

INSTALLATION INSTRUCTIONS

WALL MOUNTED PACKAGE AIR CONDITIONERS

MODELS

WA421

WA482

WA602

DATE: 04-12-94

MANUAL 2100-218 REV. D
SUPERSEDES REV. C
FILE VOL. III, TAB 16

SECTION 1 --GETTING OTHER INFORMATION AND PUBLICATIONS

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

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

FOR MORE INFORMATION, CONTACT THESE PUBLISHERS

ACCA: AIR CONDITIONING CONTRACTORS OF AMERICA
1513 16th Street NW
Washington, DC 20036
Telephone: (202) 483-9370 Fax: (202) 234-4721

ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE
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New York, NY 10036
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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
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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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BRYAN, OH 43506 USA

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PART 1 -- WALL MOUNT GENERAL INFORMATION

AIR CONDITIONER WALL MOUNT MODEL NOMENCLATURE

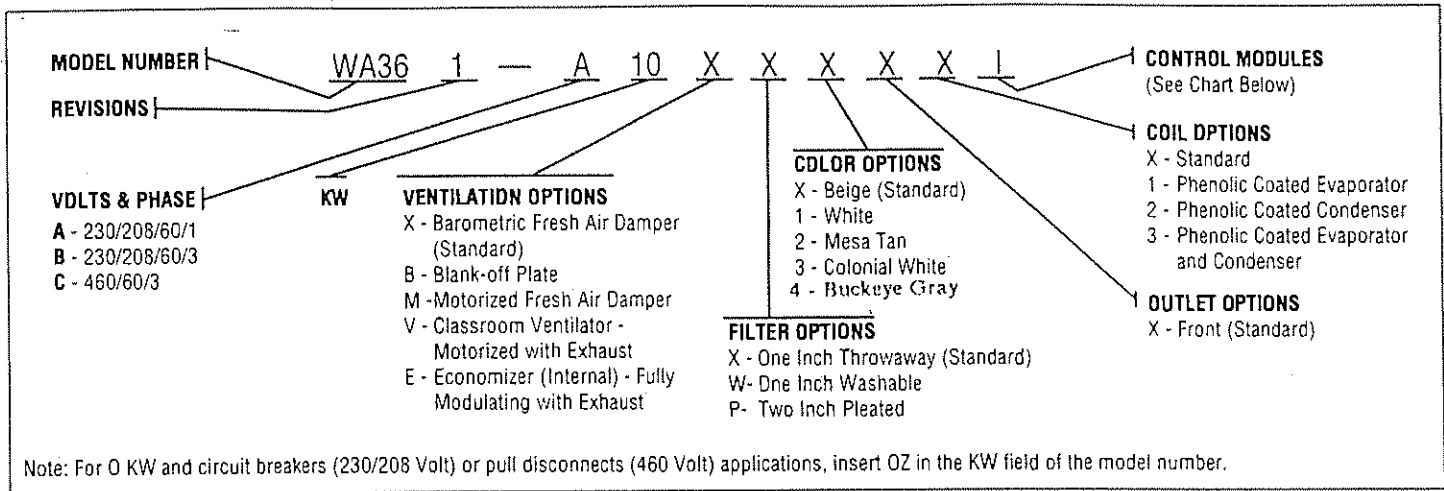


TABLE 1 ELECTRIC HEAT TABLE

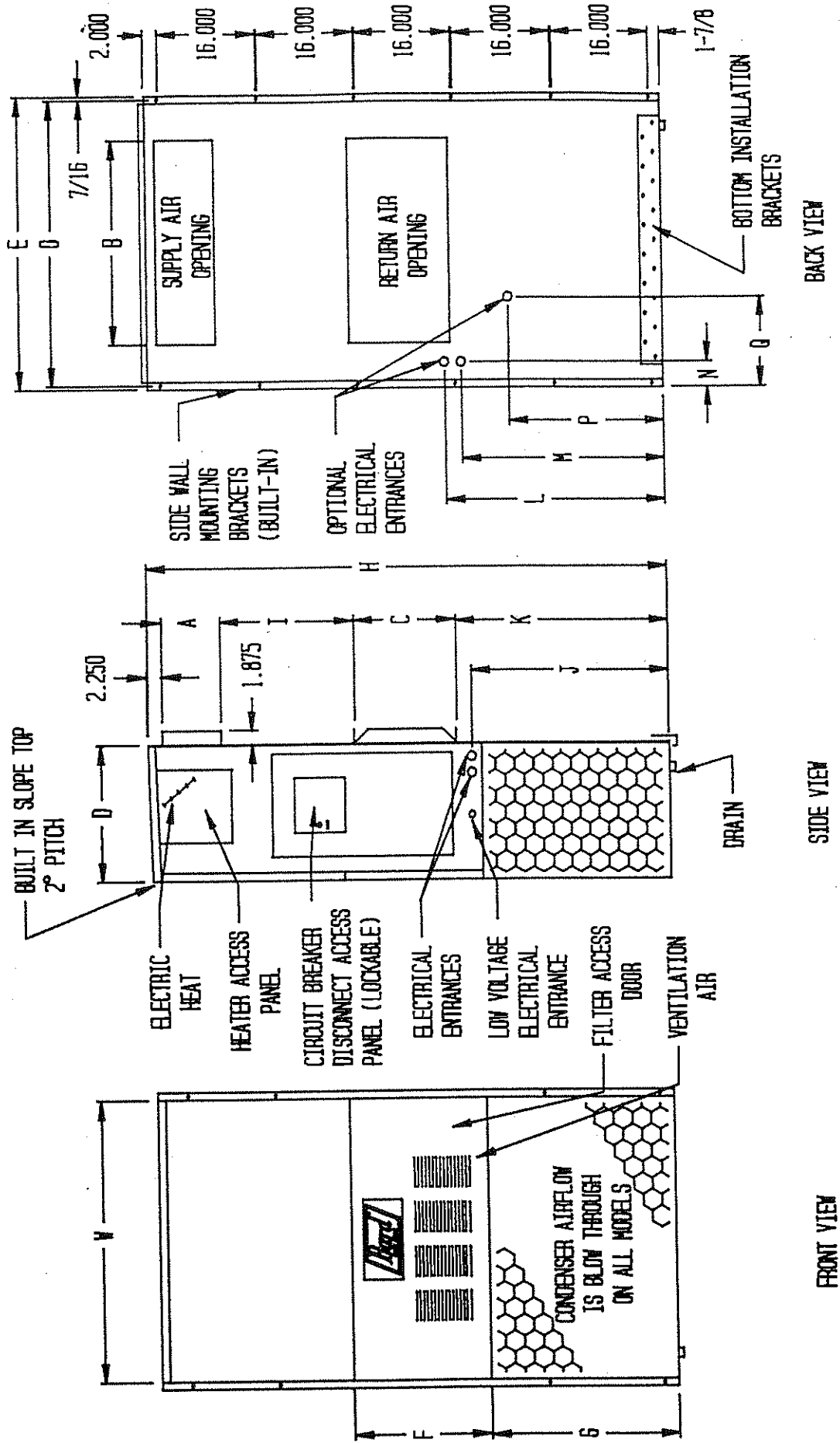
Models	WA421-A		WA421-B		WA421-C					
	WA482-A		WA482-B		WA482-C					
	WA602-A		WA602-B		WA602-C					
KW	240-1		208-1		240-3		208-3		460-3	
	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU
5	20.8	17050	18.1	12800						
9					21.7	30600	18.7	23030	10.8	30700
10	41.6	34130	36.2	25600						
15	62.5	51200	54.1	38400	36.2	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
 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	230/208-1	1	32	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	31	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	56	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15		1 or 2	83	90	4	8	56	26	60	30	6	10	10	10
A20		1 or 2	108	110	2	6	56	52	60	60	6	6	10	10
WA421-B00,B0Z	230/208-3	1	22	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B09		1	32	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B15		1	50	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B18		1	59	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA421-C00,C0Z	460-3	1	11	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C09		1	16	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15		1	25	25	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	36	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	36	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	56	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15		1 or 2	83	90	4	8	56	26	60	30	6	10	10	10
A20		1 or 2	108	110	2	6	56	52	60	60	6	6	10	10
WA482-B00,B0Z	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	32	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B15		1	50	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B18		1	59	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA482-C00,C0Z	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	16	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15		1	25	25	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	42	60	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	42	60	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	56	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15		1 or 2	83	90	4	8	56	26	60	30	6	10	10	10
A20		1 or 2	108	110	2	6	56	52	60	60	6	6	10	10
WA602-B00,B0Z	230/208-3	1	30	45	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B09		1	32	45	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B15		1	50	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B18		1	59	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA602-C00,C0Z	460-3	1	15	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C09		1	16	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15		1	25	25	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

- (1) Maximum size of the time delay fuse or HACR type circuit breaker for protection of field wiring conductors.
- (2) Based on 75°C copper wire. All wiring must conform to NEC and all local codes.
- (3) These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electric Code (latest revision), article 310 for power conductor sizing. Caution: When more than one field power conductor circuit is run thru one conduit, the conductors must be derated. Pay special attention to note 8 of Table 310 regarding Ampacity Adjustment Factors when more than 3 conductors are in a raceway.

GENERAL

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

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

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

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

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

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

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

DUCT WORK

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 8 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.

Some installations may not require any return air duct. It is recommended that on this type of installation that a filter grille be located in the wall. 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

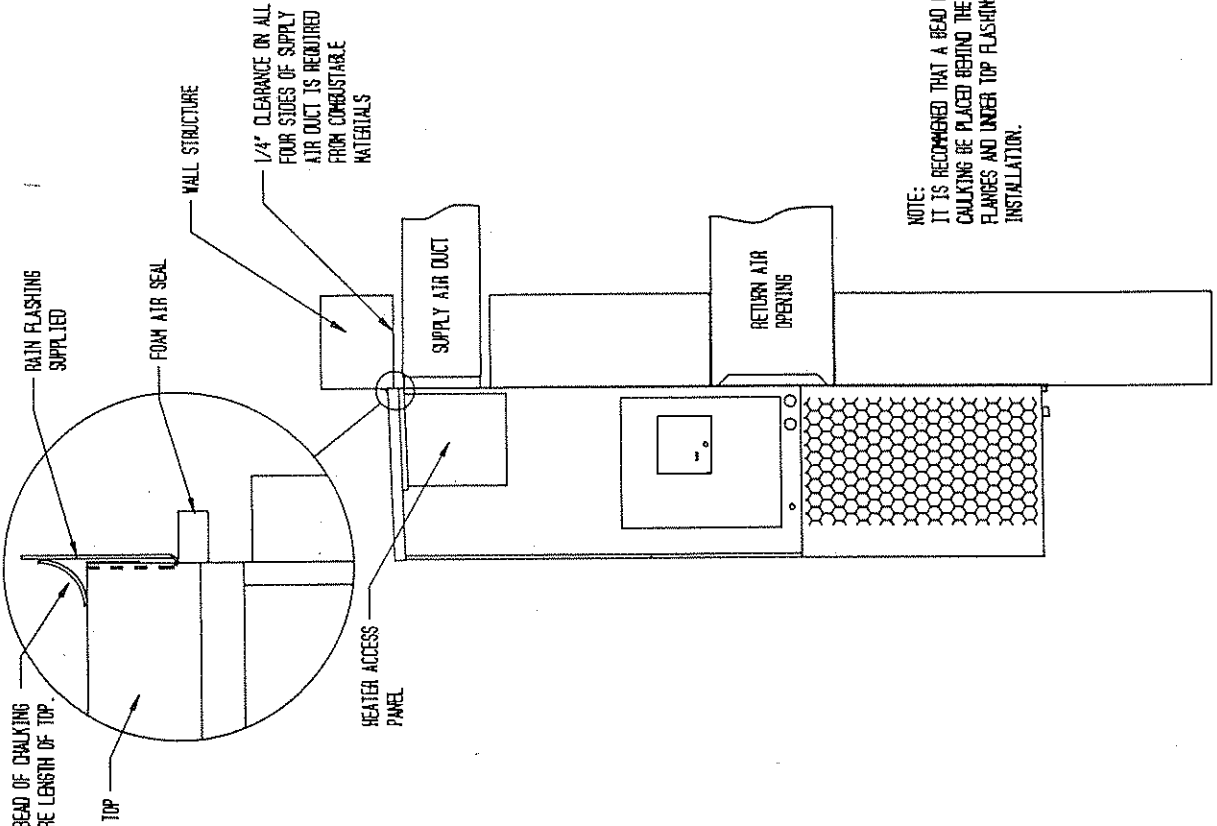
1. These units are secured by wall mounting brackets which secure the unit to the outside wall surface at both sides. A bottom mounting bracket is provided for ease of installation.
2. The unit itself is suitable for "0" inch clearance, but the supply air duct flange and the first 3 feet of supply air 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

NOTE: It is recommended that a bead of silicone caulking be placed behind the side mounting flanges and under the top flashing at time of installation.



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

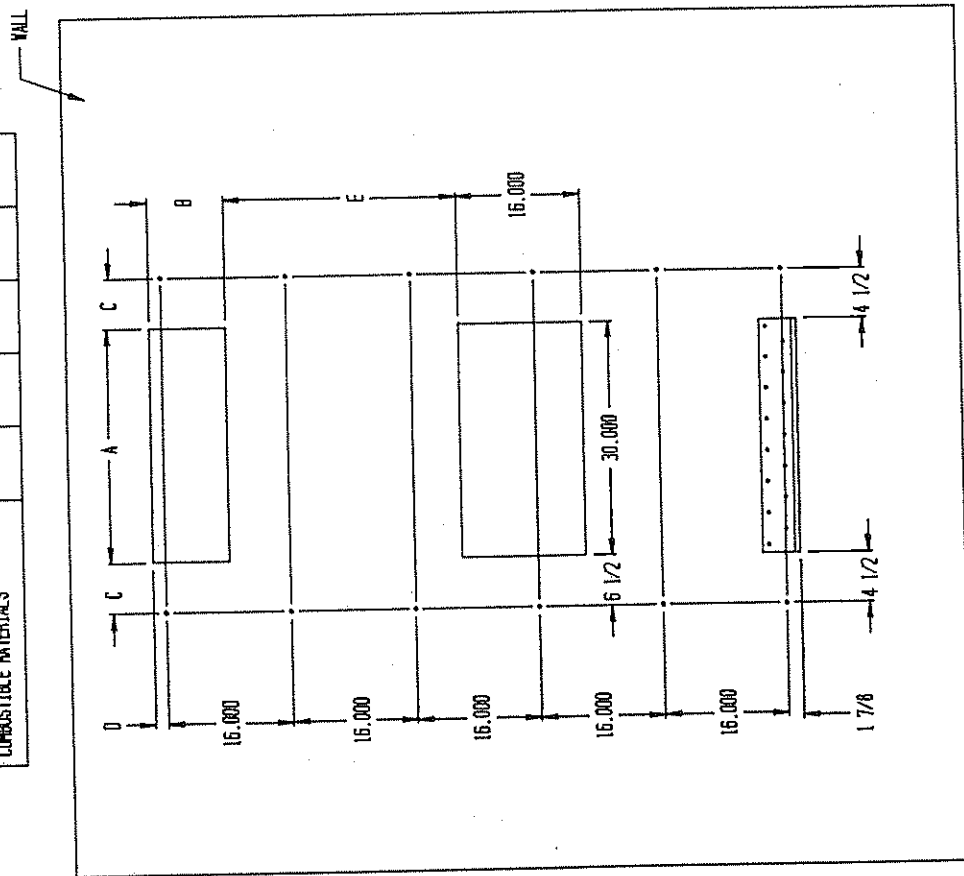
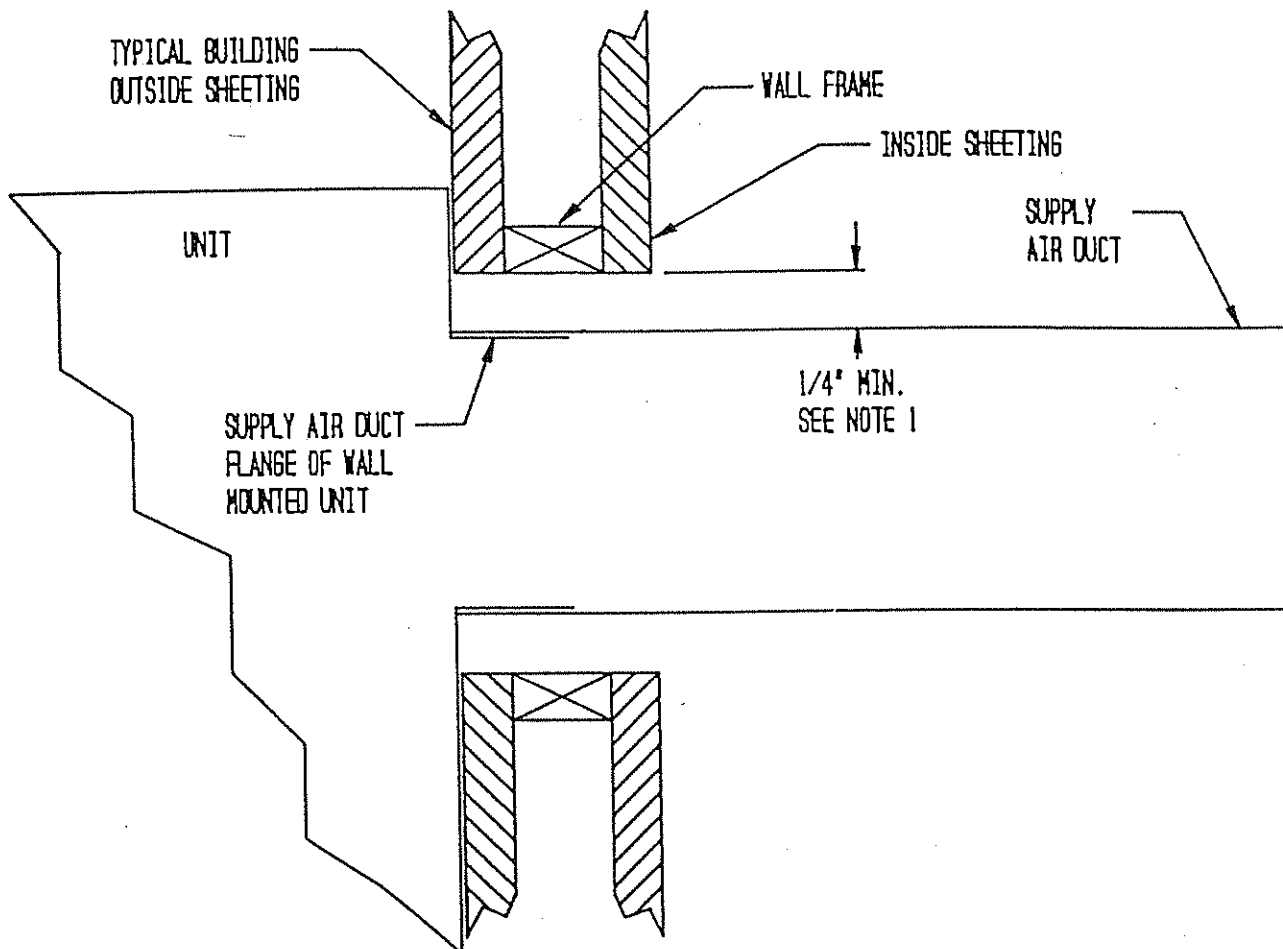


FIGURE 2A
ELECTRIC HEAT CLEARANCE



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

NOTE 1:

WARNING
<p>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.</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>

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 3.

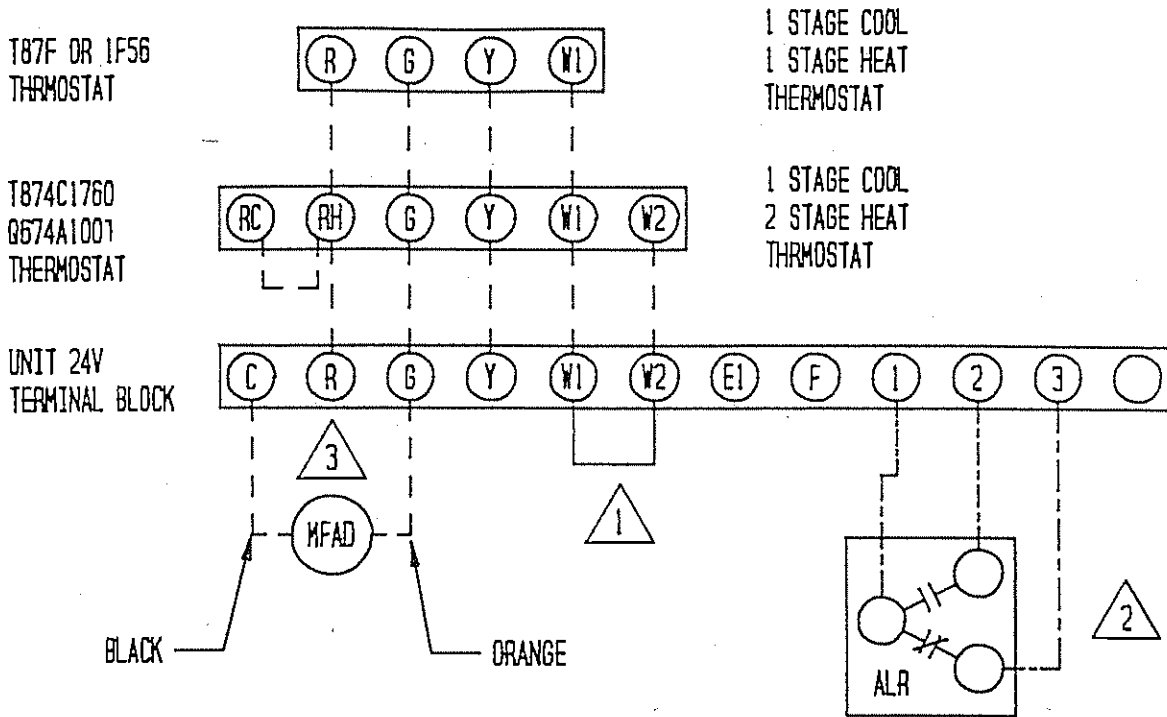
TABLE 3 THERMOSTAT WIRE SIZE




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

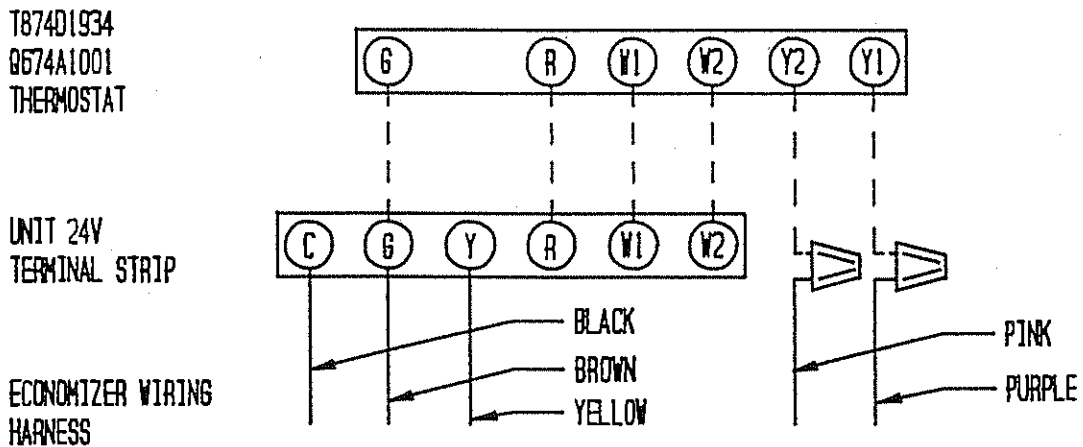
Thermostat	Subbase	Predominate Features
8403-019	8404-012	1 stage cool, 2 stage heat
T874C1760	Q674A1001	System: heat-auto-cool Fan: on-auto
8403-002	8404-003	1 stage heat, 1 stage cool
T87E3111	Q539A1220	System: heat-off-cool Fan: on-auto
8403-009	----	1 stage heat, 1 stage cool
1F56-318		

FIGURE 3
LOW VOLTAGE WIRING



-  REMOVE JUMPER FOR 2 STAGE ELECTRIC HEAT ON UNITS WITH 15 OR MORE KW
-  OPTIONAL ALARM RELAY PROVIDED ON UNITS WITH CONTROL MODULE "M" OR "J" INSTALLED. CONTACT RATING 24VAC @ 125VA
-  OPTIONAL MOTORIZED FRESH AIR DAMPER SUGGESTED HOOK UP

OPTIONAL ECONOMIZER LOW VOLTAGE WIRING



PART 3 -- START-UP

IMPORTANT INSTALLER NOTE

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

CRANKCASE HEATERS

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

The WA421 models have an insertion well-type heater located in the lower section of the compressor housing. This is a self-regulating type heater that draws only enough power to maintain the compressor at a safe temperature on these units.

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

The decal in Figure 4 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.

FIGURE 4

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 5

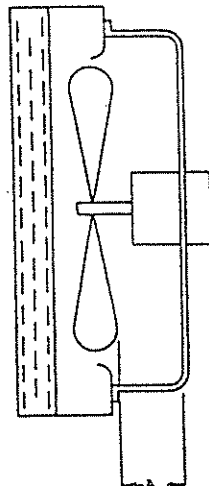


TABLE 4

Model	Dimension A
WA421 WA482 WA602	1.75

REMOVAL OF THE FAN SHROUD

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

REFRIGERANT CHARGE

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

TABLE 5

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

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

TABLE 6 INDOOR BLOWER PERFORMANCE--CFM @ 230V

E.S.P. In 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

TABLE 8

ELECTRIC HEAT ONLY

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

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

COOLING

TABLE 9

Air Temperature Entering Outdoor Coil °F

Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
WA421	75 deg. DB	Low Side	68	71	74	76	78	80	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
	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
WA482	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
	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
	85 deg. DB	Low Side	84	85	85	86	87	88	89	90	91
	72 deg. WB	High Side	245	261	278	296	314	333	353	373	394

Low side pressure \pm 2 PSIG

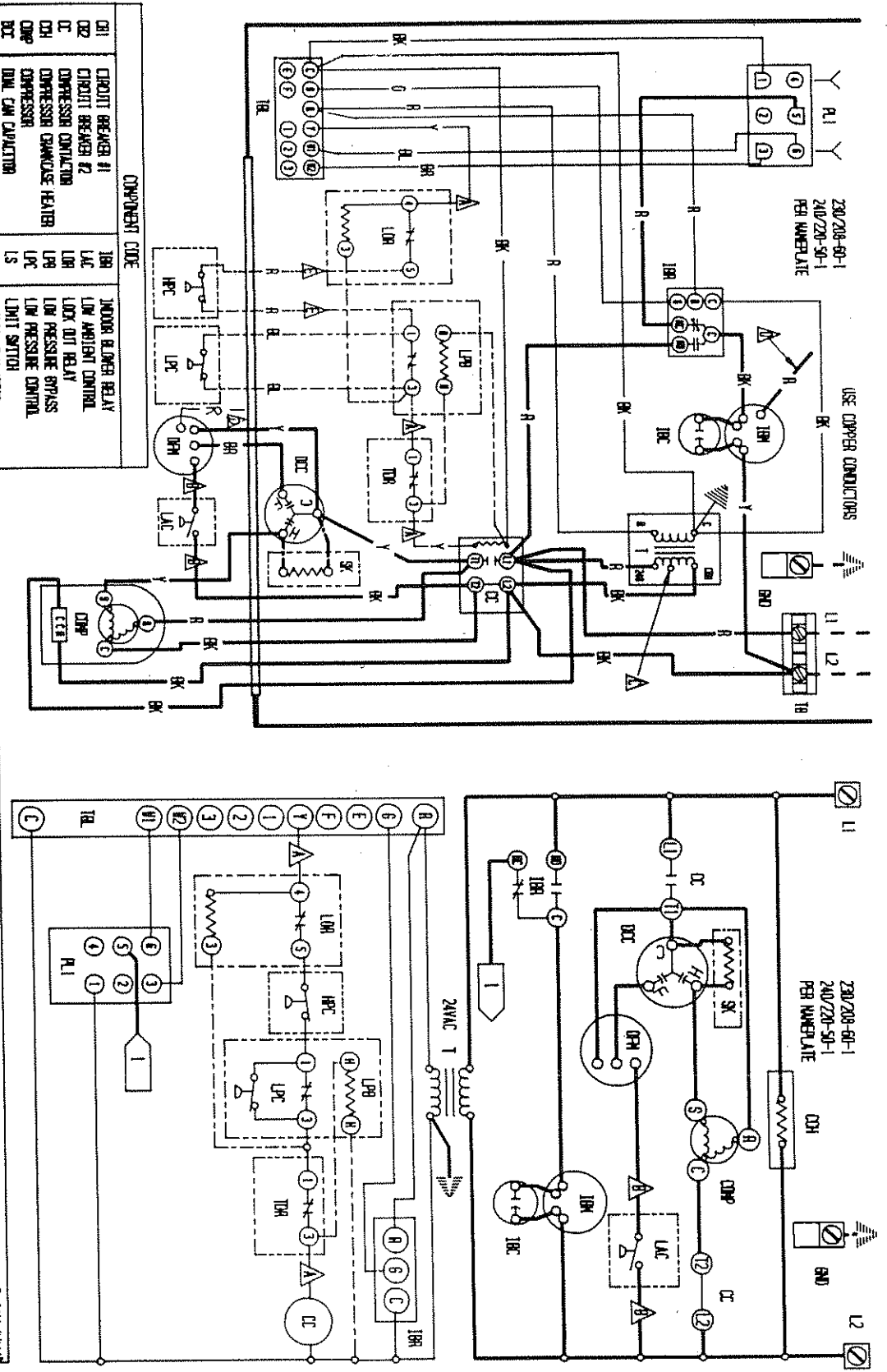
High side pressure \pm 5 PSIG

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

TABLE 10

OPTIONAL ACCESSORIES

Model	Description	W	W	W	W	W	W	W	W	W
		A	A	A	A	A	A	A	A	A
		4	4	4	4	4	4	4	6	6
		2	2	2	8	8	8	0	0	0
		1	1	1	2	2	2	2	2	2
		-	-	-	-	-	-	-	-	-
		A	B	C	A	B	C	A	B	C
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
EIEF-5	Economizer With Exhaust	X	X	X	X	X	X	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

001	CIRCUIT BREAKER #1
002	CIRCUIT BREAKER #2
003	COMPRESSOR CONTACTOR
004	COMPRESSOR OVERCURRENT HEATER
005	COMPRESSOR
006	DUAL CAPACITOR
007	EQUIPMENT GROUND
008	HEAT STRIP #1
009	HEAT STRIP #2
010	HEATER CONTACTOR #1
011	HEATER CONTACTOR #2
012	HIGH PRESSURE CAPACITOR
013	HIGH PRESSURE CONTROL
014	INDOOR BLOWER MOTOR

015	INDOOR BLOWER RELAY
016	LOW AMBIENT CONTROL
017	LOCK OUT RELAY
018	LOW PRESSURE SWITCH
019	LOW PRESSURE CONTROL
020	LIMIT SWITCH
021	OUTDOOR FAN MOTOR
022	START KIT
023	TRANSFORMER
024	LOW VOLTAGE THERMAL BLOCK
025	THERMAL OVER-RIDE
026	THERMAL RELAY

WIRE CONNECTIONS

△ LABELLED WIRES CONNECT IF NO OPTIONS USED. △ WIRE RED WIRE TO 200V TAP FOR 200V OPERATION. △ RED (LINES) BLACK (NEUTRAL) WIRE APPROPRIATE.

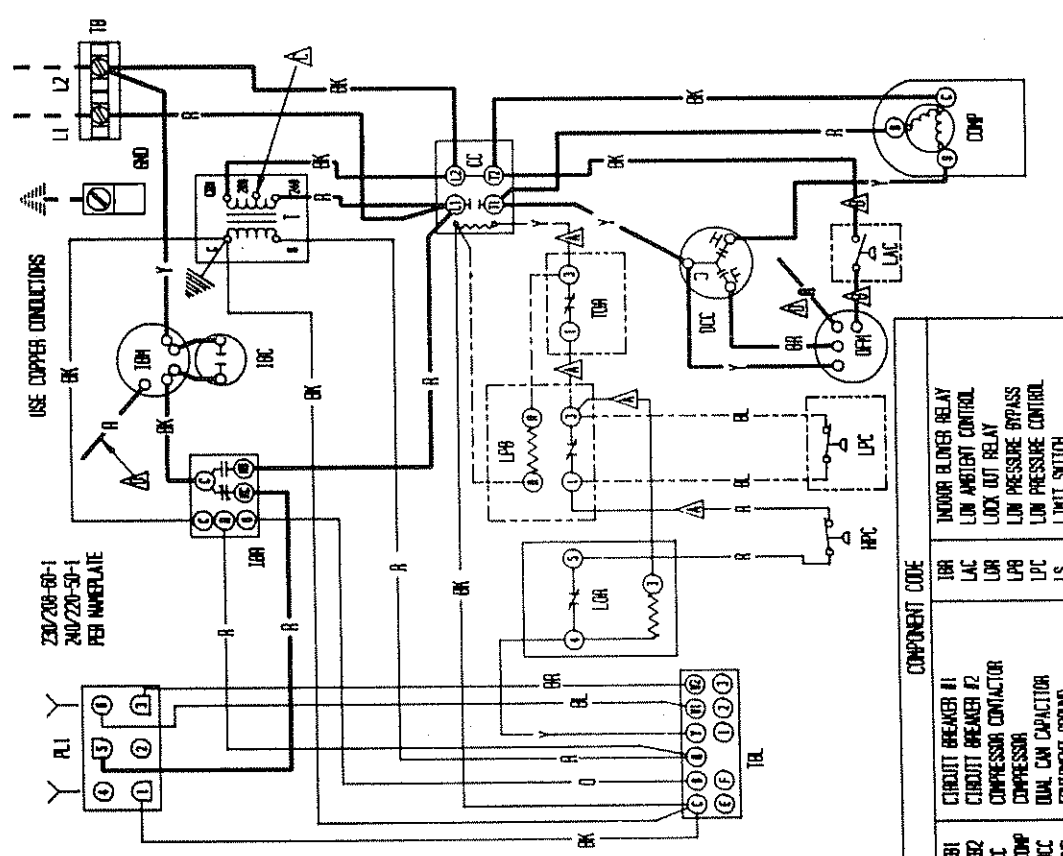
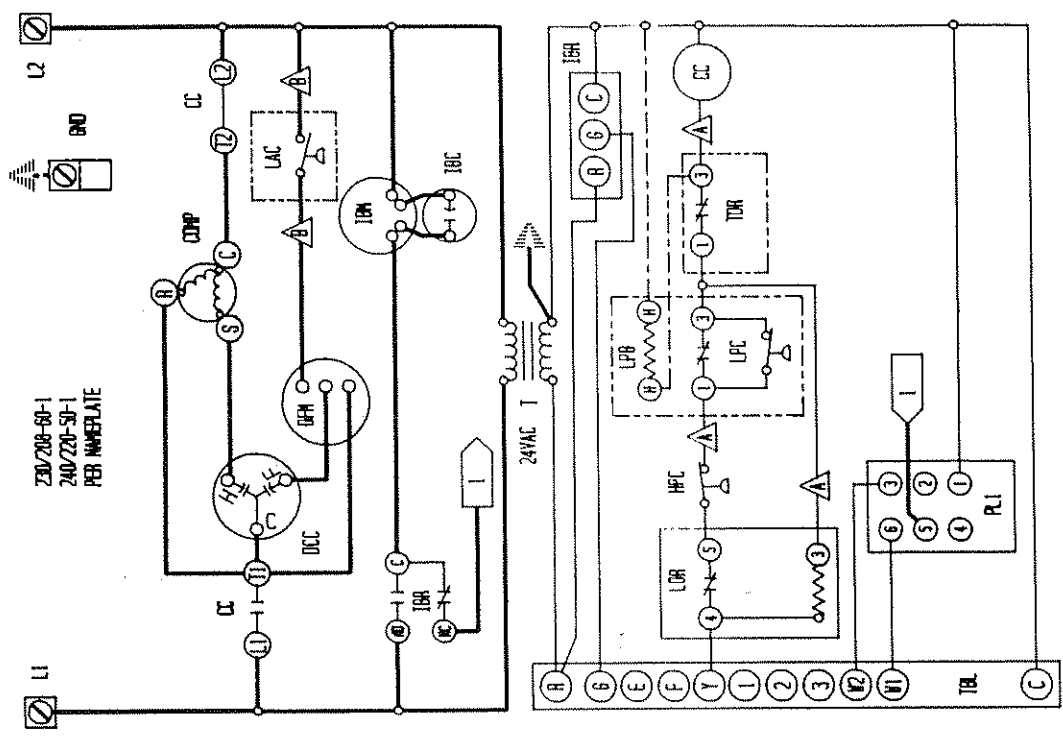
FACTORY STD.	FIELD	OPTIONAL
——	---	----

FACTORY STD.	FIELD	OPTIONAL
---	----	-----

COLOR CODE		
BK	BLACK	
BR	BROWN	
R	RED	
W	WHITE	
Y	YELLOW	
GRN	GREEN	
BLU	BLUE	
PUR	PURPLE	
PNK	PINK	
OR	ORANGE	

WIRE CODE		
1	PK	1
2	L	2
3	SLATE	3
4		4
5		5
6		6
7		7
8		8
9		9
0		0

BARD MFG. CO.		
DN6	4055-110 B	
DN7	C8B	
DN8	C8B	
DN9	C8B	
DN10	C8B	



230/208-50-1
240/220-50-1
PER NAMEPLATE

USE COPPER CONDUCTORS

230/208-50-1
240/220-50-1
PER NAMEPLATE

COMPONENT CODE	
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CCP	COMPRESSOR CAPACITOR
CCF	DUAL CAN CAPACITOR
CCG	EQUIPMENT GROUND
CC1	HEAT STRIP #1
CC2	HEAT STRIP #2
CC3	HEATER CONTACTOR #1
CC4	HEATER CONTACTOR #2
CC5	HIGH PRESSURE CONTROL
CC6	INDOOR BLOWER CAPACITOR
CC7	INDOOR BLOWER MOTOR
IBR	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOR	LOCK OUT RELAY
LPB	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
OPH	OUTDOOR FAN MOTOR
PL1	PLUS #1
SA	START KIT
T	TRANSFORMER
TR	TERMINAL BLOCK
TRB	LOW VOLTAGE TERMINAL BLOCK
TRC	LOW VOLTAGE TERMINAL BLOCK
TRD	THERMAL CUTOFF
TRF	TIME DELAY RELAY

▲ Labeled wires connect if no options used. ▲ Move red wire to 208V tap for 208V operation. ▲ (Low) Black (High) Red

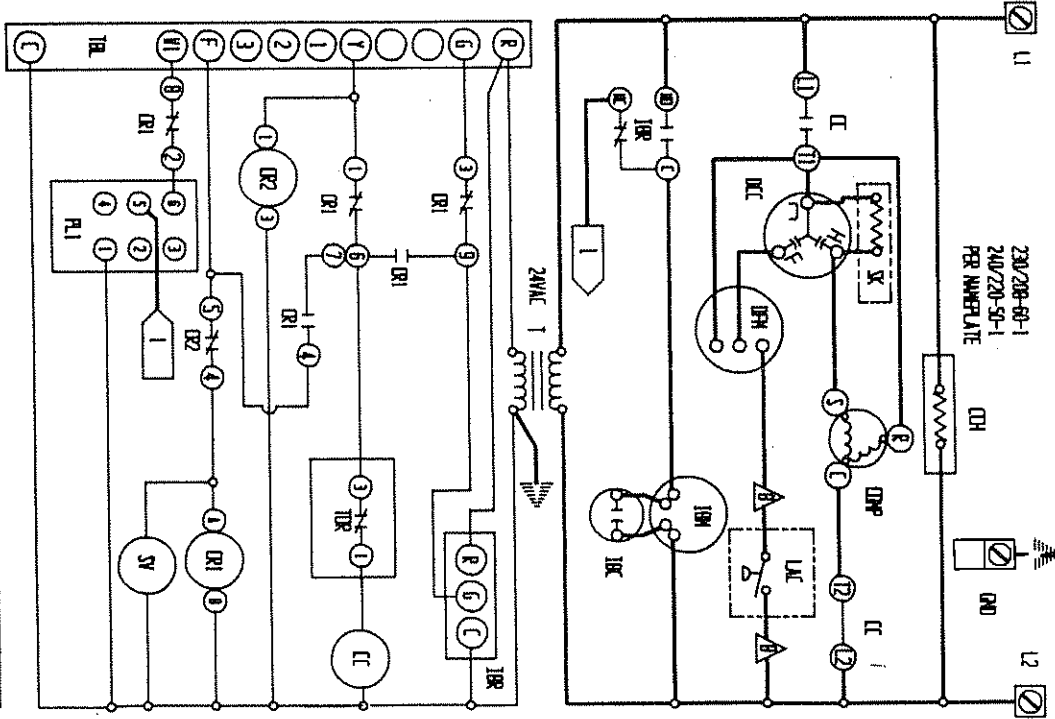
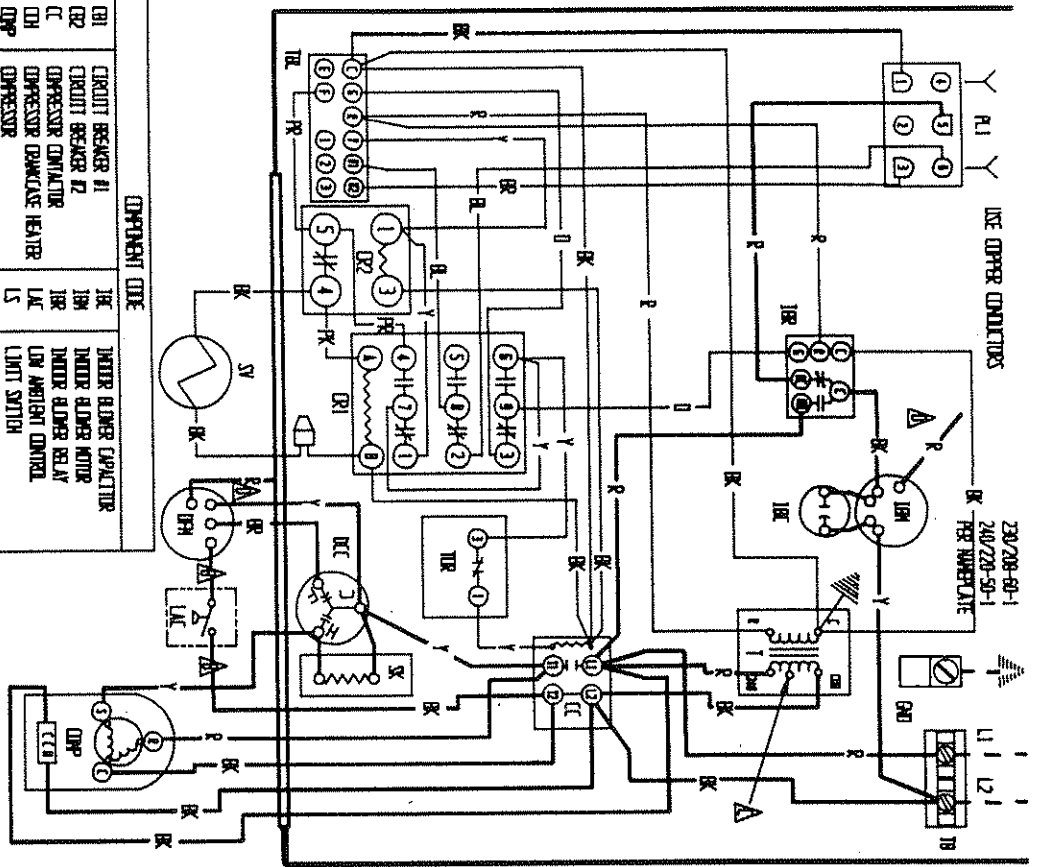
Color	Terminal	Terminal	Terminal	Terminal
Black	Y	V	T	JAW
Brown	6	GREEN (PR)	PK	PINK
Red	BL	BLUE (S)	L	LAVENDER
Orange	W	WHITE (S)	SLATE	

Color Code: (Low) Black (High) Red

Factory Std. Field Optional

High Voltage Low Voltage Accessory

BARD MFG. CO.
 DWG. 41055-112
 DRN. CDB
 CHK./APPR.



COMPONENT CODE

CR1	CIRCUIT BREAKER #1	IR	INDOR BLOWER CAPACTIOR
CR2	CIRCUIT BREAKER #2	IR	INDOR BLOWER MOTOR
CR3	COMPRESSOR CONTACTOR	IR	INDOR BLOWER RELAY
CR4	COMPRESSOR CONTACTOR HEATER	IR	INDOR AMBIGHT ONROL
CR5	COMPRESSOR	IR	LIMIT SWITCH
CR6	ONROL RELAY #1	IR	INDOR FAN MOTOR
CR7	ONROL RELAY #2	IR	PLR #1
CR8	ONROL RELAY #3	IR	STENOID VALVE
CR9	ONROL RELAY #4	IR	TRNSFORMER
CR10	ONROL RELAY #5	IR	TRNSFORMER
CR11	ONROL RELAY #6	IR	TRNSFORMER
CR12	ONROL RELAY #7	IR	TRNSFORMER
CR13	ONROL RELAY #8	IR	TRNSFORMER
CR14	ONROL RELAY #9	IR	TRNSFORMER
CR15	ONROL RELAY #10	IR	TRNSFORMER
CR16	ONROL RELAY #11	IR	TRNSFORMER
CR17	ONROL RELAY #12	IR	TRNSFORMER

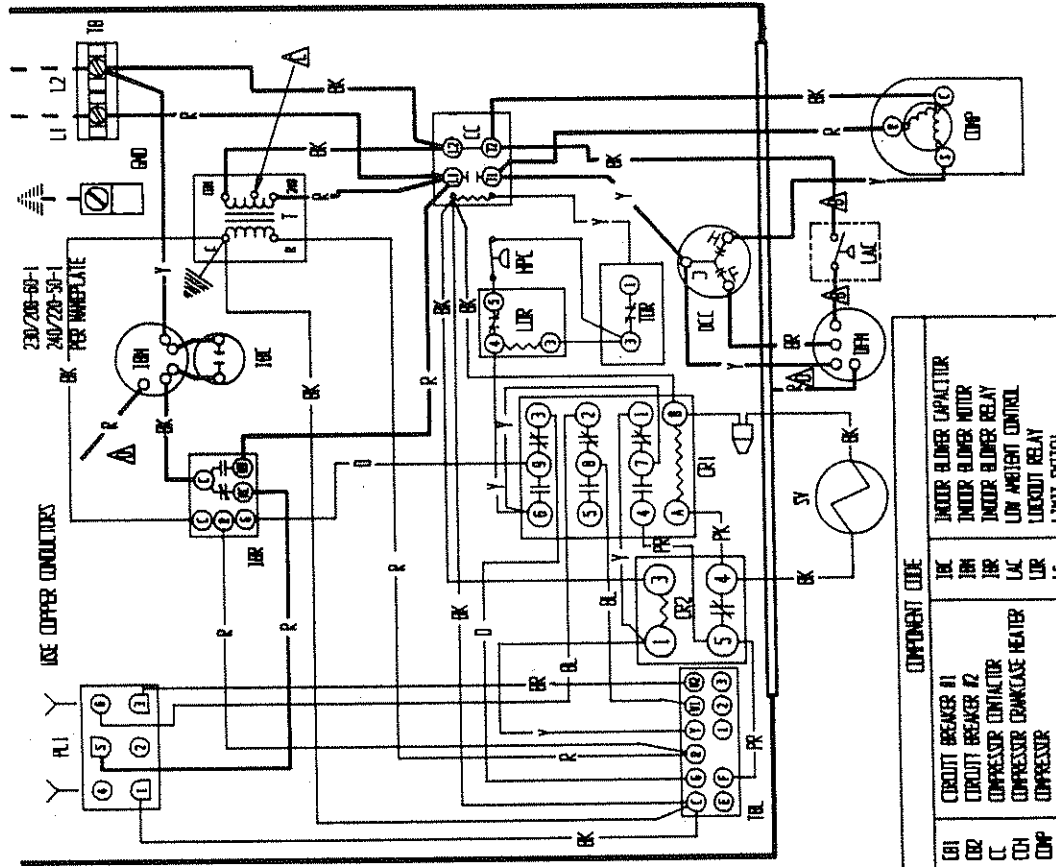
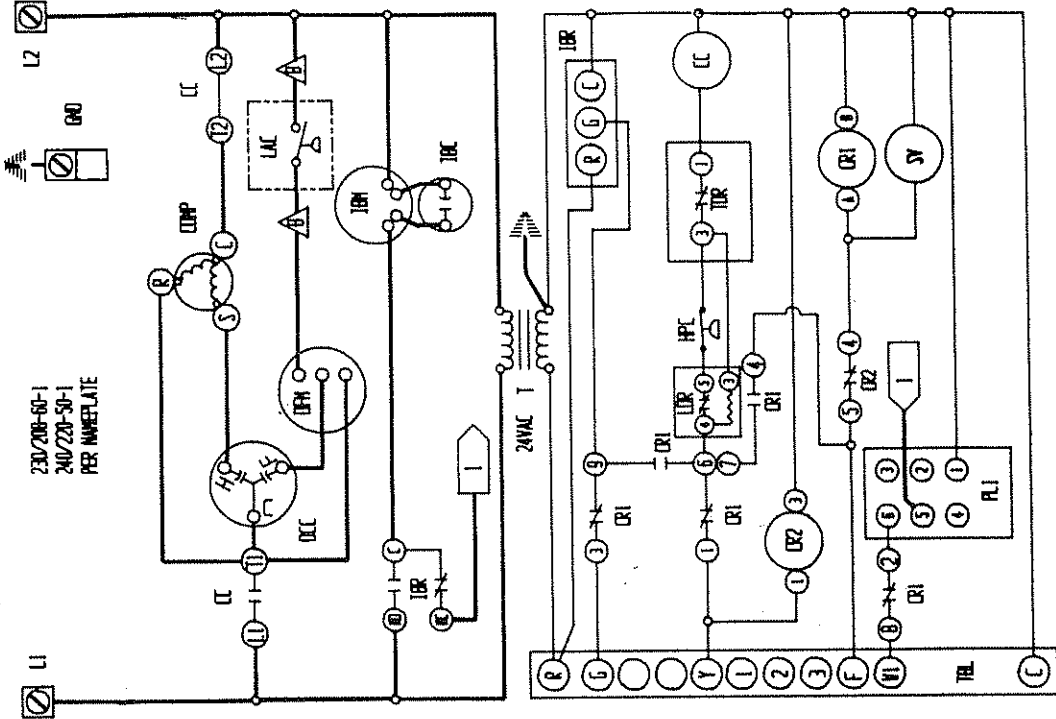
WIRE COLOR CODE

CR	BLACK	Y	YELLOW	V	VIOLET	T	TRNSFORMER
BR	BROWN	G	GREEN	GR	GRAY	R	RED
BL	BLUE	B	BLUE	BL	BLACK	L	LINE
RD	RED	R	RED	RD	RED	PK	PIK
OR	ORANGE	W	WHITE	W	WHITE	LV	LOW VOLTAGE

WIRE COLOR CODE

CR	BLACK	Y	YELLOW	V	VIOLET	T	TRNSFORMER
BR	BROWN	G	GREEN	GR	GRAY	R	RED
BL	BLUE	B	BLUE	BL	BLACK	L	LINE
RD	RED	R	RED	RD	RED	PK	PIK
OR	ORANGE	W	WHITE	W	WHITE	LV	LOW VOLTAGE

BARCO MFG. CO.
 405-118 A
 TEL. 1-800-451-118
 CHICAGO, ILL.



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

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

RED (LOW) BLACK (HIGH)
WIRE APPLICABLE

MOVE RED WIRE TO 200V TAP FOR 200V OPERATION

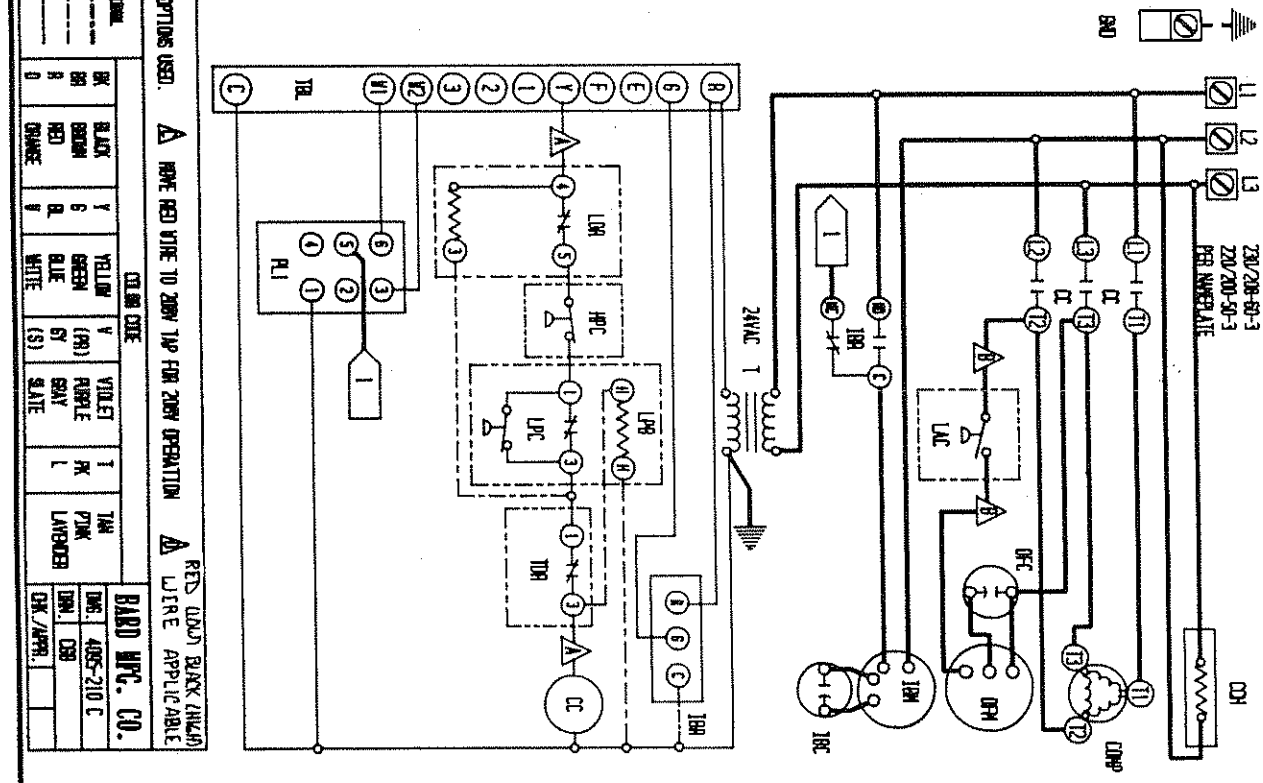
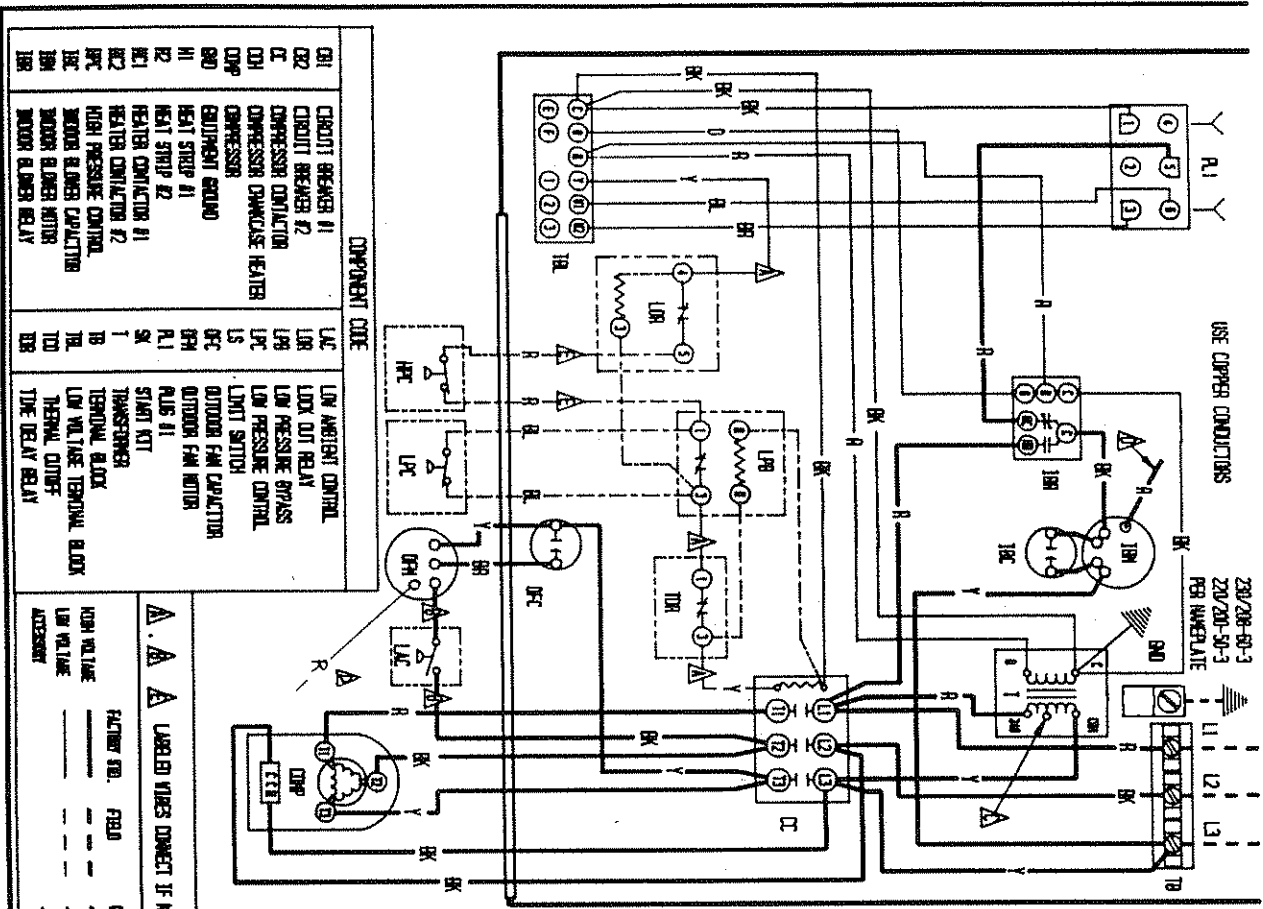
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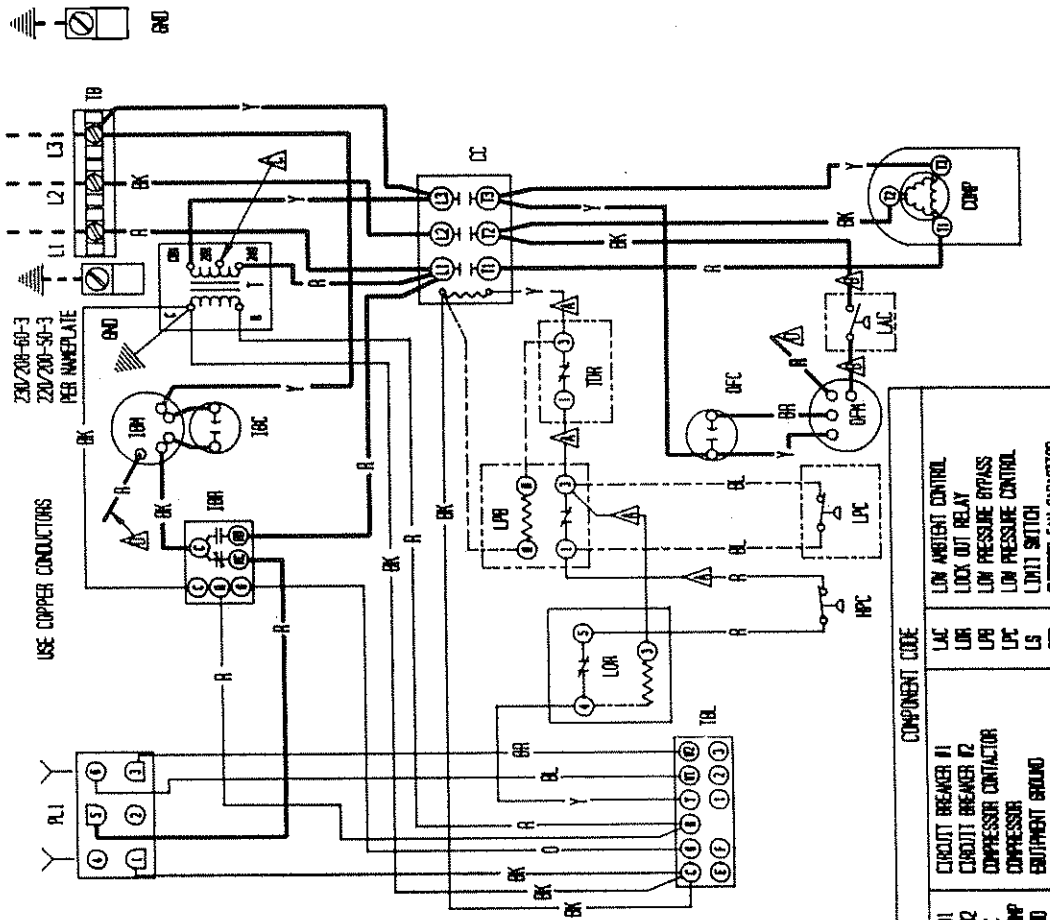
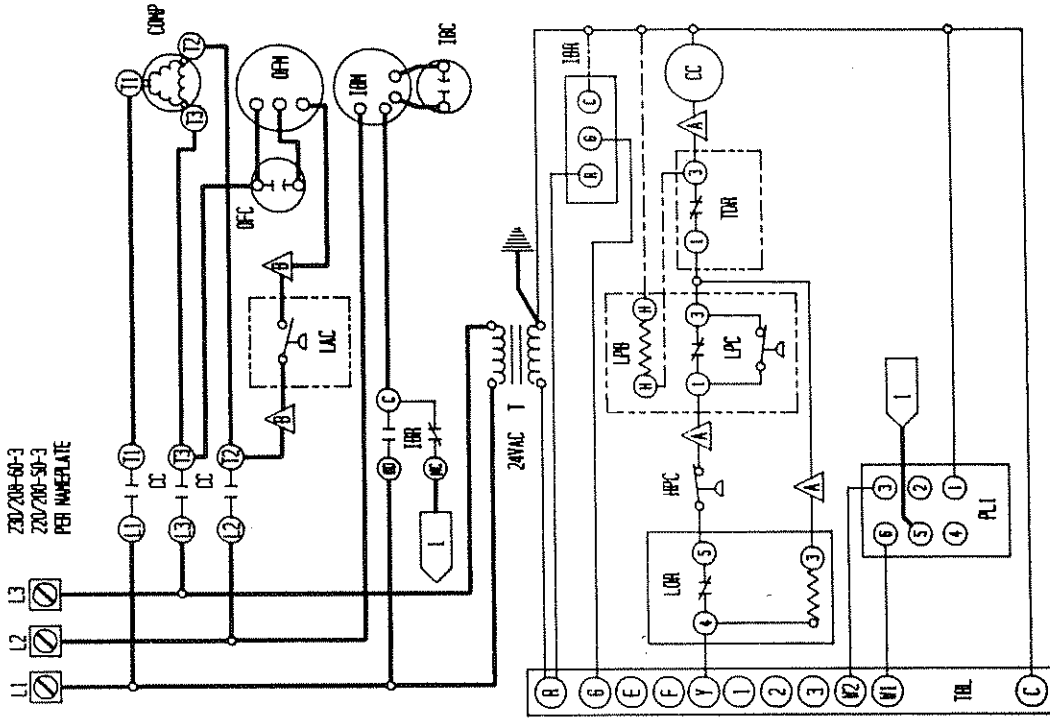
FACTORY STD.	FIELD	OPTIONAL
HIGH VOLTAGE	---	---
LOW VOLTAGE	---	---
ACCESSORY	---	---

BLACK	BROWN	RED	ORANGE	YELLOW	GREEN	BLUE	WHITE	VIOLET	PURPLE	GRAY	SLATE	TAN	PINK	LAVENDER
BK	BR	RD	OR	YL	GR	BL	WH	VL	PR	GRY	SLT	TN	PK	LV

BARB MFG. CO.
DNG. 4165-121
DYN.
CHK./APPR.

CIRCUIT CODE	COMPONENT CODE
IBR	INDOOR BLOWER CAPACITOR
IBH	INDOOR BLOWER MOTOR
IBC	INDOOR BLOWER RELAY
IAC	LOW AMBIENT CONTROL
IUR	LOCKOUT RELAY
LS	LIMIT SWITCH
IOR	INDOOR FAN MOTOR
PL1	PLUG #1
SV	SOLENOID VALVE
TR	TRANSFORMER
TL	TERMINAL BLOCK
LV	LOW VOLTAGE TERMINAL BLOCK
TRM	THERMAL LIMIT
TRD	TIME DELAY RELAY
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CCM	COMPRESSOR CRANKCASE HEATER
CCP	COMPRESSOR
CR1	CONTROL RELAY 1
CR2	CONTROL RELAY 2
CCN	DUAL CAN CAPACITOR
GRD	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H1C	HEATER CONTACTOR #1
H2C	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL





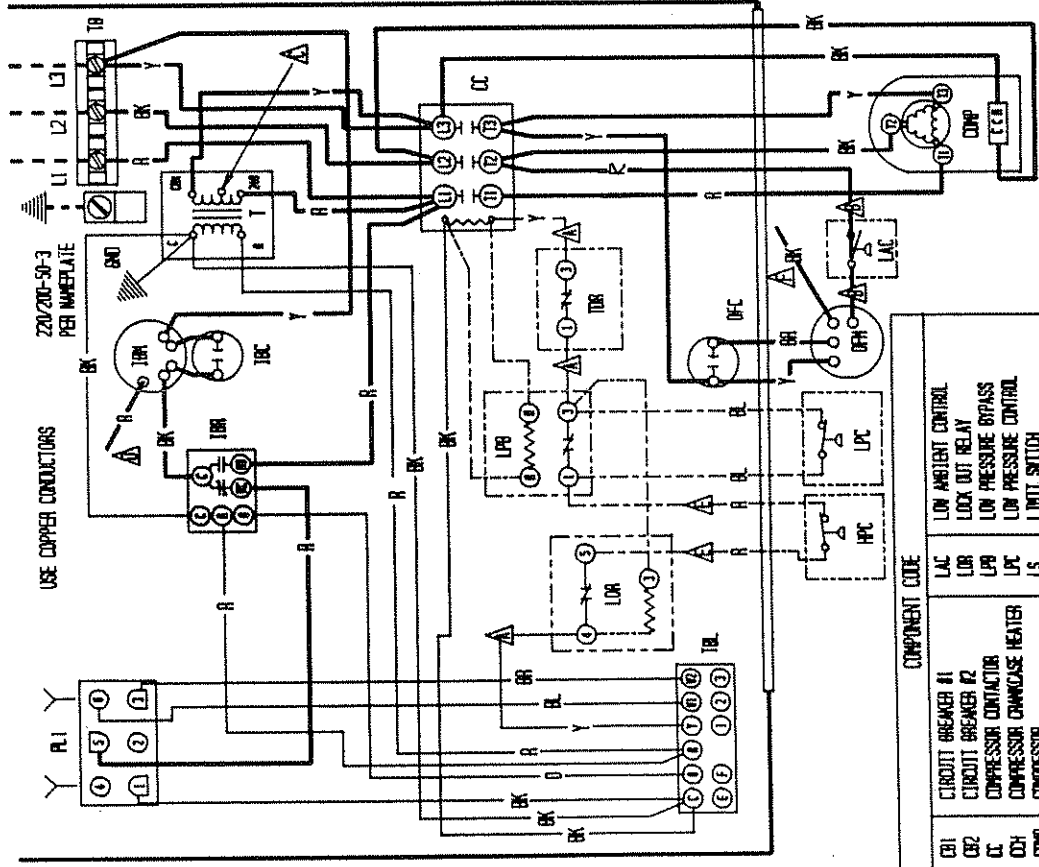
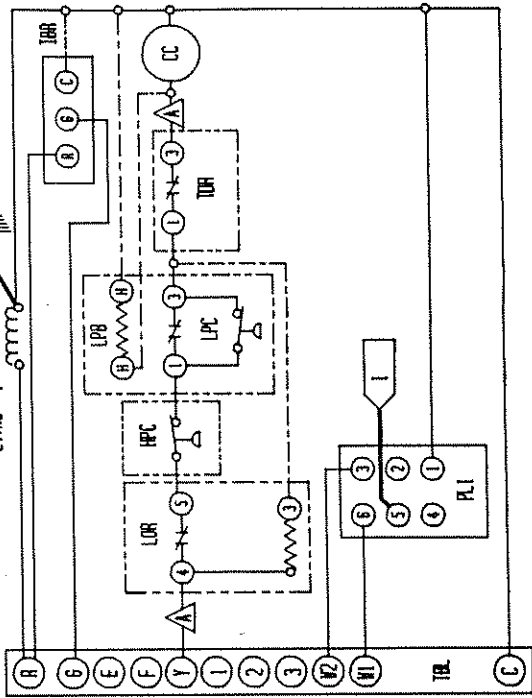
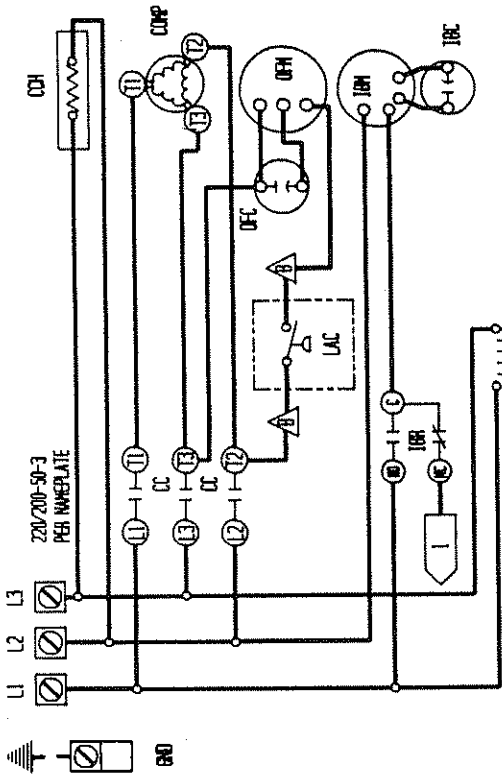
COMPONENT CODE		COLOR CODE		FACTORY STD.		HIGH VOLTAGE		LOW VOLTAGE		ACCESSORY	
CB1	CIRCUIT BREAKER #1	Y	YELLOW	BK	BLACK	Y	Y	BK	BK	Y	Y
CB2	CIRCUIT BREAKER #2	BL	BLUE	BR	BROWN	G	GREEN	BR	BR	BL	BL
CC	COMPRESSOR CONTACTOR	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
CGND	COMPRESSOR GROUND	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
HI	HEAT STRIP #1	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
HI2	HEAT STRIP #2	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
HC1	HEATER CONTACTOR #1	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
HC2	HEATER CONTACTOR #2	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
IBC	INDOOR BLOWER CONTACTOR	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
IBM	INDOOR BLOWER MOTOR	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
IBR	INDOOR BLOWER RELAY	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LAC	LOW AMBIENT CONTROL	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LOR	LOCK OUT RELAY	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LUB	LOW PRESSURE BYPASS	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LUC	LOW PRESSURE CONTROL	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LS	LIMIT SWITCH	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LSC	OUTDOOR FAN CAPACITOR	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LFC	OUTDOOR FAN MOTOR	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LHC	PLUR #1	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LUR	START KIT	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LOR	TRANSFORMER	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LUC	TERMINAL BLOCK	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LOR	TERMINAL BLOCK	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LUC	LOW VOLTAGE THERMAL BLOCK	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LOR	LOW VOLTAGE THERMAL BLOCK	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LUC	THERMAL CUTOFF	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL
LOR	TIME DELAY RELAY	BL	BLUE	R	RED	BL	BLUE	R	R	BL	BL

▲ ▲ LABELLED WIRES CONNECT IF NO OPTIONS USED. ▲ MOVE RED WIRE TO 208V TAP FOR 208V OPERATION ▲ RED (LOW) BLACK (HIGH)
 BARD MPC. CO.
 DWG. 4185-212
 DRN. CBR
 CHK./APPR.

COLOR CODE		TAP	
BK	BLACK	T	PK
BR	BROWN	I	L
R	RED	V	Y
D	ORANGE	Y	Y
Y	YELLOW	Y	Y
G	GREEN	Y	Y
B	BLUE	Y	Y
BL	WHITE	Y	Y
W	SLATE	Y	Y
P	PURPLE	Y	Y
PR	GRAY	Y	Y
PK	PINK	Y	Y
LAV	LAVENDER	Y	Y

230/208-60-3
 220/200-50-3
 PER WAREHOUSE

USE COPPER CONDUCTORS



MOVE RED WIRE TO 200V RED (LOW) BLACK (HIGH) (BLACK) HIGH SPEED TAP NOT TO BE USED ON 50HZ MODELS

APPLY LABELLED WIRES CONNECT IF NO OPTIONS USED. OPTIONAL

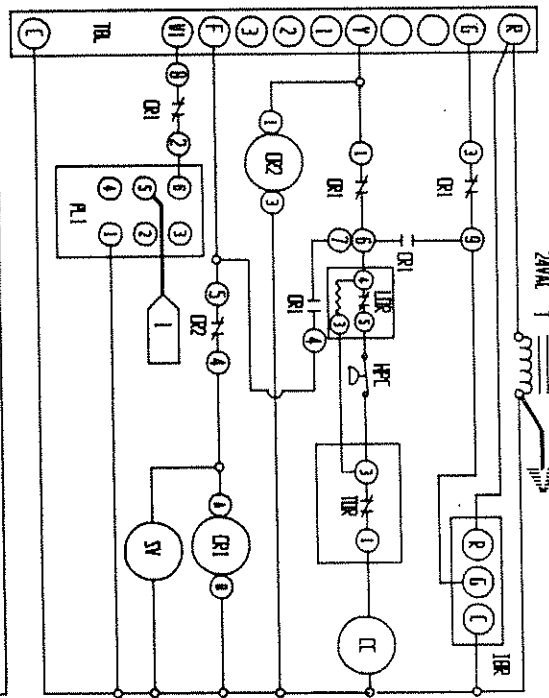
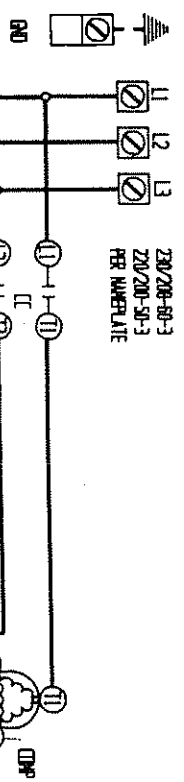
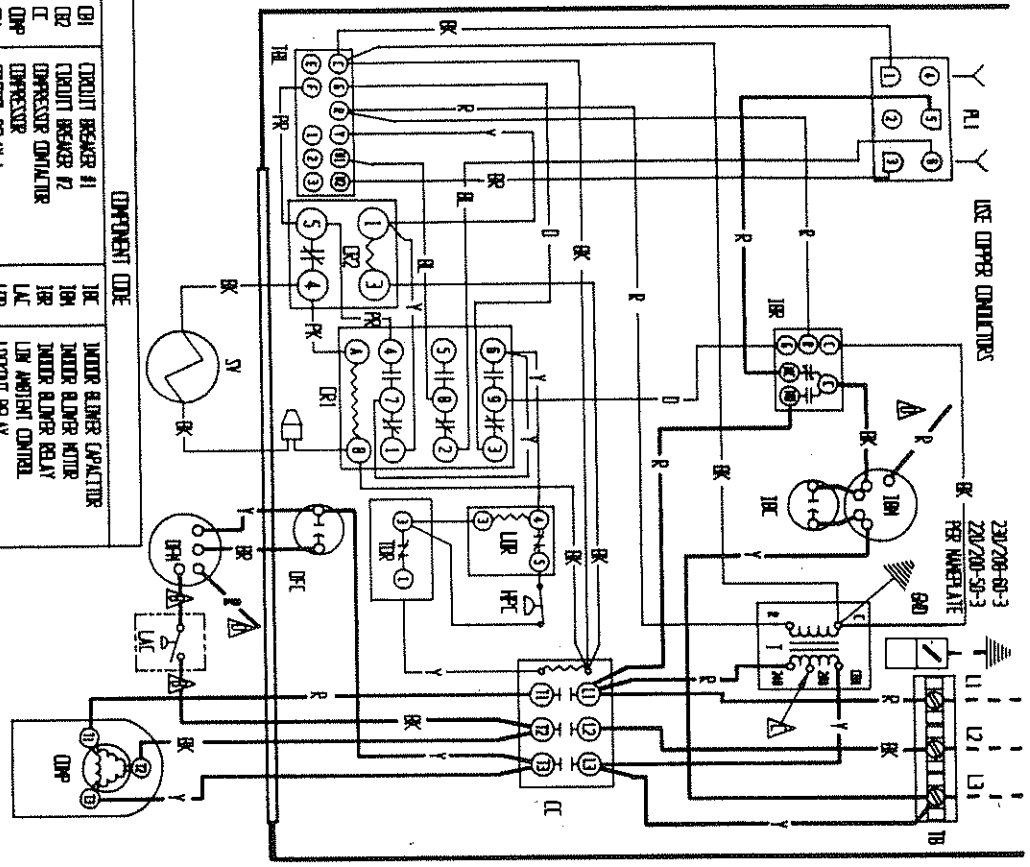
COLOR CODE		TAP	
Y	VIOLET	T	TAN
6	GREEN (CR)	PK	PINK
BL	BLUE	SN	SLATE
W	WHITE	GR	GRAY
OR	ORANGE	BR	BROWN
0	---	R	RED
---	---	B	BLACK

FACTORY SD. FIELD ACCESSORY

ROTH VOLTAGE LOW VOLTAGE ACCESSORY

BARCO MFG. CO.
DMS: 4185-214
DPR: DAY
DPR: APPR.

COMPONENT CODE	DESCRIPTION
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CDH	COMPRESSOR OVERHEAT HEATER
CDP	COMPRESSOR
END	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
IBR	INDOOR BLOWER MOTOR
IRB	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOR	LOCK OUT RELAY
LPR	LOW PRESSURE BYPASS
LPC	LOW PRESSURE CONTROL
LPS	LOW PRESSURE SWITCH
LFC	LIMIT SWITCH
LS	OUTDOOR FAN CAPACITOR
DFC	OUTDOOR FAN MOTOR
DPH	PLUG #1
PLS	START KIT
SK	TRANSFORMER
T	TERMINAL BLOCK
TB	LOW VOLTAGE TERMINAL BLOCK
TDB	LOW VOLTAGE TERMINAL BLOCK
TDD	THERMAL DUTY OFF
TDR	TIME DELAY RELAY



WIRE COLOR CODE

BLACK	B
BROWN	BR
RED	R
ORANGE	O
YELLOW	Y
BLUE	B
WHITE	W
VIOLET	V
PURPLE	P
GRAY	G
SLATE	S
PINK	P
LAURENCE	L

WIRE TYPE

FACTORY STD.	FIELD	OPTIONAL
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

WIRE CONNECTIONS

CR1	CR2	IIR	IIR	IIR	CRP
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----

WIRE COLOR CODE

BLACK	B
BROWN	BR
RED	R
ORANGE	O
YELLOW	Y
BLUE	B
WHITE	W
VIOLET	V
PURPLE	P
GRAY	G
SLATE	S
PINK	P
LAURENCE	L

WIRE TYPE

FACTORY STD.	FIELD	OPTIONAL
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

WIRE CONNECTIONS

CR1	CR2	IIR	IIR	IIR	CRP
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----

WIRE COLOR CODE

BLACK	B
BROWN	BR
RED	R
ORANGE	O
YELLOW	Y
BLUE	B
WHITE	W
VIOLET	V
PURPLE	P
GRAY	G
SLATE	S
PINK	P
LAURENCE	L

WIRE TYPE

FACTORY STD.	FIELD	OPTIONAL
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

WIRE CONNECTIONS

CR1	CR2	IIR	IIR	IIR	CRP
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----

WIRE COLOR CODE

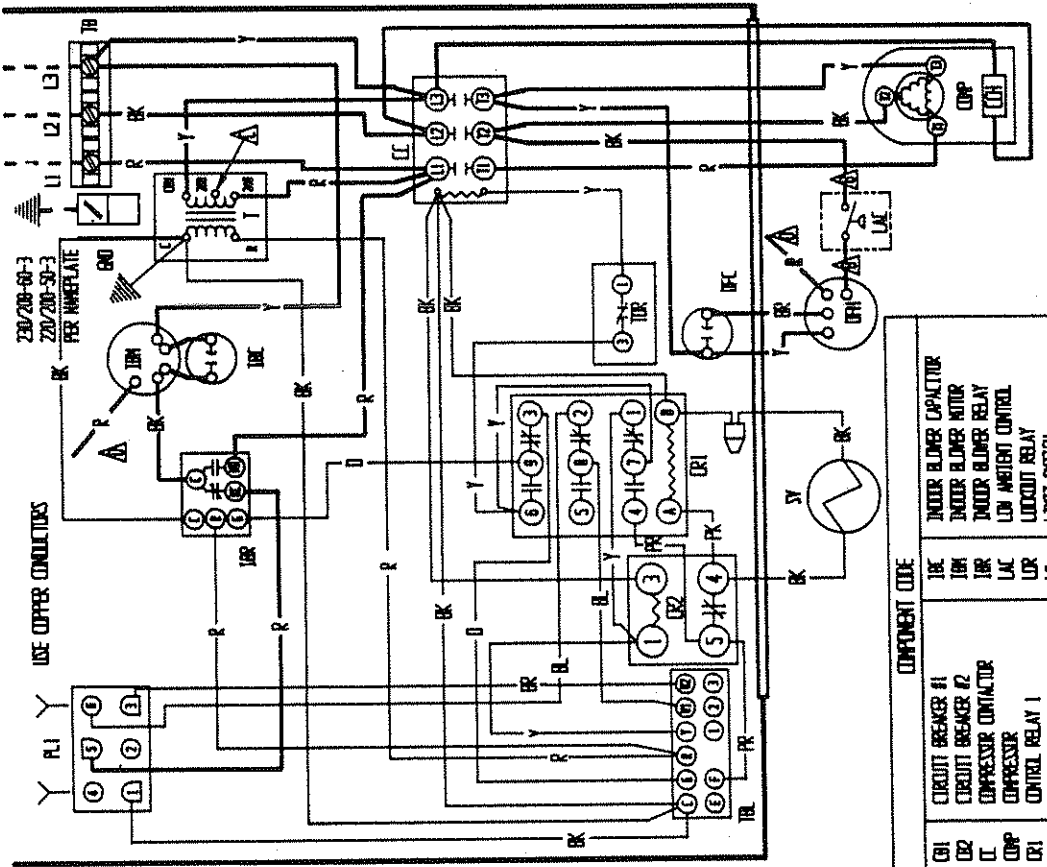
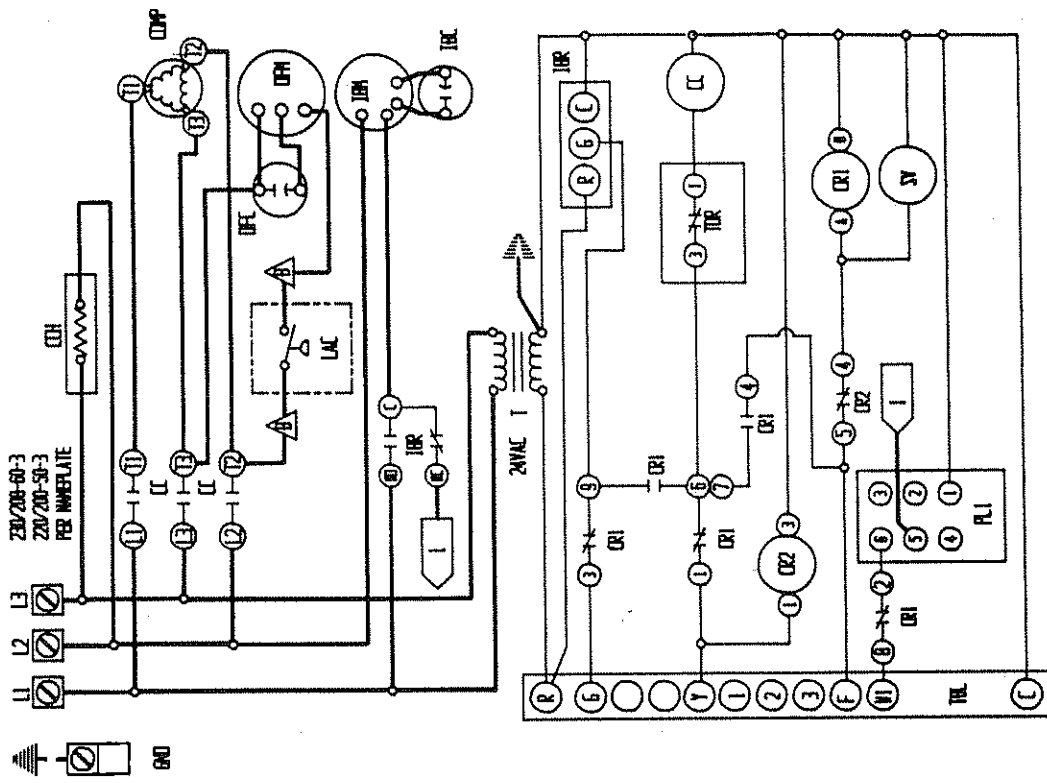
BLACK	B
BROWN	BR
RED	R
ORANGE	O
YELLOW	Y
BLUE	B
WHITE	W
VIOLET	V
PURPLE	P
GRAY	G
SLATE	S
PINK	P
LAURENCE	L

WIRE TYPE

FACTORY STD.	FIELD	OPTIONAL
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

WIRE CONNECTIONS

CR1	CR2	IIR	IIR	IIR	CRP
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----



▲ Labeled wires connect if no options used.

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

▲ RED (LOW) BLACK (HIGH) WIRE APPLICABLE

COLOR CODE		TM	FABR. NO.	
BK	BLACK	Y	485-221	DR.
BR	BROWN	G		CHK./MFR.
RD	RED	B		
OR	ORANGE	L		
YL	YELLOW	PK		
GN	GREEN	L		
BL	BLUE			
GR	GRAY			
VT	VIOLET			
PR	PURPLE			
SL	SLATE			

BAIRD MFG. CO.

COMPONENT CODE	DESCRIPTION
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
COMP	COMPRESSOR
CR1	CONTROL RELAY 1
CR2	CONTROL RELAY 2
CCG	DUAL CAM CAPACITOR
GRD	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H3	HEATER CONTACTOR #1
H4	HEATER CONTACTOR #2
H5	HIGH PRESSURE CONTROL
IR	INDOOR BLOWER CAPACITOR
IRM	INDOOR BLOWER MOTOR
IRK	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LS	LOCKOUT RELAY
LS1	LOCKOUT SWITCH
OFM	OUTDOOR FAN MOTOR
PL1	PLUG #1
SV	SOLENOID VALVE
TR	TRANSFORMER
TB	TERMINAL BLOCK
TEL	LOW VOLTAGE TERMINAL BLOCK
TEO	THERMAL CUTOFF
TDR	TIME DELAY RELAY

USE COPPER CONDUITS 480-B2-3

COMPONENT CODE

C	COMPRESSION CONTACTOR
CH	COMPRESSOR OVERCURE HEATER
CP	COMPRESSOR
ND	EQUIPMENT BEGROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
HP	HIGH PRESSURE CONTROL
ILC	INDOOR ALUMINUM CAPACITOR
IRC	INDOOR ALUMINUM MOTOR
IRC1	INDOOR ALUMINUM RELAY
LAC	LOW AMBIENT CONTROL
LDR	LOCK OUT RELAY

COMPONENT CODE

LPR	LOW PRESSURE PRESS
LFC	LOW PRESSURE CONTROL
LS	LOW PRESSURE LIMIT SWITCH
DEF	OUTDOOR FAN MOTOR
OP	OUTDOOR FAN RELAY
PO	OUTDOOR FAN RELAY ALL DISCONNECT
PLB #1	TRANSFORMER
T	TERMINAL BLOCK
TR	LOW VOLTAGE TERMINAL BLOCK
TCR	TEMPERATURE CONTROL
TRD	TEMPERATURE DELAY RELAY

FACTORY STD. FIELD OPTION.

BLACK BROWN YELLOW GREEN BLUE WHITE VIOLET PURPLE GRAY SLATE V P T TAN

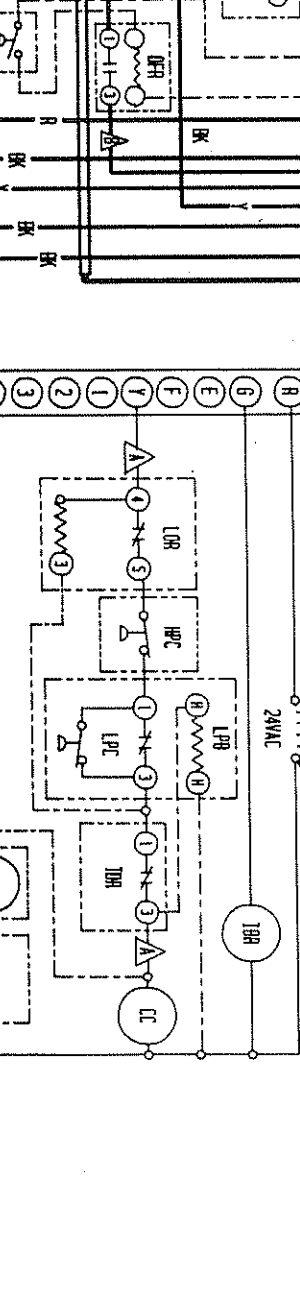
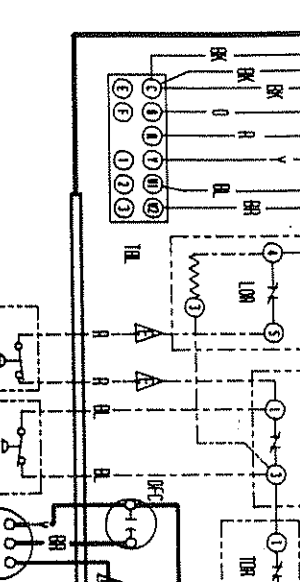
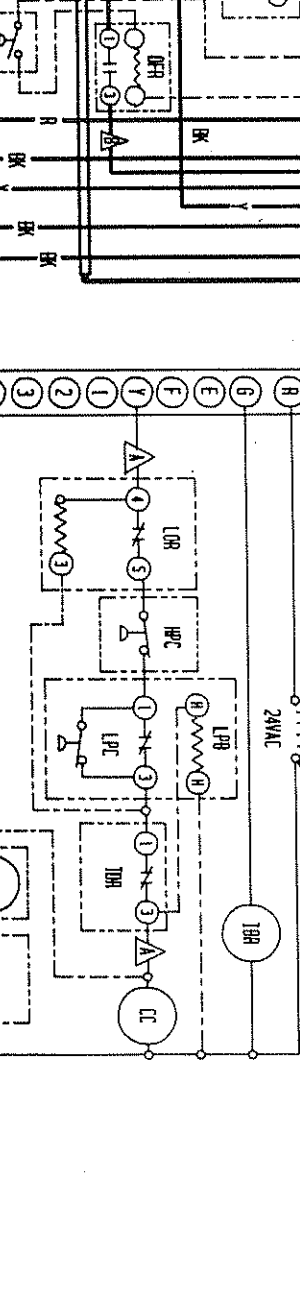
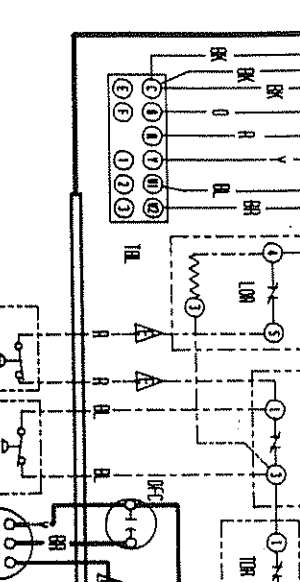
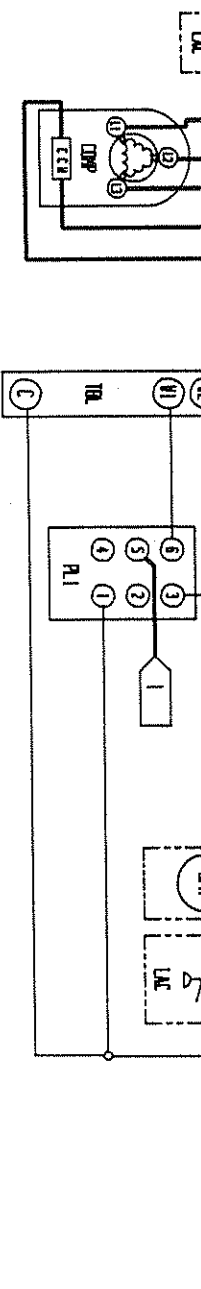
BLACK BROWN RED ORANGE Y S G R W V P K LAM

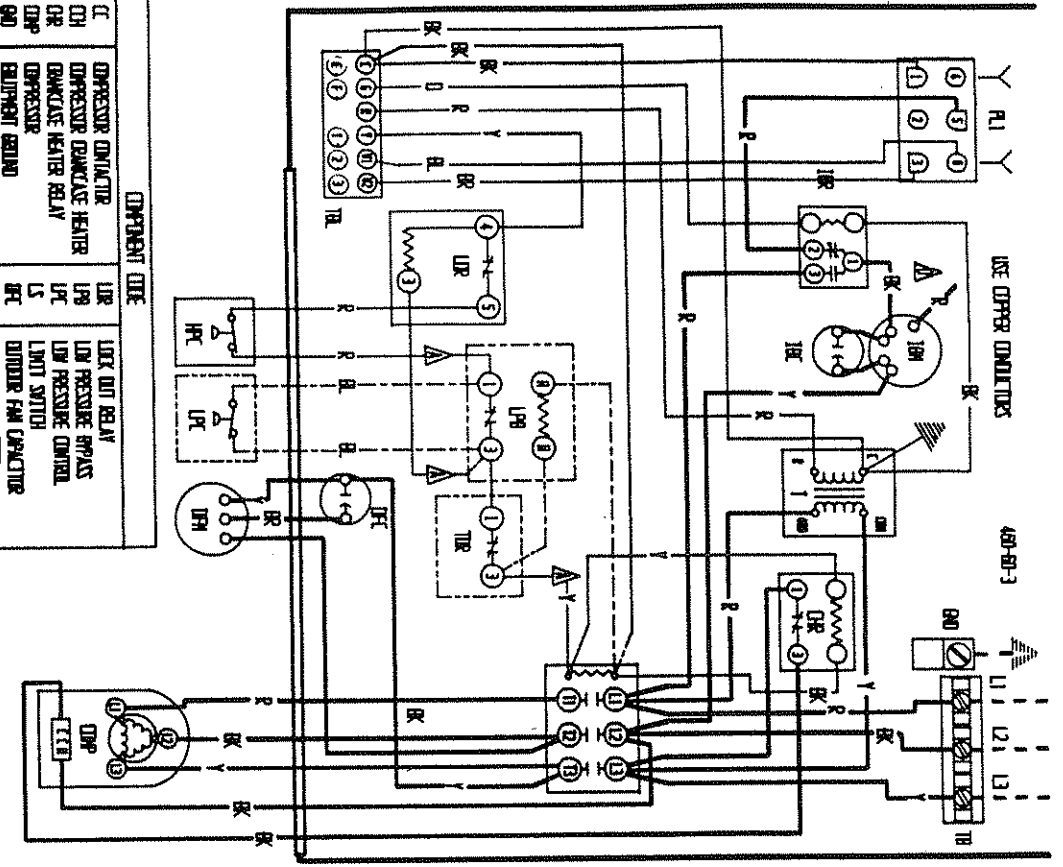
DARK BROWN DARK GREEN DARK RED

BARD MFC. CO.
1066 T 4095-310 A

FACTORY WIRE CONNECT IF NO OPTIONS USED. Δ RED (LDR) BLACK (HTR)

COLOR CODE	
Y	YELLOW
S	GREEN
G	GREEN
R	RED
W	WHITE
V	VIOLET
P	PURPLE
K	GRAY
L	SLATE
T	TAN
LAM	LAM





COMPONENT CODE

LC	COMPRESSOR CONTACTOR
CM	COMPRESSOR CONTACTOR HEATER
CH	COMPRESSOR HEATER RELAY
UR	COMPRESSOR
UR2	EQUIPMENT RELAY
UR3	BEAT STRIP #1
UR4	BEAT STRIP #2
UR5	BEAT STRIP #3
UR6	BEAT STRIP #4
UR7	BEAT STRIP #5
UR8	BEAT STRIP #6
UR9	BEAT STRIP #7
UR10	BEAT STRIP #8
UR11	BEAT STRIP #9
UR12	BEAT STRIP #10
UR13	BEAT STRIP #11
UR14	BEAT STRIP #12
UR15	BEAT STRIP #13
UR16	BEAT STRIP #14
UR17	BEAT STRIP #15
UR18	BEAT STRIP #16
UR19	BEAT STRIP #17
UR20	BEAT STRIP #18
UR21	BEAT STRIP #19
UR22	BEAT STRIP #20
UR23	BEAT STRIP #21
UR24	BEAT STRIP #22
UR25	BEAT STRIP #23
UR26	BEAT STRIP #24
UR27	BEAT STRIP #25
UR28	BEAT STRIP #26
UR29	BEAT STRIP #27
UR30	BEAT STRIP #28
UR31	BEAT STRIP #29
UR32	BEAT STRIP #30
UR33	BEAT STRIP #31
UR34	BEAT STRIP #32
UR35	BEAT STRIP #33
UR36	BEAT STRIP #34
UR37	BEAT STRIP #35
UR38	BEAT STRIP #36
UR39	BEAT STRIP #37
UR40	BEAT STRIP #38
UR41	BEAT STRIP #39
UR42	BEAT STRIP #40
UR43	BEAT STRIP #41
UR44	BEAT STRIP #42
UR45	BEAT STRIP #43
UR46	BEAT STRIP #44
UR47	BEAT STRIP #45
UR48	BEAT STRIP #46
UR49	BEAT STRIP #47
UR50	BEAT STRIP #48
UR51	BEAT STRIP #49
UR52	BEAT STRIP #50
UR53	BEAT STRIP #51
UR54	BEAT STRIP #52
UR55	BEAT STRIP #53
UR56	BEAT STRIP #54
UR57	BEAT STRIP #55
UR58	BEAT STRIP #56
UR59	BEAT STRIP #57
UR60	BEAT STRIP #58
UR61	BEAT STRIP #59
UR62	BEAT STRIP #60
UR63	BEAT STRIP #61
UR64	BEAT STRIP #62
UR65	BEAT STRIP #63
UR66	BEAT STRIP #64
UR67	BEAT STRIP #65
UR68	BEAT STRIP #66
UR69	BEAT STRIP #67
UR70	BEAT STRIP #68
UR71	BEAT STRIP #69
UR72	BEAT STRIP #70
UR73	BEAT STRIP #71
UR74	BEAT STRIP #72
UR75	BEAT STRIP #73
UR76	BEAT STRIP #74
UR77	BEAT STRIP #75
UR78	BEAT STRIP #76
UR79	BEAT STRIP #77
UR80	BEAT STRIP #78
UR81	BEAT STRIP #79
UR82	BEAT STRIP #80
UR83	BEAT STRIP #81
UR84	BEAT STRIP #82
UR85	BEAT STRIP #83
UR86	BEAT STRIP #84
UR87	BEAT STRIP #85
UR88	BEAT STRIP #86
UR89	BEAT STRIP #87
UR90	BEAT STRIP #88
UR91	BEAT STRIP #89
UR92	BEAT STRIP #90
UR93	BEAT STRIP #91
UR94	BEAT STRIP #92
UR95	BEAT STRIP #93
UR96	BEAT STRIP #94
UR97	BEAT STRIP #95
UR98	BEAT STRIP #96
UR99	BEAT STRIP #97
UR100	BEAT STRIP #98

▲ LABELLED WIRING CONNECT IF NO OPTIONS USED.

FACTORY SW.	FIELD	OPTIONAL
UR	UR	UR
UR2	UR2	UR2
UR3	UR3	UR3
UR4	UR4	UR4
UR5	UR5	UR5
UR6	UR6	UR6
UR7	UR7	UR7
UR8	UR8	UR8
UR9	UR9	UR9
UR10	UR10	UR10
UR11	UR11	UR11
UR12	UR12	UR12
UR13	UR13	UR13
UR14	UR14	UR14
UR15	UR15	UR15
UR16	UR16	UR16
UR17	UR17	UR17
UR18	UR18	UR18
UR19	UR19	UR19
UR20	UR20	UR20
UR21	UR21	UR21
UR22	UR22	UR22
UR23	UR23	UR23
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UR25	UR25	UR25
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UR28	UR28	UR28
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UR32	UR32	UR32
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UR63	UR63	UR63
UR64	UR64	UR64
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UR66	UR66	UR66
UR67	UR67	UR67
UR68	UR68	UR68
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UR72	UR72	UR72
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UR74	UR74	UR74
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UR89	UR89	UR89
UR90	UR90	UR90
UR91	UR91	UR91
UR92	UR92	UR92
UR93	UR93	UR93
UR94	UR94	UR94
UR95	UR95	UR95
UR96	UR96	UR96
UR97	UR97	UR97
UR98	UR98	UR98
UR99	UR99	UR99
UR100	UR100	UR100

▲ 500 (LWP) BLACK (HOB)

COLOR CODE

BLACK	GREEN	YELLOW	VIOLET	TAN
RED	BLUE	ORANGE	GRAY	PINK
WHITE	SLATE	SLATE	SLATE	LAMBER
Y	5	6	7	8
BL	BL	BL	BL	BL
W	W	W	W	W
(R)	(R)	(R)	(R)	(R)
(S)	(S)	(S)	(S)	(S)
SLAVE	SLAVE	SLAVE	SLAVE	SLAVE
L	L	L	L	L
LAMBER	LAMBER	LAMBER	LAMBER	LAMBER

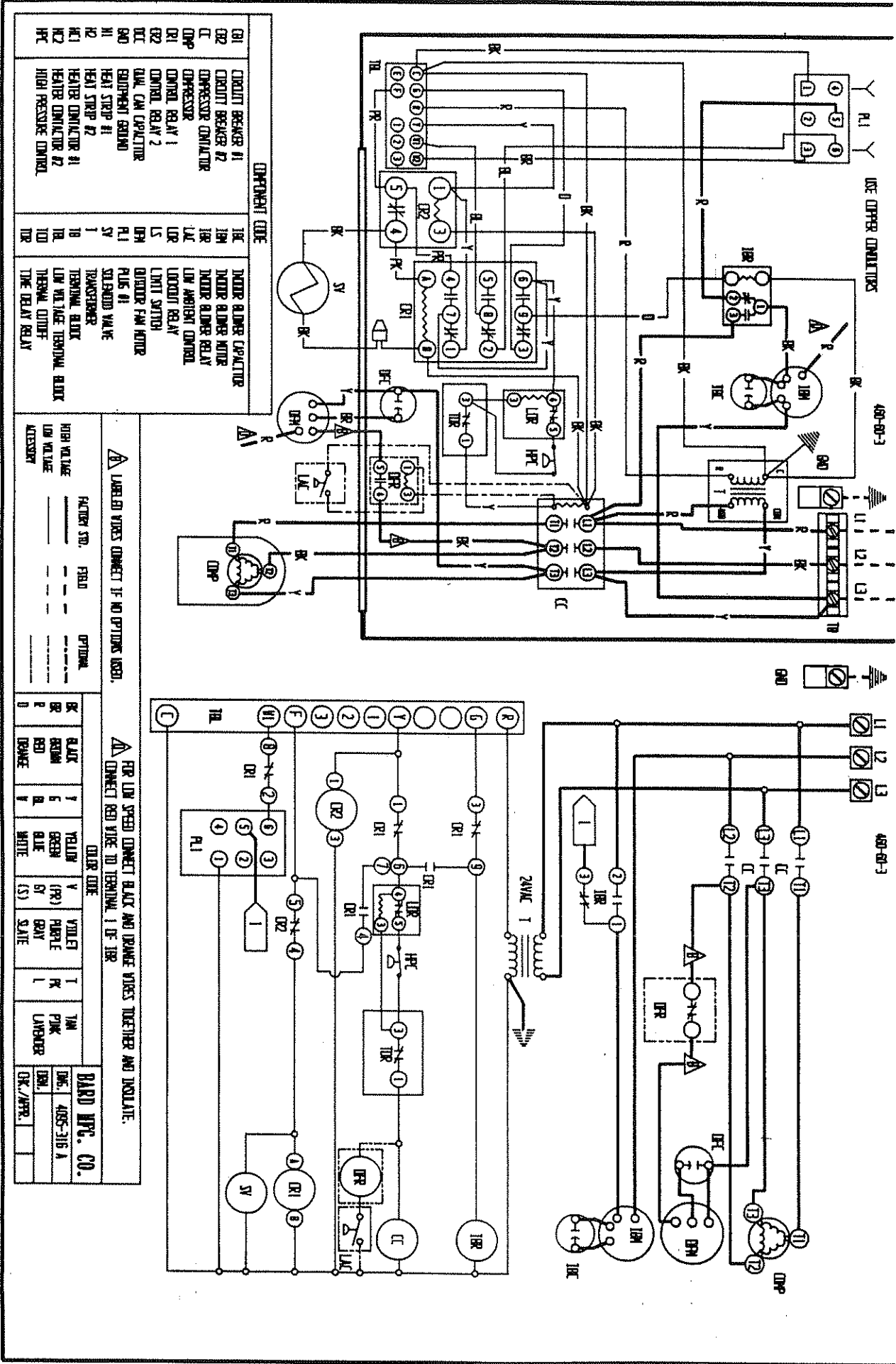
BARCO MFC. CO.

ENC. 405-313

ENC. 405-313

ENC. 405-313

ENC. 405-313



COMPONENT CODE	
CR1	CIRCUIT BREAKER #1
CR2	CIRCUIT BREAKER #2
CC	COMPRESSOR
CCP	COMPRESSOR CONTACTOR
CR1	CONTROL RELAY #1
CR2	CONTROL RELAY #2
CC	OWL CAP CAPACITOR
CR1	BAUDEN RELAY
CR2	HEAT STRIP #1
CR3	HEAT STRIP #2
CR4	HEATER CONTACTOR #1
CR5	HEATER CONTACTOR #2
CR6	HIGH PRESSURE CONTROL
CR7	INDOR BLUNDER CAPACITOR
CR8	INDOR BLUNDER MOTOR
CR9	INDOR BLUNDER RELAY
CR10	LOW AMBIENT CONTROL
CR11	LOOKOUT RELAY
CR12	LIMIT SWITCH
CR13	OUTDOOR FAN MOTOR
CR14	PLUG #1
CR15	SLIDING VALVE
CR16	TRANSFORMER
CR17	TERMINAL BLOCK
CR18	LOW VOLTAGE TERMINAL BLOCK
CR19	TERMINAL CUP
CR20	THE RELAY RELAY

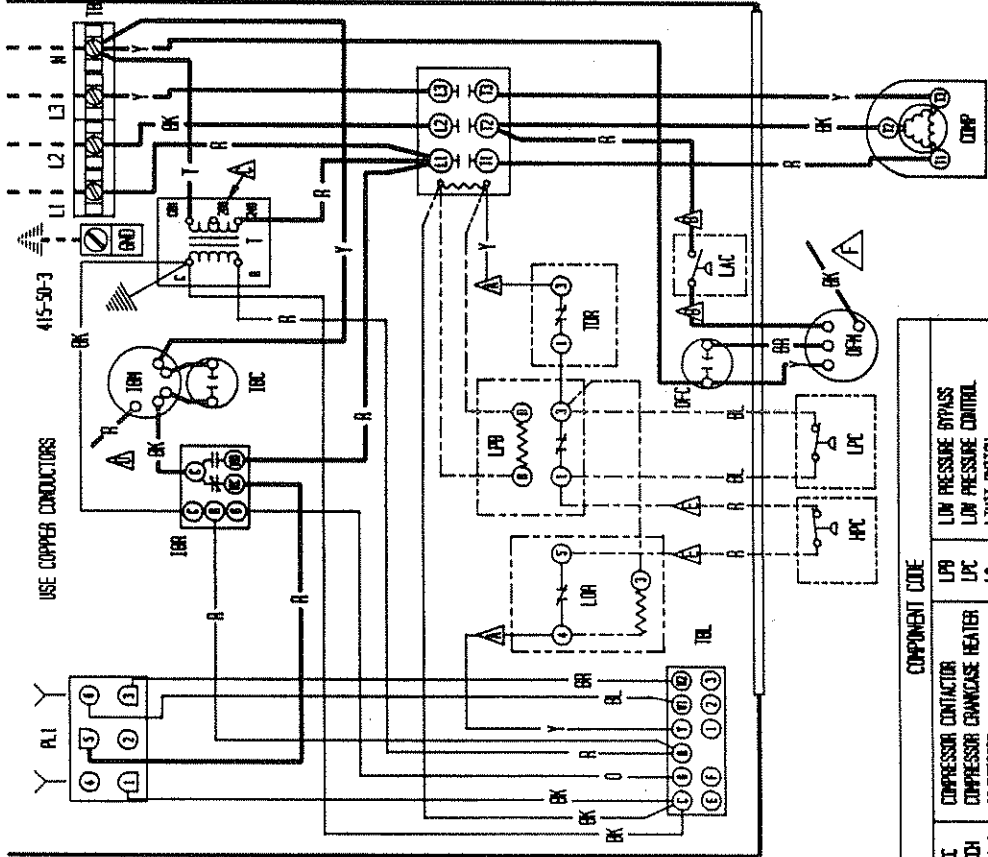
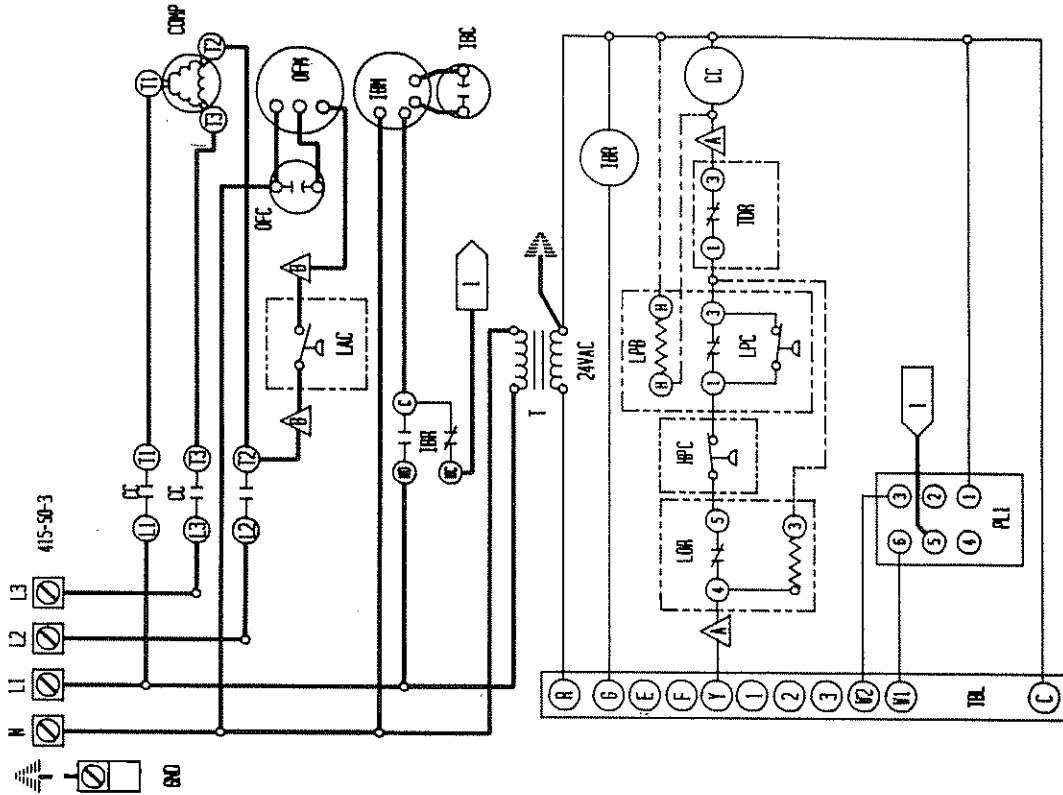
△ LABELLED WIRES CONNECT IF NO OPTIONS USED.

△ FOR LOW SPEED CONNECT BLACK AND BROWN WIRES TOGETHER AND INSULATE.

△ CONNECT RED WIRE TO TERMINAL 1 IF 1BR.

COLOR CODE		BARD HPC. CO.	
BLACK	Y	YELLOW	Y
BROWN	6	GREEN	(GR)
RED	R	BLUE	BL
BROWN	W	WHITE	(S)
BLACK	T	VOLTEI	T
BROWN	RK	PURPLE	RK
RED	IR	GRAY	IR
BROWN	IR	SLATE	IR
BLACK	IR	PINK	IR
BROWN	IR	LAVENDER	IR
RED	IR	DK/GR.	IR
BROWN	IR	DK/GR.	IR

2WVAC 1 amp fuse



USE COPPER CONDUCTORS

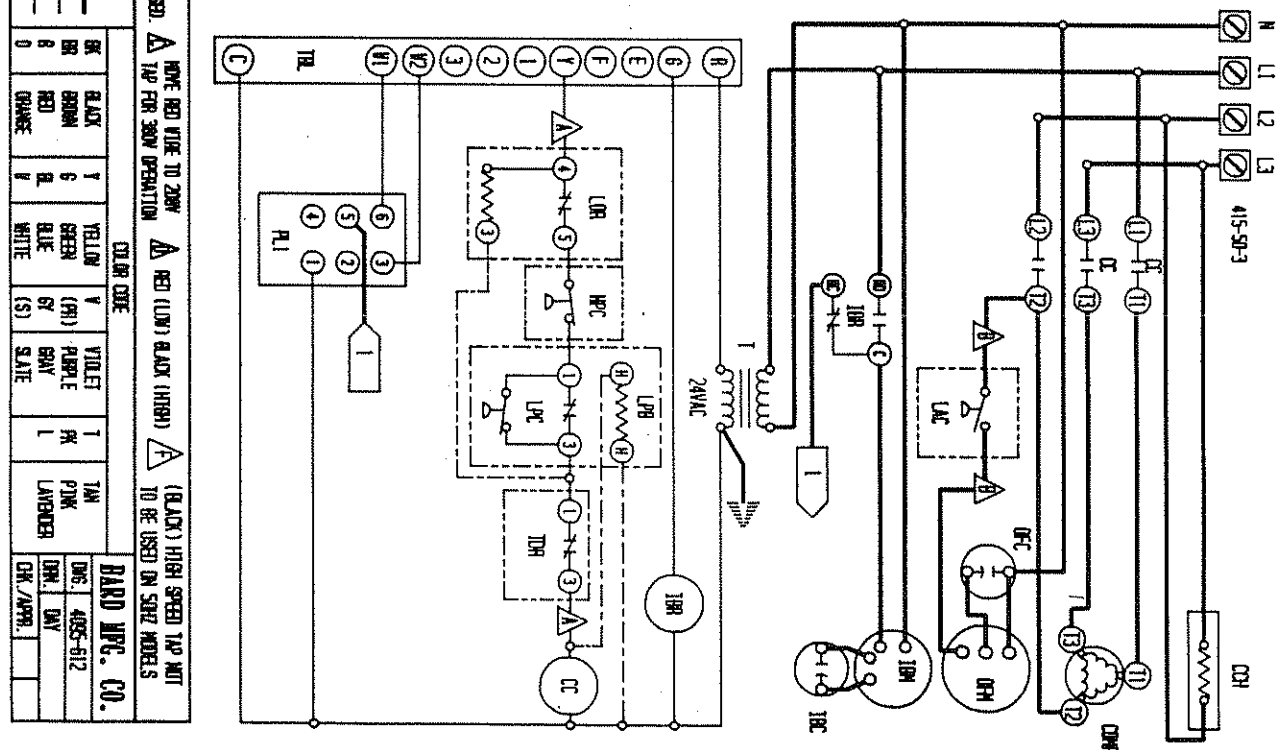
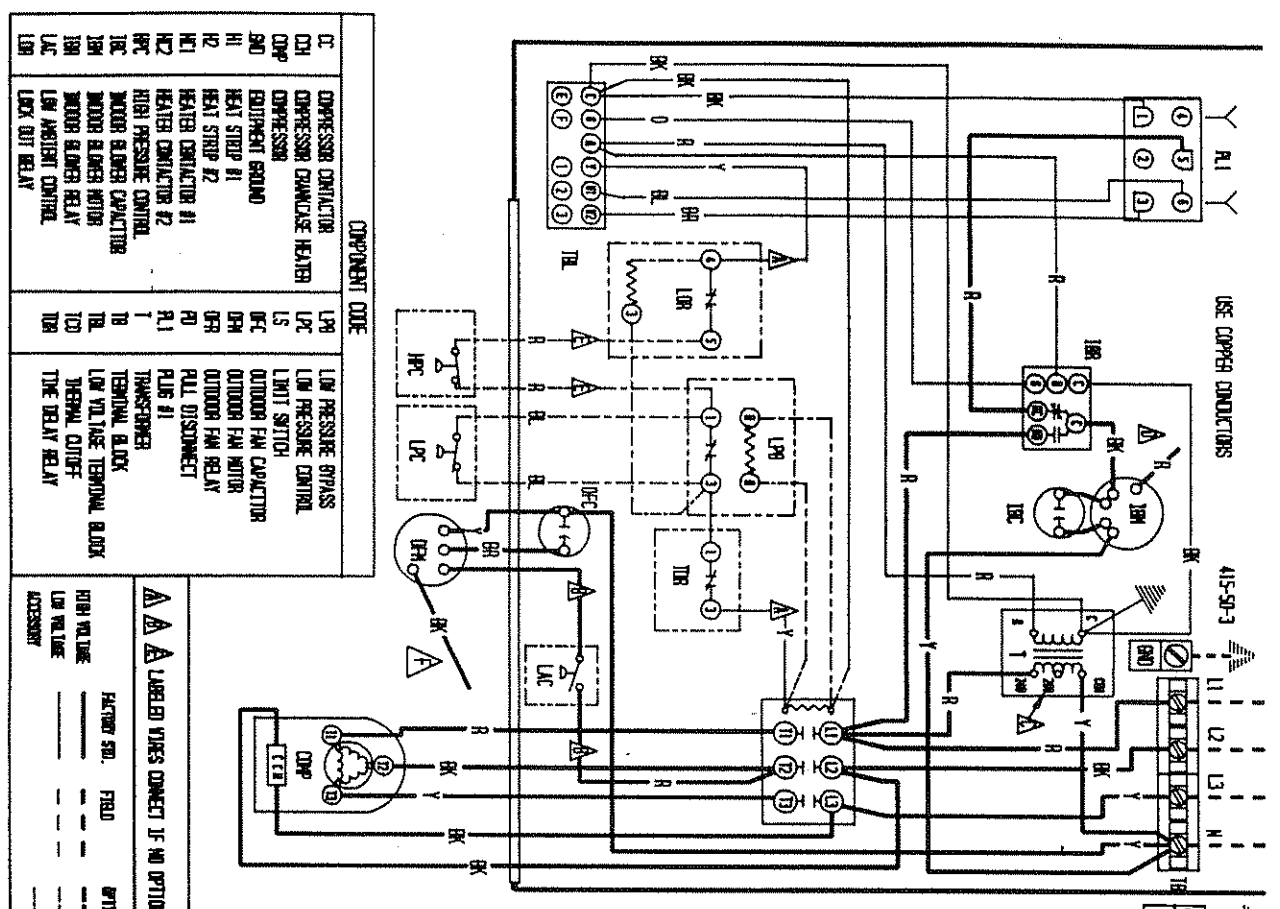
COMPONENT CODE	
CC	COMPRESSOR CONTACTOR
CH	COMPRESSOR CRANKCASE HEATER
CM	COMPRESSOR
END	EQUIPMENT GROUND
H1	HEAT STRIP #1
H2	HEAT STRIP #2
H3	HEATER CONTACTOR #1
H4	HEATER CONTACTOR #2
H5	HIGH PRESSURE CONTROL
H6	INDOOR BLOWER CAPACITOR
H7	INDOOR BLOWER MOTOR
H8	INDOOR BLOWER RELAY
H9	LOW AMBIENT CONTROL
H10	LOCK OUT RELAY
L1	LOW PRESSURE SWITCH
L2	LOW PRESSURE CONTROL
L3	LIMIT SWITCH
L4	OUTDOOR FAN CAPACITOR
L5	OUTDOOR FAN MOTOR
L6	OUTDOOR FAN RELAY
L7	PULL DISCONNECT
L8	PLUG #1
L9	TRANSFORMER
L10	TERMINAL BLOCK
L11	LOW VOLTAGE TERMINAL BLOCK
L12	THERMAL OUTFLOW
L13	TIME DELAY RELAY
L14	LOW PRESSURE STIPAS
L15	LOW PRESSURE CONTROL
L16	LOW VOLTAGE TERMINAL BLOCK
L17	LOW VOLTAGE TERMINAL BLOCK
L18	LOW VOLTAGE TERMINAL BLOCK
L19	LOW VOLTAGE TERMINAL BLOCK
L20	LOW VOLTAGE TERMINAL BLOCK
L21	LOW VOLTAGE TERMINAL BLOCK
L22	LOW VOLTAGE TERMINAL BLOCK
L23	LOW VOLTAGE TERMINAL BLOCK
L24	LOW VOLTAGE TERMINAL BLOCK
L25	LOW VOLTAGE TERMINAL BLOCK
L26	LOW VOLTAGE TERMINAL BLOCK
L27	LOW VOLTAGE TERMINAL BLOCK
L28	LOW VOLTAGE TERMINAL BLOCK
L29	LOW VOLTAGE TERMINAL BLOCK
L30	LOW VOLTAGE TERMINAL BLOCK
L31	LOW VOLTAGE TERMINAL BLOCK
L32	LOW VOLTAGE TERMINAL BLOCK
L33	LOW VOLTAGE TERMINAL BLOCK
L34	LOW VOLTAGE TERMINAL BLOCK
L35	LOW VOLTAGE TERMINAL BLOCK
L36	LOW VOLTAGE TERMINAL BLOCK
L37	LOW VOLTAGE TERMINAL BLOCK
L38	LOW VOLTAGE TERMINAL BLOCK
L39	LOW VOLTAGE TERMINAL BLOCK
L40	LOW VOLTAGE TERMINAL BLOCK
L41	LOW VOLTAGE TERMINAL BLOCK
L42	LOW VOLTAGE TERMINAL BLOCK
L43	LOW VOLTAGE TERMINAL BLOCK
L44	LOW VOLTAGE TERMINAL BLOCK
L45	LOW VOLTAGE TERMINAL BLOCK
L46	LOW VOLTAGE TERMINAL BLOCK
L47	LOW VOLTAGE TERMINAL BLOCK
L48	LOW VOLTAGE TERMINAL BLOCK
L49	LOW VOLTAGE TERMINAL BLOCK
L50	LOW VOLTAGE TERMINAL BLOCK
L51	LOW VOLTAGE TERMINAL BLOCK
L52	LOW VOLTAGE TERMINAL BLOCK
L53	LOW VOLTAGE TERMINAL BLOCK
L54	LOW VOLTAGE TERMINAL BLOCK
L55	LOW VOLTAGE TERMINAL BLOCK
L56	LOW VOLTAGE TERMINAL BLOCK
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L68	LOW VOLTAGE TERMINAL BLOCK
L69	LOW VOLTAGE TERMINAL BLOCK
L70	LOW VOLTAGE TERMINAL BLOCK
L71	LOW VOLTAGE TERMINAL BLOCK
L72	LOW VOLTAGE TERMINAL BLOCK
L73	LOW VOLTAGE TERMINAL BLOCK
L74	LOW VOLTAGE TERMINAL BLOCK
L75	LOW VOLTAGE TERMINAL BLOCK
L76	LOW VOLTAGE TERMINAL BLOCK
L77	LOW VOLTAGE TERMINAL BLOCK
L78	LOW VOLTAGE TERMINAL BLOCK
L79	LOW VOLTAGE TERMINAL BLOCK
L80	LOW VOLTAGE TERMINAL BLOCK
L81	LOW VOLTAGE TERMINAL BLOCK
L82	LOW VOLTAGE TERMINAL BLOCK
L83	LOW VOLTAGE TERMINAL BLOCK
L84	LOW VOLTAGE TERMINAL BLOCK
L85	LOW VOLTAGE TERMINAL BLOCK
L86	LOW VOLTAGE TERMINAL BLOCK
L87	LOW VOLTAGE TERMINAL BLOCK
L88	LOW VOLTAGE TERMINAL BLOCK
L89	LOW VOLTAGE TERMINAL BLOCK
L90	LOW VOLTAGE TERMINAL BLOCK
L91	LOW VOLTAGE TERMINAL BLOCK
L92	LOW VOLTAGE TERMINAL BLOCK
L93	LOW VOLTAGE TERMINAL BLOCK
L94	LOW VOLTAGE TERMINAL BLOCK
L95	LOW VOLTAGE TERMINAL BLOCK
L96	LOW VOLTAGE TERMINAL BLOCK
L97	LOW VOLTAGE TERMINAL BLOCK
L98	LOW VOLTAGE TERMINAL BLOCK
L99	LOW VOLTAGE TERMINAL BLOCK
L100	LOW VOLTAGE TERMINAL BLOCK

▲ Labeled wires connect if no options used. ▲ Red (Low) Black (High) ▲ Move red wire to 200V tap for 300V operation ▲ (Black) High speed tap not to be used on 50Hz models

FACTORY SET	FIELD	OPTIONAL
HIGH VOLTAGE	---	---
LOW VOLTAGE	---	---
ACCESSORY	---	---

COLOR CODE	
Y	YELLOW
G	GREEN
B	BLUE
W	WHITE
OR	BROWN
R	RED
OR	ORANGE
Y	VIOLET
P	PURPLE
SL	SLATE
T	TAN
P	PINK
L	LAVENDER

HARDWARE CO.	
QMS.	4005-611 A
DATE	3-8-93
CHK/APPR.	



COMPONENT CODE	COMPONENT CODE	COMPONENT CODE
CC	COMPRESSOR CONTACTOR	COMPRESSOR CONTACTOR
CH	HEATER	HEATER
CM	COMPRESSOR	COMPRESSOR
CP	COMPRESSOR	COMPRESSOR
DP	COMPRESSOR	COMPRESSOR
EP	COMPRESSOR	COMPRESSOR
FP	COMPRESSOR	COMPRESSOR
GP	COMPRESSOR	COMPRESSOR
HP	COMPRESSOR	COMPRESSOR
IP	COMPRESSOR	COMPRESSOR
JP	COMPRESSOR	COMPRESSOR
KP	COMPRESSOR	COMPRESSOR
LP	COMPRESSOR	COMPRESSOR
MP	COMPRESSOR	COMPRESSOR
NP	COMPRESSOR	COMPRESSOR
OP	COMPRESSOR	COMPRESSOR
PP	COMPRESSOR	COMPRESSOR
QP	COMPRESSOR	COMPRESSOR
RP	COMPRESSOR	COMPRESSOR
SP	COMPRESSOR	COMPRESSOR
TP	COMPRESSOR	COMPRESSOR
UP	COMPRESSOR	COMPRESSOR
VP	COMPRESSOR	COMPRESSOR
WP	COMPRESSOR	COMPRESSOR
XP	COMPRESSOR	COMPRESSOR
YP	COMPRESSOR	COMPRESSOR
ZP	COMPRESSOR	COMPRESSOR

COMPONENT CODE	COMPONENT CODE	COMPONENT CODE
LA	LOW PRESSURE BYPASS	LA
LB	LOW PRESSURE CONTROL	LB
LC	LIMIT SWITCH	LC
LD	OUTDOOR FAN CAPACITOR	LD
LE	OUTDOOR FAN MOTOR	LE
LF	OUTDOOR FAN RELAY	LF
LG	ALL DISCONNECT	LG
LH	FAUSE #1	LH
LI	TRANSFORMER	LI
LJ	TERMINAL BLOCK	LJ
LK	LOW VOLTAGE TERMINAL BLOCK	LK
LL	TERMINAL BLOCK	LL
LM	THE DELAY RELAY	LM

▲▲▲ LABELLED WIRES CONNECT IF NO OPTIONS USED. ▲ TIP FOR 300V OPERATION. (BLACK) HIGH SPEED TIP NOT TO BE USED ON SIZE MODELS.

FACTORY SFD.	FIELD	OPTIONAL
BK	BLACK	Y
BR	BROWN	6
R	RED	BL
0	ORANGE	W
		WHITE

COLOR CODE	V	Y	VI	T	TAN
GREEN	(GR)	YELLOW	VI <td>PK</td> <td>PINK</td>	PK	PINK
BLUE	ST	GREEN	PL <td>PK</td> <td>PINK</td>	PK	PINK
GR	(S)	BLUE	SL <td>L</td> <td>LAVENDER</td>	L	LAVENDER
SLATE		WHITE			

BARO MFC. CO.
DATE: 4025-612
REV. 1 DAY
CHK. APPR. 1