

INSTALLATION INSTRUCTIONS

WALL MOUNTED PACKAGE AIR CONDITIONERS

MODELS

WA301

WA361

DATE: 05-29-94

**MANUAL 2100-192 REV. G
SUPERSEDES REV. F
FILE VOL. III, TAB 16**

SECTION 1 --GETTING OTHER INFORMATION AND PUBLICATIONS

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

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

FOR MORE INFORMATION, CONTACT THESE PUBLISHERS

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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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PART 1 -- WALL MOUNT GENERAL INFORMATION

AIR CONDITIONER WALL MOUNT MODEL NOMENCLATURE

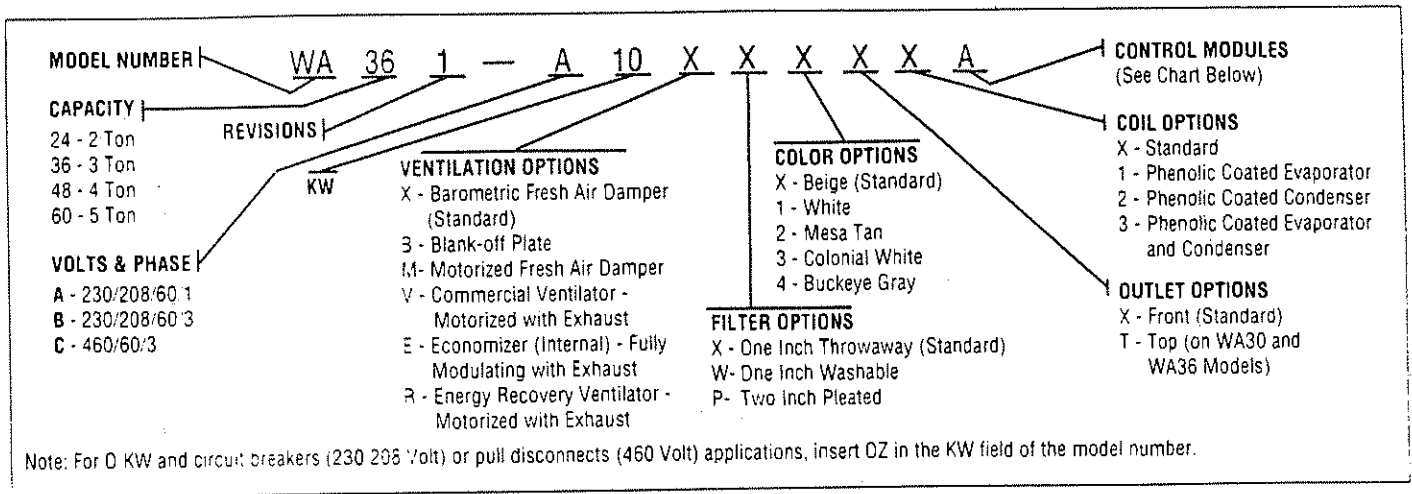


TABLE 1 ELECTRIC HEAT TABLE

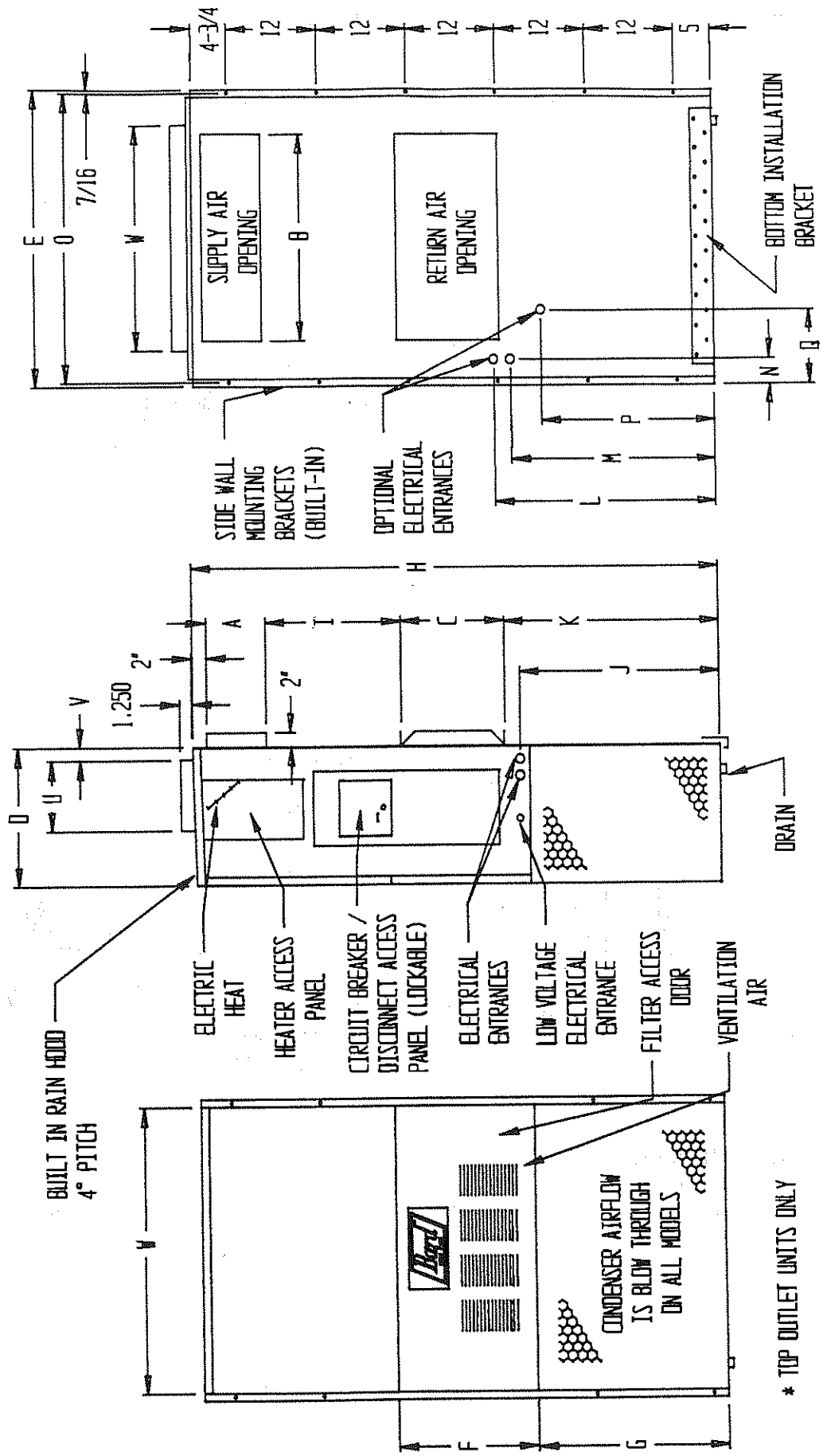
Models	WA301-A		WA301-B				WA301-C		WA361-A				WA361-B				WA361-C			
	240-1		208-1		240-3		208-3		460-3		240-1		208-1		240-3		208-3		460-3	
	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU
5	20.8	17065	18.1	12800							20.8	17065	18.1	12800						
8	33.3	27300	28.8	20475							33.3	27300	28.8	20475						
10	41.6	34130	36.2	25600							41.6	34130	36.2	25600						
15											62.5	51200	54.1	38400						
6					14.4	20500	12.5	15360	7.2	20475					14.4	20500	12.5	15360	7.2	20475
9					21.7	30600	18.7	23030	10.8	30700					21.7	30600	18.7	23030	10.8	30700
15									18	51200					36.2	51200	31.2	38400	18.0	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

UNIT	WIDTH (W)	DEPTH (D)	HEIGHT (H)	SUPPLY		RETURN		E	F	G	I	J	K	L	M	N	O	P	Q	U	*V	*W
				A	B	C	B															
30 & 36	37-7/8	16-7/8	70-1/2	7-7/8	27-7/8	13-7/8	27-7/8	39-7/8	18-1/4	25-3/4	18	26-3/4	28-3/4	29-1/4	27	2-9/16	39	22-3/4	9	7-7/8	1	31-7/8



* TOP OUTLET UNITS ONLY

FRONT VIEW

SIDE VIEW

BACK VIEW

ELECTRICAL SPECIFICATIONS

TABLE 2

Model	Rated Volts and Phase	SINGLE CIRCUIT				DUAL CIRCUIT								
		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				
WA301-A00,A0Z		1	24	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	31	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A08 (4)	230/208-1	1	47	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	57	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15 (4)		1 or 2	83	90	4	8	55	26	60	30	4	10	8	10
WA301-B00,B0Z		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B06 (4)	230/208-3	1	23	25	10	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 (4)		1	50	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA301-C00,C0Z		1	10	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C06 (4)	460-3	1	12	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C09		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15 (4)		1	26	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA361-A00,A0Z		1	27	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	31	35	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A08 (4)	230/208-1	1	47	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	57	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15 (4)		1 or 2	83	90	4	8	55	26	60	30	4	10	8	10
WA361-B00,B0Z		1	20	25	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B06 (4)	230/208-3	1	23	25	10	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 (4)		1	50	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA361-C00,C0Z		1	10	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C06 (4)	460-3	1	12	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C09		1	17	20	12	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15 (4)		1	26	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) Maximum size of the time delay fuse or HACR type circuit breaker for protection of field wiring conductors.
 (2) Based on 75°C copper wire. All wiring must conform to NEC and all local codes.
 (3) These "Minimum Circuit Ampacity" values are to be used for sizing the field power conductors. Refer to the National Electric Code (latest revision), article 310 for power conductor sizing. Caution: When more than one field power conductor circuit is run thru one conduit, the conductors must be derated. Pay special attention to note 8 of table 310 regarding Ampacity Adjustment Factors when more than 3 conductors are in a raceway.
 (4) Not available in top outlet version.

GENERAL

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

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

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

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

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

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

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

DUCT WORK

Any heat pump is more critical of proper operating charge and an adequate duct system than a straight air conditioning unit. All duct work, supply and return, must be properly sized for the design air flow requirement of the equipment. Air Conditioning Contractors of America (ACCA) is an excellent guide to proper sizing. All duct work or portions thereof not in the conditioned space should be properly insulated in order to both conserve energy and prevent condensation or moisture damage.

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

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

A 1/4-inch clearance to combustible material for the first three feet of duct attached to the outlet air frame is required. See Pages 5, 6 and 7 Wall Mounting Instructions and Figures 2 and 2A for further details.

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

CAUTION: Some installations may not require any return air duct. A metallic return air grille is required with installations not requiring a return air duct. The spacing between louvers on the grille shall not be larger than 5/8 inches.

Any grille that meets the 5/8 inch louver criteria, may be used. It is recommended that Bard Return Air Grille Kit RG2 thru RG5 or RFG2 thru RFG5 be installed when no return duct is used. Contact distributor or factory for ordering information. If using a return air filter grille, filters must be of sufficient size to allow a maximum velocity of 400 fpm.

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

FILTERS

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

FRESH AIR INTAKE

All units are built with a 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, but is not required.
2. The unit itself is suitable for "0" inch clearance, but the supply air duct flange and the first three feet of supply air duct require a minimum of 1/4-inch clearance to combustible material. If a combustible wall, use a minimum of 28-1/2" x 8-1/2" dimensions for sizing. However, it is generally recommended that a 1" clearance is used for ease of installation and maintaining the required clearance to combustible material. The supply air opening would then be 30" x 10". See Figures 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 three feet of duct can result in fire.

3. Locate and mark lag bolt locations and bottom mounting bracket location, if desired. See Figure 2.
4. Mount bottom mounting bracket, if used.
5. Hook top rain flashing under back bend of top. Top rain flashing is shipped attached to the back of the unit on the right side.
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 7.
8. For additional mounting rigidity, the return air and supply air frames or collars can be drilled and screwed or welded to the structural wall itself (depending upon wall construction). Be sure to observe required clearance if combustible wall.
9. On side by side installations, maintain a minimum of 20 inches clearance on right side to allow access to heat strips and control panel and to allow proper airflow to the outdoor coil. Additional clearance may be required to meet local or national codes.

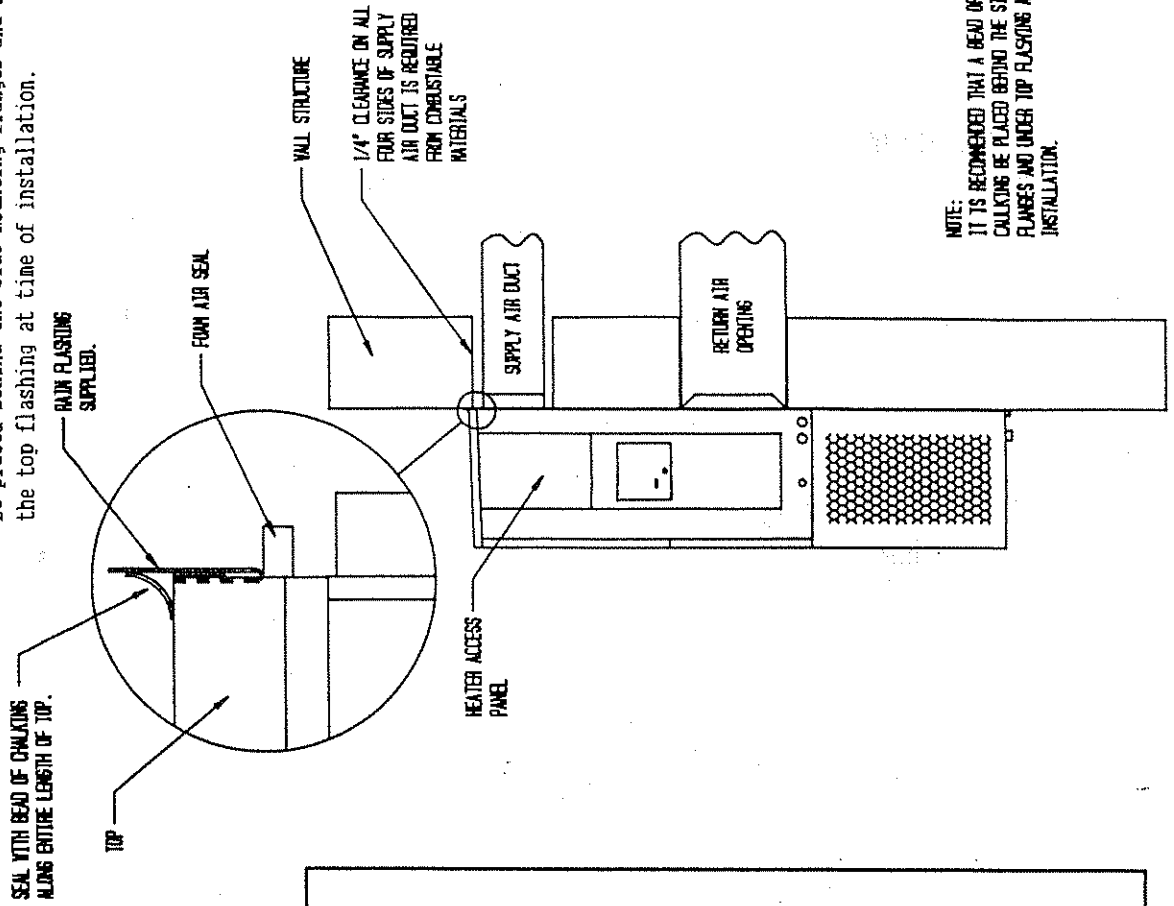
TOP OUTLET ONLY

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

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	28 1/2	6 1/2	5 1/4	3 13/16	17 5/8
REQUIRED DIMENSIONS TO MAINTAIN RECOMMENDED 1" CLEARANCE FROM COMBUSTIBLE MATERIALS	30	10	4 1/2	3 1/16	16 7/8



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

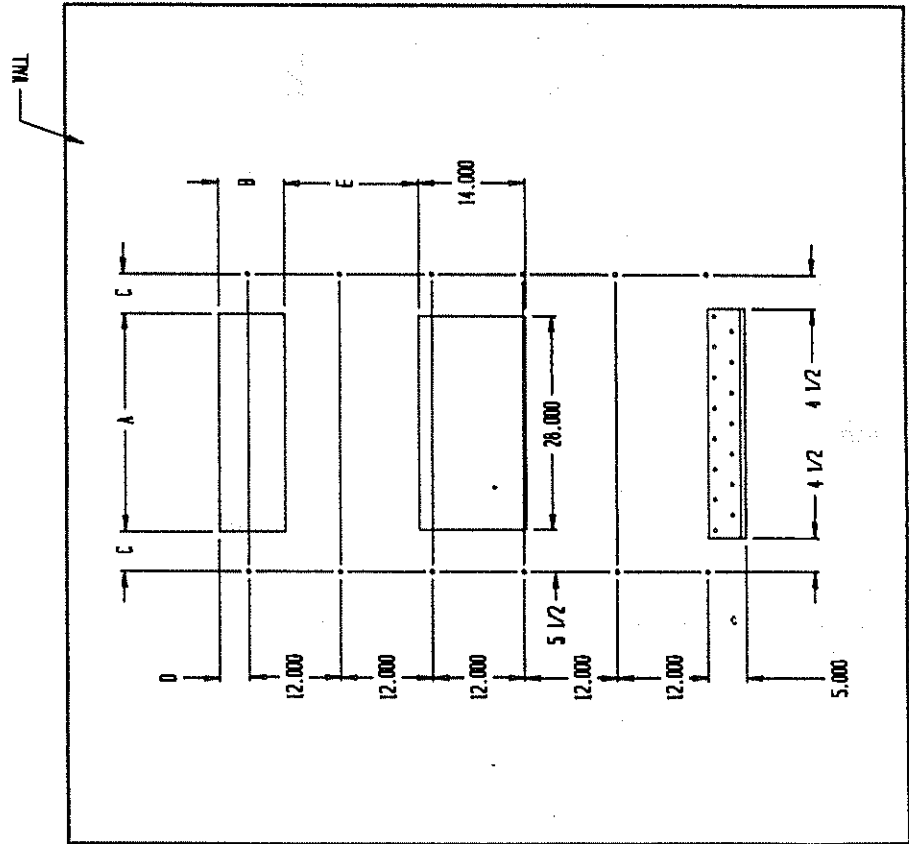
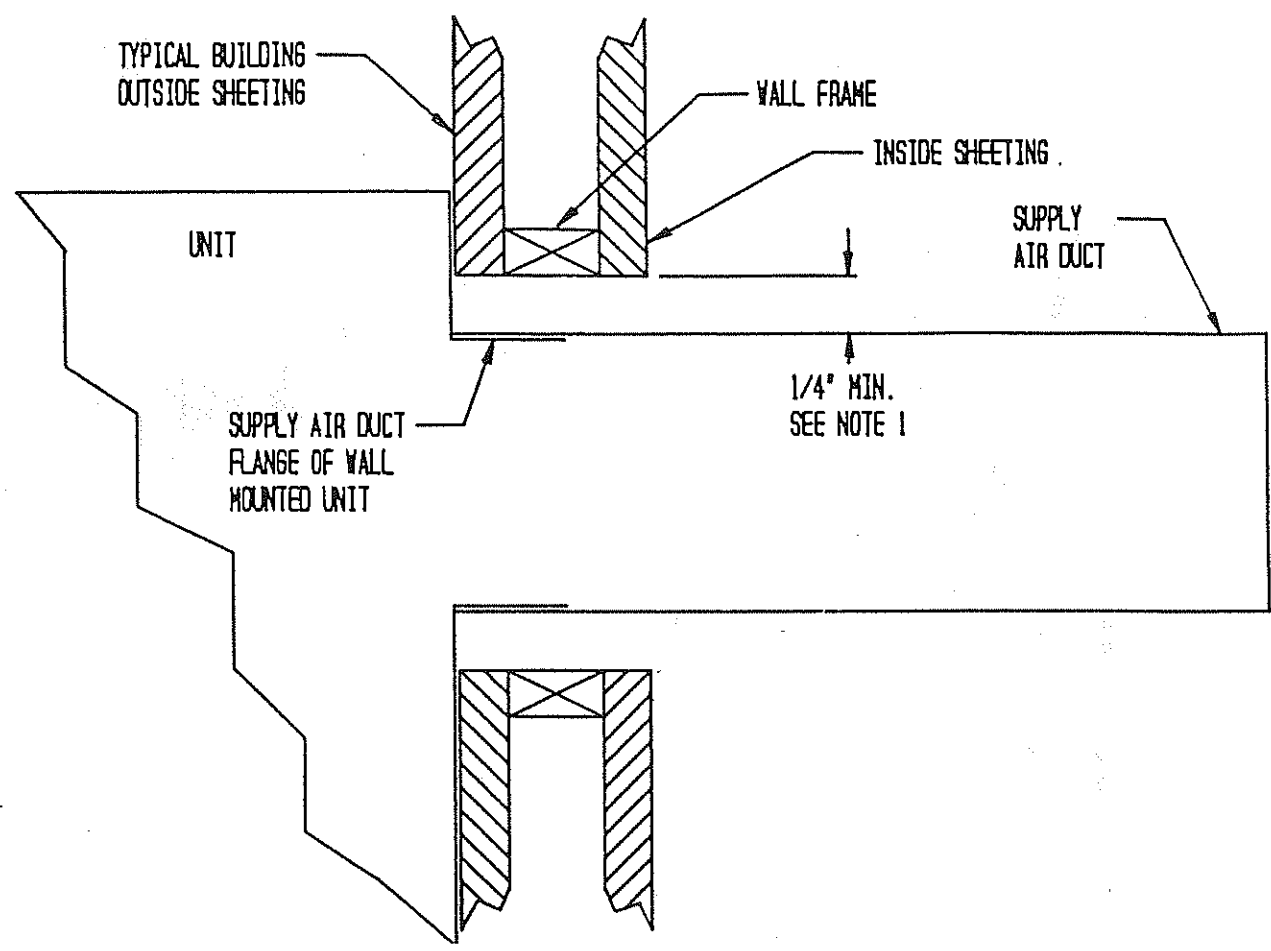


FIGURE 2A
ELECTRIC HEAT CLEARANCE



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

NOTE 1:

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

FIGURE 2B

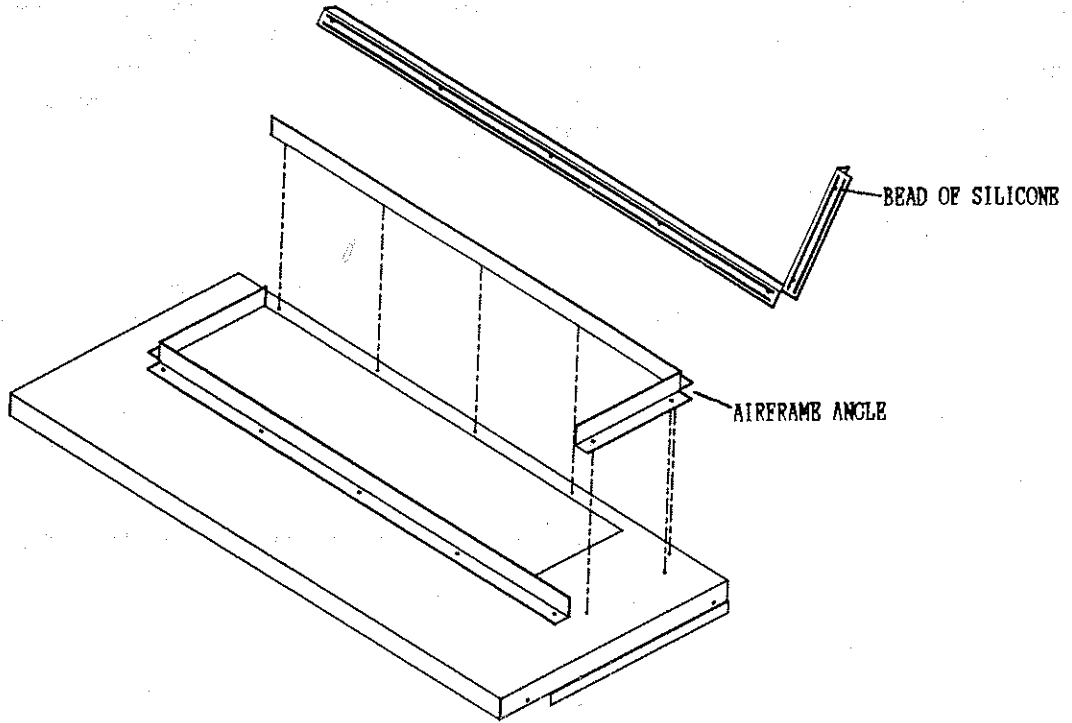
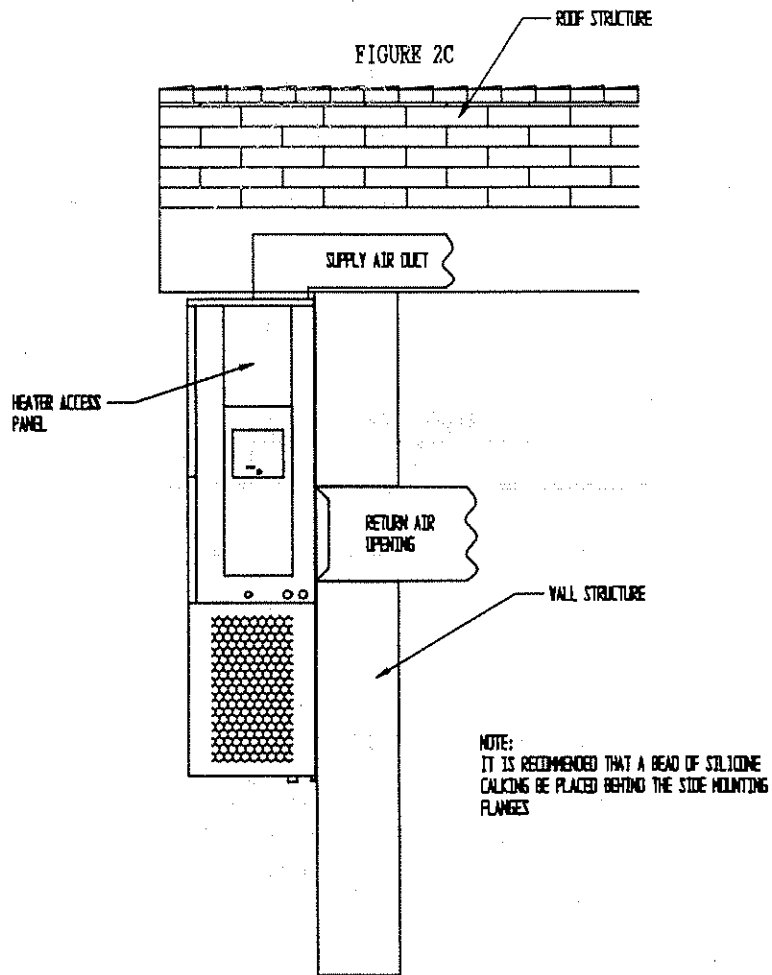


FIGURE 2C



WIRING--MAIN POWER

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

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

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

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

WIRING: LOW VOLTAGE WIRING

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

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

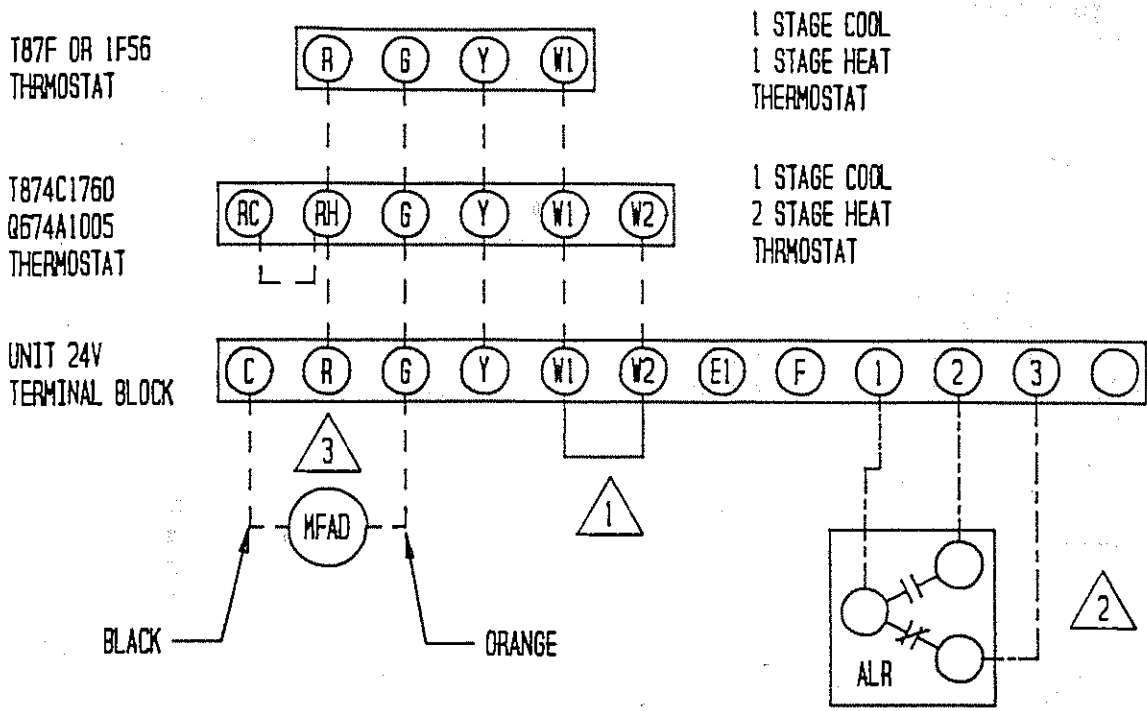
Transformer VA	FLA	Wire Gauge	Maximum Distance In Feet
55	2.3	20 Gauge	45
		18 "	60
		16 "	100
		14 "	160
		12 "	250




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
T87F3111	Q539A1220	System: heat-off-cool Fan: on-auto
8403-009	----	1 stage heat, 1 stage cool
1F56-318		

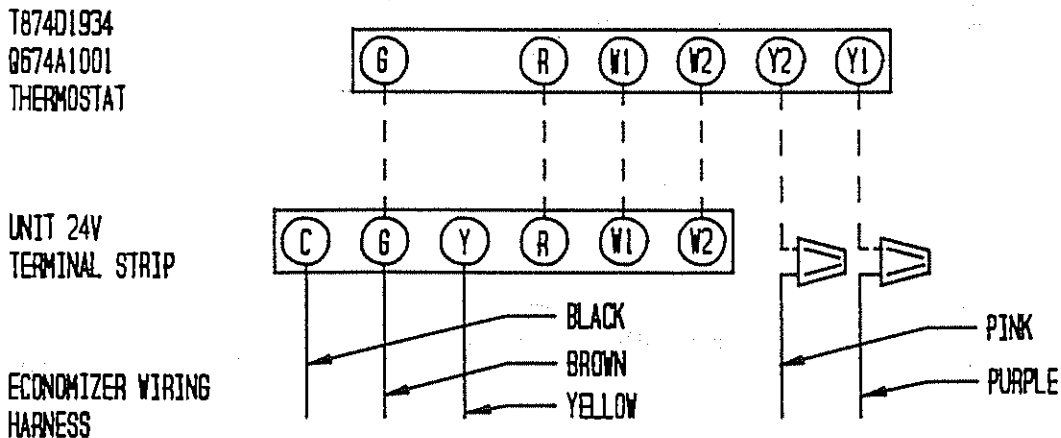
FIGURE 3

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

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

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

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

The decal in Figure 4 is affixed to all outdoor units detailing start-up procedure. This is very important. Please read carefully.

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. The heat pump wall thermostats perform multiple functions. Be sure that all function switches are correctly set for the desired operating mode before trying to diagnose any reported service problems.
4. Check all power fuses or circuit breakers to be sure they are the correct rating.
5. 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 makes 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

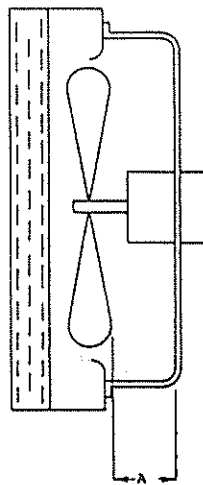


TABLE 4

Model	Dimension A
WA301	1.25
WA361	

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
WA301	1100	55 - 57	64 - 66
WA361	1100	57 - 59	62 - 64

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

TABLE 6 INDOOR BLOWER PERFORMANCE--CFM @ 230V

E.S.P. In H2O	WA301, WA361	
	Lo 230V Dry/Wet Coil	Hi 230V Dry/Wet Coil
.0	950 / 935	1395 / 1315
.1	930 / 915	1340 / 1270
.2	910 / 885	1285 / 1190
.3	855 / 830	1205 / 1100
.4	800 / 755	1110 / 1000
.5	---	1005 / 870

TABLE 7

Model	Rated CFM*	Rated ESP*	Recommended Airflow Range
WA301	1100	.30	930 - 1300
WA361	1100	.30	930 - 1350

*Rated CFM and ESP on high speed tap.

TABLE 8 MAXIMUM ESP OF OPERATION--ELECTRIC HEAT ONLY

Model	Front Outlet		Top Outlet	
	Low Speed	High Speed	Low Speed	High Speed
WA301 A00	.50	.50	.50	.50
WA301 A05	.50	.50	.45	.50
WA361 A08	.50	.50	NA	NA
WA361 A10	.45	.50	.35	.50
WA361 A15	.35	.40	NA	NA
WA301 B00	.50	.50	.50	.50
WA301 B06	.40	.50	NA	NA
WA361 B09	.50	.50	.40	.45
WA361 B15	.30	.45	NA	NA
WA301 C00	.50	.50	.50	.50
WA301 C06	.50	.50	NA	NA
WA361 C09	.40	.50	.40	.45
WA361 C15	.35	.45	NA	NA

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

TABLE 9

COOLING

Air Temperature Entering Outdoor Coil °F

Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
WA301	75 deg. DB	Low Side	74	77	79	81	82	84	85	85	86
	62 deg. WB	High Side	218	232	247	262	277	292	308	325	341
	80 deg. DB	Low Side	80	82	84	86	88	89	91	91	92
	67 deg. WB	High Side	223	238	253	268	284	300	316	333	350
	85 deg. DB	Low Side	85	88	91	93	95	96	97	98	99
	72 deg. WB	High Side	231	246	262	278	294	310	327	345	362
WA361	75 deg. DB	Low Side	70	72	74	76	78	79	80	81	82
	62 deg. WB	High Side	224	242	259	275	290	304	316	328	339
	80 deg. DB	Low Side	75	77	79	81	83	85	86	87	88
	67 deg. WB	High Side	229	248	265	282	297	311	325	337	348
	85 deg. DB	Low Side	80	83	85	87	89	91	92	94	95
	72 deg. WB	High Side	238	257	275	292	307	322	336	349	360

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

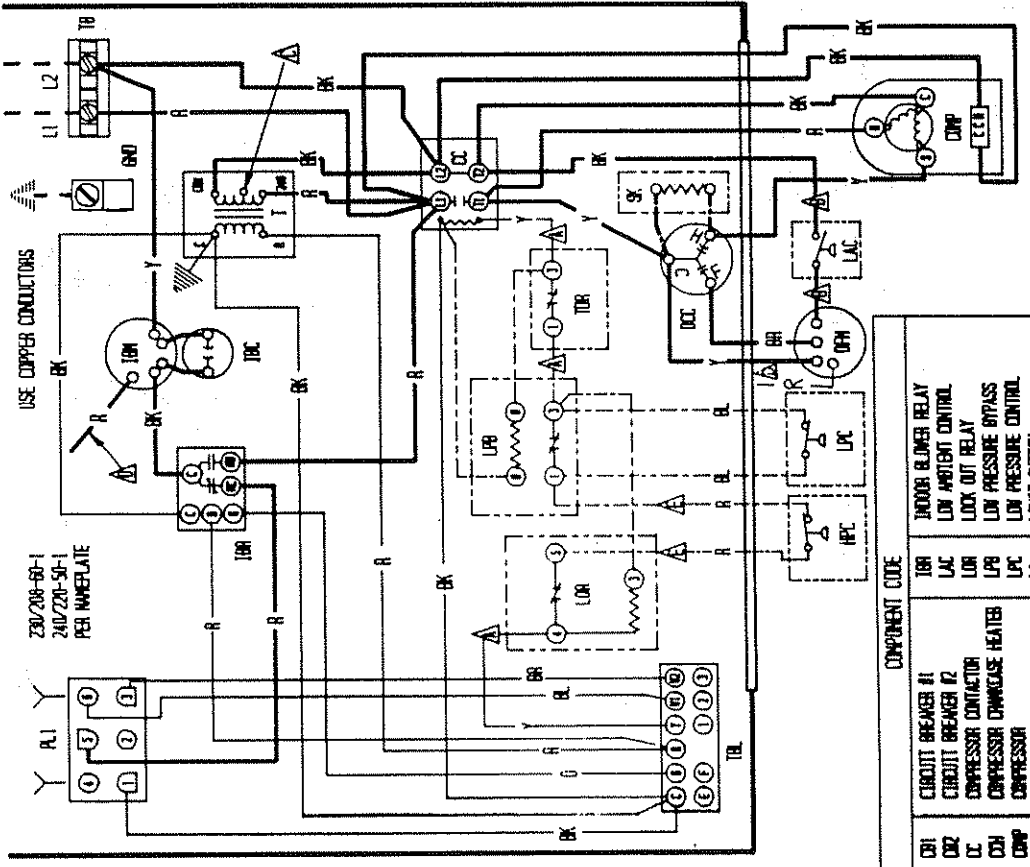
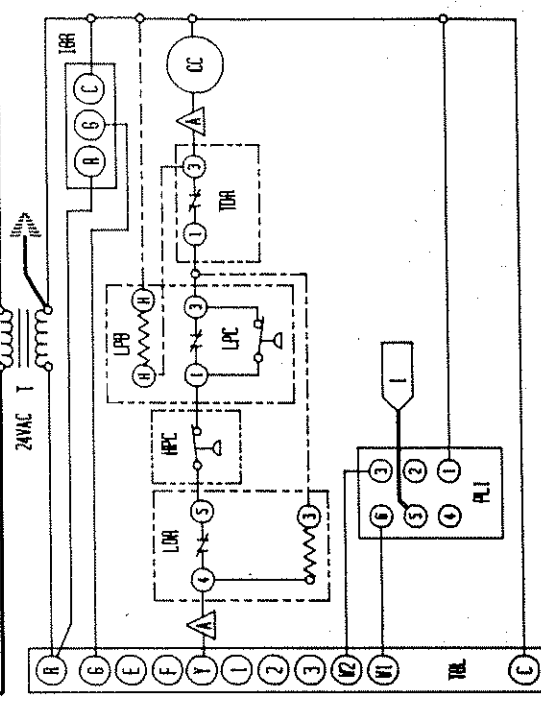
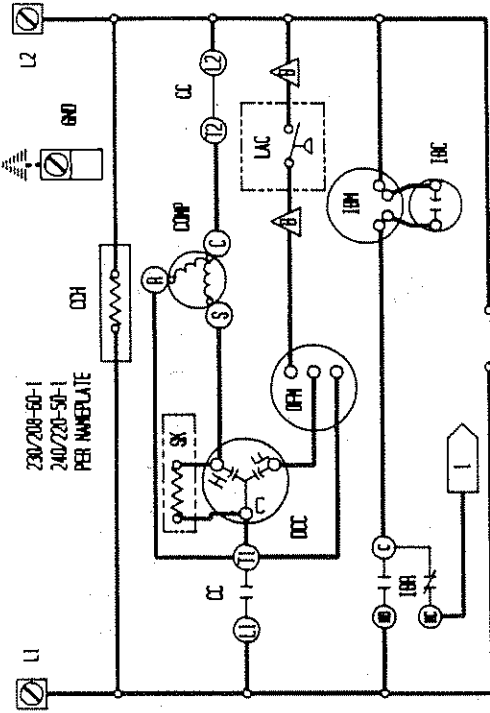
Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged to serial plate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

TABLE 10 OPTIONAL ACCESSORIES

Model	Description	W	W	W	W	W	W
		A	A	A	A	A	A
		3	3	3	3	3	3
		0	0	0	6	6	6
		1	1	1	1	1	1
		-	-	-	-	-	-
		A	B	C	A	B	C
EHWA03-A05	Heater Packages (1)	X			X		
EHWA03-A08	Heater Packages (1)	X			X		
EHWA03-A10	Heater Packages (1)	X			X		
EHWA03-A15	Heater Packages (1)	X			X		
EHWA03-B06	Heater Packages (1)		X			X	
EHWA03-B09	Heater Packages (1)		X			X	
EHWA03-B15	Heater Packages (1)		X			X	
EHWC03-C06	Heater Packages (1)			X			X
EHWC03-C09	Heater Packages (1)			X			X
EHWA03-C12	Heater Packages (1)						X
EHWA03-C15	Heater Packages (1)			X			X
BOP-3	Blank Off Plate	X	X	X	X	X	X
BFAD-3	Barometric Fresh Air Damper	X	X	X	X	X	X
MFAD-3	Motorized Fresh Air Damper	X	X	X	X	X	X
CRV-3	Commercial Ventilator with Exhaust	X	X	X	X	X	X
EIEH-3	Economizer with Exhaust	X	X	X	X	X	X
WERY-A3A	Energy Recovery Ventilator	X	X		X	X	
WERY-C3A	Energy Recovery Ventilator			X			X
CMA-1	High Pressure Control (HPC)	X	X	X	X	X	X
CMA-2	Low Pressure Control (LPC)	X	X	X	X	X	X
CMA-4	Low and High Pressure Control	X	X	X	X	X	X
CMA-5	Time Delay Relay (TDR)	X	X	X	X	X	X
CMA-6	Low Ambient Control (LAC)	X	X		X	X	
CMA-8	TDR + HPC	X	X	X	X	X	X
CMA-10	LPC + HPC + TDR	X	X	X	X	X	X
CMA-11	LPC + HPC + LAC	X	X		X	X	
CMA-12	LAC + TDR	X	X		X	X	
CMA-13	LPC + HPC + TDR + LAC	X	X		X	X	
CMC-15	Start Kit	X			X		
WMCB-05A	Circuit Breaker Kit	X			X		
WMCB-02B	Circuit Breaker Kit		X				
WMPD-01C	Pull Disconnect Kit			X			X
WMCB-03B	Circuit Breaker Kit					X	

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

NOTE: Top outlet models are available only as factory built.



RED (LINE) BLACK (NEUTRAL) WHITE (GROUND) APPLICABLE

MOVE RED WIRE TO 208V TAP FOR 208V OPERATION

LABELLED WIRES CONNECT IF NO OPTIONS USED.

COLOR CODE	
Y	BLACK
B	BROWN
R	RED
W	ORANGE
G	GREEN
BL	BLUE
W	WHITE
S	SLATE
V	VIOLET
PK	PINK
L	LAVENDER

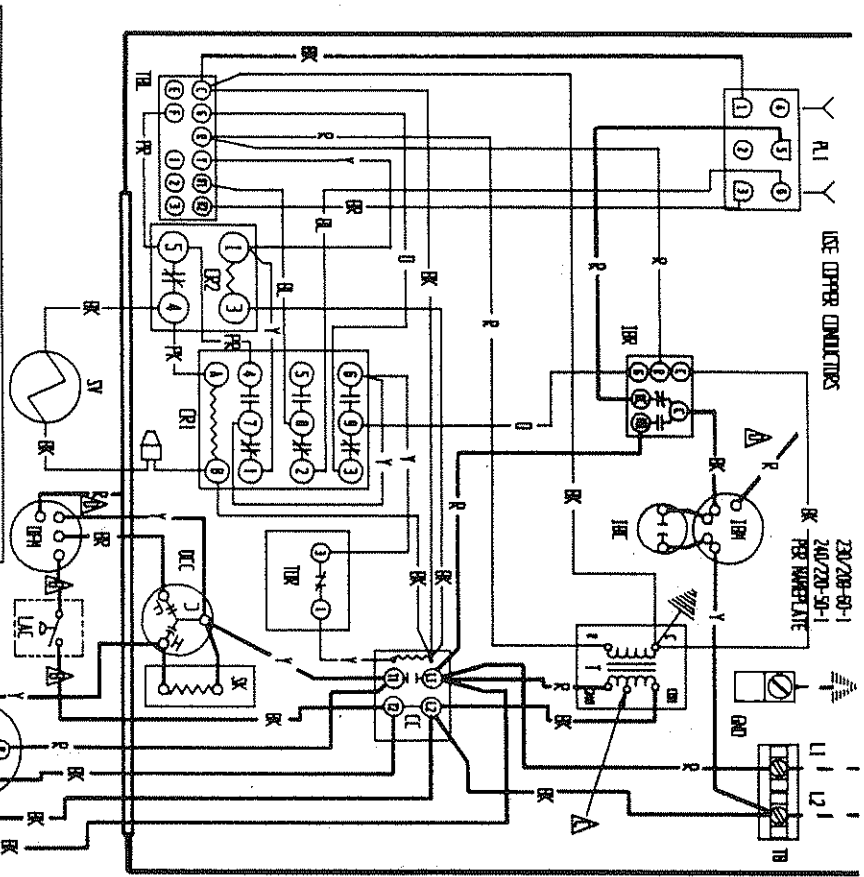
FACTORY FTD.	FIELD	OPTIONAL
HIGH VOLTAGE	---	---
LOW VOLTAGE	---	---
ACCESSORY	---	---

WARD MFG. CO.

DNB: 4055-118 B
DRA: CDB
CRK/APPR: []

COMPONENT CODE	
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CDH	COMPRESSOR CAPACITOR
CCM	CONDENSER MOTOR
CS	CAPACITOR
CS2	CONDENSER MOTOR
CS3	CONDENSER MOTOR
CS4	CONDENSER MOTOR
CS5	CONDENSER MOTOR
CS6	CONDENSER MOTOR
CS7	CONDENSER MOTOR
CS8	CONDENSER MOTOR
CS9	CONDENSER MOTOR
CS10	CONDENSER MOTOR
CS11	CONDENSER MOTOR
CS12	CONDENSER MOTOR
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CS92	CONDENSER MOTOR
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CS94	CONDENSER MOTOR
CS95	CONDENSER MOTOR
CS96	CONDENSER MOTOR
CS97	CONDENSER MOTOR
CS98	CONDENSER MOTOR
CS99	CONDENSER MOTOR
CS100	CONDENSER MOTOR

CR1	CIRCUIT BREAKER #1	IR1	INDOR FIDDER CAPACTR
CR2	CIRCUIT BREAKER #2	IR2	INDOR FIDDER MOTOR
CR3	COMPRESSOR CONTACTOR	IR3	INDOR FIDDER RELAY
CR4	COMPRESSOR CONTACTOR HEATER	IR4	INDOR FIDDER CONTROL
CR5	COMPRESSOR	IR5	INDOR FAN MOTOR
CR6	CONTROL RELAY #1	IR6	INDOR FAN CONTROL
CR7	CONTROL RELAY #2	IR7	INDOR FAN VALVE
CR8	CONTROL RELAY #3	IR8	INDOR FAN START KIT
CR9	CONTROL RELAY #4	IR9	INDOR FAN TRANSFORMER
CR10	CONTROL RELAY #5	IR10	INDOR FAN THERMAL BLDX
CR11	CONTROL RELAY #6	IR11	INDOR FAN THERMAL CTR
CR12	CONTROL RELAY #7	IR12	INDOR FAN THERMAL RELY
CR13	CONTROL RELAY #8	IR13	INDOR FAN THERMAL RELY
CR14	CONTROL RELAY #9	IR14	INDOR FAN THERMAL RELY
CR15	CONTROL RELAY #10	IR15	INDOR FAN THERMAL RELY
CR16	CONTROL RELAY #11	IR16	INDOR FAN THERMAL RELY
CR17	CONTROL RELAY #12	IR17	INDOR FAN THERMAL RELY
CR18	CONTROL RELAY #13	IR18	INDOR FAN THERMAL RELY
CR19	CONTROL RELAY #14	IR19	INDOR FAN THERMAL RELY
CR20	CONTROL RELAY #15	IR20	INDOR FAN THERMAL RELY

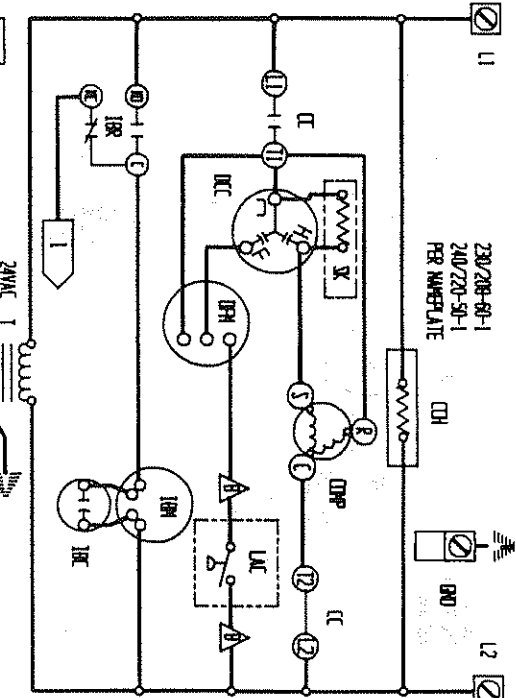
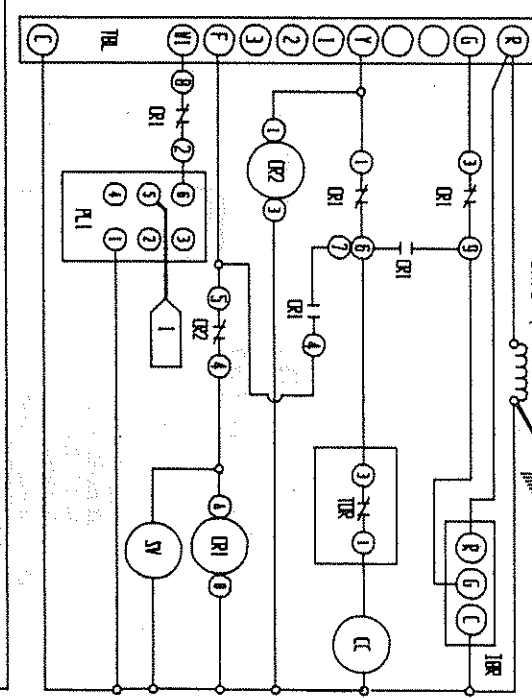


COMPONENT CODE

IR1	INDOR FIDDER CAPACTR
IR2	INDOR FIDDER MOTOR
IR3	INDOR FIDDER RELAY
IR4	INDOR FIDDER CONTROL
IR5	INDOR FAN MOTOR
IR6	INDOR FAN CONTROL
IR7	INDOR FAN VALVE
IR8	INDOR FAN START KIT
IR9	INDOR FAN TRANSFORMER
IR10	INDOR FAN THERMAL BLDX
IR11	INDOR FAN THERMAL CTR
IR12	INDOR FAN THERMAL RELY
IR13	INDOR FAN THERMAL RELY
IR14	INDOR FAN THERMAL RELY
IR15	INDOR FAN THERMAL RELY
IR16	INDOR FAN THERMAL RELY
IR17	INDOR FAN THERMAL RELY
IR18	INDOR FAN THERMAL RELY
IR19	INDOR FAN THERMAL RELY
IR20	INDOR FAN THERMAL RELY

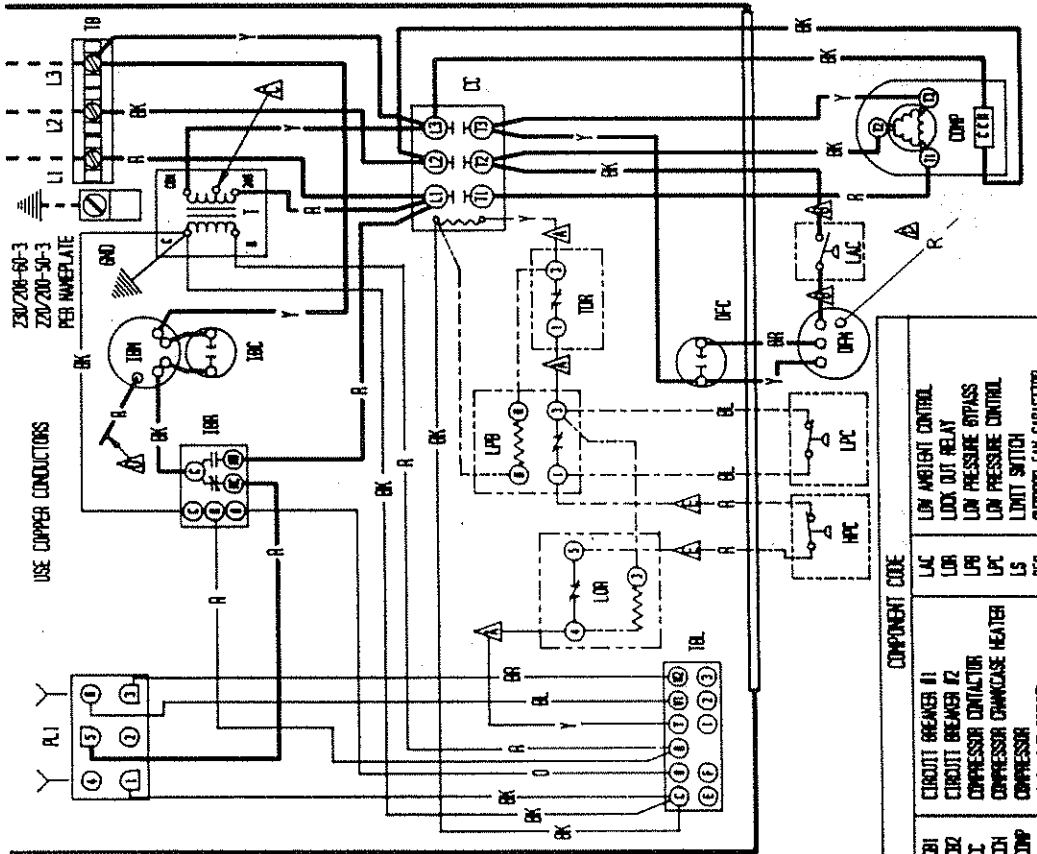
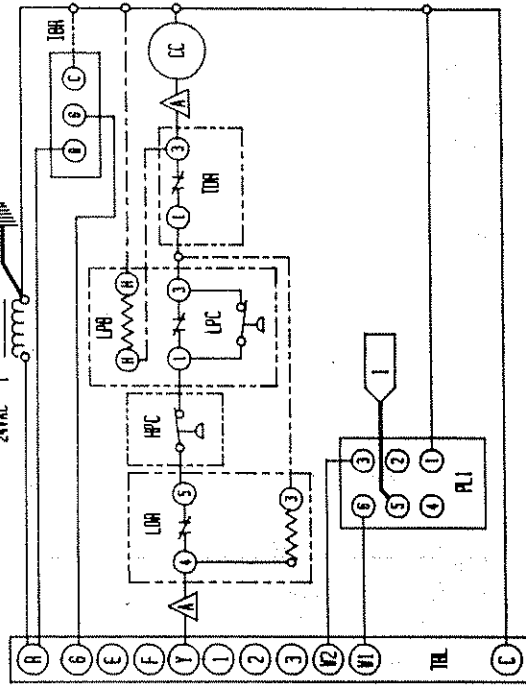
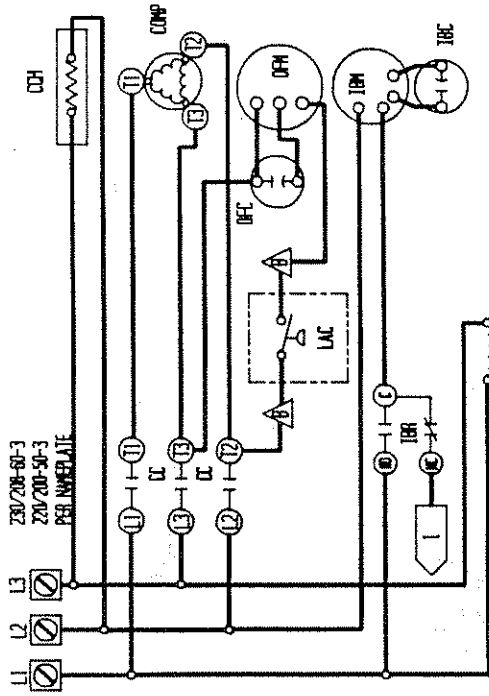
COLOR CODE

CR	BLACK	IR	YELLOW
BR	BROWN	GR	GREEN
R	RED	BL	BLUE
D	DRIVE	W	WHITE
Y	YELLOW	V	VIOLET
B	BROWN	(R)	PURPLE
G	GREEN	SV	GRAY
BL	BLUE	L	LAGER
W	WHITE	P	PINK
		L	LAGER



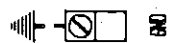
HARDWARE CO.

IR1	4055-118 A
IR2	4055-118 A
IR3	4055-118 A
IR4	4055-118 A
IR5	4055-118 A
IR6	4055-118 A
IR7	4055-118 A
IR8	4055-118 A
IR9	4055-118 A
IR10	4055-118 A
IR11	4055-118 A
IR12	4055-118 A
IR13	4055-118 A
IR14	4055-118 A
IR15	4055-118 A
IR16	4055-118 A
IR17	4055-118 A
IR18	4055-118 A
IR19	4055-118 A
IR20	4055-118 A



USE COPPER CONDUCTORS

230/208-50-3
220/200-50-3
PER NAMEPLATE



COMPONENT CODE	
CB1	CIRCUIT BREAKER #1
CB2	CIRCUIT BREAKER #2
CC	COMPRESSOR CONTACTOR
CH	COMPRESSOR CHAMBER HEATER
COMP	COMPRESSOR
EQ	EQUIPMENT GROUND
HT	HEAT STRIP #1
HT2	HEAT STRIP #2
HC1	HEATER CONTACTOR #1
HC2	HEATER CONTACTOR #2
HPC	HIGH PRESSURE CONTROL
IBC	INDOOR BLOWER CAPACITOR
IBM	INDOOR BLOWER MOTOR
IRM	INDOOR BLOWER RELAY
LAC	LOW AMBIENT CONTROL
LOR	LOCK OUT RELAY
LPS	LOW PRESSURE SWITCH
LPC	LOW PRESSURE CONTROL
LS	LIMIT SWITCH
DFC	OUTDOOR FAN CAPACITOR
OFM	OUTDOOR FAN MOTOR
PLUS #1	PLUS #1
SK	START KIT
T	TRANSFORMER
TR	TERMINAL BLOCK
TV	LOW VOLTAGE TERMINAL BLOCK
TDO	THERMAL CUTOFF
TDR	TIME DELAY RELAY

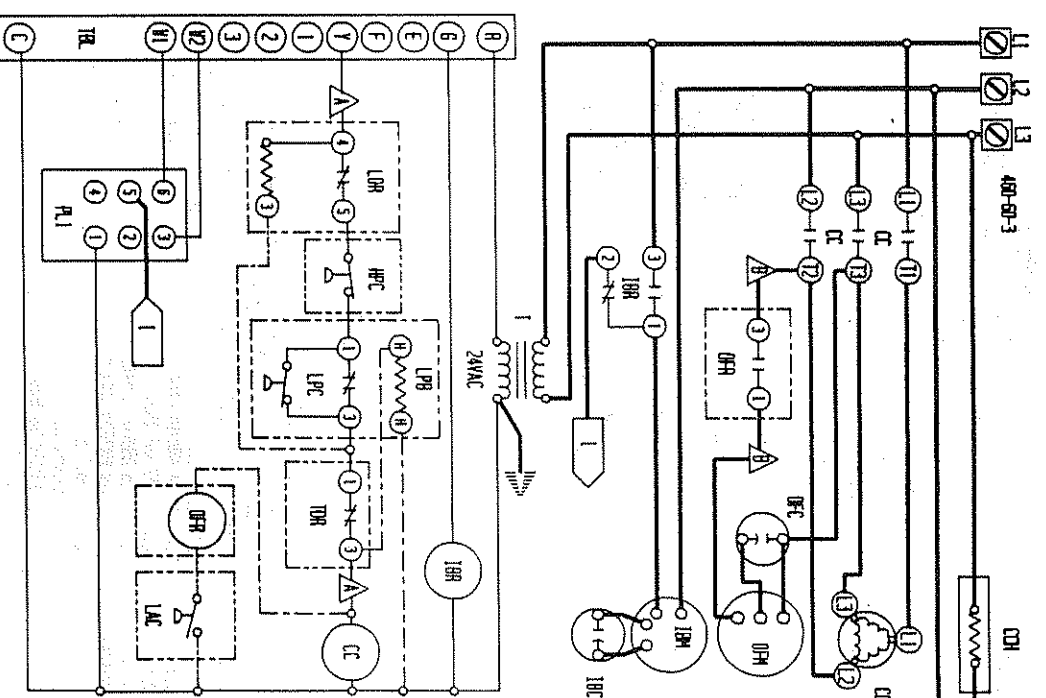
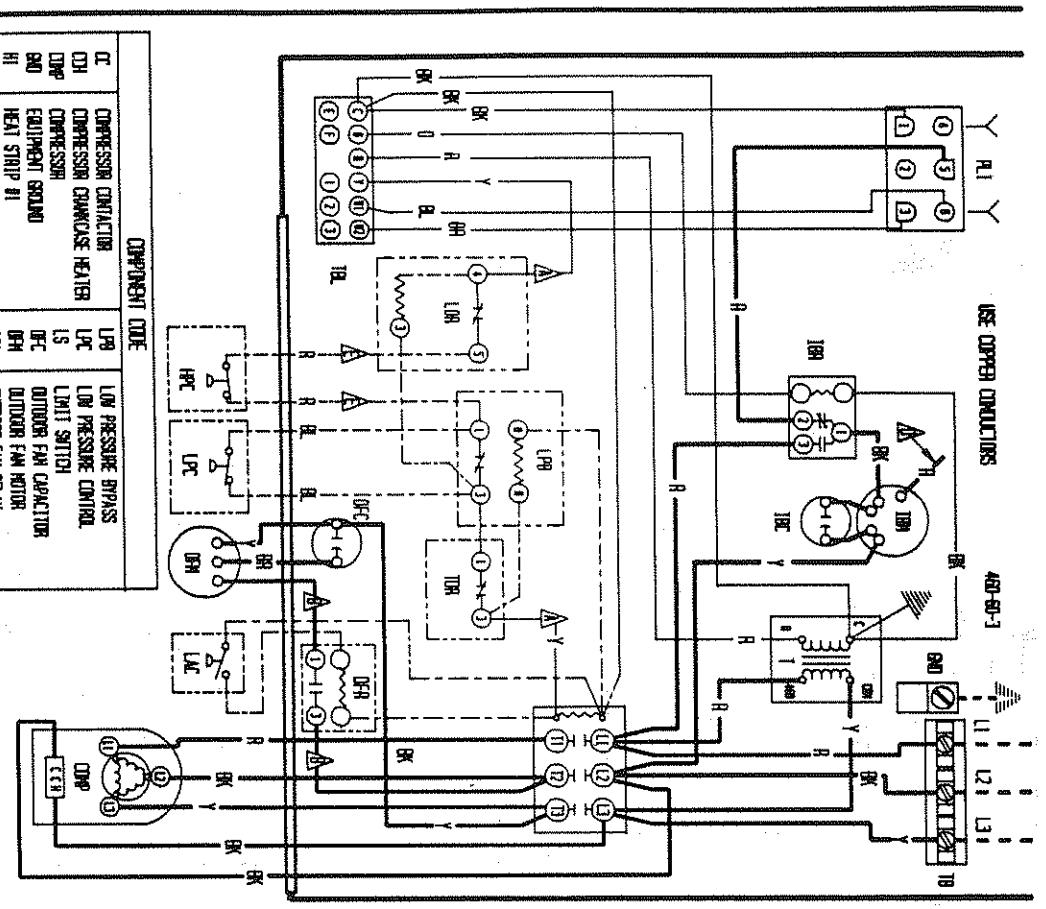
▲ ▲ LABELLED WIRES CONNECT IF NO OPTIONS USED. ▲ HAVE RED WIRE TO 208V TAP FOR 208V OPERATION. ▲ RED (LOW) BLACK (HIGH) WERE APPLICABLE.

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

BK	BR	R	O	ORANGE	Y	BL	BL	BL	BL	BL	(S)	(S)	SLATE	Y	VIOLET	PURPLE	PURPLE	PK	L	LAUREN	LAUREN	LAUREN	LAUREN
BLACK	BROWN	RED	ORANGE	ORANGE	YELLOW	GREEN	BLUE	WHITE	WHITE	WHITE	WHITE	WHITE	SLATE	YELLOW	VIOLET	PURPLE	PURPLE	PINK	L	LAUREN	LAUREN	LAUREN	LAUREN

COLUMN CODE	
7M	PINK
7M	LAUREN

BARD MFG. CO.
 DWG: 41055-210 C
 DSK: DB
 CHK/APPR:



COMPONENT CODE

CC	COMPRESSOR CONTACTOR	LP9	LOW PRESSURE BYPASS
CDH	COMPRESSOR CONTACTOR HEATER	LPC	LOW PRESSURE CONTROL
CDP	COMPRESSOR	LS	LIGHT SWITCH
EQD	EQUIPMENT GROUND	DEC	OUTDOOR FAN CAPACITOR
HI	HEAT STRIP #1	DFH	OUTDOOR FAN MOTOR
H2	HEAT STRIP #2	DFH	OUTDOOR FAN RELAY
K1	HEATER CONTACTOR #1	RLL	RAIL DISCONNECT
K2	HEATER CONTACTOR #2	FLS #1	FUSE #1
HPC	HIGH PRESSURE CONTROL	TMS/DFH	TRANSFORMER
IBH	INDOOR BLOWER CAPACITOR	TRM, BLX	TERMINAL BLOCK
IBM	INDOOR BLOWER MOTOR	LIV	LIN VOLTAGE TERMINAL BLOCK
IBR	INDOOR BLOWER RELAY	TRM, CTRF	THERMAL CUTOFF
LAC	LOW VOLTAGE CONTROL	TRD	TIME DELAY RELAY
LBR	LOCK OUT RELAY		

WIRING AND LABELING INFORMATION

▲ LABEL BY WIRES CONNECT IF NO OPTIONS USED. ▲ RED (L.V.) BLACK (H.V.)

FACTORY STD.	FIBD	OPTIONAL
BK	BROWN	Y
BR	RED	B
0	ORANGE	V
		Y
		B
		V

COMP CODE	VOLTAGE	TYPE	TYPE
V	(PH)	VIOL/ET	TW
(R)	(R)	VIOL/E	PK
SV	SV	VIOL/E	L
(S)	(S)	VIOL/E	L
SLATE	SLATE	VIOL/E	L
LANCHER	LANCHER	VIOL/E	L

BARO MFG. CO.

ONS	4005-310 A
ORN	CSB
OK	APPR.

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author details the various methods used to collect and analyze the data. This includes both manual and automated processes. The goal is to ensure that the data is as accurate and reliable as possible.

The third part of the document focuses on the results of the analysis. It shows that there is a clear trend in the data, which is consistent with the initial hypothesis. This finding is significant and warrants further investigation.

Finally, the document concludes with a summary of the findings and a list of recommendations. It suggests that the current methods are effective but could be improved in certain areas. The author also notes that the data is still being analyzed and that a final report will be provided in the near future.

