

INSTALLATION INSTRUCTIONS

WALL MOUNTED PACKAGE AIR CONDITIONERS

MODELS

WA421

WA482

WA602

MANUAL: 2100-218 REV. H
SUPERSEDES: REV. G
FILE: Vol. III, Tab 17
DATE: 09-24-96

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
1712 New Hampshire Avenue, N.W.
Washington, DC 20009
Telephone: (202) 483-9370 Fax: (202) 234-4721
- ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE
11 West Street, 13th Floor
New York, NY 10036
Telephone: (212) 642-4900 Fax: (212) 302-1286
- ASHRAE: AMERICAN SOCIETY OF HEATING REFRIGERATING AND
AIR CONDITIONING ENGINEERS, INCORPORATED
1791 Tullie Circle, N.E.
Atlanta, GA 30329-2305
Telephone: (404) 636-8400 Fax: (404) 321-5478
- NFPA: NATIONAL FIRE PROTECTION ASSOCIATION
Batterymarch Park
P. O. Box 9101
Quincy, MA 02269-9901
Telephone: (800) 344-3555 Fax: (617) 984-7057

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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BARD MANUFACTURING COMPANY
BRYAN, OH 43506 USA

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PART 1 -- WALL MOUNT GENERAL INFORMATION

AIR CONDITIONER WALL MOUNT MODEL NOMENCLATURE

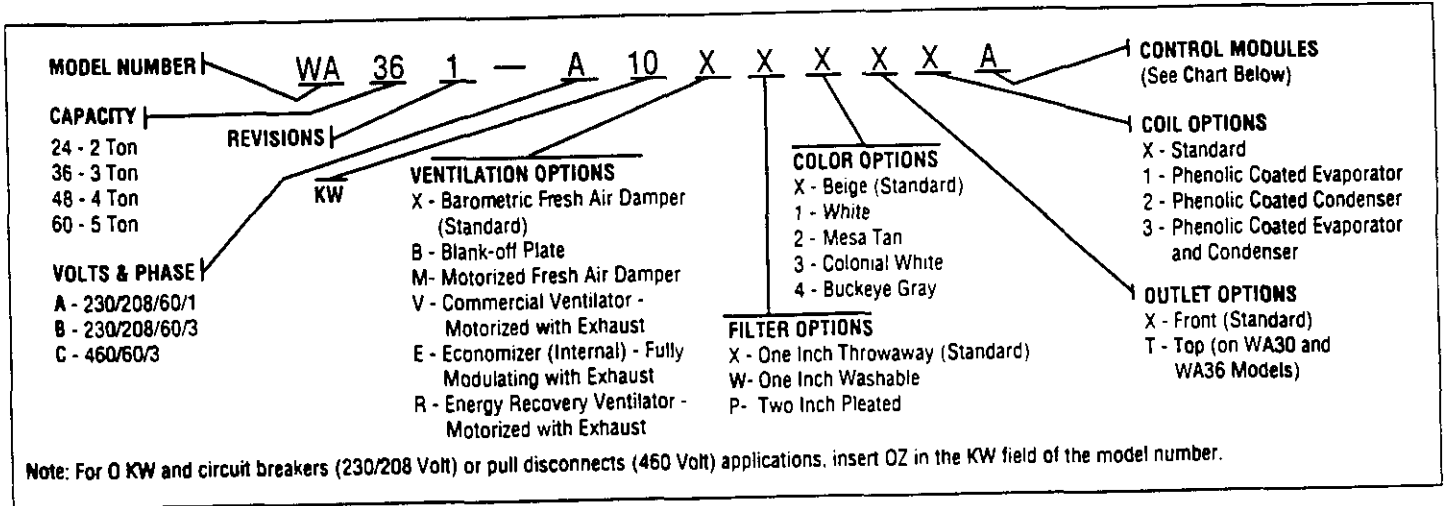


TABLE 1 ELECTRIC HEAT TABLE

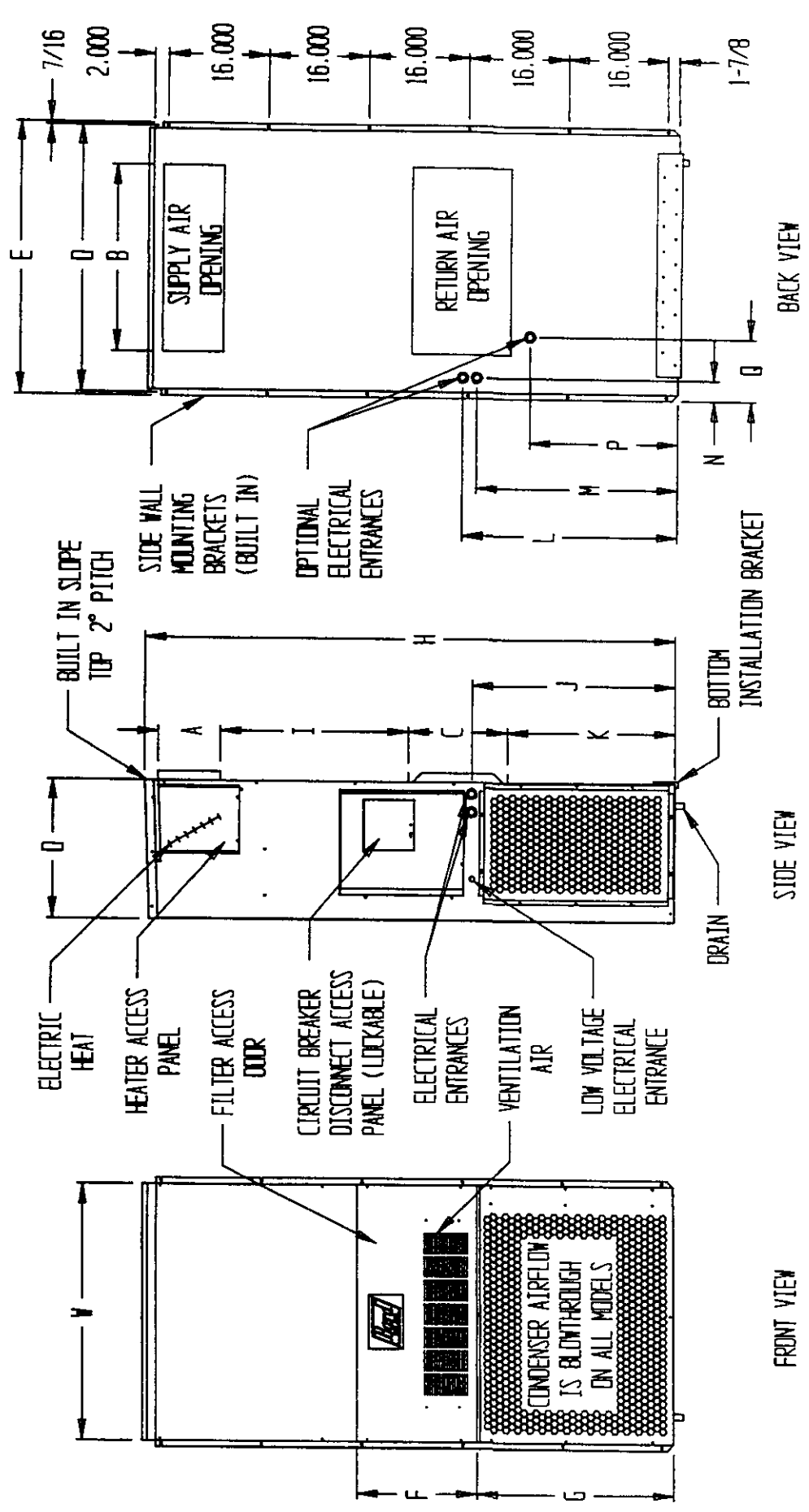
Models	WA421-A		WA421-B		WA421-C					
	WA482-A		WA482-B		WA482-C					
	WA602-A		WA602-B		WA602-C					
KW	240-1		208-1		240-3		208-3		460-3	
	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU
5	20.8	17050	18.1	12800						
9					21.7	30600	18.7	23030	10.8	30700
10	41.6	34130	36.2	25600						
15	62.5	51200	54.1	38400	36.2	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	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, B0Z 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	
		1	52	50	6	10	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	
WA421-C00, C0Z 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	
		1	26	30	10	10	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	
		1	59	60	6	10	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, B0Z 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	
		1	52	60	6	10	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	
WA482-C00, C0Z 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	
		1	26	30	10	10	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	
		1	55	60	6	10	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, B0Z 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	
		1	52	60	6	10	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	
WA602-C00, C0Z 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	
		1	26	30	10	10	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 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.

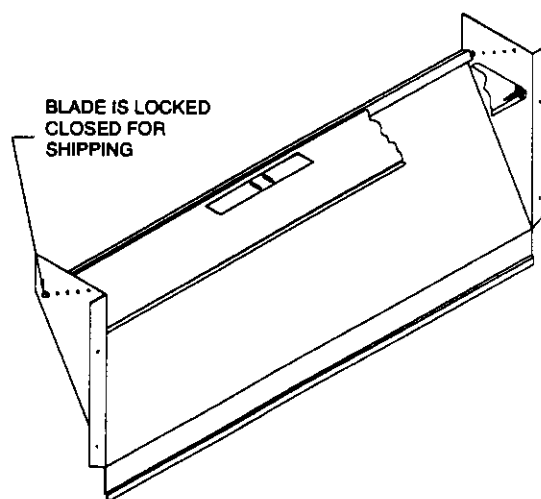
All capacity, efficiency and cost of operation information as required for Department of Energy "Energyguide" Fact Sheets is based upon the fresh air blank-off plate in place and is recommended for maximum energy efficiency.

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 combustible materials for supply air duct is not maintained. See Figure 3.
3. Concrete block walls must be thoroughly inspected to insure that they are capable of carrying the weight of the installing unit.

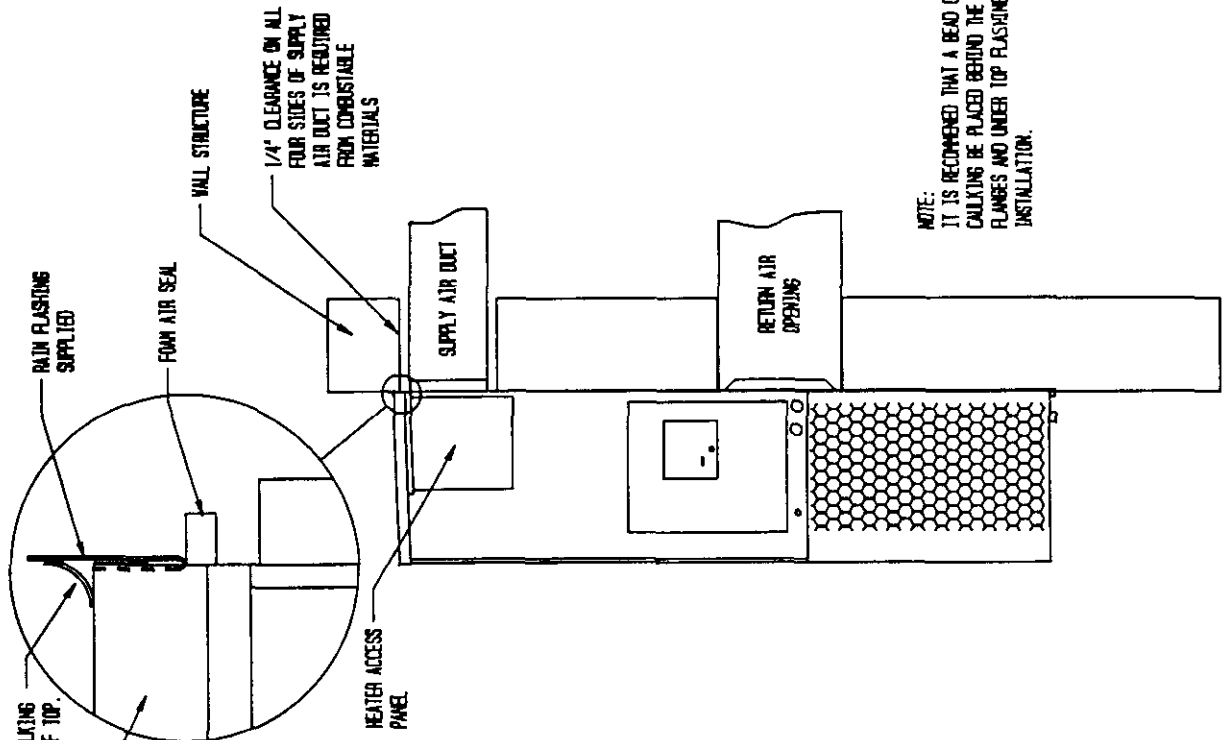
MOUNTING THE UNIT

1. These units are secured by wall mounting brackets which secure the unit to the outside wall surface at both sides. A bottom mounting bracket is provided for ease of installation.
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 3 and 3A for details.

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

3. Locate and mark lag bolt locations and bottom mounting bracket location. See Figure 3.
4. Mount bottom mounting bracket.
5. Hook top rain flashing under back bend of top. Top rain flashing is shipped secured to the right side of the back.
6. Position unit in opening and secure with 5/16 lag bolts; use 7/8-inch diameter flat washers on the lag bolts.
7. Secure rain flashing to wall and caulk across entire length of top. See Figure 3.
8. For additional mounting rigidity, the return air and supply air frames or collars can be drilled and screwed or welded to the structural wall itself (depending upon wall construction). Be sure to observe required clearance if combustible wall.
9. On side by side installations, maintain a minimum of 20-inches clearance on right side to allow access to heat strips and control panel and to allow proper airflow to the outdoor coil. Additional clearance may be required to meet local or national codes.

FIGURE 3
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	28 1/2
REQUIRED DIMENSIONS TO MAINTAIN RECOMMENDED 1" CLEARANCE FROM COMBUSTIBLE MATERIALS	32	12	5 1/2	9/16	28

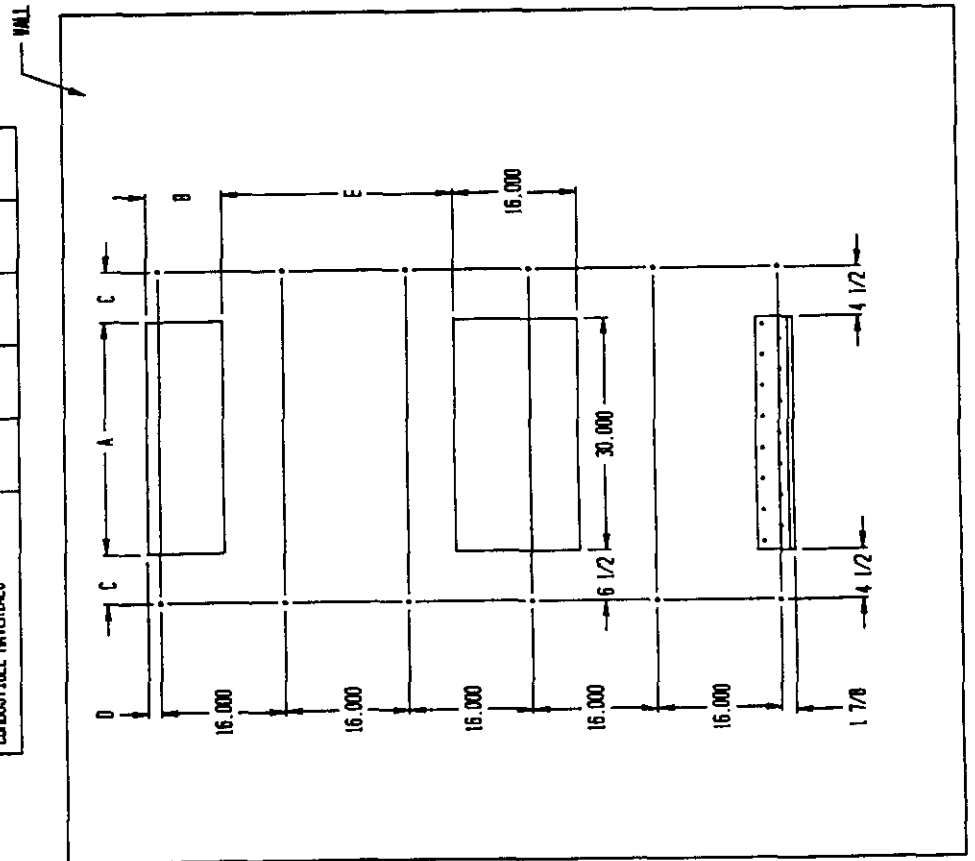
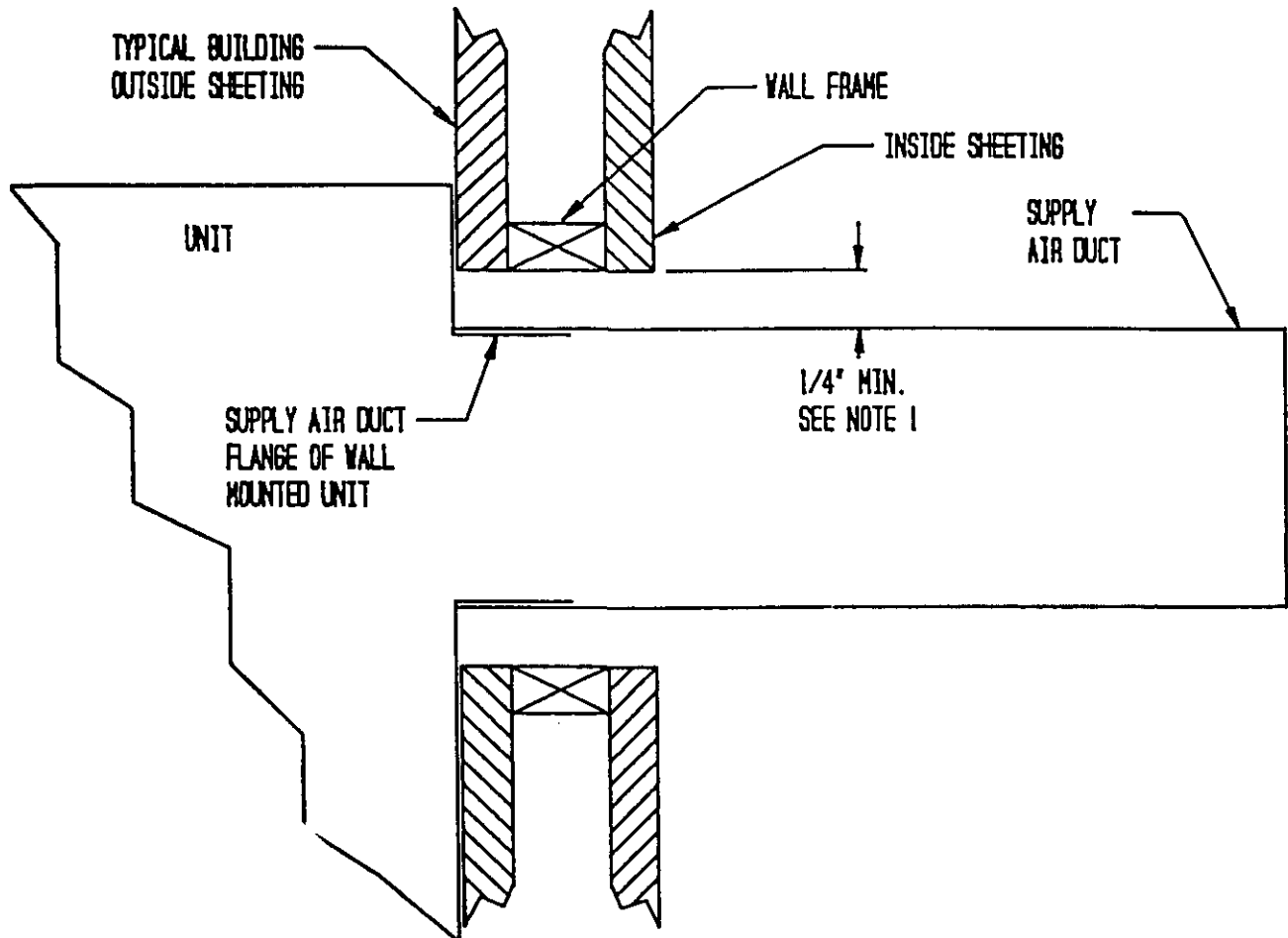


FIGURE 3A
ELECTRIC HEAT CLEARANCE

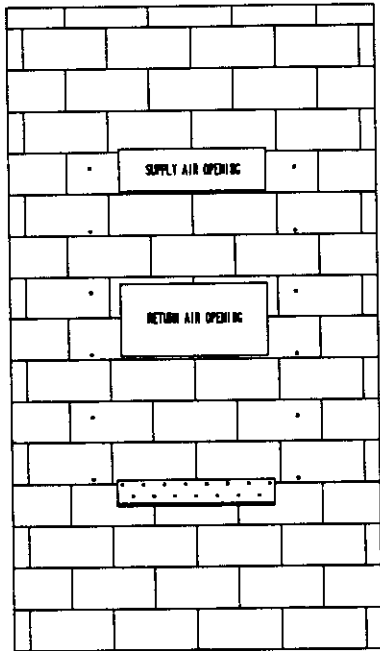


Side section view of supply air duct for wall mounted unit showing 1/4" clearance to combustible surfaces.

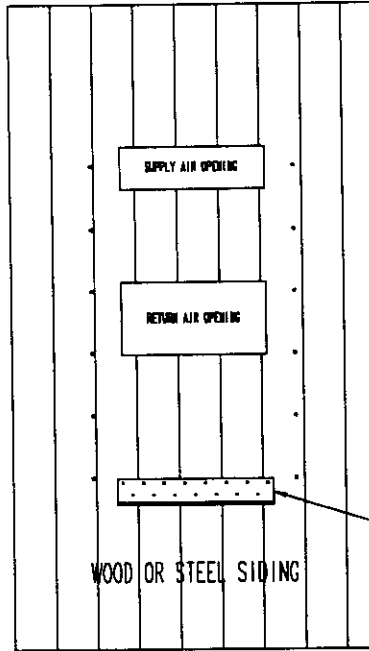
NOTE 1:

WARNING
<p>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.</p> <p>It is important to insure that the 1/4-inch minimum spacing is maintained at all points.</p> <p>Failure to do this could result in overheating the combustible material and may result in a fire.</p>

SEE FIGURE 3 FOR MOUNTING INSTRUCTIONS



CONCRETE BLOCK WALL INSTALLATION



WOOD FRAME WALL INSTALLATION

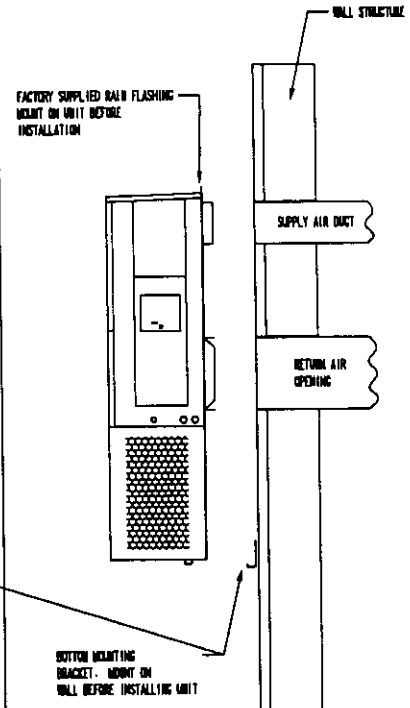


Figure 4 – Wall-Mounting Instructions

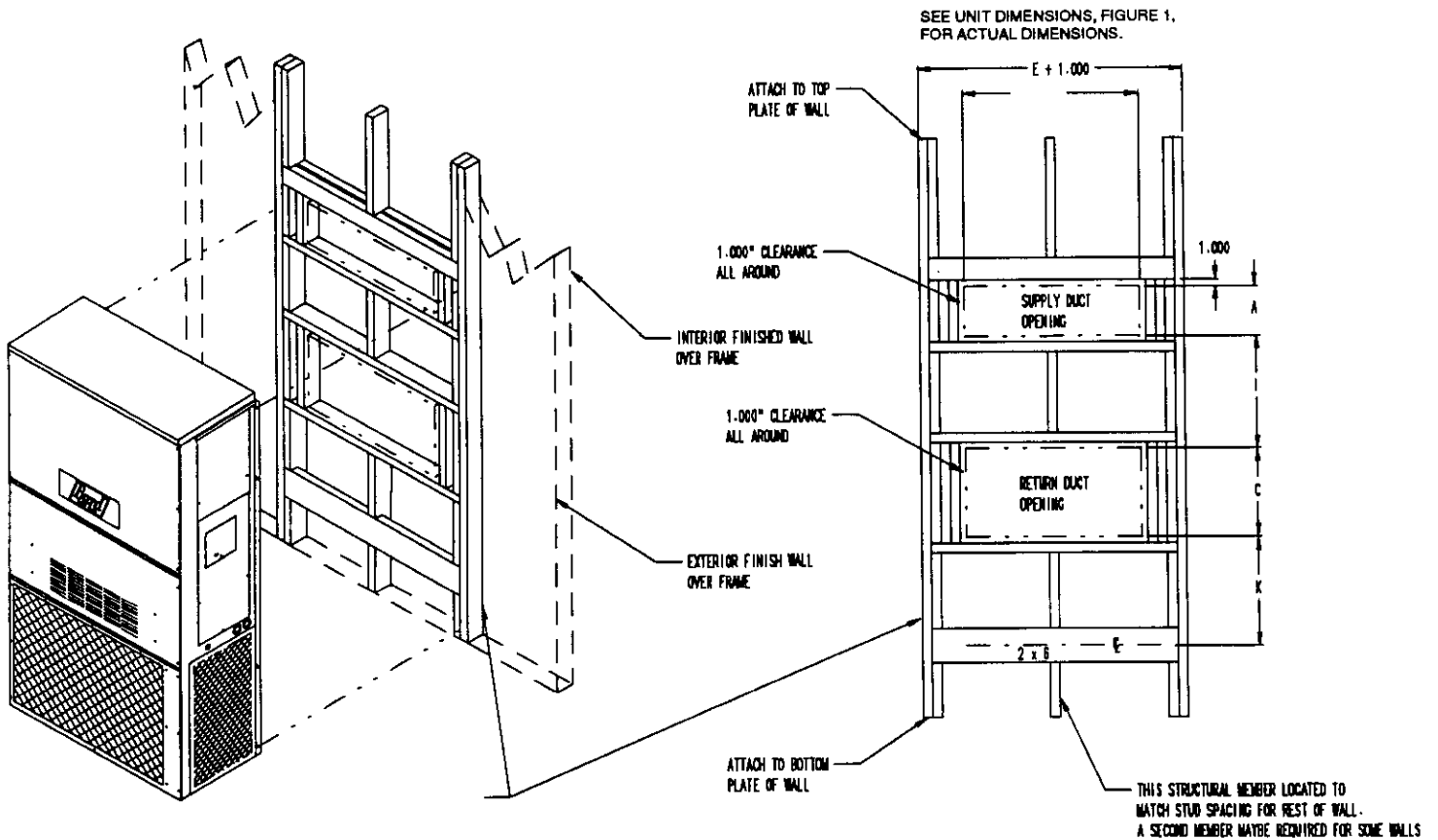
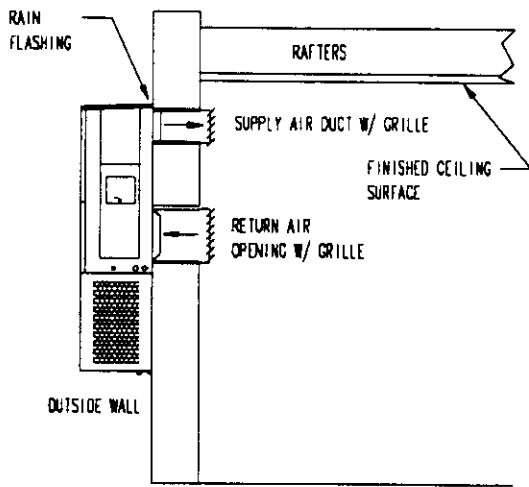
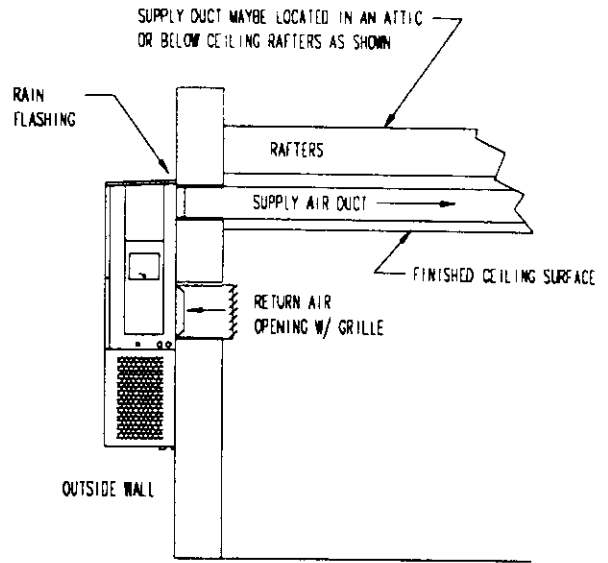


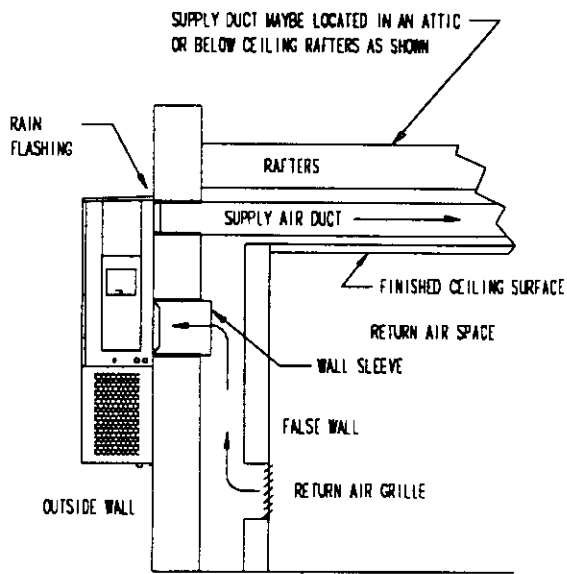
Figure 5 – Wall-Mounting Instructions



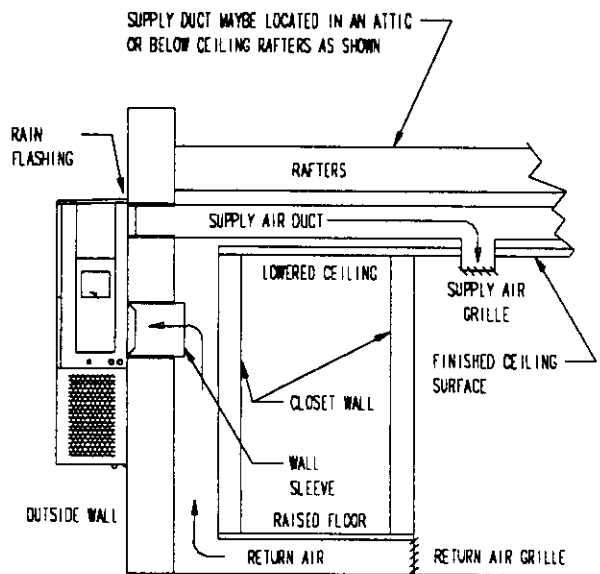
FREE AIR FLOW
NO DUCT



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

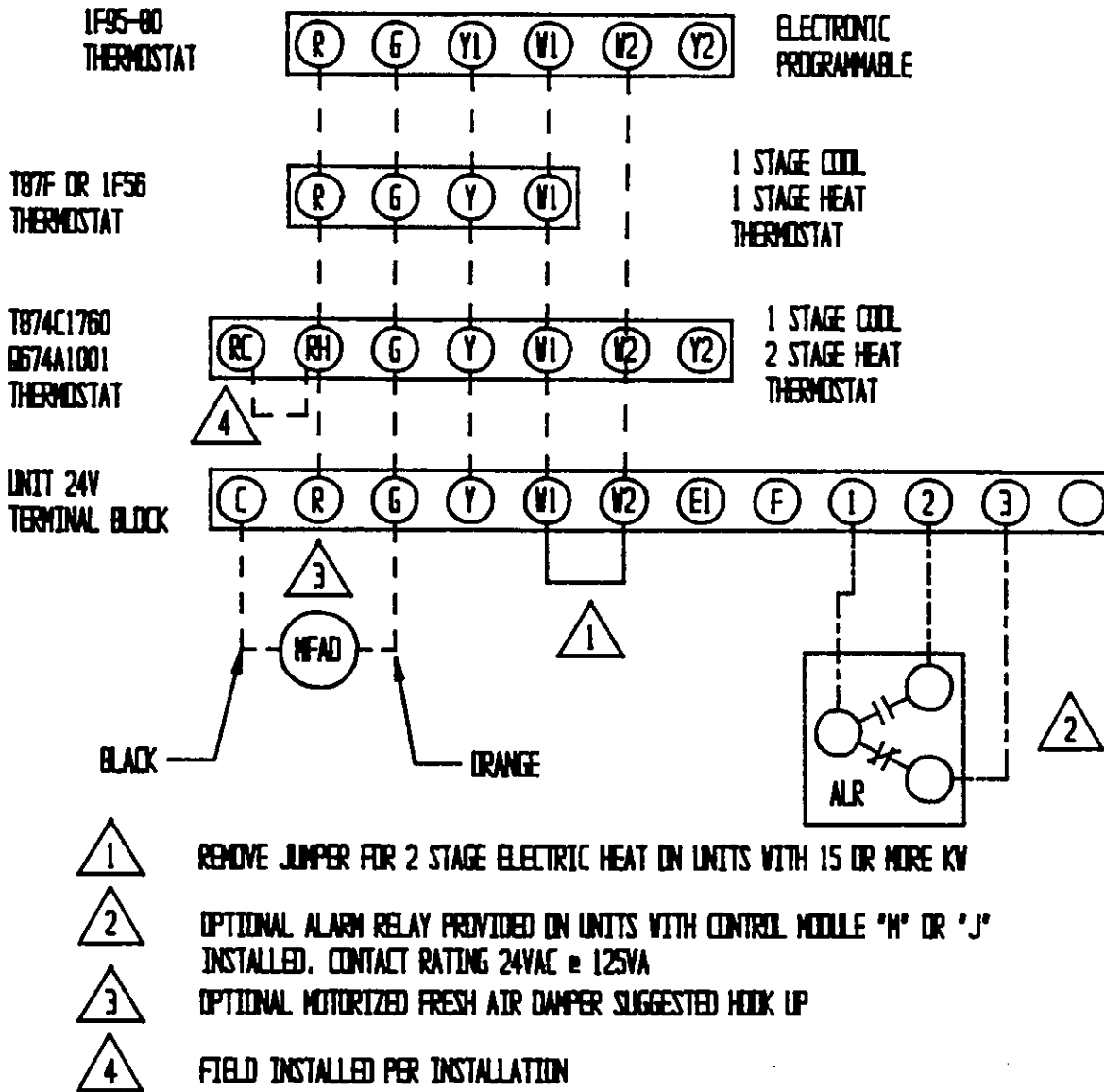
TABLE 3A WALL THERMOSTAT AND SUBBASE COMBINATIONS

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

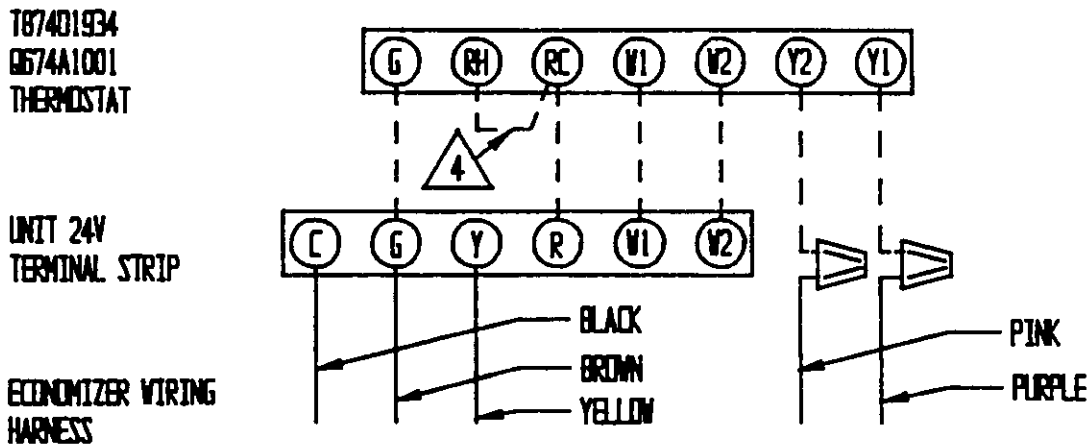
M15310

Figure 7

LOW VOLTAGE WIRING



OPTIONAL ECONOMIZER LOW VOLTAGE WIRING



PART 3 -- START-UP

FIGURE 8

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.

Verification of proper rotation must be made at the time the equipment is put into service. If improper rotation is corrected at this time there will be no negative impact on the durability of the compressor. However, reverse operation for over one hour may have a negative impact on the bearing due to oil pump out.

NOTE: If compressor is allowed to run in reverse rotation for several minutes, the compressor's internal protector will trip.

All three phase 2R3 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 9

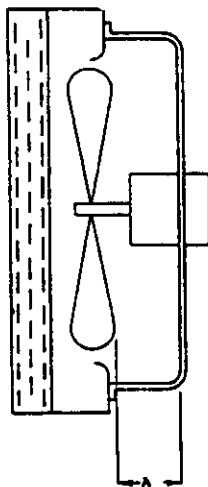


TABLE 4

Model	Dimension A
WA421	1.75
WA482	
WA602	

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 H ₂ O	WA421, WA482		WA602	
	Lo 230V Dry/Wet Coil	Hi 230V Dry/Wet Coil	Lo 230V Dry/Wet Coil	Hi 230V 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

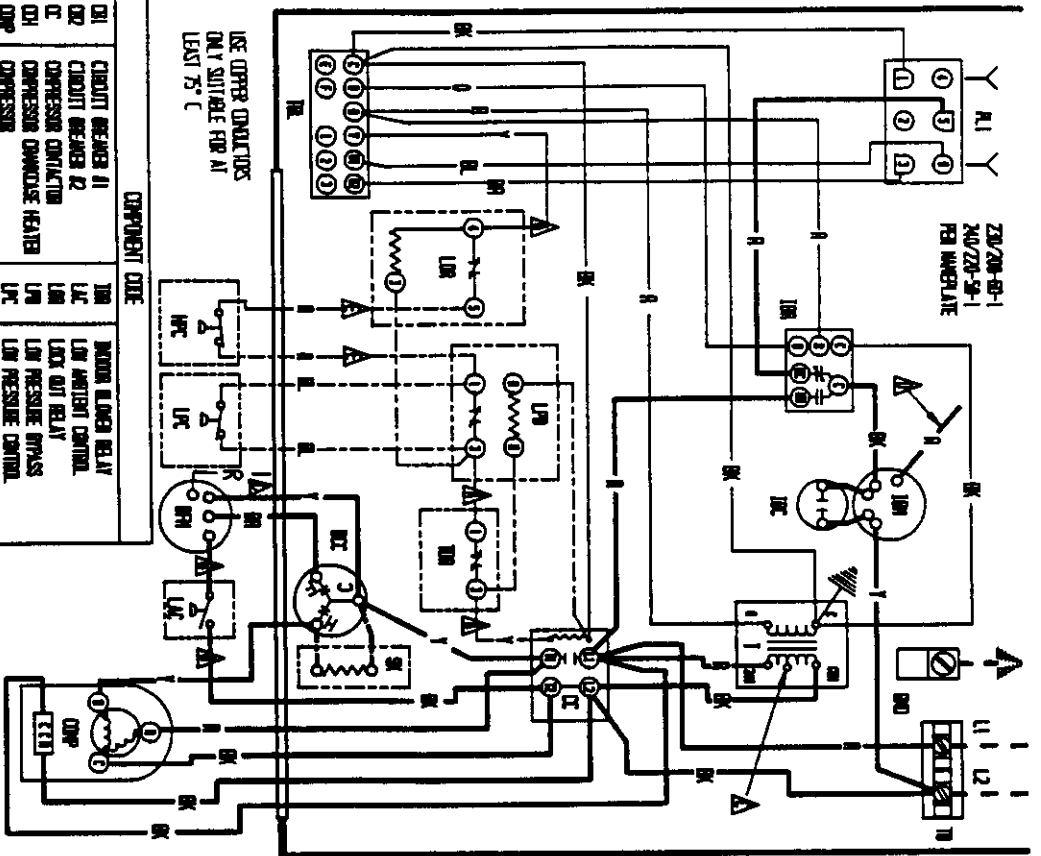
Low side pressure \pm 2 PSIG
High side pressure \pm 5 PSIG

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

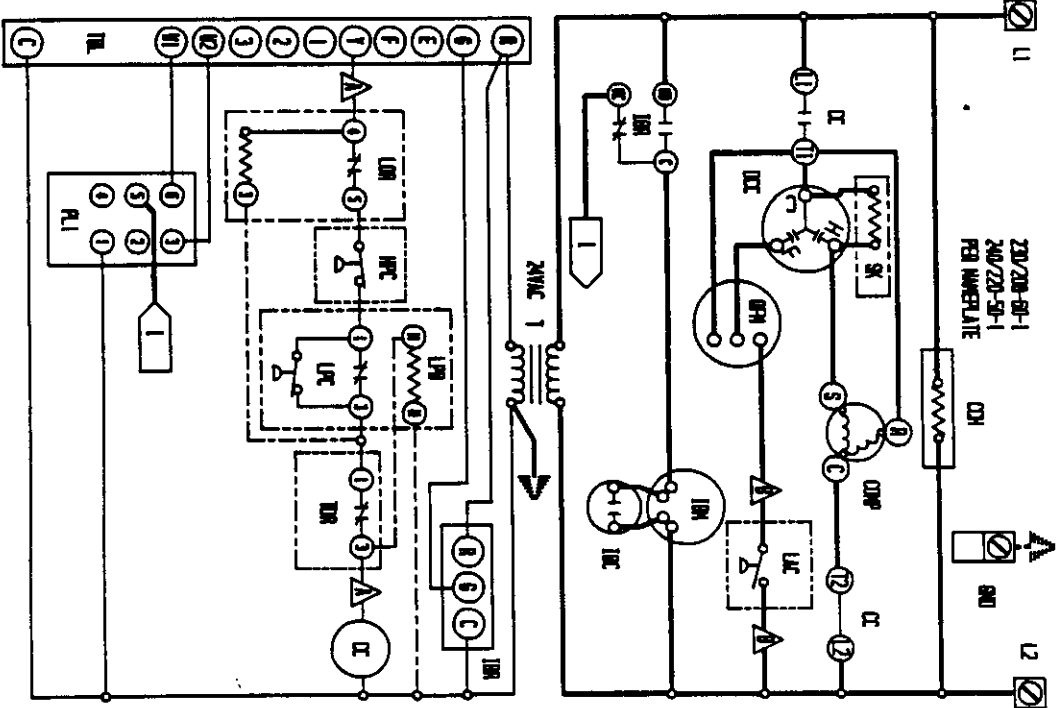
OPTIONAL ACCESSORIES

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
EHWA05-A05	Heater Packages	X			X			X		
EHWA05-A08	Heater Packages	X			X			X		
EHWA05-A10	Heater Packages	X			X			X		
EHWA05-A15	Heater Packages	X			X			X		
EHWA05-B09	Heater Packages		X			X			X	
EHWA05-B15	Heater Packages		X			X			X	
EHWA05-B18	Heater Packages		X			X			X	
EHWC05-C05	Heater Packages			X			X			X
EHWA05-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
EIFM-5	Economizer With Exhaust	X	X	X	X	X	X	X	X	X
WERV-ASA	Energy Recovery Ventilator	X	X		X	X		X	X	
WERV-CSA	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 UPPER CONDENSERS
ONLY SUITABLE FOR AT
LEAST 75° F

COMPONENT CODE	
DI	CIRCUIT BREAKER #1
DC	CIRCUIT BREAKER #2
DA	COMPRESSOR CONTACTOR
DP	COMPRESSOR OVERCLOCK HEATER
DM	COMPRESSOR
DN	DUAL CAPACITOR
DO	EXPANSION VALVE
DI	HEAT STRIP #1
DI	HEAT STRIP #2
DI	HEATER CONTACTOR #1
DI	HEATER CONTACTOR #2
DI	HIGH PRESSURE CONTROL
DI	INDOOR FAN MOTOR
DI	INDOOR FAN RELAY
DI	LOW AMBIENT CONTROL
DI	LOCK OUT RELAY
DI	LOW PRESSURE SWITCH
DI	LOW PRESSURE CONTROL
DI	UNIT SWITCH
DI	AUTODOOR FAN MOTOR
DI	AUS #1
DI	AUS #2
DI	START DT
DI	TEMPERATURE
DI	TEMPERATURE BLOCK
DI	LOW VOLTAGE TEMPERATURE BLOCK
DI	BEHALF DRIVE
DI	THE RELAY RELAY



RED (RD) BLACK (BK)
WHERE APPLICABLE

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

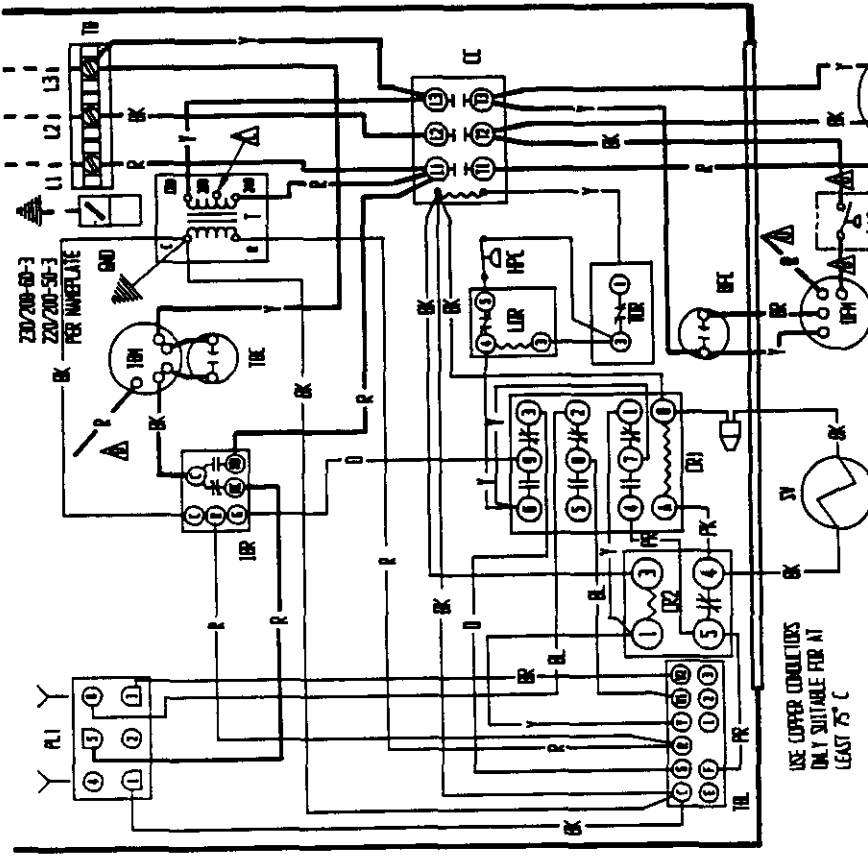
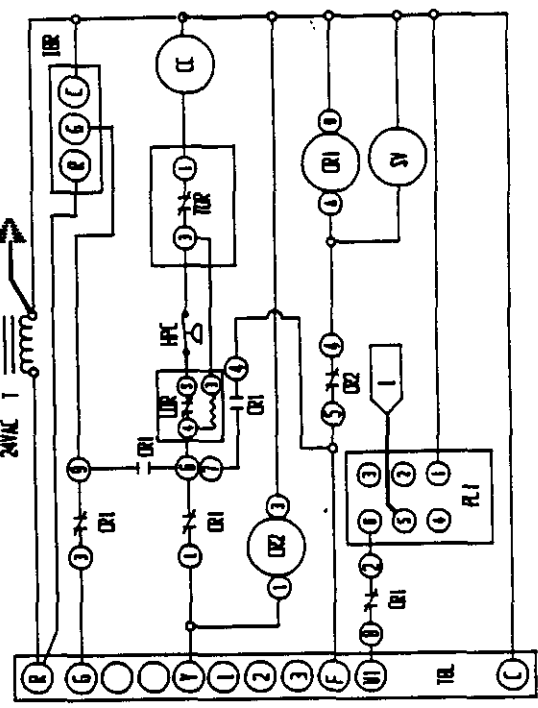
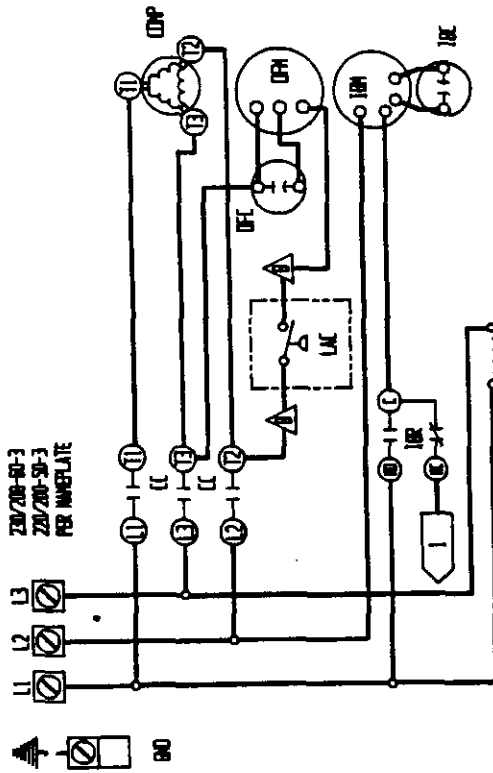
▲ LABELLED WIRES CONNECT IF NO OPTIONS USED

OPTION	FIELD	FACTORY NO.
---	---	---
---	---	---
---	---	---

COLOR CODE	
1	BLACK
2	BROWN
3	RED
4	ORANGE
5	YELLOW
6	GREEN
7	BLUE
8	RED (IN)
9	ORANGE
10	WHITE
11	VIOLET
12	PURPLE
13	PINK
14	GRAY
15	SLATE
16	BLACK
17	PINK
18	PINK
19	PINK
20	PINK
21	PINK

BARB NTC. CO.

IND: 4055-110 C
IND: C28
DN: WTR



USE UPPER CONDUCTORS ONLY SUITABLE FOR AT LEAST 75°C

COMPONENT CODE	DESCRIPTION
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CCMP	COMPRESSOR
CR1	CONTROL RELAY 1
CR2	CONTROL RELAY 2
DCC	DUAL CAPACITOR
EGND	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
IBC	INDOOR BLOWER CAPACITOR
IBM	INDOOR BLOWER MOTOR
IBR	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOR	LOCKOUT RELAY
LS	LIMIT SWITCH
OFM	OUTDOOR FAN MOTOR
PL1	PLUG #1
PL2	PLUG #2
TR	TRANSFORMER
TRBLK	TERMINAL BLOCK
TV	LOW VOLTAGE TERMINAL BLOCK
TRHP	TRIP POINT
TRR	TRIP RELAY

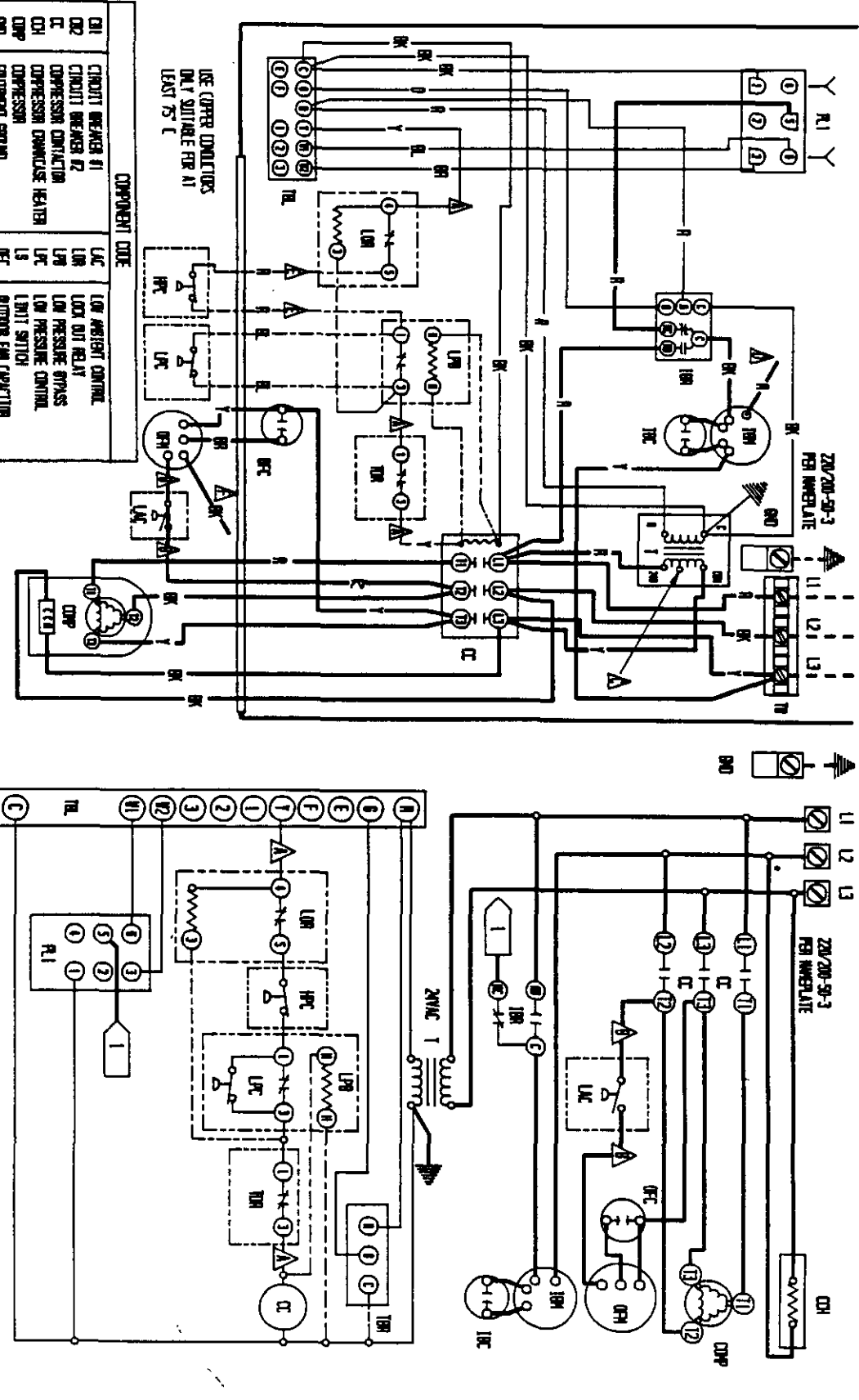
LABELLED WIRES CONNECT IF NO OPTIONS USED.

NOTE RED WIRE TO 200V TAP FOR 200V OPERATION

RED (LOW) BLACK (HIGH) WERE APPLICABLE

WIRE COLOR	WIRE COLOR	WIRE COLOR	WIRE COLOR
BLACK	YELLOW	VIOLET	TAN
BROWN	GREEN	PURPLE	PINK
RED	BLUE	GRAY	LAVENDER
ORANGE	WHITE (S)	SLATE	

BARCO MFG. CO.
 DWG. 4085-220 A
 DRN.
 CR./MFR.

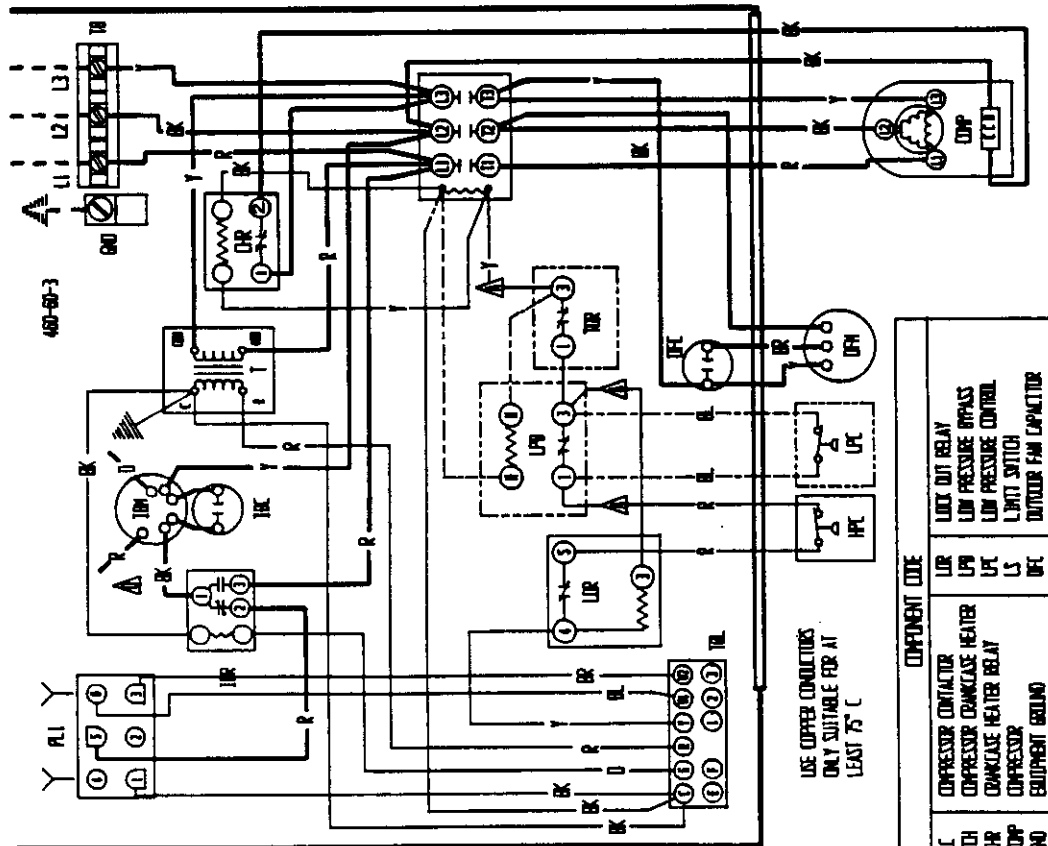
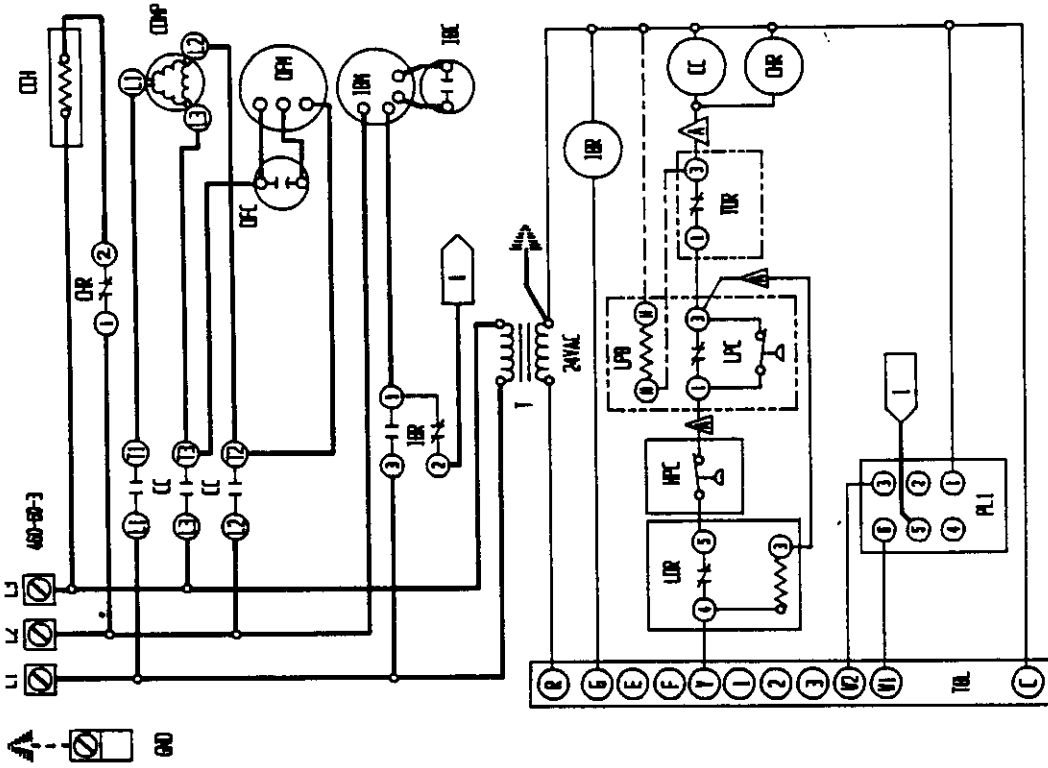


COMPONENT CODE	COMPONENT DESCRIPTION
LAC	LOW AMBIENT CONTROL
LOR	LOCK OUT RELAY
LPR	LOW PRESSURE BYPASS
LPH	LOW PRESSURE CONTROL
LPT	LIMIT SWITCH
LPM	OUTDOOR FAN CAPACTTOR
LPS	FUSE #1
LPU	START KIT
LSS	THRESHOLDER
LST	TEMPORAL BLOCK
LSO	TEMPORAL BLOCK
LSP	TEMPORAL OFF
LTS	TEMPORAL OFF
LTH	THE DELAY RELAY
LTI	THE DELAY RELAY
LTO	THE DELAY RELAY
LTR	THE DELAY RELAY
LTN	THE DELAY RELAY

WIRE VALUE	FUNCTION	FIELD	OPTIONAL
BLK	BLACK	1	1
BRN	BROWN	2	2
RED	RED	3	3
ORNG	ORANGE	4	4
GRN	GREEN	5	5
BLU	BLUE	6	6
WHT	WHITE	7	7
YEL	YELLOW	8	8
PUR	PURPLE	9	9
PNK	PINK	10	10
GRY	GRAY	11	11
SLT	SLATE	12	12
---	---	13	13

▲▲▲ LABELS WIRE CONNECT IF NO OPTIONS USED.
▲▲▲ LABELS WIRE TO 200V PER INVERTER. ▲ USE APPLICABLE FOR 200V OPERATION.
▲ (BLACK) HIGH SPEED TAP NOT TO BE USED ON SDR MODELS.

BARD INC. CO.
ONE 405-214 A
DAY
OH/A/P/1



USE COPPER CONDUCTORS
ONLY SUITABLE FOR AT
LEAST 75° C

COMPONENT CODE	COMPONENT CODE
UR	LOCK OUT RELAY
UC	COMPRESSOR CONTACTOR
UR	COMPRESSOR OVERLOAD HEATER
UR	COMPRESSOR HEATER RELAY
UR	COMPRESSOR
UR	EQUIPMENT GROUND
UR	HEAT STRIP #1
UR	HEAT STRIP #2
UR	HEATER CONTACTOR #1
UR	HEATER CONTACTOR #2
UR	HIGH PRESSURE CONTROL
UR	INDOOR BLOWER CAPACITOR
UR	INDOOR BLOWER MOTOR
UR	INDOOR BLOWER RELAY
UR	LOW PRESSURE BYPASS
UR	LOW PRESSURE CONTROL
UR	LOW PRESSURE RELAY
UR	LIMIT SWITCH
UR	OUTDOOR FAN CAPACITOR
UR	OUTDOOR FAN MOTOR
UR	PULL DISCONNECT
UR	PLUG #1
UR	TRANSFORMER
UR	TERMINAL BLOCK
UR	LOW VOLTAGE TERMINAL BLOCK
UR	THERMAL CUTOFF
UR	THERMAL DELAY RELAY

▲ Labeled wires connect if no options used.

▲ For low speed connect black and orange wires together and isolate. Connect red wire to terminal 1 of IR.

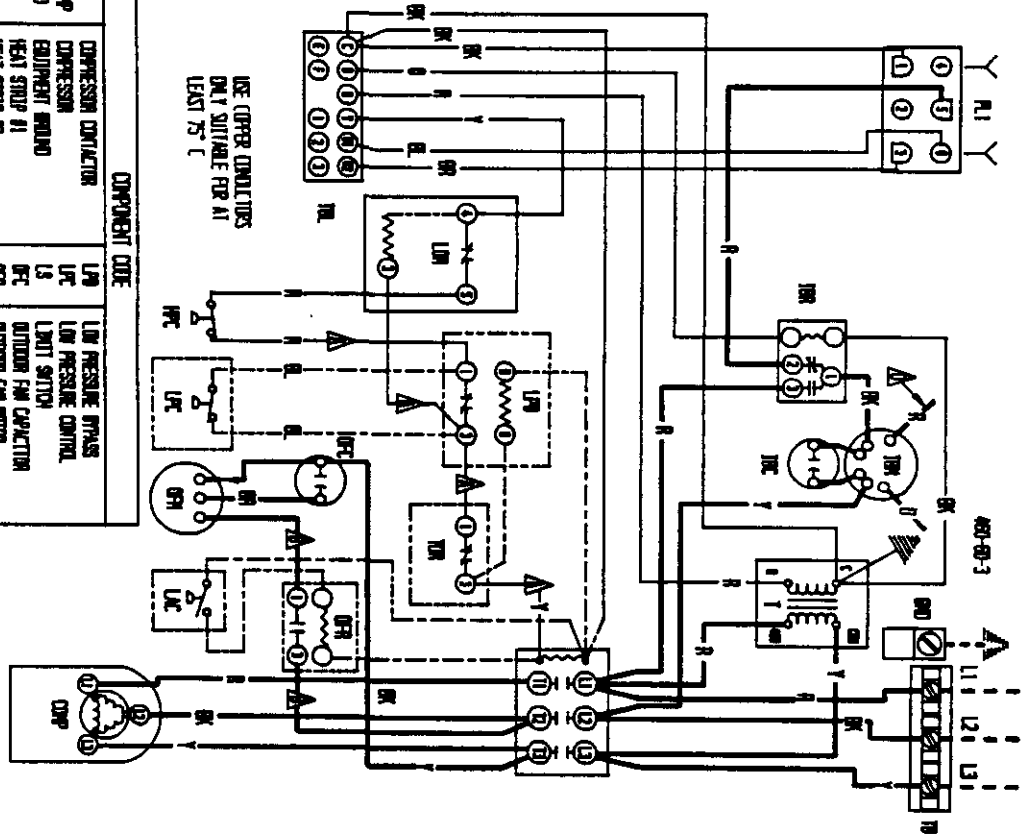
FACTORY TO:	FELD	OPTIONAL
HIGH VOLTAGE	---	---
LOW VOLTAGE	---	---
NECESSARY	---	---

COLOR CODE		
BK	BLACK	T
BR	BROWN	V
R	RED	(R)
O	ORANGE	GY
BL	BLUE	SL
W	WHITE	(S)
Y	YELLOW	---
G	GREEN	---
B	BLUE	---
P	PINK	---
L	LAVENDER	---
PK	PINK	---
SL	SLATE	---
---	---	---
---	---	---
---	---	---

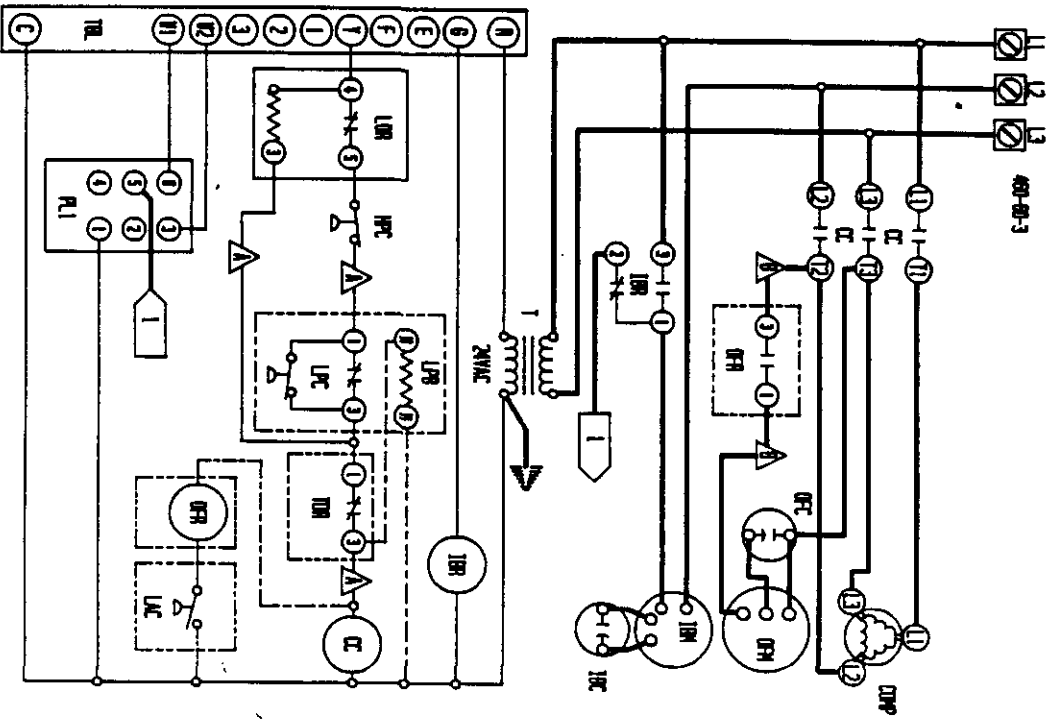
BARB WPC. CO.

DES.	CON.	CHK.	APPR.
400S-313 C	CEB	CEB	

417 2



COMPONENT CODE	COMPONENT CODE	COMPONENT CODE
C1	COMPRESSOR CONTACTOR	LOW PRESSURE OFFPASS
800	EQUIPMENT MOUNT	LOW PRESSURE CONTROL
N1	HEAT SHUT/ P1	LIMIT SWITCH
N2	HEAT SHUT/ P2	OUTDOOR FAN CAPACTOR
N1	HEATER CONTACTOR P1	OUTDOOR FAN MOTOR
N2	HEATER CONTACTOR P2	OUTDOOR FAN RELAY
N1	HIGH PRESSURE CONTROL	ALL DISCONNECT
N2	HIGH PRESSURE CONTROL	ALIS #1
N1	INDOOR BLOWER MOTOR	TRANSFORMER
N2	INDOOR BLOWER MOTOR	TEMPERATURE BLOCK
N1	INDOOR BLOWER RELAY	LOW VALUE TEMPORAL BLOCK
N2	INDOOR BLOWER RELAY	TEMPERATURE OFFSET
N1	LOW AMBIENT CONTROL	THE DELAY RELAY
N2	LOW AMBIENT CONTROL	
N1	LOCK OUT RELAY	
N2	LOCK OUT RELAY	



Labels other connect if no options used.

FOR LOW SPEED CONNECT BLACK AND BROWN WIRES TOGETHER

FOR HIGH SPEED CONNECT BLACK AND BROWN WIRES TOGETHER

AND ISOLATE. CONNECT RED WIRE TO TERMINAL 1 OF 1BR.

COLOR CODE	OPTIONAL
BLACK	FACTORY FR.
BROWN	FIELD
RED	OPTIONAL
ORANGE	OPTIONAL
1	OPTIONAL
2	OPTIONAL
3	OPTIONAL
4	OPTIONAL
5	OPTIONAL
6	OPTIONAL
7	OPTIONAL
8	OPTIONAL
9	OPTIONAL
10	OPTIONAL
11	OPTIONAL

COLOR CODE	OPTIONAL
YELLOW	OPTIONAL
GREEN	OPTIONAL
BLUE	OPTIONAL
ORANGE	OPTIONAL
RED	OPTIONAL
WHITE	OPTIONAL
1	OPTIONAL
2	OPTIONAL
3	OPTIONAL
4	OPTIONAL
5	OPTIONAL
6	OPTIONAL
7	OPTIONAL
8	OPTIONAL
9	OPTIONAL
10	OPTIONAL
11	OPTIONAL

OPTIONAL	OPTIONAL
1	OPTIONAL
2	OPTIONAL
3	OPTIONAL
4	OPTIONAL
5	OPTIONAL
6	OPTIONAL
7	OPTIONAL
8	OPTIONAL
9	OPTIONAL
10	OPTIONAL
11	OPTIONAL

BAIRD MPC. CO.

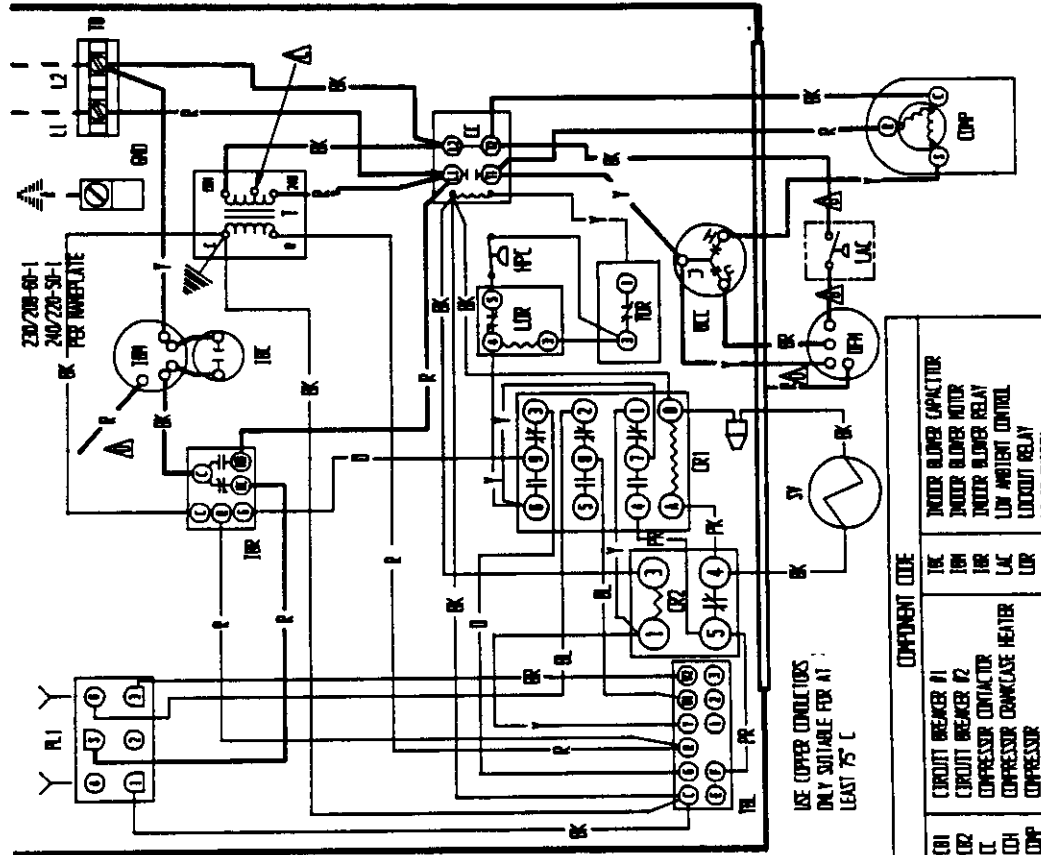
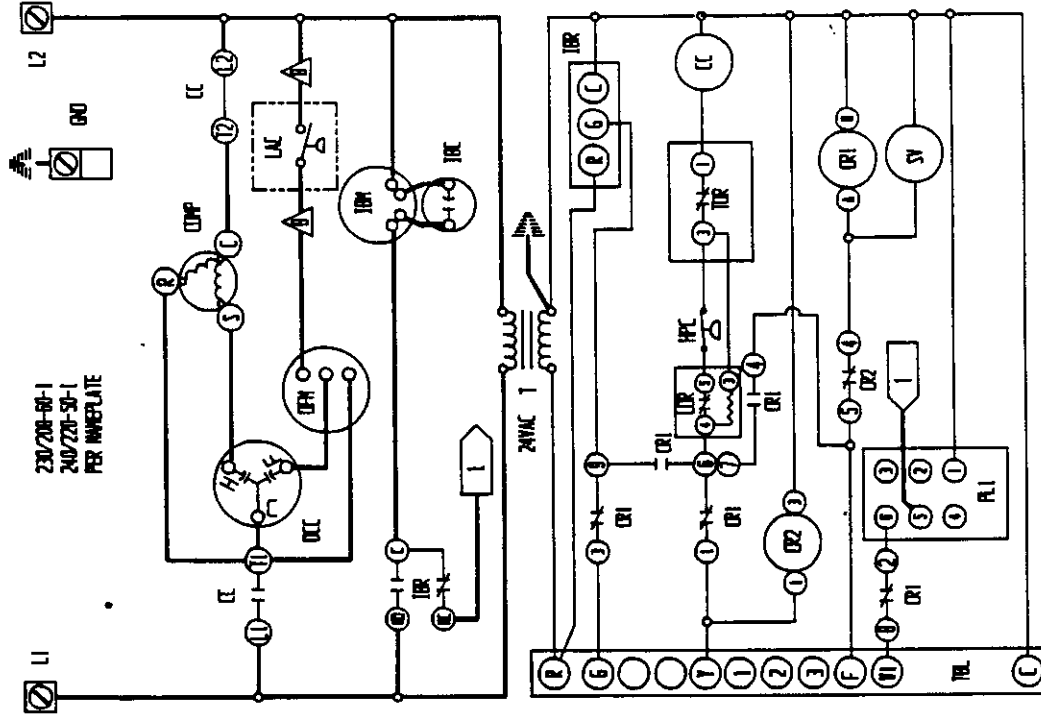
MODEL: 4055-312 B

DATE: 08/01

REV: 001

DATE: 08/01

REV: 001



USE UPPER CONDUCTORS
ONLY SUITABLE FOR AT
LEAST 75 °C

COMPONENT CODE	COMPONENT CODE	COMPONENT CODE	
CB1	CIRCUIT BREAKER #1	TRC	TRIPER BLOWER CAPACITOR
CB2	CIRCUIT BREAKER #2	TRH	TRIPER BLOWER MOTOR
CC	COMPRESSOR CONTACTOR	TRR	TRIPER BLOWER RELAY
CD1	COMPRESSOR CRANKCASE HEATER	LAC	LOW AMBIENT CONTROL
CDP	COMPRESSOR	LUR	LOW VIBRATION RELAY
CR1	CONTROL RELAY 1	LTR	LIGHT SWITCH
CR2	CONTROL RELAY 2	LS	OUTDOOR FAN MOTOR
CND	DUAL CAPACITOR	R1	PLUS #1
RI	EQUIPMENT GROUND	SV	SOLENOID VALVE
R2	HEAT STRIP #1	TR	TRANSFORMER
R11	HEAT STRIP #2	TRB	TERMINAL BLOCK
R12	HEATER CONTACTOR #1	TRC	LOW VOLTAGE TERMINAL BLOCK
R22	HEATER CONTACTOR #2	TRD	THERMAL CUTOFF
RFC	HIGH PRESSURE CONTROL	TRR	TIME DELAY RELAY

▲ LABELLED WIRES CONNECT IF NO OPTIONS USED.

▲ NONE RED WIRE TO 208V TAP FOR 208V OPERATION

▲ RED (LOW) BLACK (HIGH) WIRE APPLICABLE

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

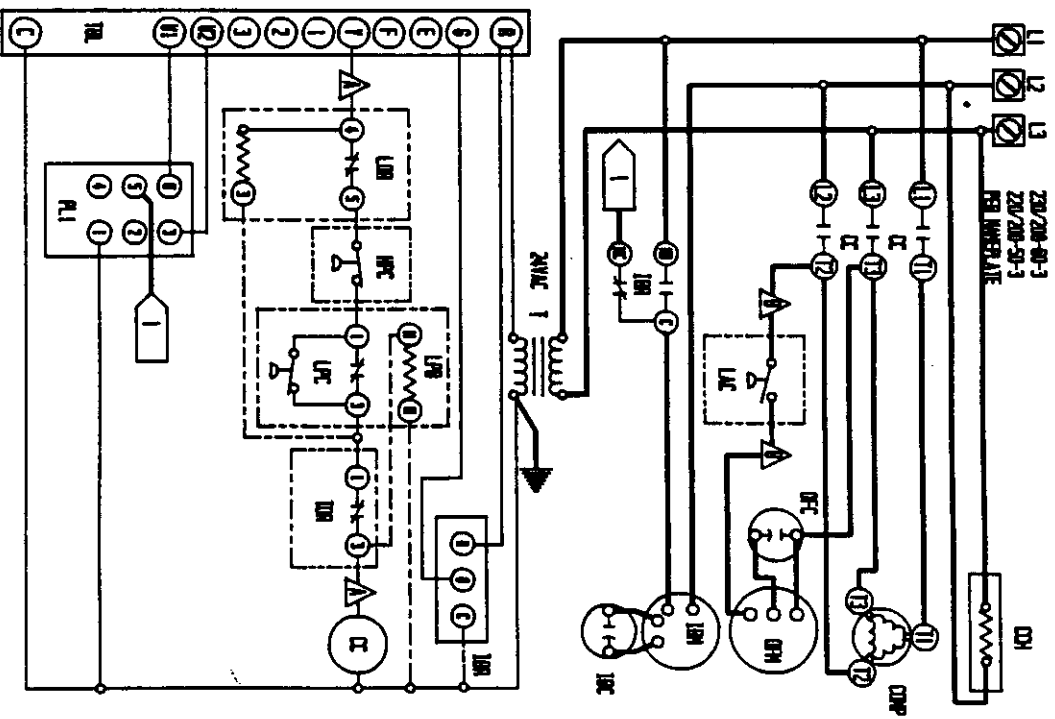
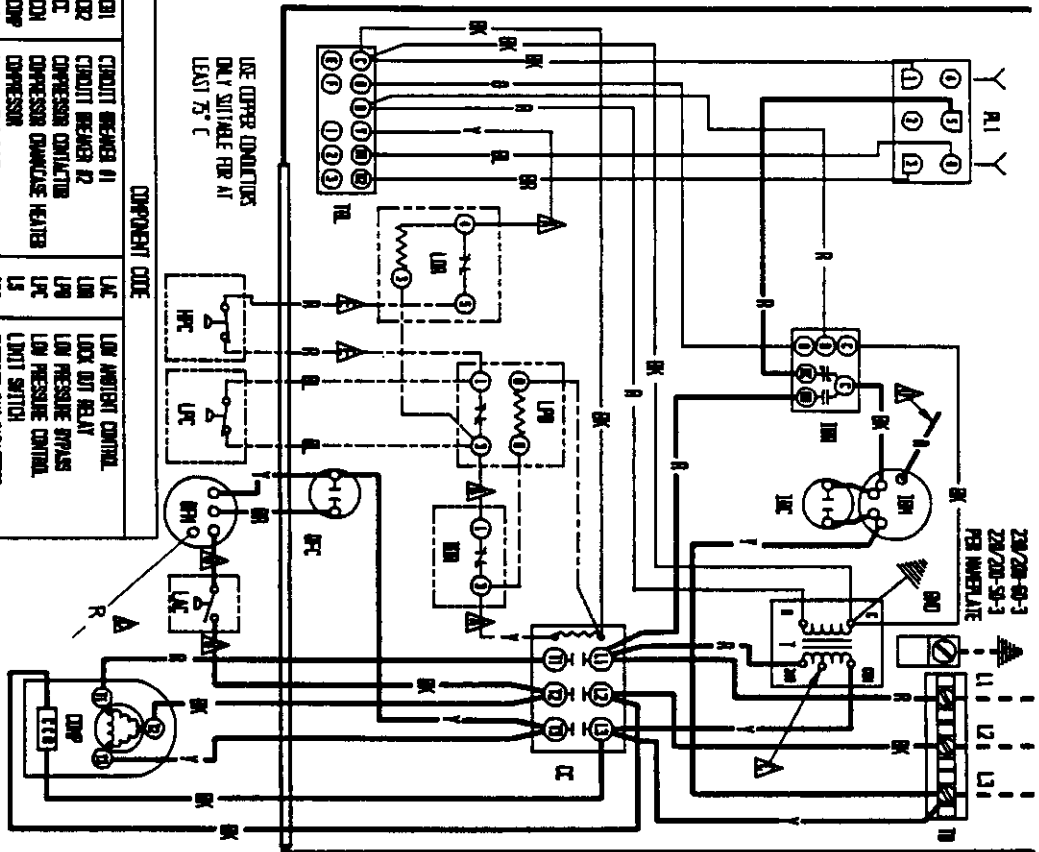
BLACK	YELLOW	VIOLET	TAN
BR	GRN (PR)	PLR	PK
PK	BL	GRY	LAV
OR	WH	SLT	

RED	GREEN	PURPLE	PINK
OR	GR	PL	PK
OR	BL	GRY	LAV
OR	WH	SLT	

RED (LOW) BLACK (HIGH) WIRE APPLICABLE

BAIRD MFG. CO.

ENG.	4085-121 A
DRN.	
CHK./APP.	



USE UPPER INDUCTION ONLY SUITABLE FOR AT LEAST 75 °C

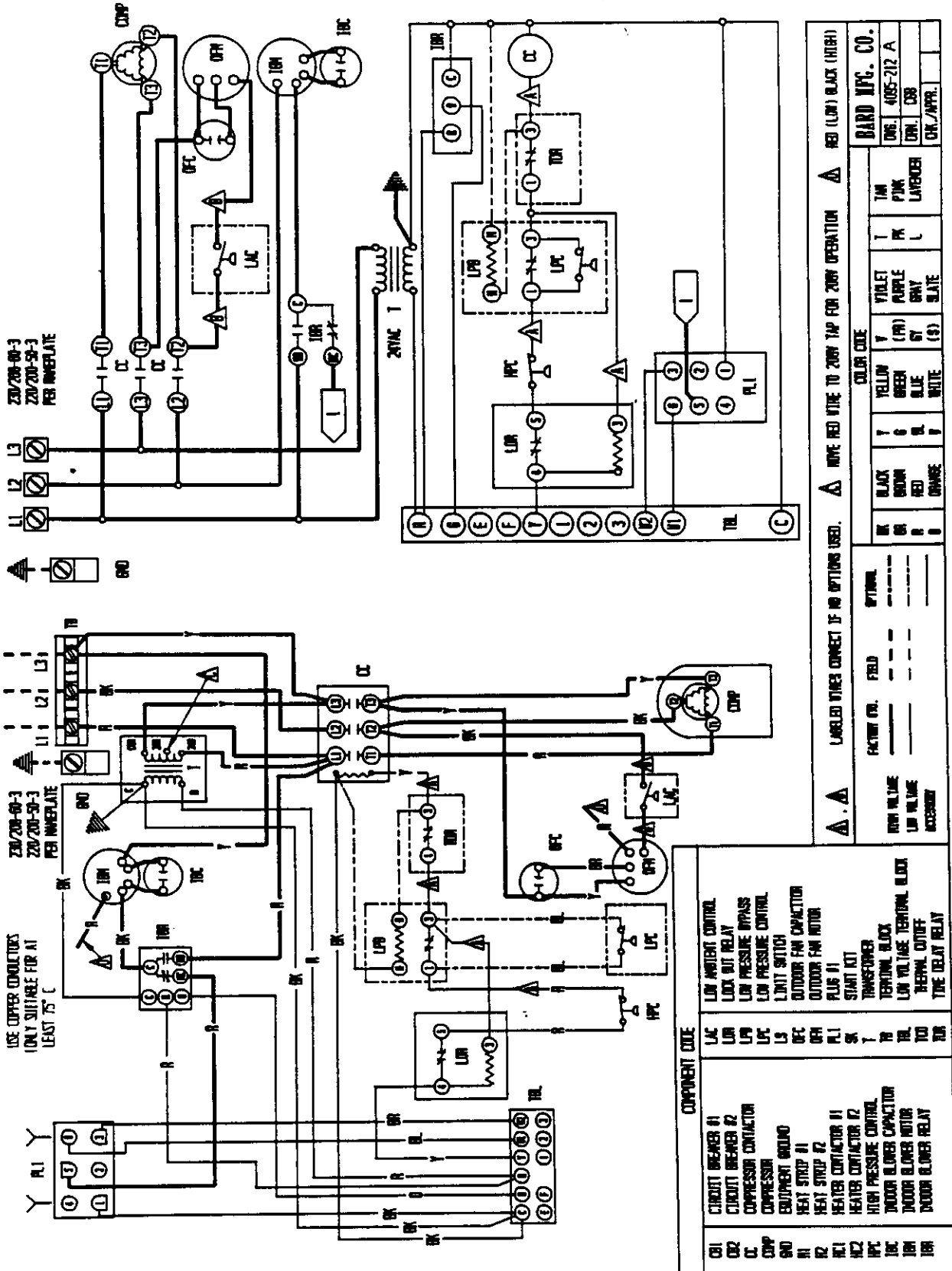
COMPONENT CODE	
CH	CIRCUIT BREAKER #1
CH	CIRCUIT BREAKER #2
CH	COMPRESSOR CONTACTOR
CH	COMPRESSOR CONTACTOR HEATER
CH	COMPRESSOR
CH	EQUIPMENT GROUND
CH	HEAT STRIP #1
CH	HEAT STRIP #2
CH	HEATER CONTACTOR #1
CH	HEATER CONTACTOR #2
CH	HIGH PRESSURE CONTROL
CH	INDOOR BLADES MOTOR
CH	INDOOR BLADES RELAY
LHC	LOW AMBIENT CONTROL
LHC	LOCK OUT RELAY
LFC	LOW PRESSURE SW/AS
LFC	LOW PRESSURE CONTROL
LFC	LIMIT SWITCH
LFC	INDOOR FAN CAPACITOR
LFC	INDOOR FAN MOTOR
LFC	FLUE #1
LFC	START KIT
LFC	TEMPERATURE BLOCK
LFC	LOW VOLTAGE TEMPERATURE BLOCK
LFC	TEMPERATURE BLOCK
LFC	THE RELAY RELAY

▲ ▲ ▲ LABELLED WIRE CONNECT IF NO OPTIONS USED. ▲ NONE RED WIRE TO 200V TAP FOR 200V OPERATION. ▲ RED W/OUT BLACK (W/OUT) WHERE APPLICABLE.

FACTORY WIRE	FIELD	OPTIONAL
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13

WIRE COLOR		WIRE COLOR		WIRE COLOR	
RED	RED	YELLOW	YELLOW	WHITE	WHITE
BLACK	BLACK	GREEN	GREEN	BLUE	BLUE
BROWN	BROWN	BLUE	BLUE	ORANGE	ORANGE
RED	RED	WHITE	WHITE	WHITE	WHITE
ORANGE	ORANGE	WHITE	WHITE	WHITE	WHITE

BARD MFC. CO.	
DATE	4/85-210 D
REV.	CSB
CHK.	CSB
APP.	CSB



200/200-00-3
200/200-50-3
PER MANUFACTURER

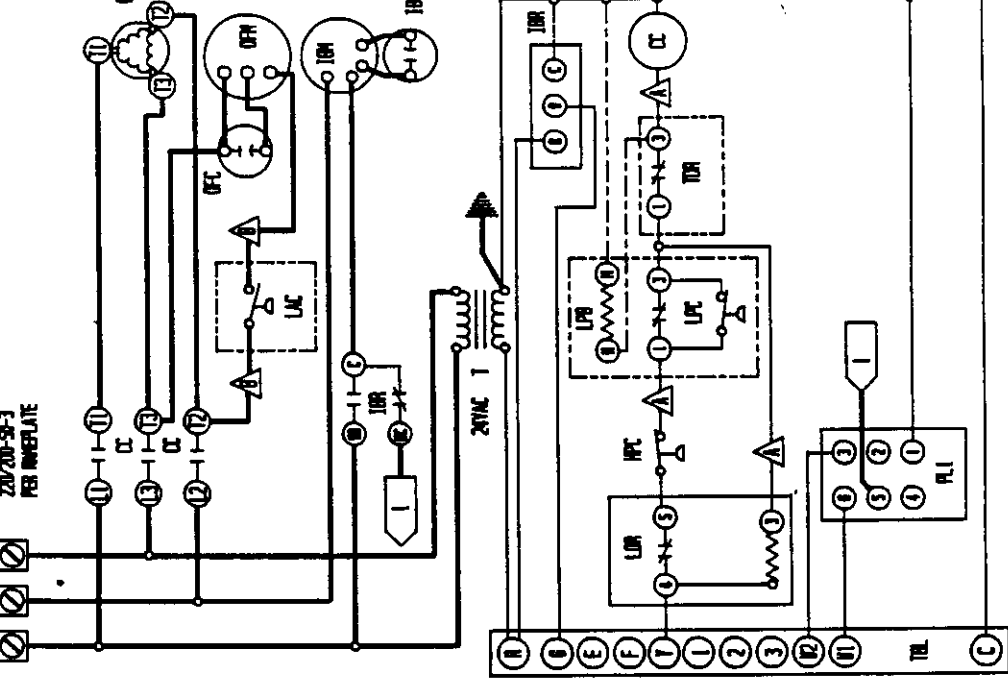
L3
L2
L1

200/200-00-3
200/200-50-3
PER MANUFACTURER

L3
L2
L1

USE COPPER CONDUCTORS
ONLY SUITABLE FOR AT
LEAST 75° C

COMP
IBL
OBL
HCR
HCR2
HCR3
HPL
LPL
LPR
LPS
LUC
LUC2
LUC3
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LUC5
LUC6
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LUC100

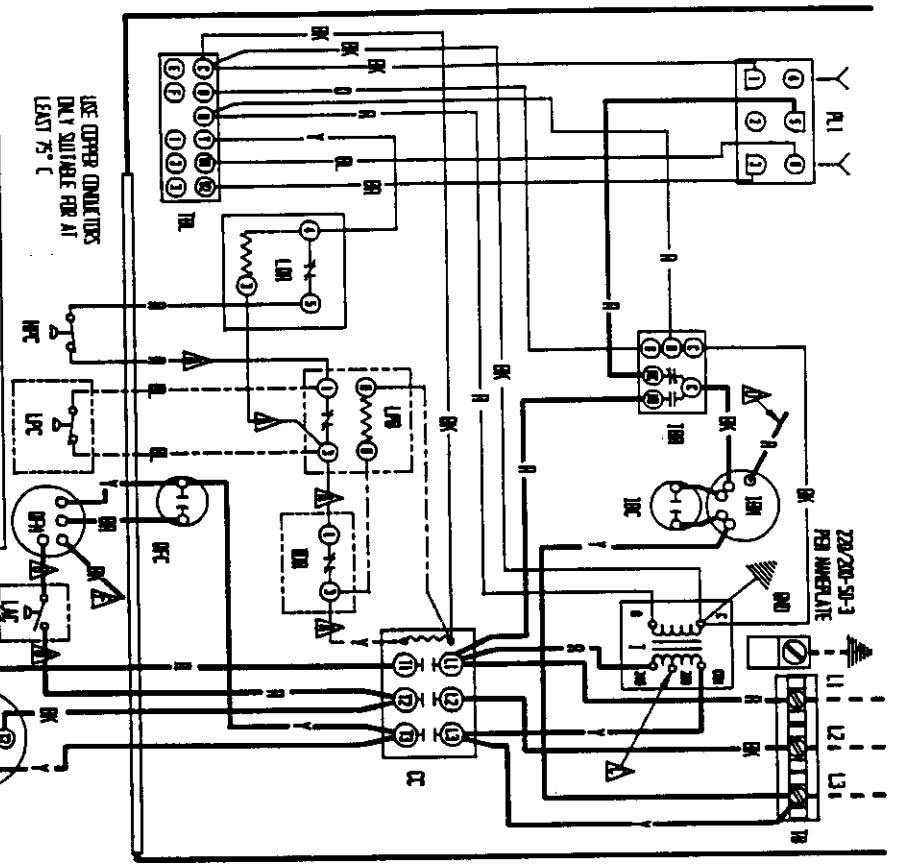


COMPONENT CODE	
C01	CIRCUIT BREAKER #1
C02	CIRCUIT BREAKER #2
CL	COMPRESSOR
COMP	COMPRESSOR
END	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H3	HEATER CONTRACTOR #1
H4	HEATER CONTRACTOR #2
H5	HIGH PRESSURE CONTROL
H6	INDOOR BLOWER CAPACITOR
H7	INDOOR BLOWER MOTOR
H8	INDOOR BLOWER RELAY
H9	LOW AMBIENT CONTROL
H10	LOCK OUT RELAY
H11	LOW PRESSURE BYPASS
H12	LOW PRESSURE CONTROL
H13	LOW PRESSURE CONTROL
H14	LIMIT SWITCH
H15	OUTDOOR FAN CAPACITOR
H16	OUTDOOR FAN MOTOR
H17	FLUG #1
H18	START KIT
H19	TRANSFORMER
H20	TRIP POINT BLOCK
H21	LOW VOLTAGE TERMINAL BLOCK
H22	LOW VOLTAGE TERMINAL BLOCK
H23	THERMAL CUTOFF
H24	TIME DELAY RELAY

▲ ▲ LABELLED WIRE CONNECT IF NO OPTIONS USED. ▲ WIRE RED WIRE TO 200V TAP FOR 200V OPERATION ▲ RED (LOW) BLACK (HIGH)

FACTORY OPT.		FIELD		OPTIONAL	
IR	BLACK	B	BROWN	Y	YELLOW
OR	BROWN	W	WHITE	GR	GREEN
RY	RED	BL	BLUE	PK	PINK
OR	ORANGE	GR	GRAY	L	LAVENDER
W	WHITE	VL	VIOLET	FM	FAN
B	BLACK	PL	PURPLE	CS	CAPACITOR
Y	YELLOW	SH	SLATE	CS	CAPACITOR
GR	GREEN			CS	CAPACITOR
BL	BLUE			CS	CAPACITOR
BR	BROWN			CS	CAPACITOR
PK	PINK			CS	CAPACITOR
L	LAVENDER			CS	CAPACITOR

BARD MFG. CO.
DWG. 405-212-A
REV. 108
CHK. 108
APP. 108

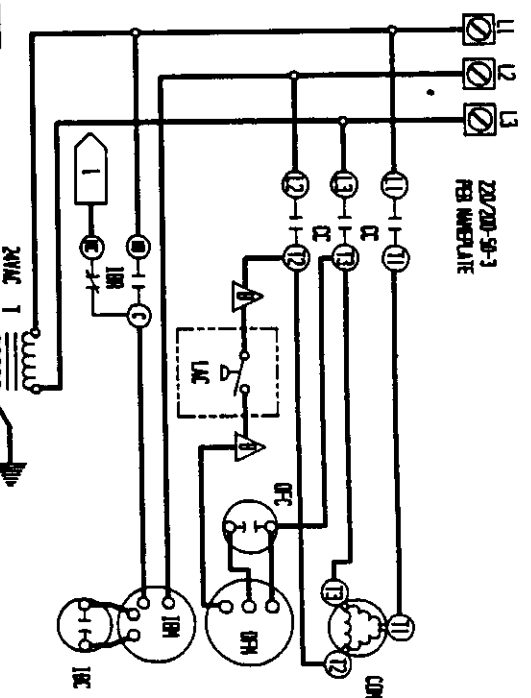
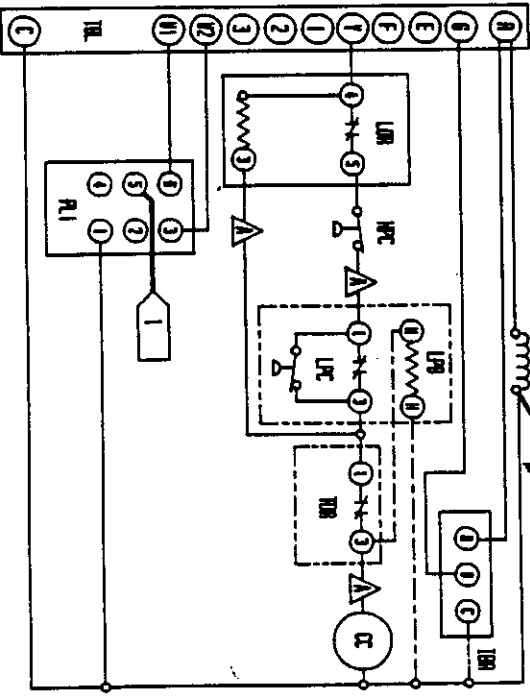


USE OTHER CONDUCTORS
ONLY SUITABLE FOR AT
LEAST 75° C

COMPONENT CODE	DESCRIPTION
001	CIRCUIT BREAKER #1
002	CIRCUIT BREAKER #2
003	COMPRESSOR CONTACTOR
004	COMPRESSOR
005	STARTER
006	HEAT STRIP #1
007	HEAT STRIP #2
008	HEATER CONTACTOR #1
009	HEATER CONTACTOR #2
010	INDOOR BLOWER MOTOR
011	INDOOR BLOWER RELAY
012	INDOOR BLOWER RELAY
013	INDOOR BLOWER RELAY
014	INDOOR BLOWER RELAY
015	INDOOR BLOWER RELAY
016	INDOOR BLOWER RELAY
017	INDOOR BLOWER RELAY
018	INDOOR BLOWER RELAY
019	INDOOR BLOWER RELAY
020	INDOOR BLOWER RELAY
021	INDOOR BLOWER RELAY
022	INDOOR BLOWER RELAY
023	INDOOR BLOWER RELAY
024	INDOOR BLOWER RELAY
025	INDOOR BLOWER RELAY
026	INDOOR BLOWER RELAY
027	INDOOR BLOWER RELAY
028	INDOOR BLOWER RELAY
029	INDOOR BLOWER RELAY
030	INDOOR BLOWER RELAY
031	INDOOR BLOWER RELAY
032	INDOOR BLOWER RELAY
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036	INDOOR BLOWER RELAY
037	INDOOR BLOWER RELAY
038	INDOOR BLOWER RELAY
039	INDOOR BLOWER RELAY
040	INDOOR BLOWER RELAY
041	INDOOR BLOWER RELAY
042	INDOOR BLOWER RELAY
043	INDOOR BLOWER RELAY
044	INDOOR BLOWER RELAY
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046	INDOOR BLOWER RELAY
047	INDOOR BLOWER RELAY
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051	INDOOR BLOWER RELAY
052	INDOOR BLOWER RELAY
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081	INDOOR BLOWER RELAY
082	INDOOR BLOWER RELAY
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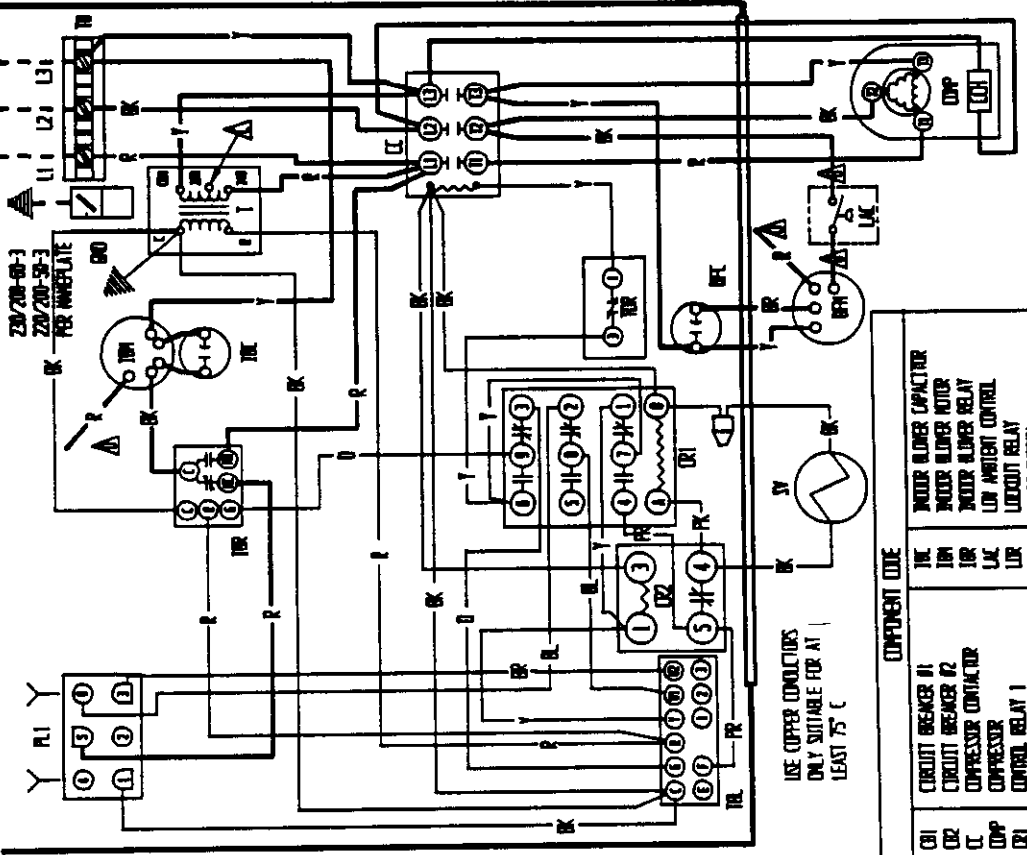
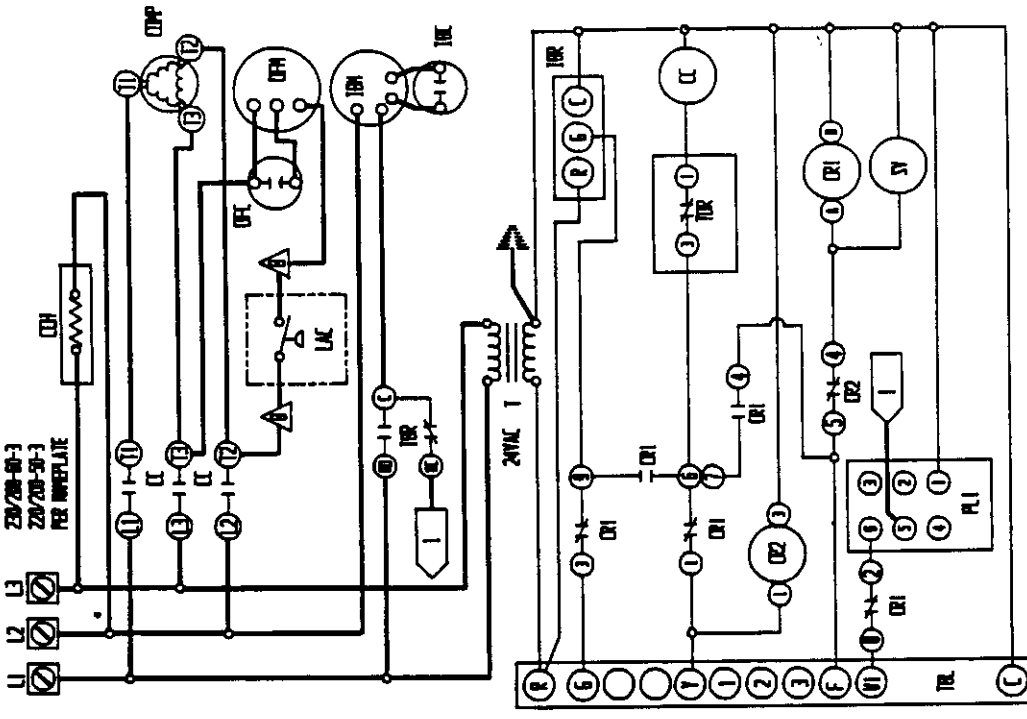
LOW AMBIENT CONTROL
 LOCK OUT RELAY
 LOW PRESSURE BYPASS
 LOW PRESSURE CONTROL
 LIMIT SWITCH
 OUTDOOR FAN CAPACITOR
 OUTDOOR FAN MOTOR
 RLS #1
 START KIT
 TRANSFORMER
 THERMAL BLOCK
 LOW VOLTAGE THERMAL BLOCK
 THERMAL CUT-OFF
 TIME DELAY RELAY

FACTORY NO.	FIELD	OPTIONAL
001	001	001
002	002	002
003	003	003
004	004	004
005	005	005
006	006	006
007	007	007
008	008	008
009	009	009
010	010	010
011	011	011
012	012	012
013	013	013
014	014	014
015	015	015
016	016	016
017	017	017
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100	100	100



NOTE: RED WIRE TO 200V
 1/2 HP FOR 230V OPERATION
 (BLACK) HIGH SPEED NOT TO
 BE USED ON 50HZ MODELS

BAND MFG. CO.
 405-213 A
 D.M. DIV.
 D.M. APRIL



RED (LOW) BLACK (HIGH) WIRE APPLICABLE

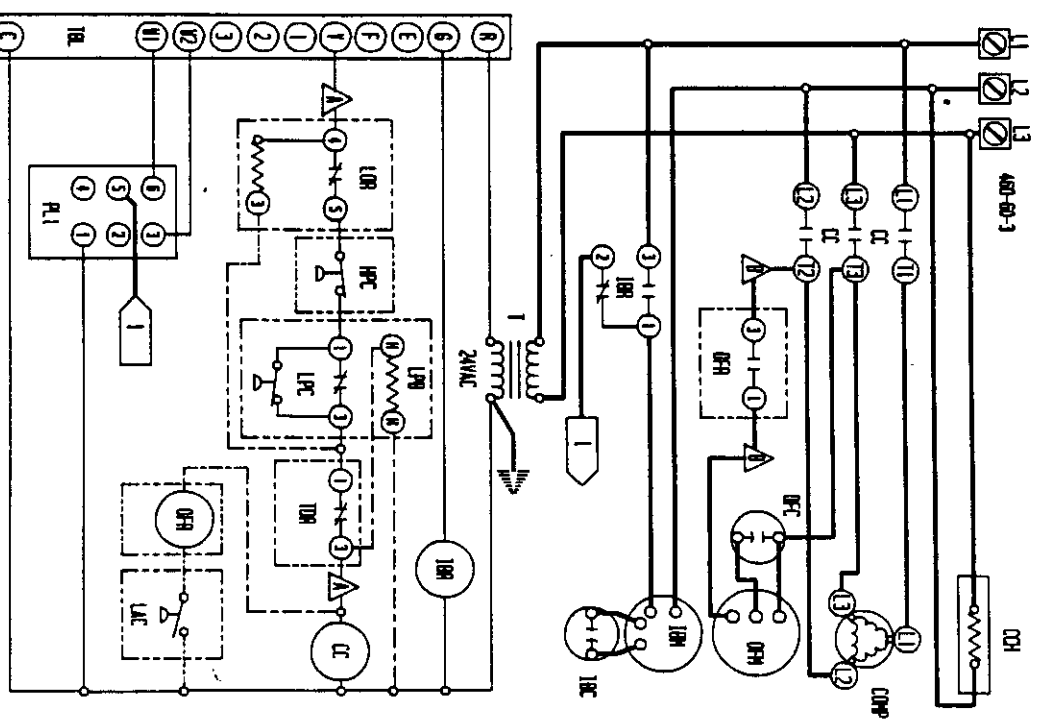
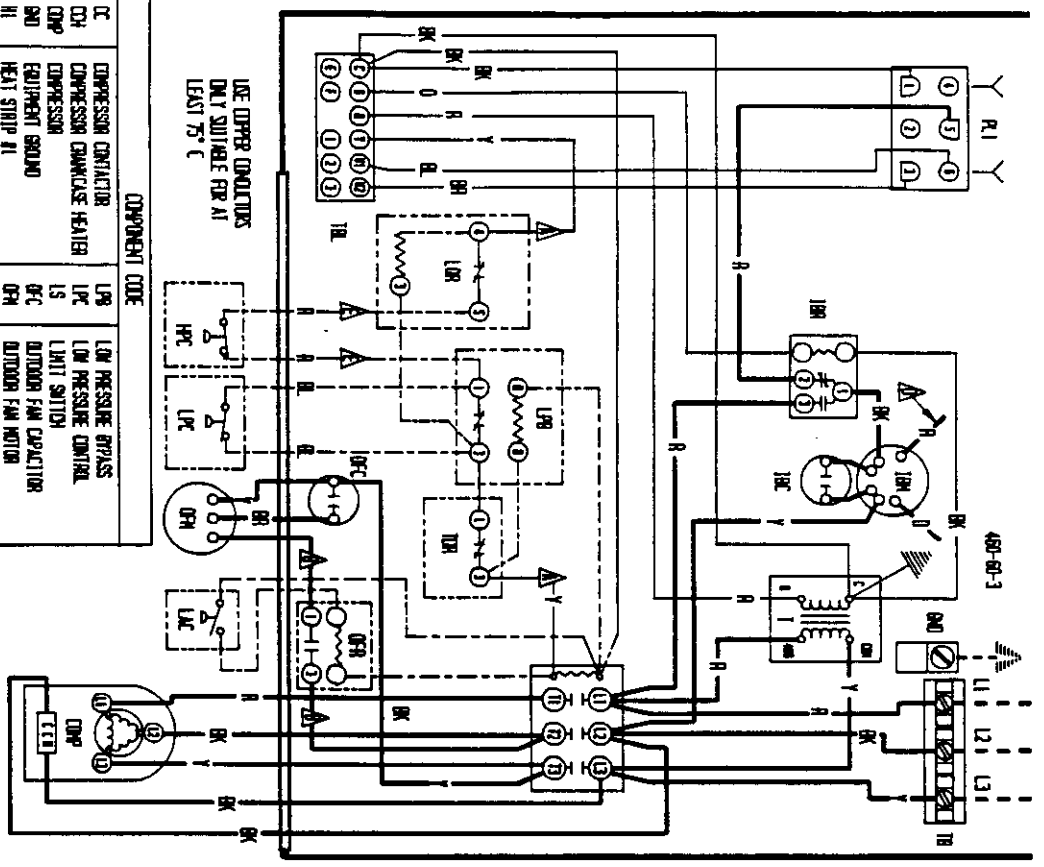
▲ HOME RED WIRE TO 208V TAP FOR 208V OPERATION ▲

▲ LABELED WIRES CONNECT IF NO OPTIONS USED. ▲

COLOR CODE		FABRIC		OPTIONAL	
BLACK	Y	BLACK	FR	FR	FR
BROWN	C	BROWN	BR	BR	BR
RED	B	RED	RD	RD	RD
ORANGE	O	ORANGE	OR	OR	OR
YELLOW	V	YELLOW	YL	YL	YL
GREEN	G	GREEN	GR	GR	GR
BLUE	B	BLUE	BL	BL	BL
PURPLE	P	PURPLE	PL	PL	PL
VIOLET	V	VIOLET	VL	VL	VL
GRAY	GY	GRAY	GRY	GRY	GRY
SLATE	S	SLATE	SL	SL	SL
WHITE	W	WHITE	WT	WT	WT
PINK	PK	PINK	PK	PK	PK
LAVENDER	L	LAVENDER	LV	LV	LV

BARO MFG. CO.
 Dwg. 4055-221 A
 DRG.
 CHK./APP.

COMPONENT CODE	DESCRIPTION
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CCP	COMPRESSOR
CR1	CONTROL RELAY 1
CR2	CONTROL RELAY 2
CC1	DUAL CAPACITOR
SO	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
HC	HIGH PRESSURE CONTROL
IM	INDOOR BLOWER MOTOR
IM1	INDOOR BLOWER MOTOR
IM2	INDOOR BLOWER MOTOR
LAC	LOW AMBIENT CONTROL
LOR	LOCKOUT RELAY
LS	LIMIT SWITCH
OPM	OUTDOOR FAN MOTOR
PL1	PLUG #1
SY	SOLENOID VALVE
TR	TRANSFORMER
TR1	TERMINAL BLOCK
TR2	TERMINAL BLOCK
TR3	LOW VOLTAGE TERMINAL BLOCK
TR4	HEATER CONTACTOR #1
TR5	HEATER CONTACTOR #2
TR6	TIME DELAY RELAY



COMPONENT CODE	
LC	COMPRESSION CONTACTOR
CH	COMPRESSION CAPACITANCE HEATER
COMP	COMPRESSOR
EQ	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H1C	HEATER CONTACTOR #1
H2C	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
LBR	LOW PRESSURE RELAY
LRC	LOW PRESSURE CONTROL
LSC	LOW PRESSURE CONTROL
LDC	LOW VOLTAGE THERMAL BLOCK
LAC	LOW AMBIENT CONTROL
LOR	LOCK OUT RELAY

LOW PRESSURE BRASS	
LPR	LOW PRESSURE CONTROL
LPS	LIMIT SWITCH
LPC	OUTDOOR FAN CAPACITOR
LPR	OUTDOOR FAN MOTOR
LPC	OUTDOOR FAN RELAY
LPC	FULL DISCONNECT
LPC	TRANSFORMER
LPC	TERMINAL BLOCK
LPC	LOW VOLTAGE THERMAL BLOCK
LPC	THERMAL CUTOFF
LPC	TIME DELAY RELAY

▲ ▲ LABELLED WIRES CONNECT IF NO OPTIONS USED. ▲ AND ISOLATE. CONNECT RED WIRE TO TERMINAL 1 OF 1BR.

FOR LOW SPEED CONNECT BLACK AND BROWN WIRES TOGETHER

▲ AND ISOLATE. CONNECT RED WIRE TO TERMINAL 1 OF 1BR

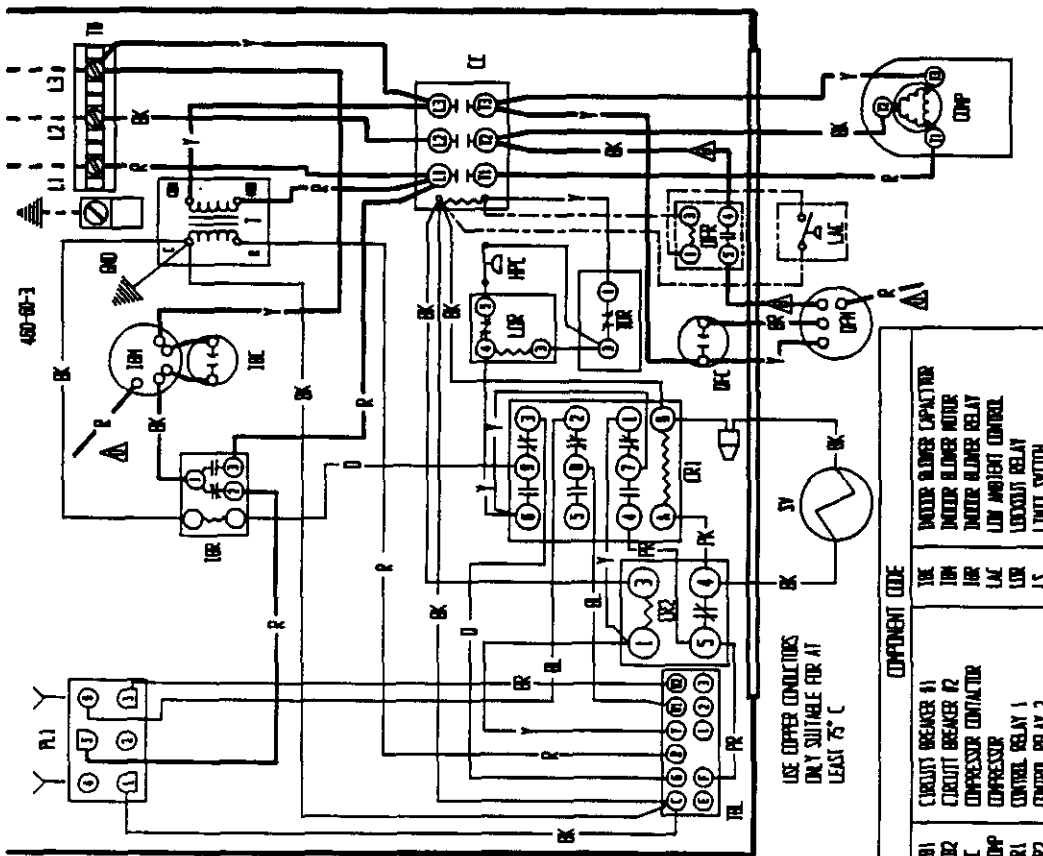
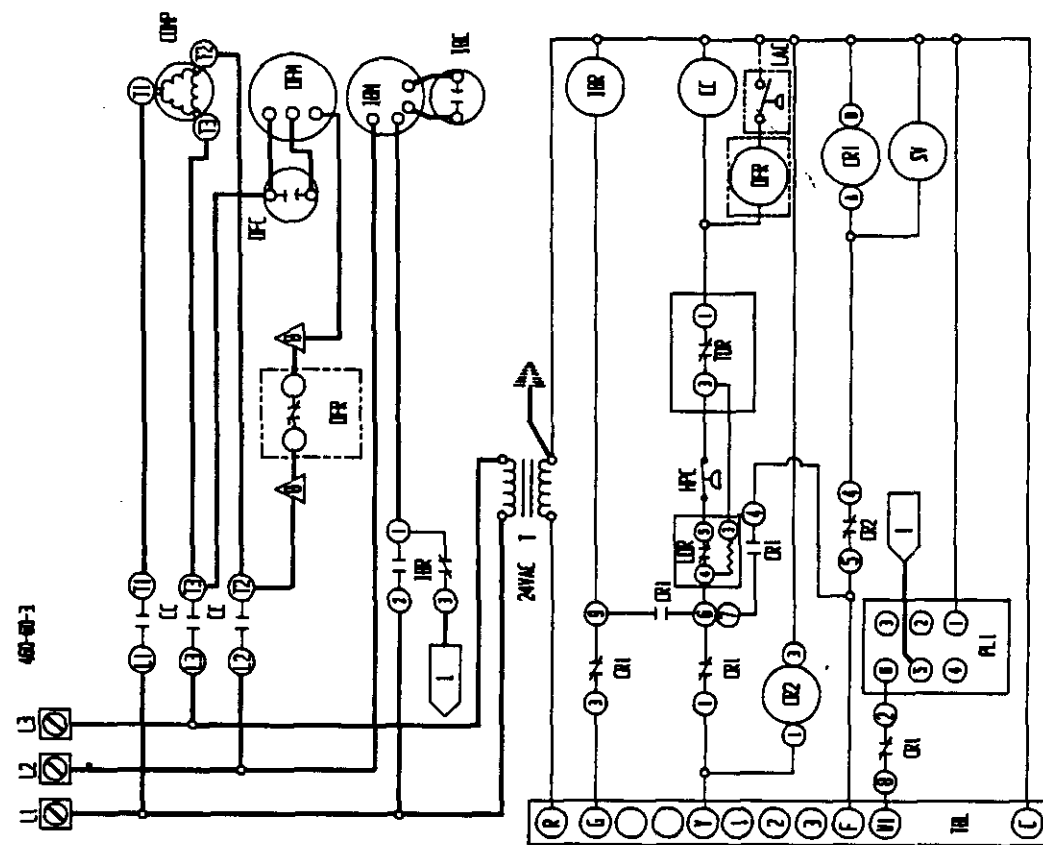
COLOR CODE	
BR	BLACK
BR	BROWN
BR	RED
BR	BROWN
BR	ORANGE
Y	YELLOW
G	GREEN
B	BLUE
W	WHITE
V	VIOLET
(R)	PURPLE
SV	SLATE
(S)	SLATE
P	PINK
L	LANDING

BARD NRC. CO.	
DATE:	4055-310 C
DRN:	CSB
CHK/APPN:	

USE OTHER CONNECTIONS ONLY SUITABLE FOR AT LEAST 75° C

480-60-3

480-60-3



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

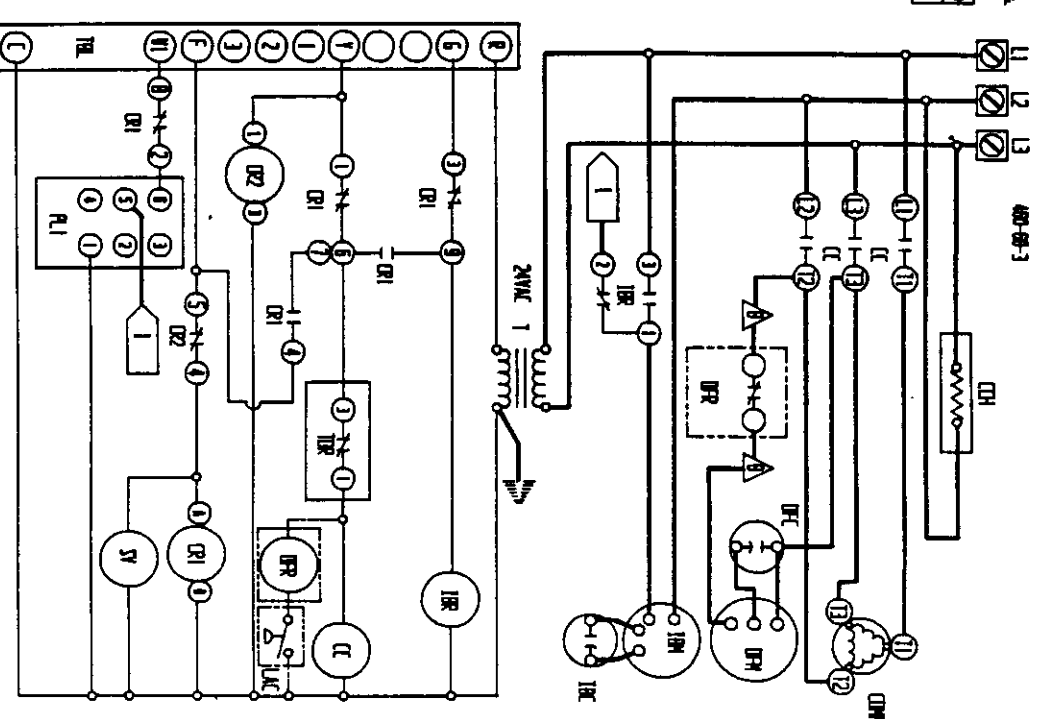
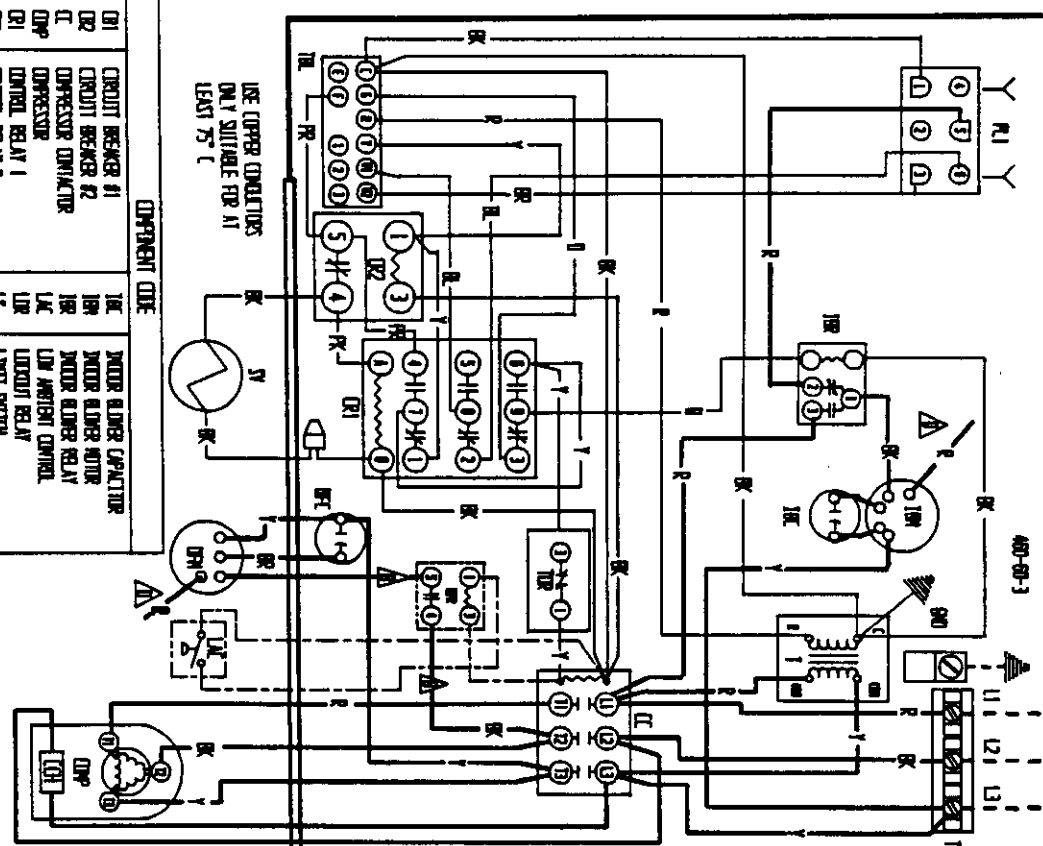
▲ LABELLED WIRES CONNECT IF NO OPTIONS USED.

BLACK	RED	ORANGE	GREEN	BLUE	WHITE	YELLOW	V	VIOLLET	PURPLE	PINK	TAN
BK	RD	OR	GRN	BLU	WHT	YEL	V	PRP	PUR	PK	TAN
1	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8	9	10	11	12

HIGH VOLTAGE _____
 LOW VOLTAGE _____
 ACCESSORY _____
 FACTORY STR. _____
 FIELD _____
 OPTIONAL _____

BARD MFG. CO.
 ENG. 4085-316 B
 DR. _____
 CK./APR. _____

COMPONENT CODE	COMMENT CODE	COMPONENT CODE	COMMENT CODE
C1	CIRCUIT BREAKER #1	IR	INDOOR BLOWER CAPACITOR
C2	CIRCUIT BREAKER #2	IR	INDOOR BLOWER MOTOR
CP	COMPRESSOR	IR	INDOOR BLOWER RELAY
CR1	CONTROL RELAY 1	LC	LOW AMBIENT CONTROL
CR2	CONTROL RELAY 2	LS	LIMIT SWITCH
CG	EQUIPMENT GROUND	OP	OUTDOOR FAN MOTOR
H1	HEAT STRIP #1	PL1	PLUS #1
H2	HEAT STRIP #2	SV	SOLENOID VALVE
HC1	HEATER CONTACTOR #1	T	TRANSFORMER
HC2	HEATER CONTACTOR #2	TR	TERMINAL BLOCK
HT	HIGH PRESSURE CONTROL	TR	TERMINAL BLOCK
		TR	TERMINAL BLOCK
		TR	TERMINAL BLOCK



COMPONENT CODE

DR1	CIRCUIT BREAKER #1	DR	DRIVER MOTOR
DR2	CIRCUIT BREAKER #2	DR	DRIVER MOTOR
CR1	COMPRESSOR	CR	COMPRESSOR MOTOR
CR2	CONTROL RELAY 1	CR	CONTROL MOTOR
CR3	CONTROL RELAY 2	CR	CONTROL MOTOR
DR1	DUE TO OPERATOR	DR	DRIVER MOTOR
DR2	HEAT STOP #1	DR	DRIVER MOTOR
DR3	HEAT STOP #2	DR	DRIVER MOTOR
DR4	HEAT STOP #3	DR	DRIVER MOTOR
DR5	HEATER CONTACTOR #1	DR	DRIVER MOTOR
DR6	HEATER CONTACTOR #2	DR	DRIVER MOTOR
DR7	HIGH PRESSURE CONTROL	DR	DRIVER MOTOR

COMPONENT CODE

DR	DRIVER MOTOR	DR	DRIVER MOTOR
CR	CONTROL MOTOR	CR	CONTROL MOTOR
IR	INTERLOCK MOTOR	IR	INTERLOCK MOTOR
UR	UNLOAD MOTOR	UR	UNLOAD MOTOR
DR1	DRIVER MOTOR	DR1	DRIVER MOTOR
CR1	CONTROL MOTOR	CR1	CONTROL MOTOR
CR2	CONTROL MOTOR	CR2	CONTROL MOTOR
DR2	DRIVER MOTOR	DR2	DRIVER MOTOR
DR3	DRIVER MOTOR	DR3	DRIVER MOTOR
CR3	CONTROL MOTOR	CR3	CONTROL MOTOR

COLOR CODE

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

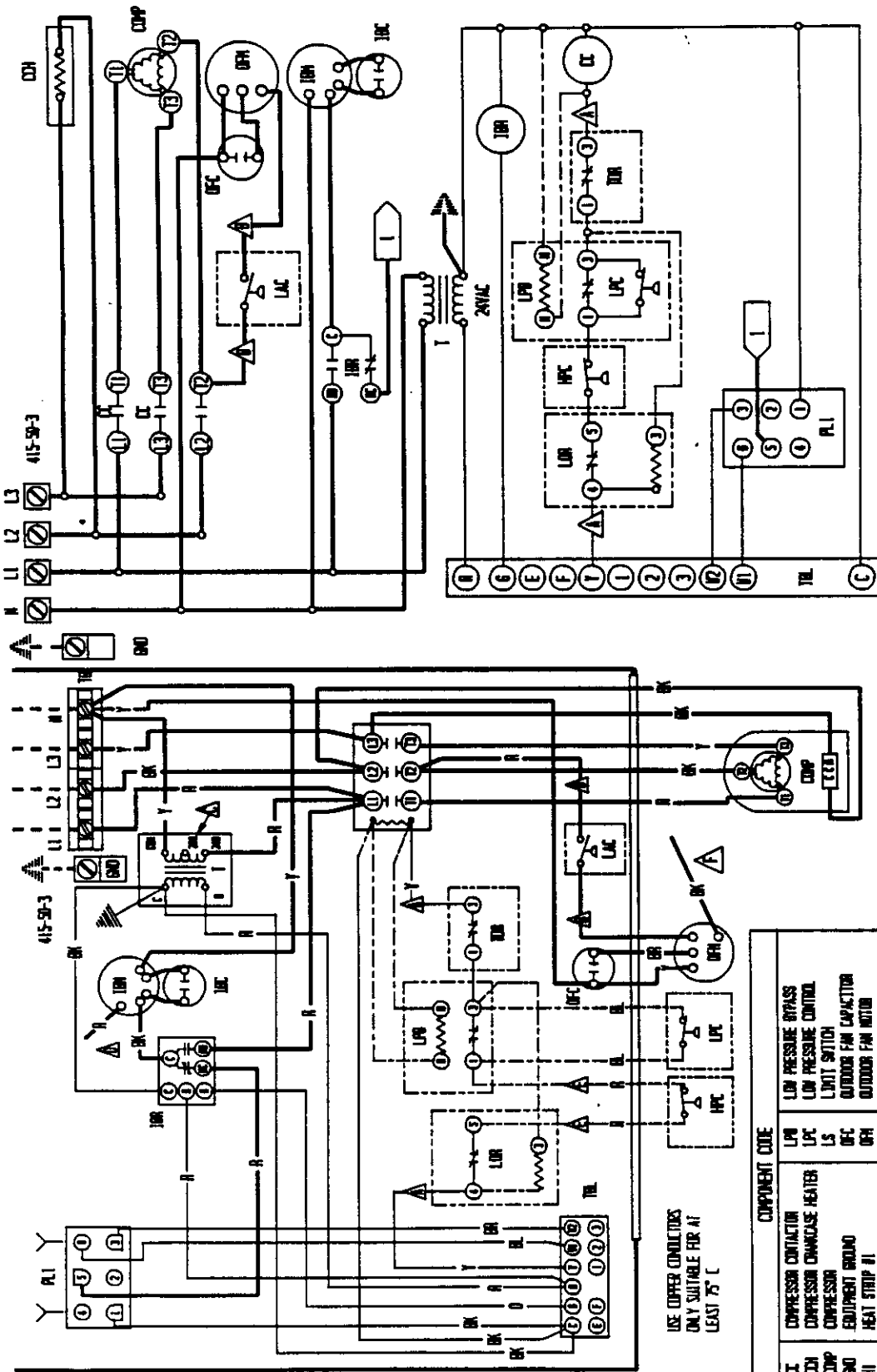
WARRANTY NOTES

WARRANTY PERIOD: 1 YEAR

WARRANTY LIMIT: 1 YEAR

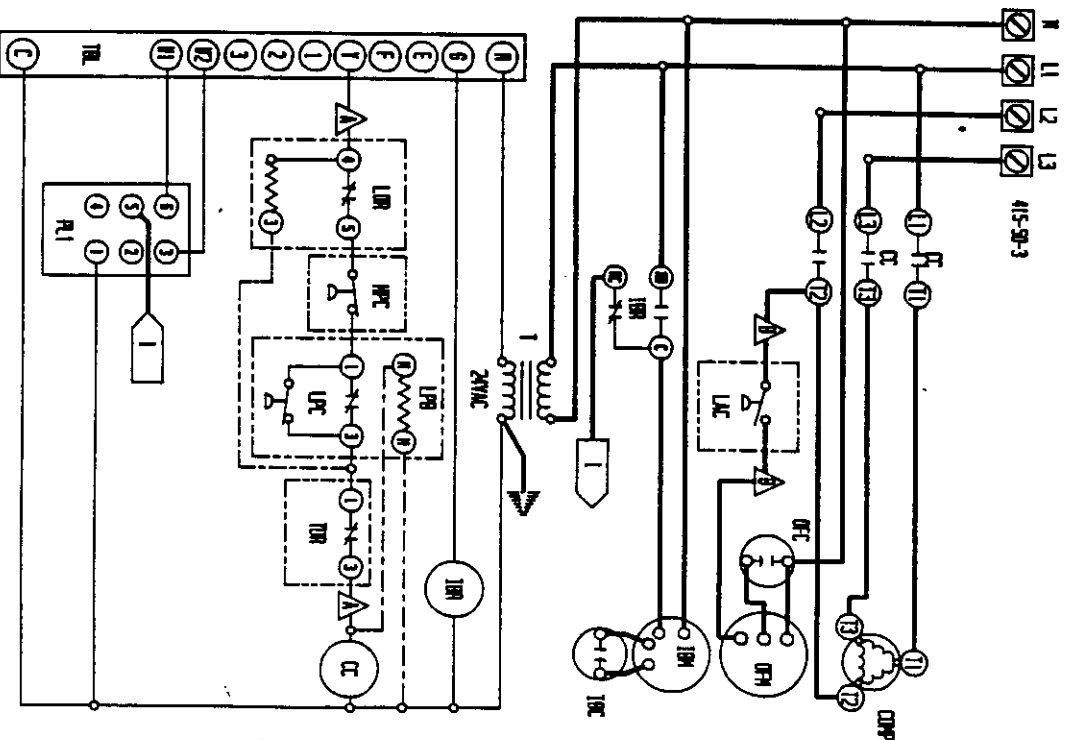
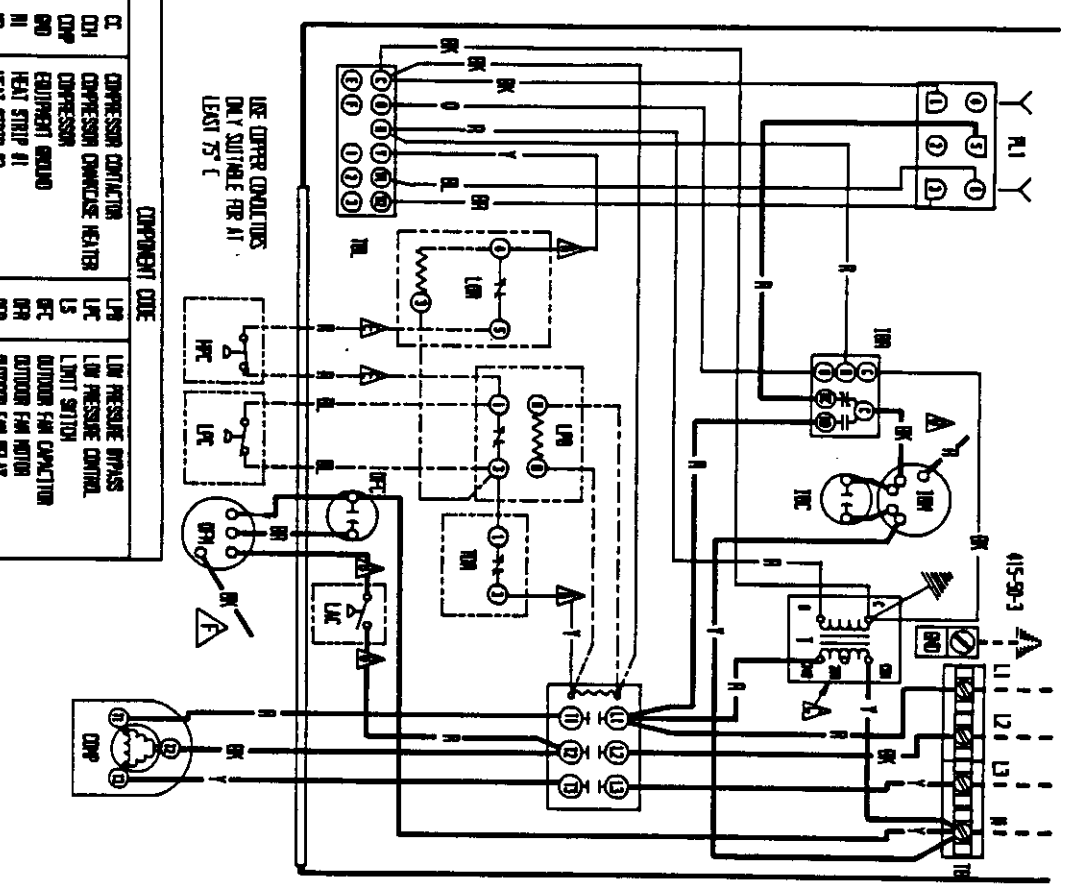
WARRANTY EXCLUSIONS: NONE

WARRANTY CONTACT: 1-800-XXX-XXXX



COMPONENT CODE		FACTORY NO.		FIELD		OPTIONAL		COLOR CODE				BARD HFC. CO.	
CC	COMPRESSOR CONTACTOR	LPB	LOW PRESSURE BYPASS	Y	YELLOW	V	VIOLET	T	TAN	P	PINK	DMC	4085-612 A
CH	COMPRESSOR CHARGING HEATER	LPC	LOW PRESSURE CONTROL	G	GREEN	(PB)	PURPLE	PK	PALE	L	LAVENDER	DMC	4085-612 A
SD	COMPRESSOR	LS	LOW PRESSURE SWITCH	B	BLACK	W	WHITE	R	RED	OR	ORANGE	DMC	4085-612 A
H1	EQUIPMENT GROUND	OCN	OUTDOOR FAN MOTOR	BR	BROWN	BL	BLUE	BL	BLACK	GR	GRAY	DMC	4085-612 A
H2	HEAT STRIP #1	OFN	OUTDOOR FAN MOTOR	R	RED	OL	OLIVE	I	INDIGO			DMC	4085-612 A
H3	HEAT STRIP #2	ORL	OUTDOOR FAN RELAY	O	ORANGE	SL	SLATE					DMC	4085-612 A
H4	HEATER CONTACTOR #1	PD	PULL DISCONNECT									DMC	4085-612 A
H5	HEATER CONTACTOR #2	PLB #1	PLUG #1									DMC	4085-612 A
HFC	HIGH PRESSURE CONTROL	TRNSFRM	TRANSFORMER									DMC	4085-612 A
HIC	INDOOR BLOWER CAPACITOR	TRM	TERMINAL BLOCK									DMC	4085-612 A
HIB	INDOOR BLOWER MOTOR	T	LOW VOLTAGE TERMINAL BLOCK									DMC	4085-612 A
HIC	INDOOR BLOWER RELAY	TL	TERMINAL BLOCK									DMC	4085-612 A
LAC	LOW AMBIENT CONTROL	TLR	TERMINAL BLOCK									DMC	4085-612 A
LOR	LOCK OUT RELAY	TCR	TERMINAL BLOCK									DMC	4085-612 A

▲ Labeled wires connect if no options used. ▲ Make red wire to 200V. ▲ Red (low) black (high) (black) high speed tap not to be used on 50/2 models.
 ▲ Labeled wires connect if no options used. ▲ Make red wire to 200V. ▲ Red (low) black (high) (black) high speed tap not to be used on 50/2 models.



COMPONENT CODE

CC	COMPRESSOR CONTACTOR
CH	COMPRESSION CHAMBER HEATER
CHP	COMPRESSION CHAMBER HEATER
CO	COMPRESSOR
EQ	EQUIPMENT GROUND
HS1	HEAT STRIP #1
HS2	HEAT STRIP #2
H1	HEATER CONTACTOR #1
H2	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL -
HLC	INDOOR LOWERS CONTACTOR
HMR	INDOOR LOWERS MOTOR
HRC	INDOOR LOWERS RELAY
LAC	LOW AMBIENT CONTROL
LOR	LOCK OUT RELAY

LFB	LOW PRESSURE BYPASS
LFC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
FC	OUTDOOR FAN CONTACTOR
FR	OUTDOOR FAN MOTOR
FR	OUTDOOR FAN RELAY
FD	FALL DISCONNECT
F1	FUSE #1
F2	THROWSWITCH
TBL	TERMINAL BLOCK
TDL	LOW VOLTAGE TERMINAL BLOCK
TDR	TEMPERATURE OFFER
TOR	TIME DELAY RELAY

▲▲▲ LABELED WIRES CONNECT IF NO NOTINGS USED. ▲ RED (LWS) BLACK (HSH) ▲ WIRE RED WIRE TO 200V ▲ (BLACK) HIGH SPEED TAP NOT USE FOR 200V OPERATION ▲ (BLACK) HIGH SPEED TAP NOT TO BE USED ON 50HZ MODELS

FACTORY WIRING	OPTIONAL
BLACK	YELLOW
BROWN	GREEN (FR)
RED	BLUE
ORANGE	WHITE
RED	YELLOW
ORANGE	GREEN (FR)
	BLUE
	WHITE
	SLATE
	PINK
	PURPLE
	LAMPOR

RARD MFG. CO.
DWS: 4055-611 B
DATE: 3-8-93
CR./APPR: