
TRB	INDOOR BLOWER MOTOR
TRR	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOK	LOCK OUT RELAY
LON	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OPC	OUTDOOR FAN CAPACITOR
OPM	OUTDOOR FAN MOTOR
PL1	PLUS #1
SK	START KIT
T	TRANSFORMER
TR	TERMINAL BLOCK
TRC	LOW VOLTAGE TERMINAL BLOCK
TRD	TERMINAL OFFSET
TRR	TUNE RELAY RELAY

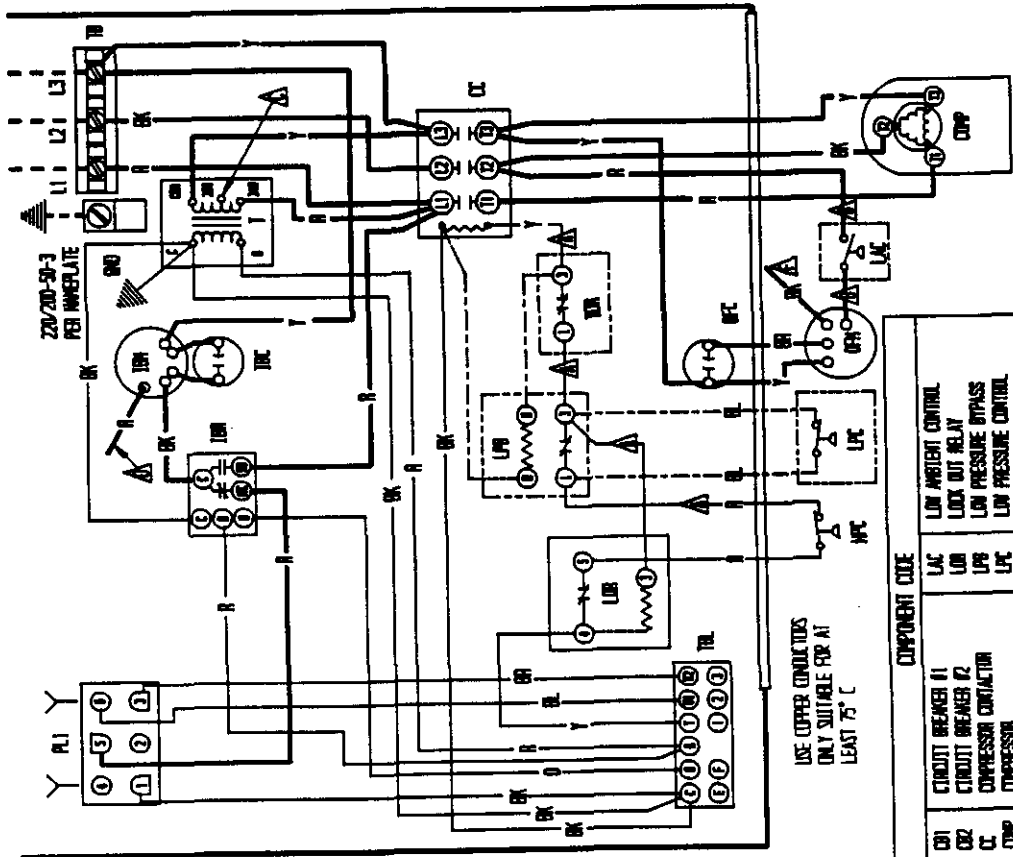
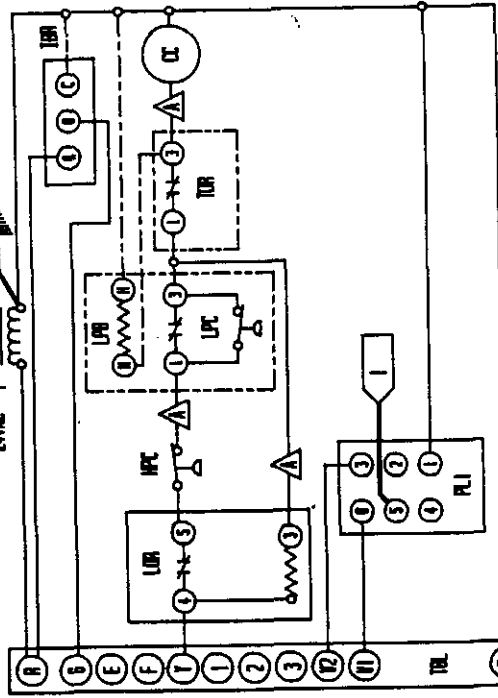
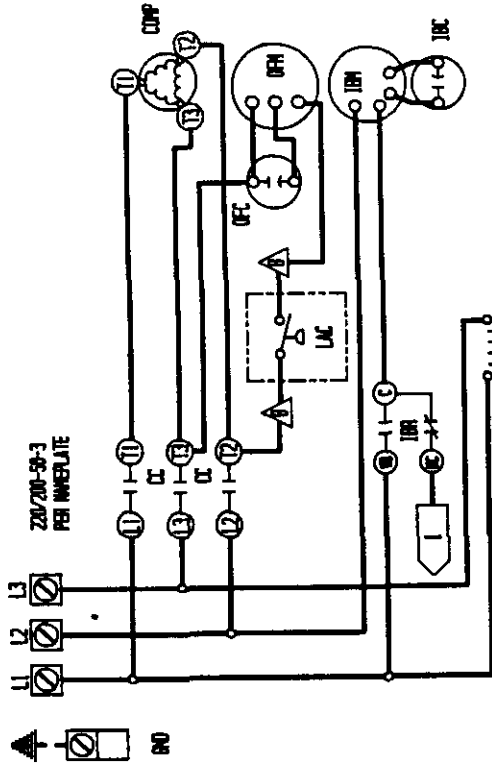
▲ ▲ LABELLED WIRES CONNECT IF NO OPTIONS USED. ▲ WIRE RED WIRE TO 200V TAP FOR 200V OPERATION. RED (LON) BLACK (LONB) WHERE APPLICABLE.

COLOR CODE			
BLACK	Y	VIOLET	T
BROWN	G	PURPLE	PK
RED	B	GRAY	L
ORANGE	F	SLATE	

FACTORY OR. FIELD. OPTIONAL.			
HIGH VOLTAGE	---	---	---
LOW VOLTAGE	---	---	---
EXTENSIVE	---	---	---

BARD MFG. CO.			
DES.	4055-210 D		
DRW.	CSB		
CHK./APPR.			





USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75 °C

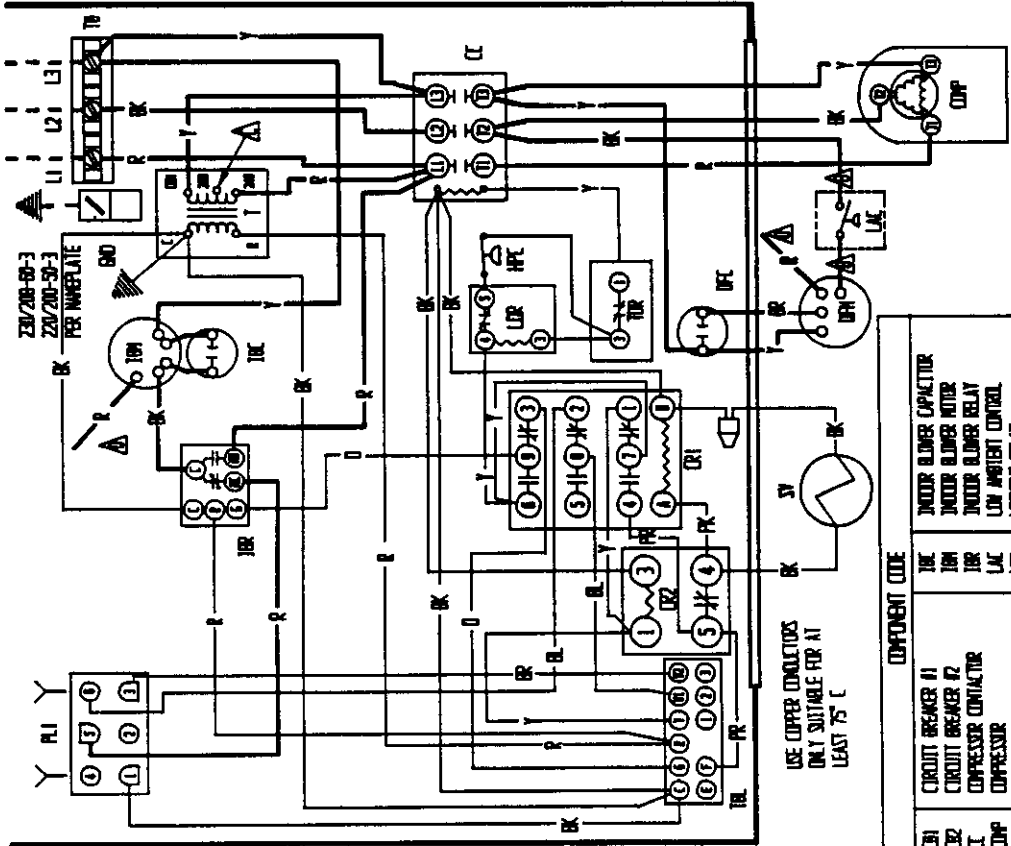
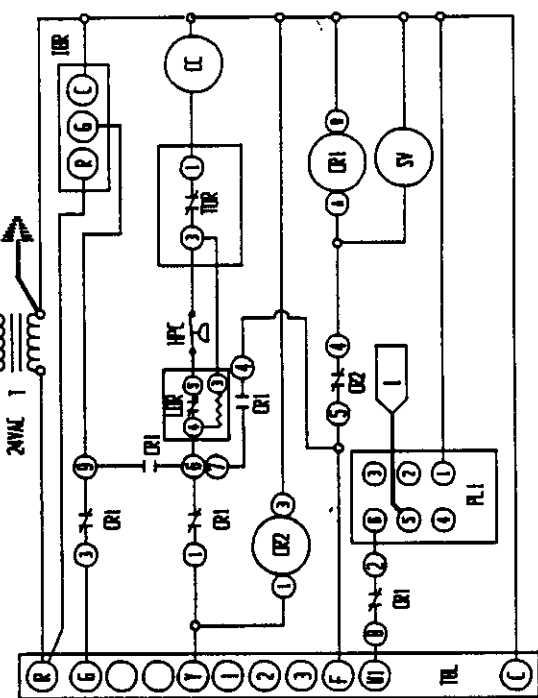
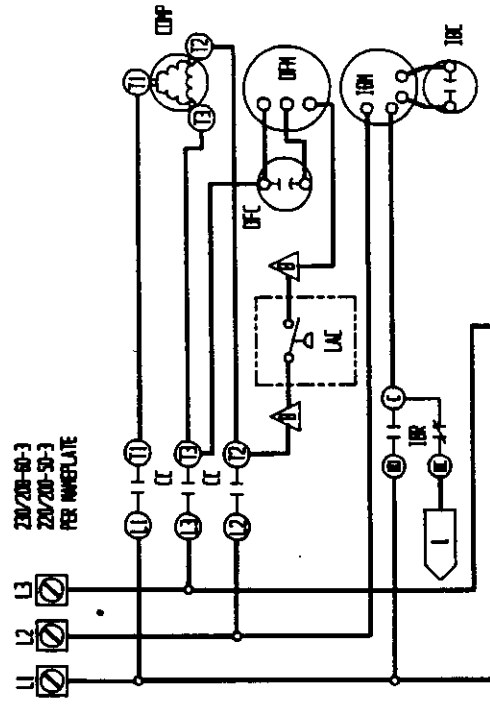
COMPONENT CODE	DESCRIPTION
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CCP	COMPRESSOR
END	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HFC	HEATER CONTACTOR #1
HFC	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
INDOOR	INDOOR BLOWER MOTOR
INDOOR	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOK	LOCK OUT RELAY
LPI	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OPC	OUTDOOR FAN CAPACITOR
OPR	OUTDOOR FAN MOTOR
PLI	PLUS #1
SK	START KIT
T	TRANSFORMER
TR	TEMPERATURE BLOCK
TRC	TRIP RELAY
TRC	TRIP RELAY
TRC	TRIP RELAY
TRC	TRIP RELAY
TRC	TRIP RELAY

▲ Labeled wires connect if no options used. ▲ Wire red wire to 200V tap for 200V operation. ▲ Red (low) black (high) (black) high speed not to be used on 50Hz models.

FACTORY WIRE	FIELD	OPTIONAL	COLOR CODE
1	2	3	4
BLACK	YELLOW	GREEN	RED
BROWN	GREEN	BLUE	BLACK
RED	BLUE	WHITE	RED
ORANGE	WHITE	ORANGE	ORANGE
1	2	3	4
TRIP	TRIP	TRIP	TRIP
TRIP	TRIP	TRIP	TRIP
TRIP	TRIP	TRIP	TRIP
TRIP	TRIP	TRIP	TRIP

BARO MFC. CO.  
 DWG. 405-213-A  
 DWG. DAY  
 CHK./APPR.





USE COPPER CONDUCTORS  
OR AT LEAST 75°C

COMPONENT CODE	DESCRIPTION
DR1	CIRCUIT BREAKER #1
DR2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
DR1	CONTROL RELAY 1
DR2	CONTROL RELAY 2
DR3	DUAL CAPACITOR
DR4	EQUIPMENT GROUND
DR5	HEAT STRIP #1
DR6	HEAT STRIP #2
DR7	HEATER CONTACTOR #1
DR8	HEATER CONTACTOR #2
DR9	HIGH PRESSURE CONTROL
DR10	INDOOR BLOWER CAPACITOR
DR11	INDOOR BLOWER MOTOR
DR12	INDOOR BLOWER RELAY
DR13	INDOOR BLOWER CONTROL
DR14	LOCKOUT RELAY
DR15	LIMIT SWITCH
DR16	OUTDOOR FAN MOTOR
DR17	PLUG #1
DR18	SOLENOID VALVE
DR19	TRANSFORMER
DR20	TERMINAL BLOCK
DR21	LOW VOLTAGE TERMINAL BLOCK
DR22	THERMAL CUTOFF
DR23	TIME DELAY RELAY

▲ LABELLED WIRES CONNECT IF NO OPTIONS USED.

FACTORY STD.	FIELD	OPTIONAL
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

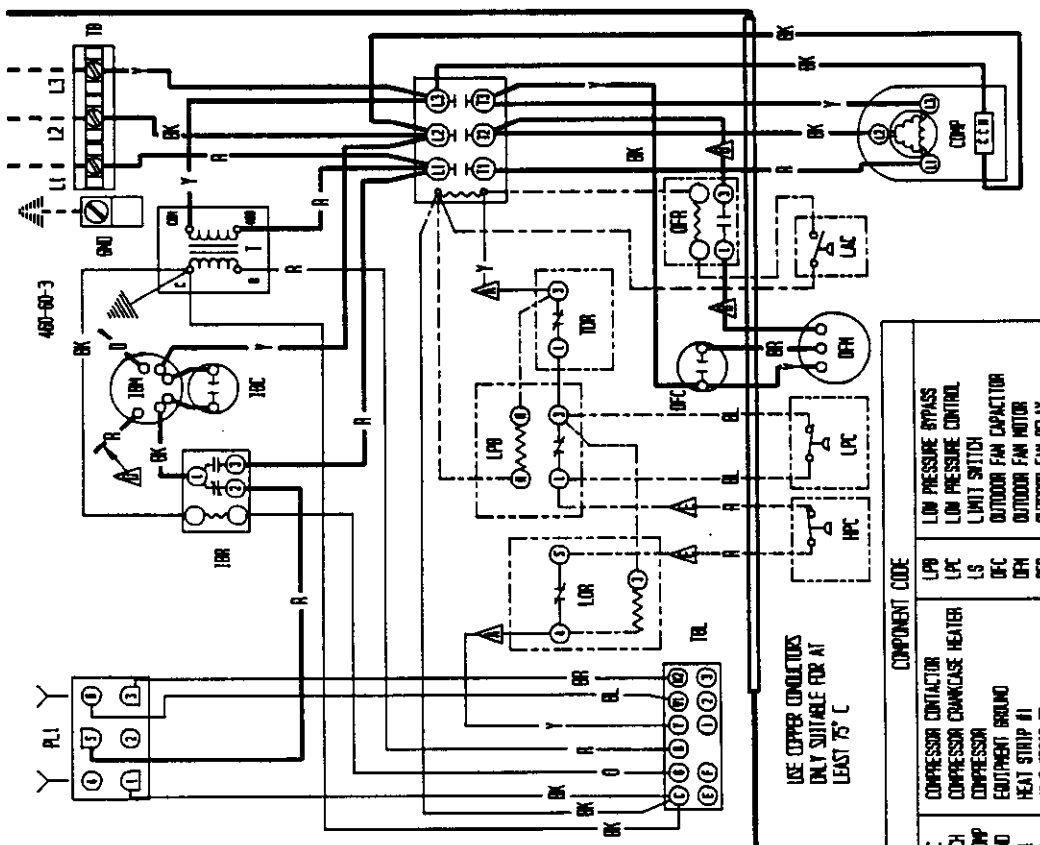
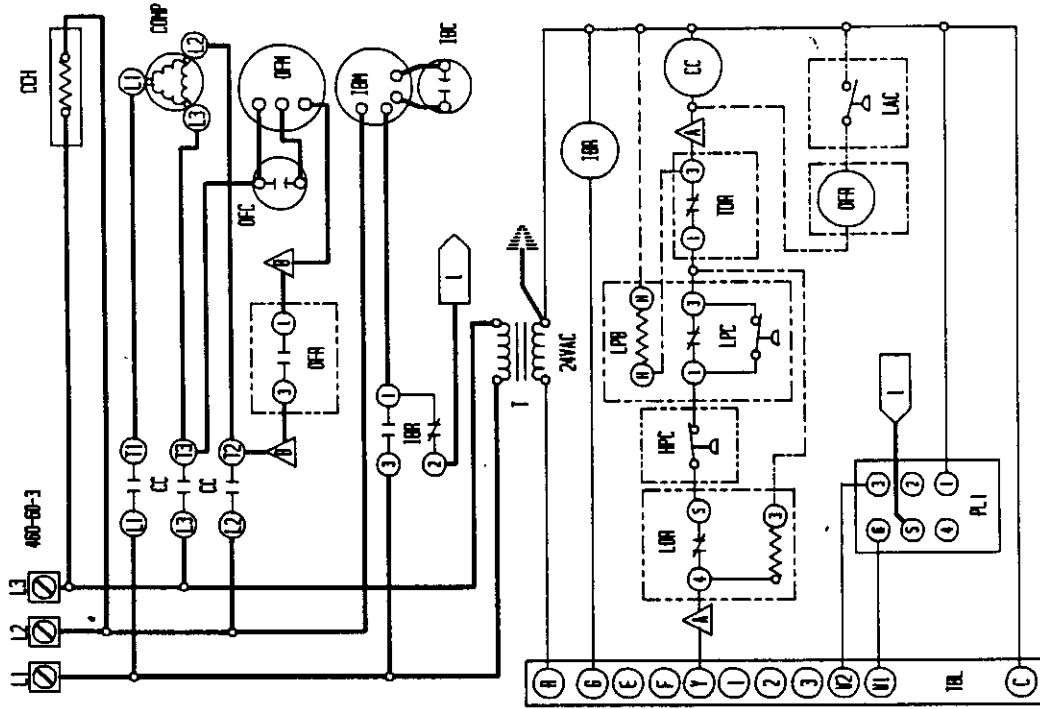
▲ MOVE RED WIRE TO 208V TAP FOR 208V OPERATION

COLOR CODE	T	R	L
YELLOW	Y	—	—
GREEN	G	—	—
BLUE	B	—	—
WHITE	W	—	—
VIOLET	V	—	—
PURPLE	P	—	—
GRAY	GR	—	—
SLATE	S	—	—
PINK	PK	—	—
LAVENDER	L	—	—

▲ RED (LOW) BLACK (HIGH) WERE APPLICABLE

BARB MFG. CO.  
 ENG. 4085-220 A  
 DRN. —  
 CHK./APPR. —





USE COPPER CONDUCTORS  
ONLY SUITABLE FOR AT  
LEAST 75° C

COMPONENT CODE	
CC	COMPRESSOR CONTACTOR
CDH	COMPRESSOR COMPANCASE HEATER
COMP	COMPRESSOR
END	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H3	HEATER CONTACTOR #1
H4	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
IBC	INDOOR BLOWER CAPACITOR
IBA	INDOOR BLOWER MOTOR
IBR	INDOOR BLOWER RELAY
IAC	LOW AMBIENT CONTROL
IBR	LOCK OUT RELAY
LPR	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OFD	OUTDOOR FAN CAPACITOR
OFM	OUTDOOR FAN MOTOR
OFB	OUTDOOR FAN RELAY
PO	PULL DISCONNECT
PLI	PLUS #1
T	TRANSFORMER
TB	TERMINAL BLOCK
TCL	LOW VOLTAGE TERMINAL BLOCK
TCO	THERMAL CUTOFF
TR	TIME DELAY 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

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

COLOR CODE		
Y	YELLOW	Y
G	GREEN	(PH)
B	BLUE	BY
W	WHITE	(S)
OR	ORANGE	OR
BL	BLACK	BL
BR	BROWN	BR
R	RED	R
O	ORANGE	O
V	VIOLET	V
P	PURPLE	P
PK	PINK	PK
L	LAVENDER	L
TAN	TAN	TAN

BARD MFG. CO.		
DWG.	4055-310 C.	
DRW.	DBR	
CHK./APPR.		

COMPONENT CODE	COMPONENT DESCRIPTION
CC	COMPRESSOR CONTACTOR
NO	EQUIPMENT GROUND
R1	HEAT STRIP #1
R2	HEAT STRIP #2
K1	HEATER CONTACTOR #1
K2	HEATER CONTACTOR #2
PC	HIGH PRESSURE CONTROL
BC	INDOOR BLOWER CAPACTOR
BN	INDOOR BLOWER MOTOR
LC	INDOOR BLOWER RELAY
LN	LOW AMBIENT CONTROL
LO	LOW OIL RELAY

LOW PRESSURE PRESSURE CONTROL	LOW PRESSURE CONTROL
LPS	LIMIT SWITCH
OPC	OUTDOOR FAN CAPACTOR
ORH	OUTDOOR FAN MOTOR
ORF	OUTDOOR FAN RELAY
ORC	CALL DISCONNECT
ORF	FLUE #1
ORF	INVERTER
ORF	TERMINAL BLOCK
ORF	LOW VOLTAGE TERMINAL BLOCK
ORF	TERMINAL CLOFF
ORF	THE DELAY RELAY

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

**A. AND INULATE. CONNECT RED WIRE TO TERMINAL 1 OF 1BR.**

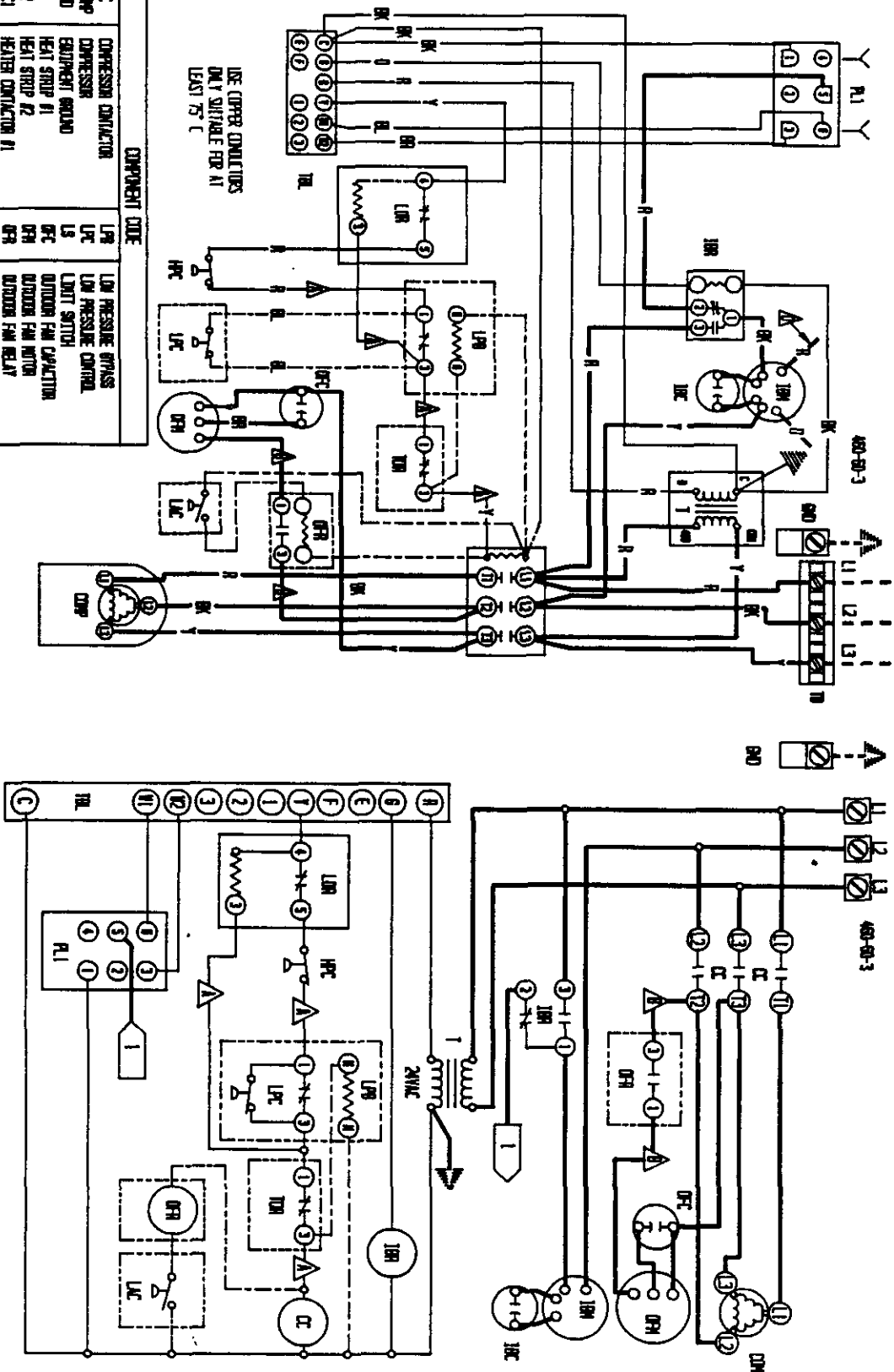
COLOR CODE		WIRE COLOR	
BR	BLACK	Y	YELLOW
BR	BROWN	GR	GREEN
RD	RED	BL	BLUE
DN	ORANGE	VT	VIOLET
		PR	PURPLE
		BN	BROWN
		SL	SLATE
		PK	PINK
		LN	LANCER

**WIRE GAUGE**

WIRE GAUGE	WIRE COLOR	WIRE GAUGE
18	BLACK	18
18	BROWN	18
18	RED	18
18	ORANGE	18
18	YELLOW	18
18	GREEN	18
18	BLUE	18
18	VIOLET	18
18	PURPLE	18
18	BROWN	18
18	SLATE	18
18	PINK	18
18	LANCER	18

**WIRE GAUGE**

WIRE GAUGE	WIRE COLOR	WIRE GAUGE
18	BLACK	18
18	BROWN	18
18	RED	18
18	ORANGE	18
18	YELLOW	18
18	GREEN	18
18	BLUE	18
18	VIOLET	18
18	PURPLE	18
18	BROWN	18
18	SLATE	18
18	PINK	18
18	LANCER	18



**WIRE GAUGE**

WIRE GAUGE	WIRE COLOR	WIRE GAUGE
18	BLACK	18
18	BROWN	18
18	RED	18
18	ORANGE	18
18	YELLOW	18
18	GREEN	18
18	BLUE	18
18	VIOLET	18
18	PURPLE	18
18	BROWN	18
18	SLATE	18
18	PINK	18
18	LANCER	18

**WIRE GAUGE**

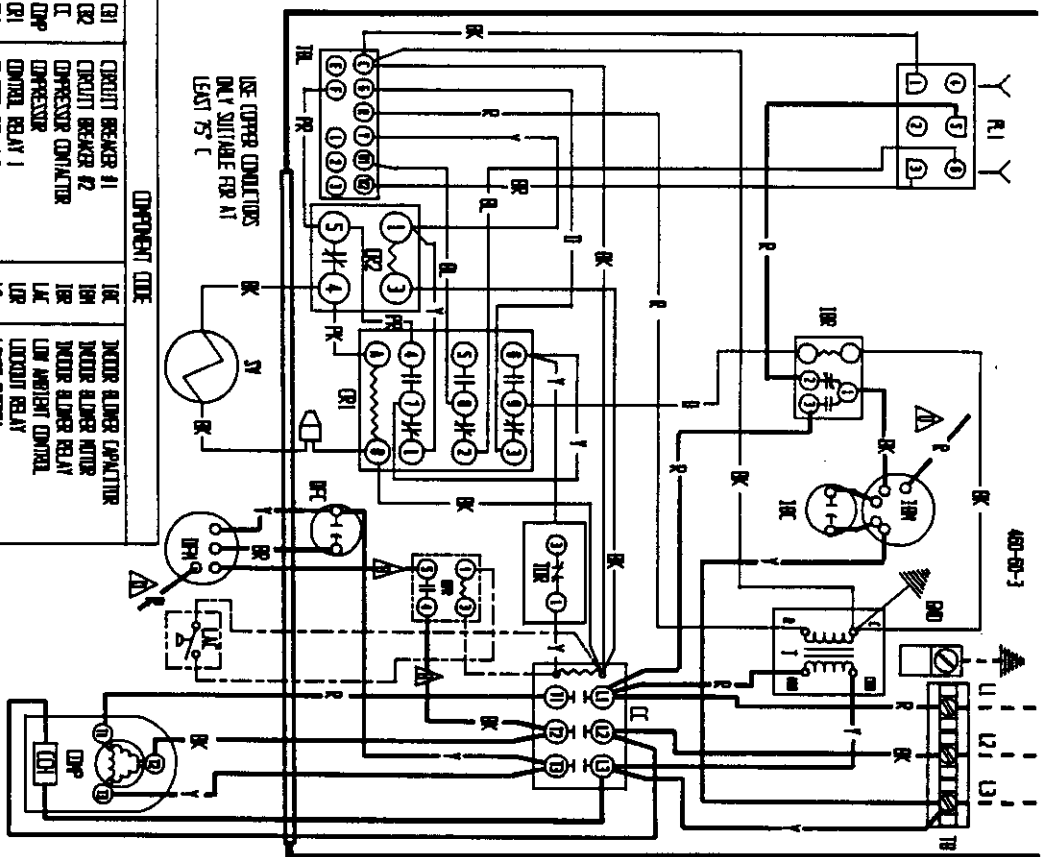
WIRE GAUGE	WIRE COLOR	WIRE GAUGE
18	BLACK	18
18	BROWN	18
18	RED	18
18	ORANGE	18
18	YELLOW	18
18	GREEN	18
18	BLUE	18
18	VIOLET	18
18	PURPLE	18
18	BROWN	18
18	SLATE	18
18	PINK	18
18	LANCER	18

**WIRE GAUGE**

WIRE GAUGE	WIRE COLOR	WIRE GAUGE
18	BLACK	18
18	BROWN	18
18	RED	18
18	ORANGE	18
18	YELLOW	18
18	GREEN	18
18	BLUE	18
18	VIOLET	18
18	PURPLE	18
18	BROWN	18
18	SLATE	18
18	PINK	18
18	LANCER	18





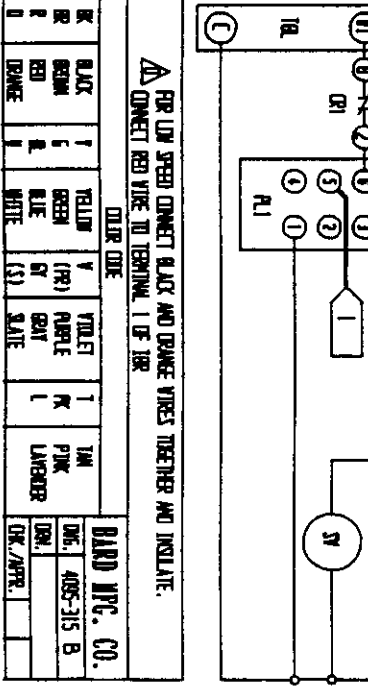


**COMPONENT CODE**

CR1	CIRCUIT BREAKER #1	IR	INDOR BLURR CAPACTOR
CR2	CIRCUIT BREAKER #2	IR1	INDOR BLURR MOTOR
CR3	COMPRESSOR COMPACTOR	IR2	INDOR BLURR RELAY
CR4	COMPRESSOR	IR3	INDOR BLURR CONTROL
CR5	CONTROL RELAY 1	UR	LIMIT SWITCH
CR6	CONTROL RELAY 2	UR1	LIMIT RELAY
CR7	OWM COW CAPACTOR	UR2	OUTDOOR FAN MOTOR
CR8	EQUIPMENT GROUND	UR3	STANDARD VALVE
CR9	HEAT STOP #1	UR4	TERMINAL BLOCK
CR10	HEAT STOP #2	UR5	LOW VOLTAGE TERMINAL BLOCK
CR11	HEATER COMPACTOR #1	UR6	HEATER COMPACTOR
CR12	HEATER COMPACTOR #2	UR7	HEATER COMPACTOR
CR13	HIGH PRESSURE CONTROL	UR8	TIME DELAY RELAY

**WIRE COLOR CODE**

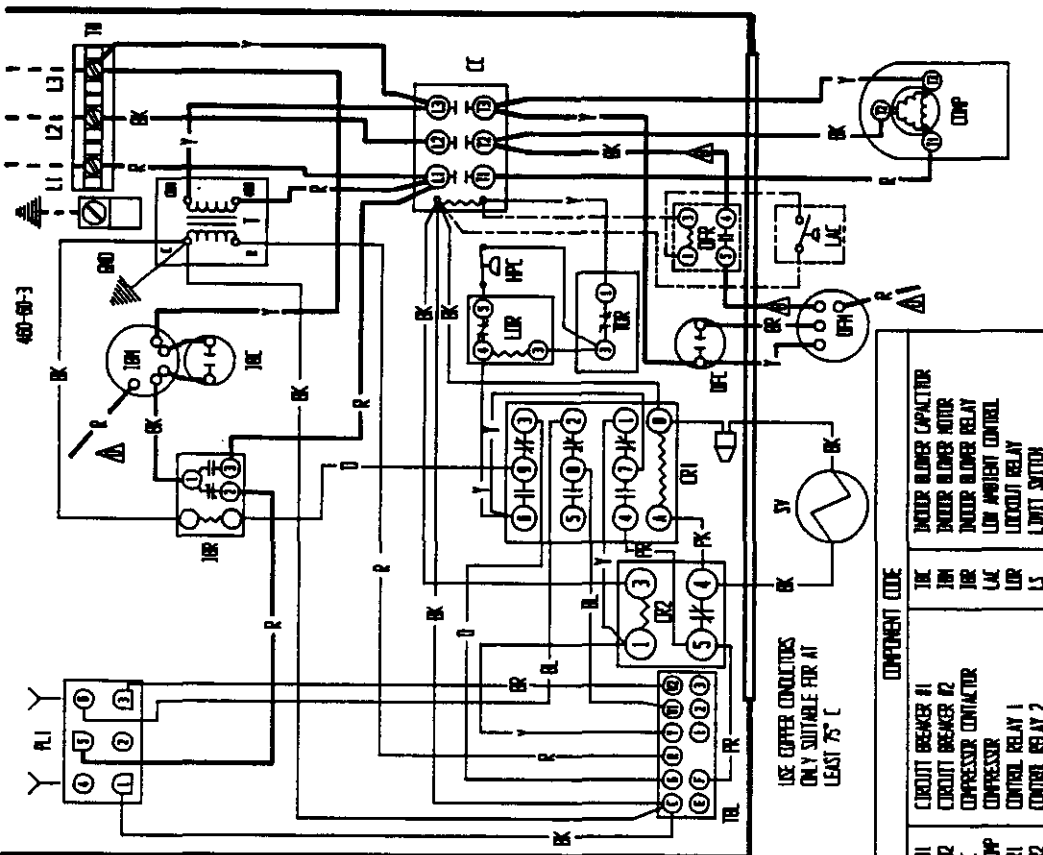
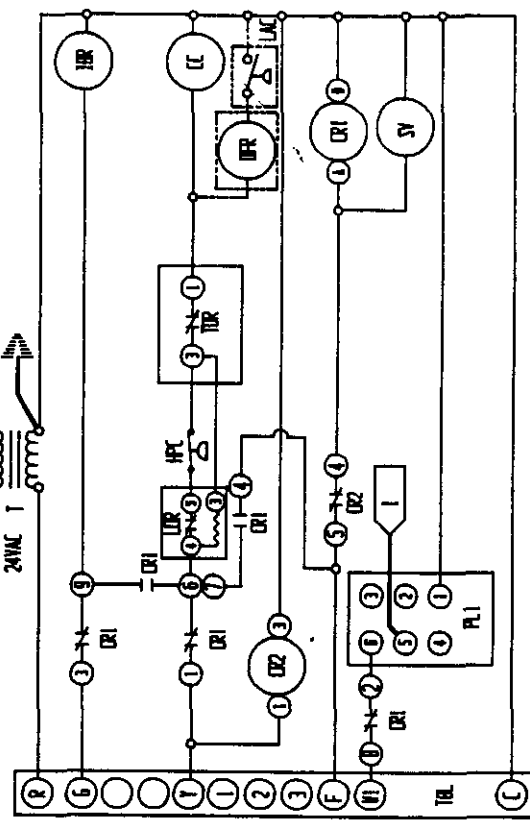
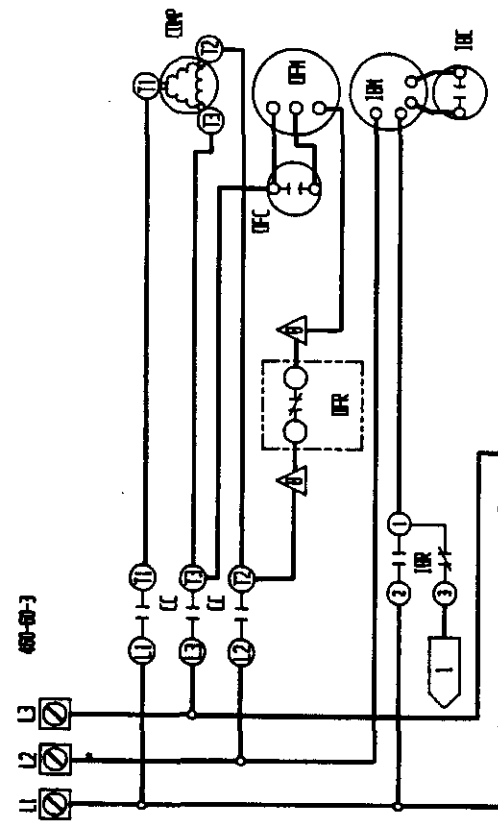
BLACK	B	RED	R	YELLOW	Y	GREEN	G	BLUE	B	WHITE	W
BROWN	BR	ORANGE	OR	PURPLE	P	PINK	PK	GRAY	GR	SLATE	SL



**WIRE COLOR CODE**

BLACK	B	RED	R	YELLOW	Y	GREEN	G	BLUE	B	WHITE	W
BROWN	BR	ORANGE	OR	PURPLE	P	PINK	PK	GRAY	GR	SLATE	SL

**BARB NPG. CO.**  
 Dwg. 405-315 B  
 1/8" / 1/16"  
 CR. / APR.



USE COPPER CONDUCTORS ONLY SUITABLE FOR AT LEAST 75°C

COMPONENT CODE		COLOR CODE	
CB1	CIRCUIT BREAKER #1	BK	BLACK
CB2	CIRCUIT BREAKER #2	BR	BROWN
CC	COMPRESSOR	RD	RED
CR1	CONTROL RELAY 1	OR	ORANGE
CR2	CONTROL RELAY 2	PK	PINK
CC	DUAL CAPACITOR	PK	PINK
GR0	EQUIPMENT GROUND	GR	GRAY
H1	HEAT STRIP #1	WT	WHITE
H2	HEAT STRIP #2	SL	SLATE
HC1	HEATER CONTACTOR #1	VT	VIOLET
HC2	HEATER CONTACTOR #2	PR	PURPLE
HFC	HIGH PRESSURE CONTROL	LV	LAVENDER
IMC	INDOOR BLOWER CAPACITOR	Y	YELLOW
IMN	INDOOR BLOWER MOTOR	G	GREEN
IMR	INDOOR BLOWER RELAY	B	BLUE
LAC	LOW AMBIENT CONTROL	W	WHITE
LR	LOW VOLTAGE TERMINAL BLOCK	VT	VIOLET
LS	LOW VOLTAGE TERMINAL BLOCK	PR	PURPLE
DPH	LOW VOLTAGE TERMINAL BLOCK	GR	GRAY
PL1	PLUS #1	WT	WHITE
SV	SELECTED VALVE	SL	SLATE
TS	TRANSFORMER	Y	YELLOW
TR	TERMINAL BLOCK	G	GREEN
TR1	TERMINAL BLOCK	B	BLUE
TR2	TERMINAL BLOCK	W	WHITE
TR3	TERMINAL BLOCK	SL	SLATE
TR4	TERMINAL BLOCK	VT	VIOLET
TR5	TERMINAL BLOCK	PR	PURPLE
TR6	TERMINAL BLOCK	GR	GRAY
TR7	TERMINAL BLOCK	WT	WHITE
TR8	TERMINAL BLOCK	SL	SLATE
TR9	TERMINAL BLOCK	VT	VIOLET
TR10	TERMINAL BLOCK	PR	PURPLE
TR11	TERMINAL BLOCK	GR	GRAY
TR12	TERMINAL BLOCK	WT	WHITE
TR13	TERMINAL BLOCK	SL	SLATE
TR14	TERMINAL BLOCK	VT	VIOLET
TR15	TERMINAL BLOCK	PR	PURPLE
TR16	TERMINAL BLOCK	GR	GRAY
TR17	TERMINAL BLOCK	WT	WHITE
TR18	TERMINAL BLOCK	SL	SLATE
TR19	TERMINAL BLOCK	VT	VIOLET
TR20	TERMINAL BLOCK	PR	PURPLE
TR21	TERMINAL BLOCK	GR	GRAY
TR22	TERMINAL BLOCK	WT	WHITE
TR23	TERMINAL BLOCK	SL	SLATE
TR24	TERMINAL BLOCK	VT	VIOLET
TR25	TERMINAL BLOCK	PR	PURPLE
TR26	TERMINAL BLOCK	GR	GRAY
TR27	TERMINAL BLOCK	WT	WHITE
TR28	TERMINAL BLOCK	SL	SLATE
TR29	TERMINAL BLOCK	VT	VIOLET
TR30	TERMINAL BLOCK	PR	PURPLE
TR31	TERMINAL BLOCK	GR	GRAY
TR32	TERMINAL BLOCK	WT	WHITE
TR33	TERMINAL BLOCK	SL	SLATE
TR34	TERMINAL BLOCK	VT	VIOLET
TR35	TERMINAL BLOCK	PR	PURPLE
TR36	TERMINAL BLOCK	GR	GRAY
TR37	TERMINAL BLOCK	WT	WHITE
TR38	TERMINAL BLOCK	SL	SLATE
TR39	TERMINAL BLOCK	VT	VIOLET
TR40	TERMINAL BLOCK	PR	PURPLE
TR41	TERMINAL BLOCK	GR	GRAY
TR42	TERMINAL BLOCK	WT	WHITE
TR43	TERMINAL BLOCK	SL	SLATE
TR44	TERMINAL BLOCK	VT	VIOLET
TR45	TERMINAL BLOCK	PR	PURPLE
TR46	TERMINAL BLOCK	GR	GRAY
TR47	TERMINAL BLOCK	WT	WHITE
TR48	TERMINAL BLOCK	SL	SLATE
TR49	TERMINAL BLOCK	VT	VIOLET
TR50	TERMINAL BLOCK	PR	PURPLE
TR51	TERMINAL BLOCK	GR	GRAY
TR52	TERMINAL BLOCK	WT	WHITE
TR53	TERMINAL BLOCK	SL	SLATE
TR54	TERMINAL BLOCK	VT	VIOLET
TR55	TERMINAL BLOCK	PR	PURPLE
TR56	TERMINAL BLOCK	GR	GRAY
TR57	TERMINAL BLOCK	WT	WHITE
TR58	TERMINAL BLOCK	SL	SLATE
TR59	TERMINAL BLOCK	VT	VIOLET
TR60	TERMINAL BLOCK	PR	PURPLE
TR61	TERMINAL BLOCK	GR	GRAY
TR62	TERMINAL BLOCK	WT	WHITE
TR63	TERMINAL BLOCK	SL	SLATE
TR64	TERMINAL BLOCK	VT	VIOLET
TR65	TERMINAL BLOCK	PR	PURPLE
TR66	TERMINAL BLOCK	GR	GRAY
TR67	TERMINAL BLOCK	WT	WHITE
TR68	TERMINAL BLOCK	SL	SLATE
TR69	TERMINAL BLOCK	VT	VIOLET
TR70	TERMINAL BLOCK	PR	PURPLE
TR71	TERMINAL BLOCK	GR	GRAY
TR72	TERMINAL BLOCK	WT	WHITE
TR73	TERMINAL BLOCK	SL	SLATE
TR74	TERMINAL BLOCK	VT	VIOLET
TR75	TERMINAL BLOCK	PR	PURPLE
TR76	TERMINAL BLOCK	GR	GRAY
TR77	TERMINAL BLOCK	WT	WHITE
TR78	TERMINAL BLOCK	SL	SLATE
TR79	TERMINAL BLOCK	VT	VIOLET
TR80	TERMINAL BLOCK	PR	PURPLE
TR81	TERMINAL BLOCK	GR	GRAY
TR82	TERMINAL BLOCK	WT	WHITE
TR83	TERMINAL BLOCK	SL	SLATE
TR84	TERMINAL BLOCK	VT	VIOLET
TR85	TERMINAL BLOCK	PR	PURPLE
TR86	TERMINAL BLOCK	GR	GRAY
TR87	TERMINAL BLOCK	WT	WHITE
TR88	TERMINAL BLOCK	SL	SLATE
TR89	TERMINAL BLOCK	VT	VIOLET
TR90	TERMINAL BLOCK	PR	PURPLE
TR91	TERMINAL BLOCK	GR	GRAY
TR92	TERMINAL BLOCK	WT	WHITE
TR93	TERMINAL BLOCK	SL	SLATE
TR94	TERMINAL BLOCK	VT	VIOLET
TR95	TERMINAL BLOCK	PR	PURPLE
TR96	TERMINAL BLOCK	GR	GRAY
TR97	TERMINAL BLOCK	WT	WHITE
TR98	TERMINAL BLOCK	SL	SLATE
TR99	TERMINAL BLOCK	VT	VIOLET
TR100	TERMINAL BLOCK	PR	PURPLE

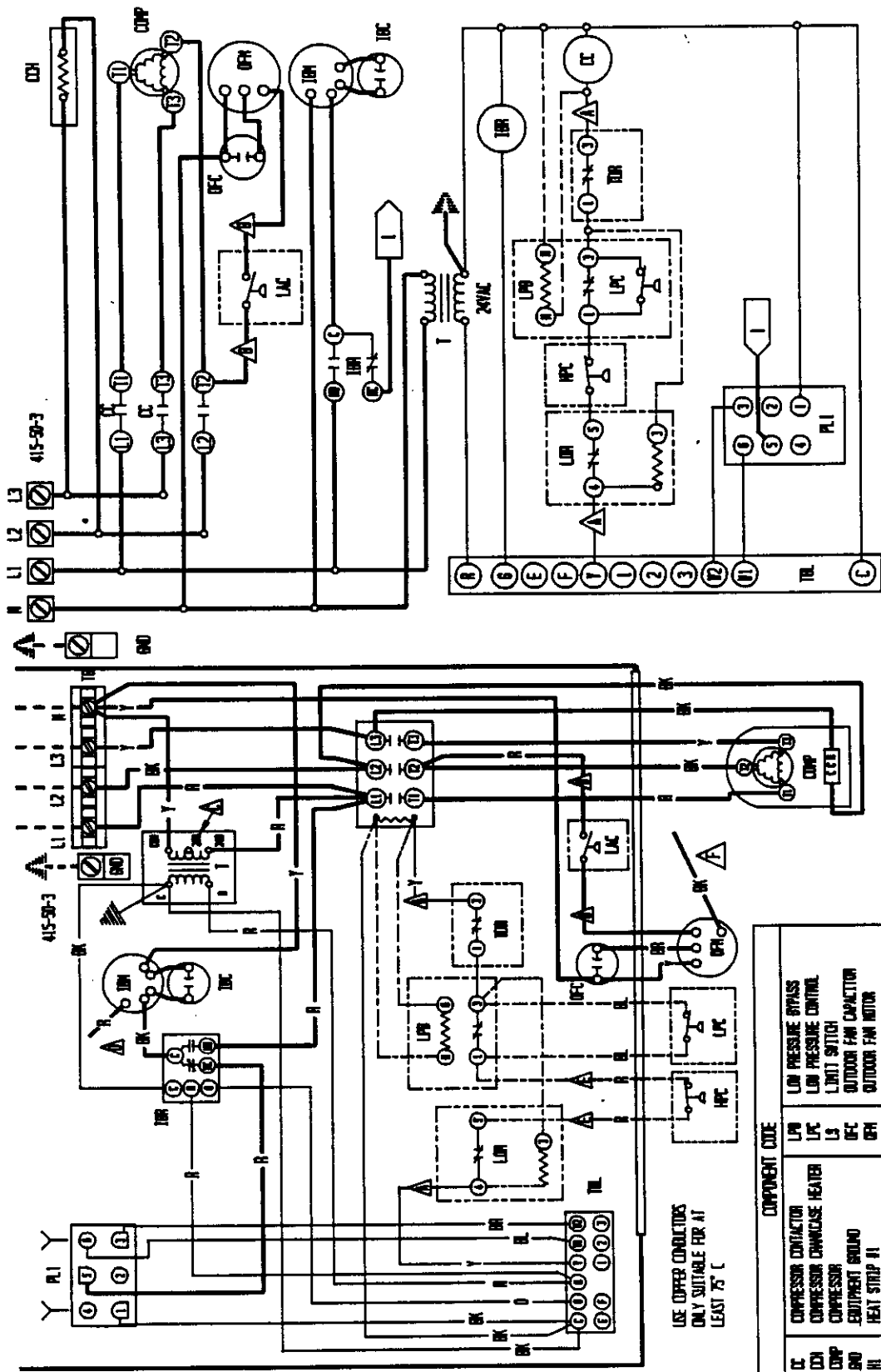
FOR LOW SPEED CONNECT BLACK AND ORANGE WIRES TOGETHER AND INSULATE. CONNECT RED WIRE TO TERMINAL 1 OF TR.

LABELLED WIRES CONNECT IF NO OPTIONS USED.

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

**BARD MFG. CO.**  
 ENG. 4055-316 B  
 DRG.  
 CHK./APPR.





**WIRE RED WIRE TO 200V . Δ RED (LOW) BLACK (HIGH) (BLACK) HIGH SPEED TAP NOT TO BE USED ON SIZE MODELS**

**Δ Δ LABELED WIRES CORRECT IF NO OPTIONS USED. Δ TIP FOR 30V OPERATION**

FACTORY NO.		FIELD		OPTIONAL	
ROTH VOLUME	---	---	---	---	---
LOW VOLUME	---	---	---	---	---
NECESSARY	---	---	---	---	---

COLOR CODE					
Y	VI	P	T	TM	
YELLOW	VIOLET	PURPLE	PINK	PINK	
(PR)	(V)	(P)	(L)	LAVENDER	
BL	BY	SL	SL		
BLACK	GRAY	SLATE			
BR	W				
BROWN	WHITE				
R					
RED					
O					
ORANGE					

**BARB MFG. CO.**  
 DATE: 4025-612 A  
 DRN. DAY  
 CRK. APPR.

COMPONENT CODE	
DC	COMPRESSOR CONTACTOR
CH	COMPRESSOR CONDENSER HEATER
CMP	COMPRESSOR
SN	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
IB	INDOOR BLOWER CAPACITOR
IBM	INDOOR BLOWER MOTOR
IBR	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOB	LOCK OUT RELAY
LPP	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LS	LOW PRESSURE SWITCH
OC	OUTDOOR FAN CAPACITOR
OFM	OUTDOOR FAN MOTOR
OFM R	OUTDOOR FAN RELAY
PO	PULL OUT/CONNECT
PL1	PLUS #1
T	TRANSFORMER
TR	TERMINAL BLOCK
TRB	LOW VOLTAGE TERMINAL BLOCK
TRC	THERMAL CUTOFF
TRM	THERMAL CUTOFF
TRR	TIME DELAY RELAY
TRT	LOCK OUT RELAY

USE UPPER CONDUCTORS ONLY SUITABLE FOR AT LEAST 75°C

