

INSTALLATION INSTRUCTIONS

WALL MOUNTED PACKAGE AIR CONDITIONERS

MODELS

WA301

WA361

PATENT PENDING

DATE: 04-30-93

**MANUAL 2100-192 REV. E
SUPERSEDES REV. D
FILE VOL. III, TAB 16**

SECTION 1 --GETTING OTHER INFORMATION AND PUBLICATIONS

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

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

FOR MORE INFORMATION, CONTACT THESE PUBLISHERS

ACCA:	AIR CONDITIONING CONTRACTORS OF AMERICA 1513 16th Street NW Washington, DC 20036 Telephone: (202) 483-9370	Fax: (202) 234-4721
ANSI:	AMERICAN NATIONAL STANDARDS INSTITUTE 11 West Street, 13th Floor New York, NY 10036 Telephone: (212) 642-4900	Fax: (212) 302-1286
ASHRAE:	AMERICAN SOCIETY OF HEATING REFRIGERATING AND AIR CONDITIONING ENGINEERS, INCORPORATED 1791 Tullie Circle, N.E. Atlanta, GA 30329-2305 Telephone: (404) 636-8400	Fax: (404) 321-5478
NFPA:	NATIONAL FIRE PROTECTION ASSOCIATION Batterymarch Park P. O. Box 9101 Quincy, MA 02269-9901 Telephone: (800) 344-3555	Fax: (617) 984-7057

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PART 1 -- WALL MOUNT GENERAL INFORMATION

AIR CONDITIONER WALL MOUNT MODEL NOMENCLATURE

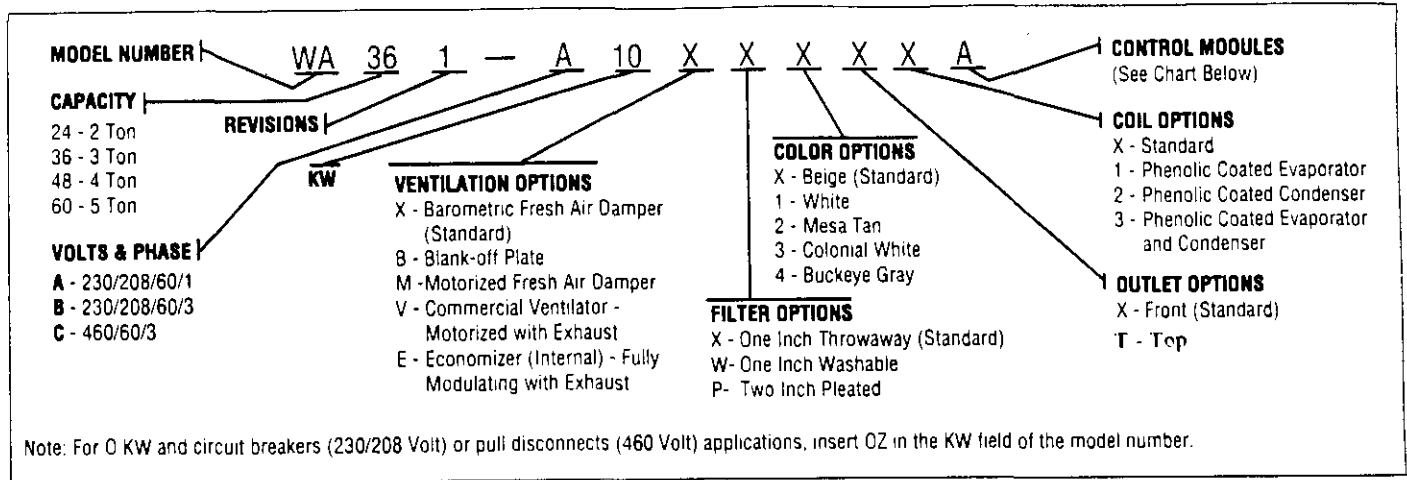


TABLE 1

ELECTRIC HEAT TABLE

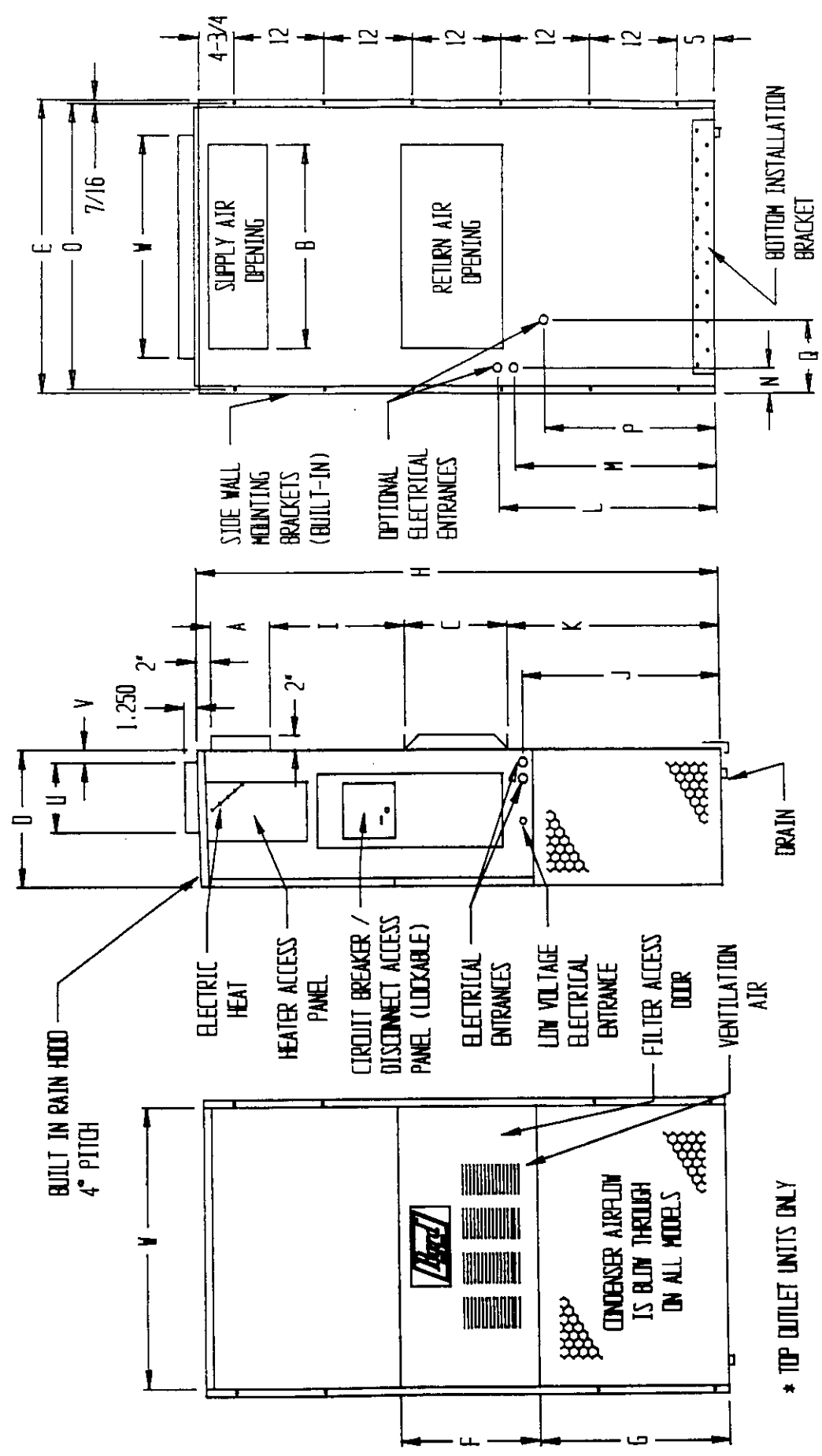
Models	WA301-A		WA301-B		WA301-C		WA361-A		WA361-B		WA361-C										
	240-1		208-1		240-3		208-3		460-3		240-1		208-1		240-3		208-3		460-3		
	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	A	BTU	
5	20.8	17065	18.1	12800							20.8	17065	18.1	12800							
8	33.3	27300	28.8	20475							33.3	27300	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	R	S	T	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

ELECTRICAL SPECIFICATIONS

TABLE 2

Model	Rated Volts and Phase	No. Field Power Ckts.	SINGLE CIRCUIT				DUAL CIRCUIT							
			(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				
								Ckt. A	Ckt. B	Ckt. A	Ckt. B			
WA301-A00,A0Z		1	22	35	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	29	35	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A08 (4)	230/208-1	1	45	45	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	55	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15 (4)		1 or 2	81	90	4	8	55	26	60	30	4	10	8	10
WA301-B00,B0Z		1	15	20	14	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B06 (4)	230/208-3	1	21	25	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B09		1	30	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B15 (4)		1	48	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA301-C00,C0Z		1	9	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C06 (4)	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	15	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15 (4)		1	24	25	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA361-A00,A0Z		1	25	35	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A05		1	29	35	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A08 (4)	230/208-1	1	45	45	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A10		1	55	60	6	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A15 (4)		1 or 2	81	90	4	8	55	26	60	30	4	10	8	10
WA361-B00,B0Z		1	18	25	12	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B06 (4)	230/208-3	1	21	25	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B09		1	30	30	10	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
B15 (4)		1	48	50	8	10	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WA361-C00,C0Z		1	9	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C06 (4)	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	15	15	14	14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
C15 (4)		1	24	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.
 (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

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 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.

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	20 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

SEAL WITH BEAD OF CAULKING ALONG ENTIRE LENGTH OF TOP.

TOP

RAIN FLASHING SUPPLIED.

FOAM AIR SEAL

WALL STRUCTURE

1/4" CLEARANCE ON ALL FOUR SIDES OF SUPPLY AIR DUCT IS REQUIRED FROM COMBUSTIBLE MATERIALS

HEATER ACCESS PANEL

SUPPLY AIR DUCT

RETURN AIR OPENING

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.

WALL

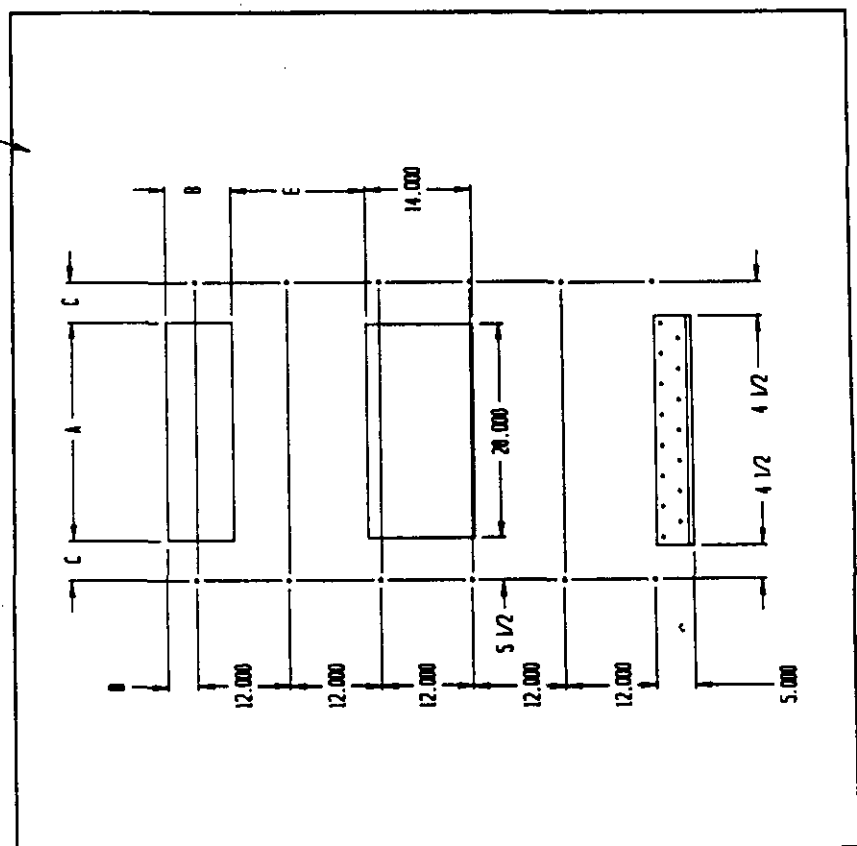
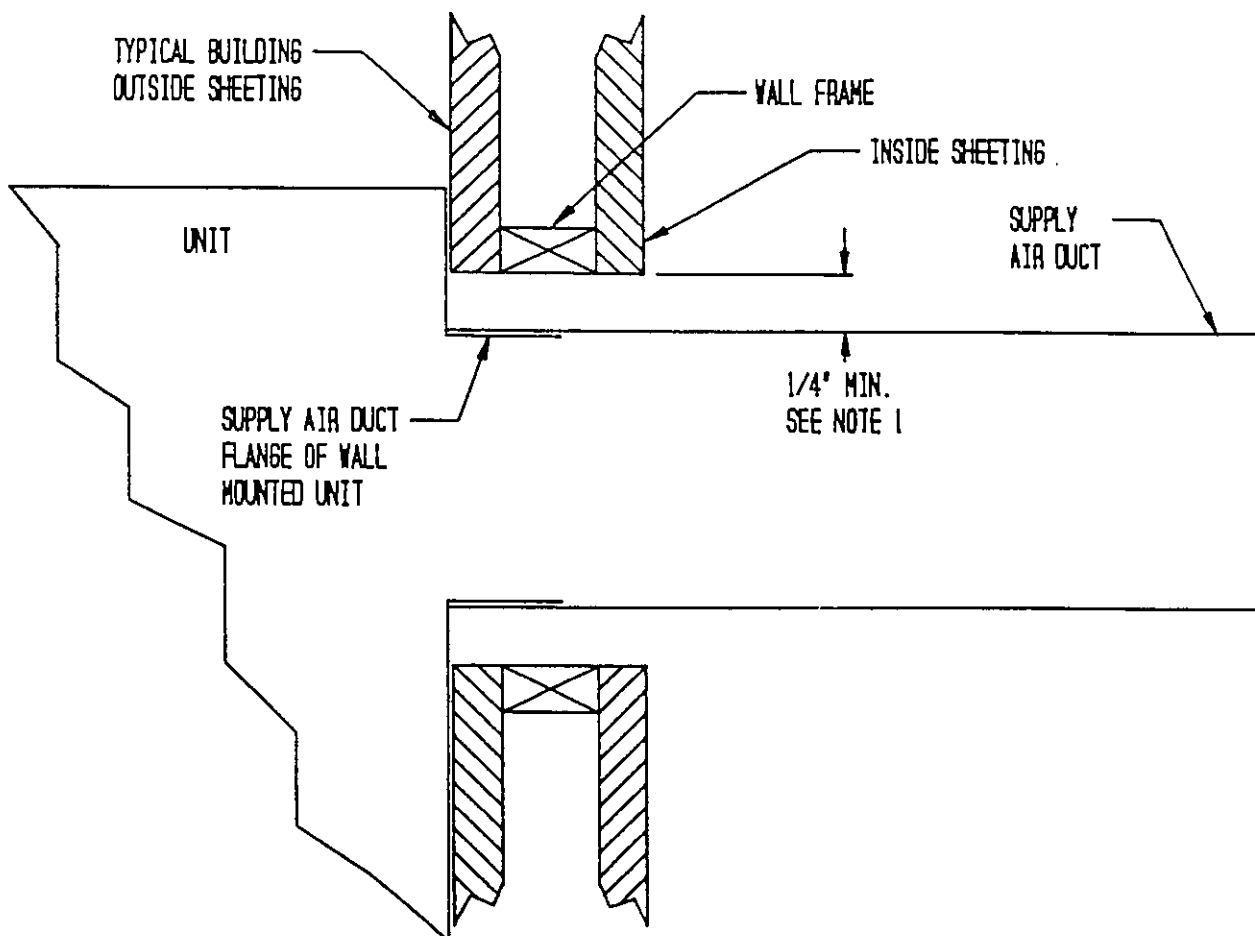


FIGURE 2A
ELECTRIC HEAT CLEARANCE



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

NOTE 1:

WARNING
<p>A <u>minimum</u> of 1/4" clearance must be maintained between the supply air duct and combustible materials. This is required for the first 3 feet of ducting.</p> <p>It is important to insure that the 1/4" 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>

FIGURE 2B

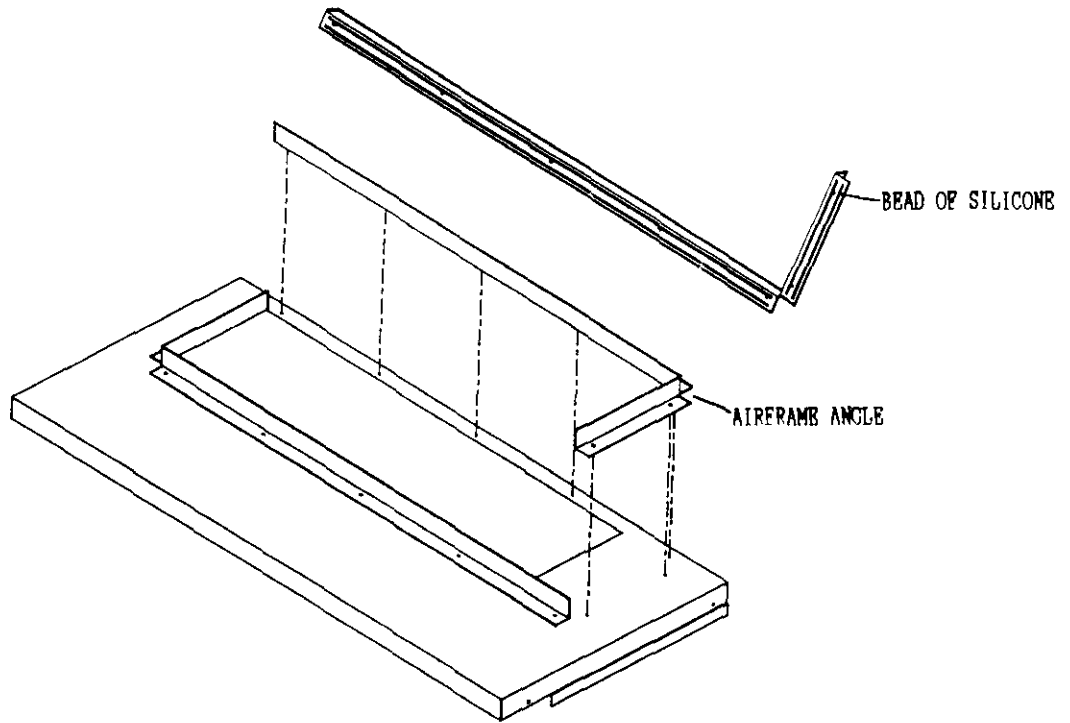
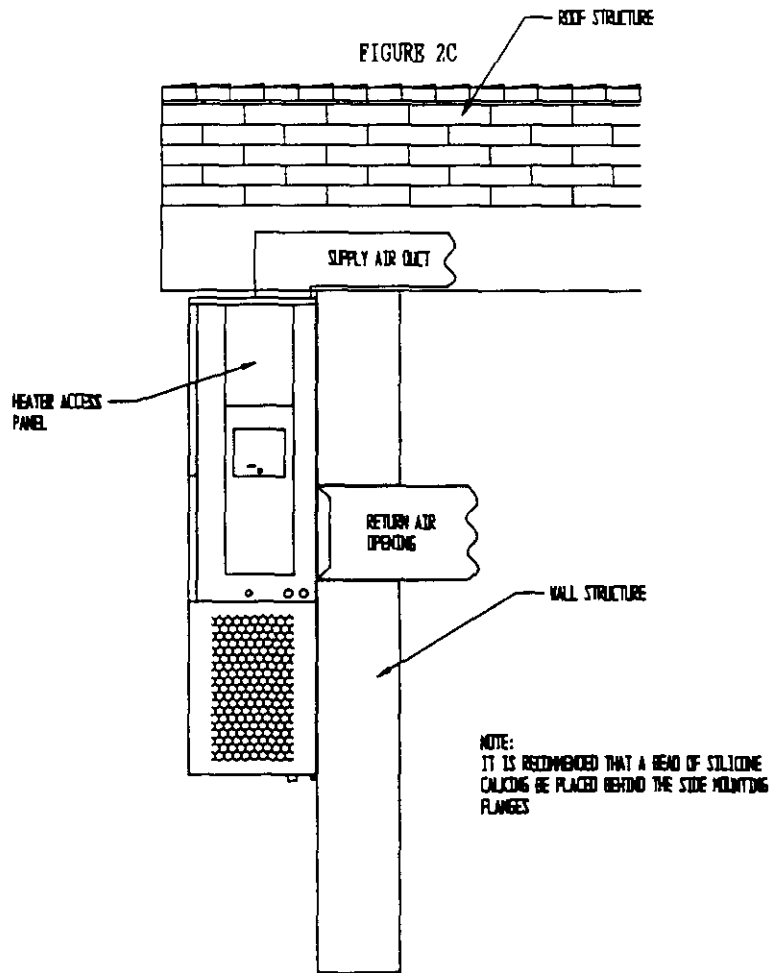


FIGURE 2C



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

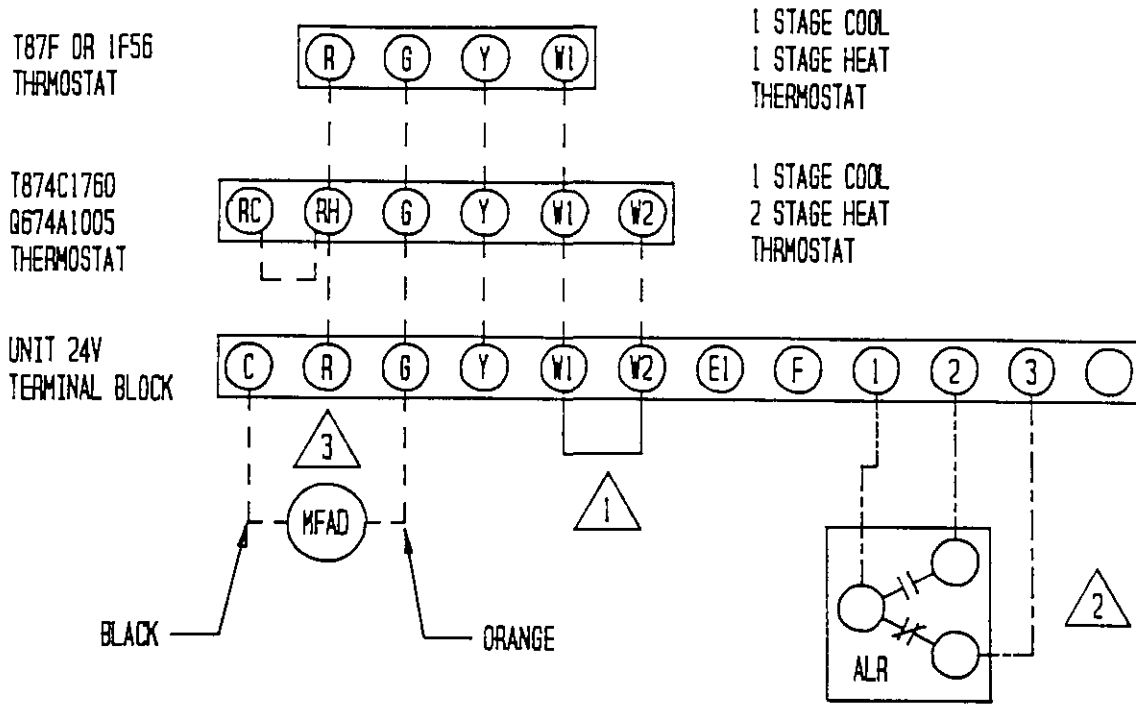
Transformer VA	FLA	Wire Gauge	Maximum Distance In Feet
55	2.3	20 Gauge	45
		18 "	60
		16 "	100
		14 "	160
		12 "	250

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



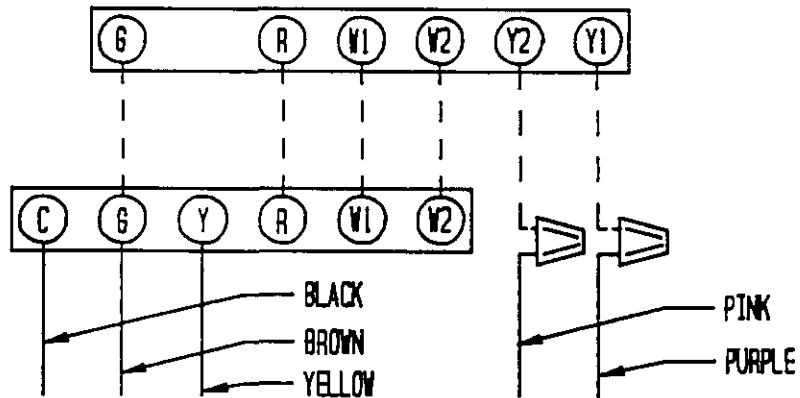
OPTIONAL MOTORIZED FRESH AIR DAMPER SUGGESTED HOOK UP

OPTIONAL ECONOMIZER LOW VOLTAGE WIRING

T874D1934
Q674A1001
THERMOSTAT

UNIT 24V
TERMINAL STRIP

ECONOMIZER WIRING
HARNESS



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 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

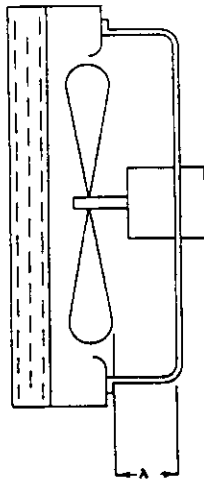


TABLE 4

Model	Dimension A
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	Hi 230V
	Dry/Wet Coil	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

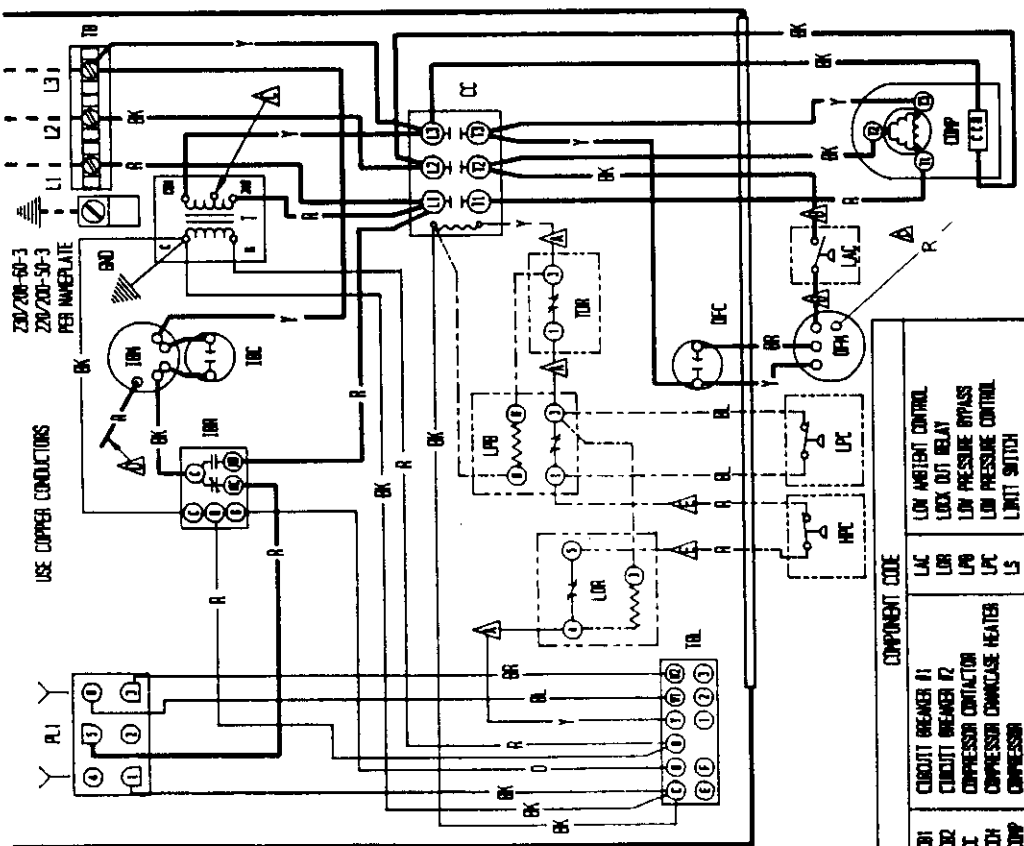
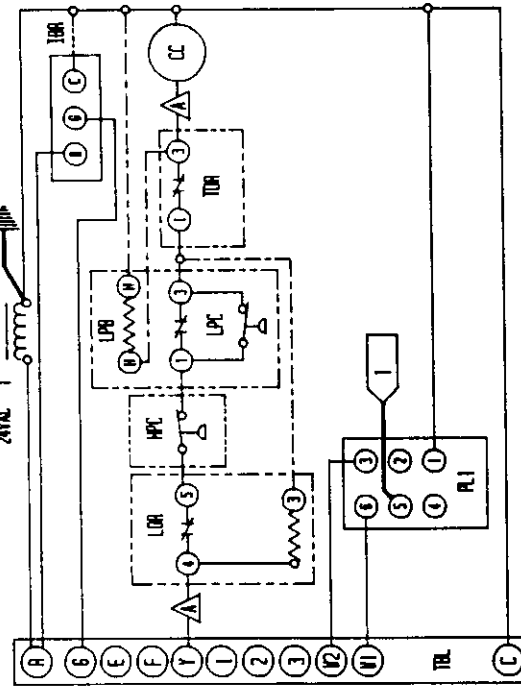
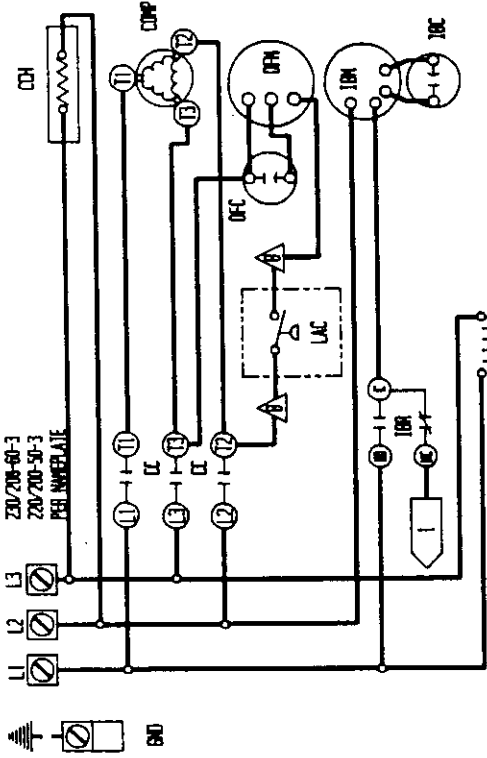
Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged to serial plate 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	
EHWA03-C06	Heater Packages (1)			X			X
EHWA03-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
EIFM-3	Economizer with Exhaust	X	X	X	X	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 (W/Δ) BLACK (W/□) WIRE APPLICABLE

Δ WIRE RED VINE TO ZION TAP FOR ZION OPERATION
Δ WIRE RED VINES CONNECT IF NO OPTIONS USED.
Δ LABELLED VINES CONNECT IF NO OPTIONS USED.

BARB WFG. CO.

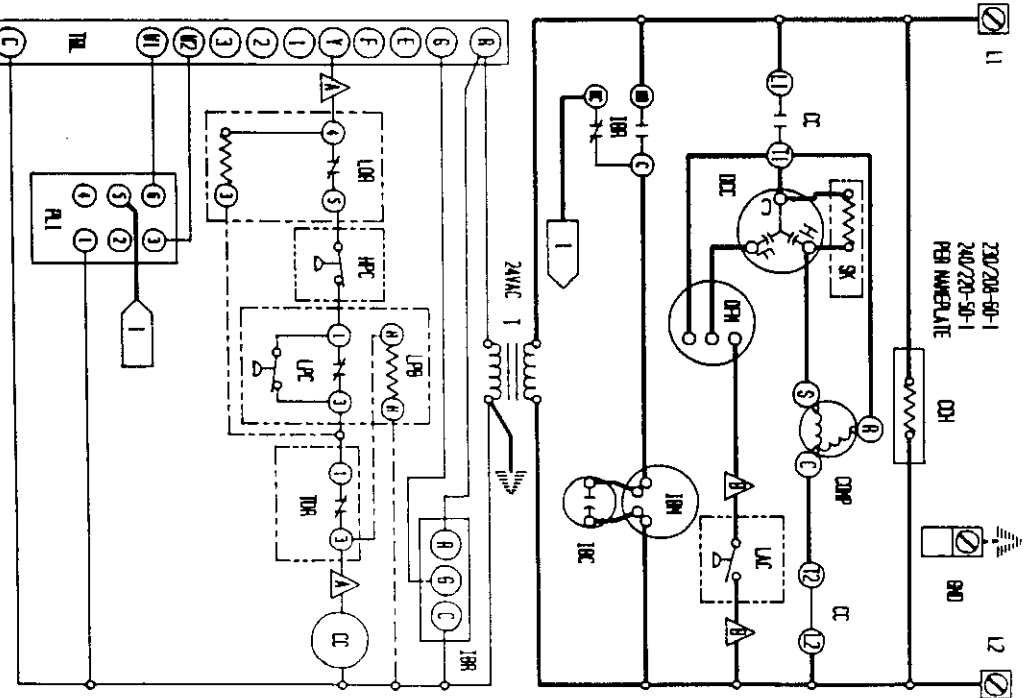
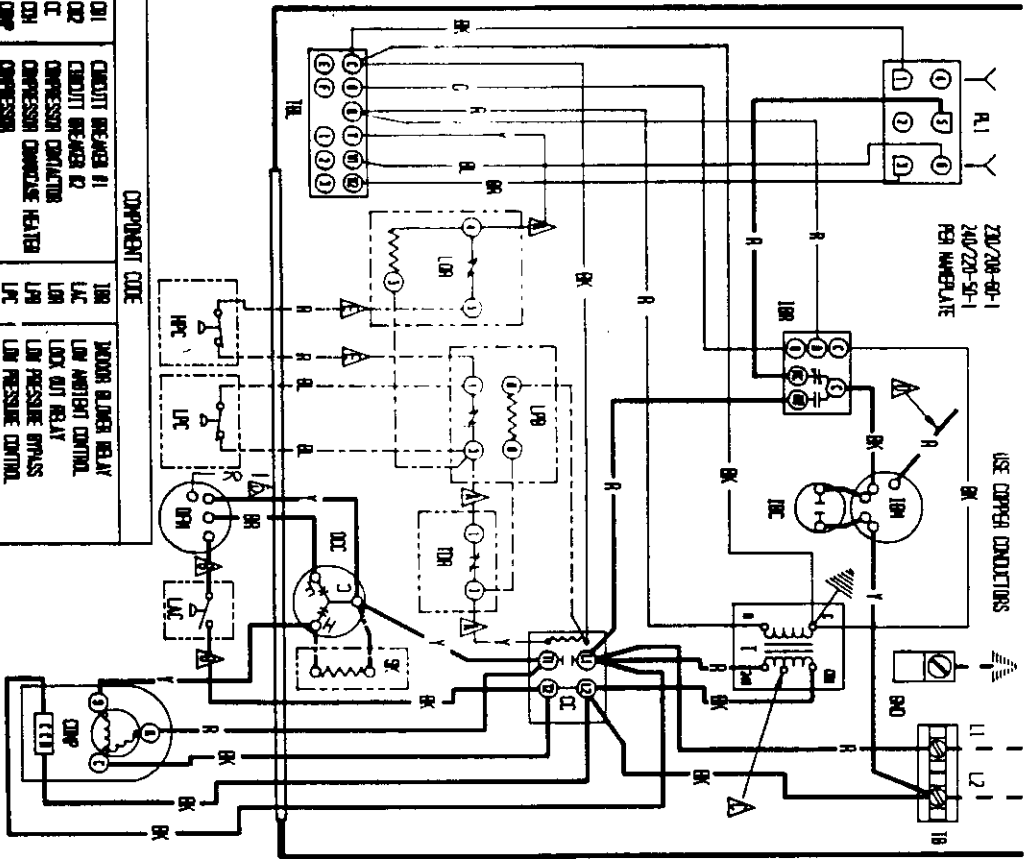
FABRYC TOR	FIELD	OPTIONAL	FROM VOLUME	TO VOLUME	ADDITION
---	---	---	---	---	---

BLACK CODE		COLOR CODE		
BLACK	Y	YELLOW	V	VIOLLET
BROWN	G	GREEN	GR	GRUY
RED	R	BLUE	B	PURPLE
ORANGE	O	WHITE	W	SLATE

	T/M	P/TM
	Y	RK
	G	L
	R	L
	O	L

COMPONENT CODE

CO1	CIRCUIT BREAKER #1	LAC	LOW AMBIENT CONTROL
CO2	CIRCUIT BREAKER #2	LOR	LOCK OUT RELAY
CC	COMPRESSOR CONTACTOR	LPO	LOW PRESSURE BYPASS
COP	COMPRESSOR	LPC	LOW PRESSURE CONTROL
END	EQUIPMENT GROUND	LS	LIMIT SWITCH
R1	HEAT STRIP #1	OPC	OUTDOOR FAN CAPACITOR
R2	HEAT STRIP #2	OPR	OUTDOOR FAN MOTOR
RC1	HEATER CONTACTOR #1	R1	RELAY #1
RC2	HEATER CONTACTOR #2	SK	START KIT
OPC	OUTDOOR PRESSURE CONTROL	T	TRANSFORMER
LAC	LOW AMBIENT CONTROL	TR	TERMINAL BLOCK
IBA	INDOOR BLOWER MOTOR	TL	TERMINAL BLOCK
IBR	INDOOR BLOWER RELAY	TR	TRANSFORMER

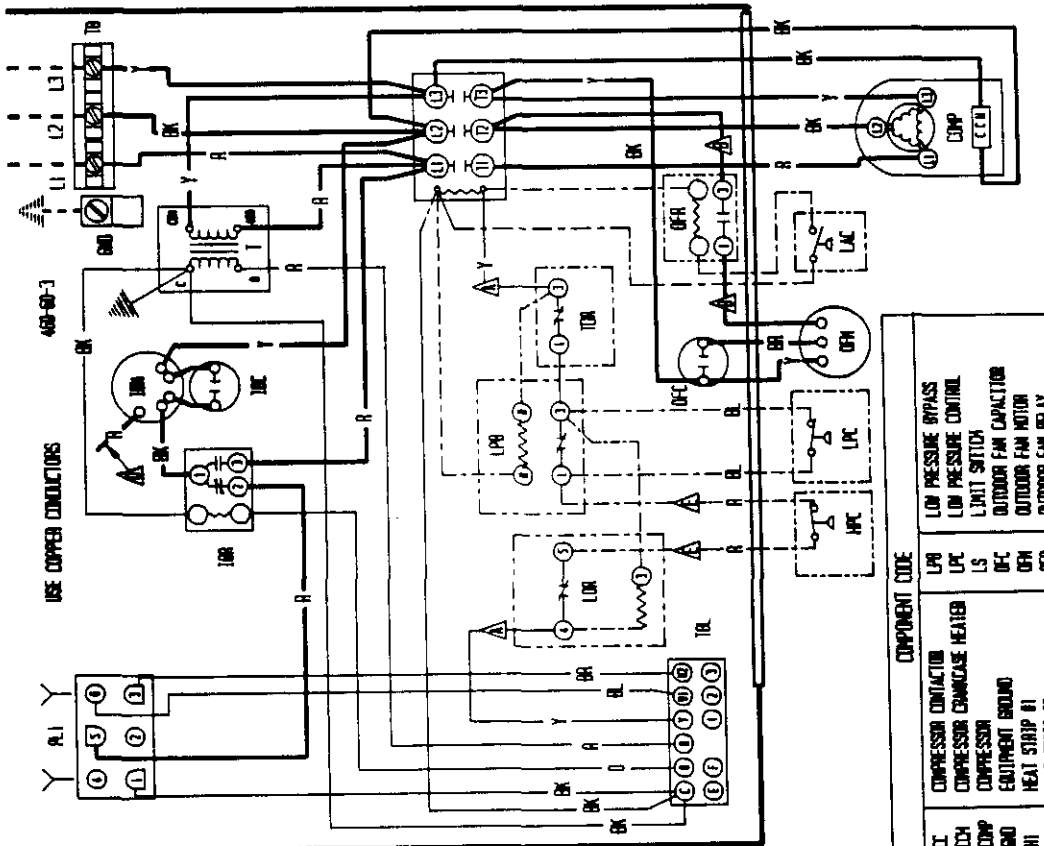
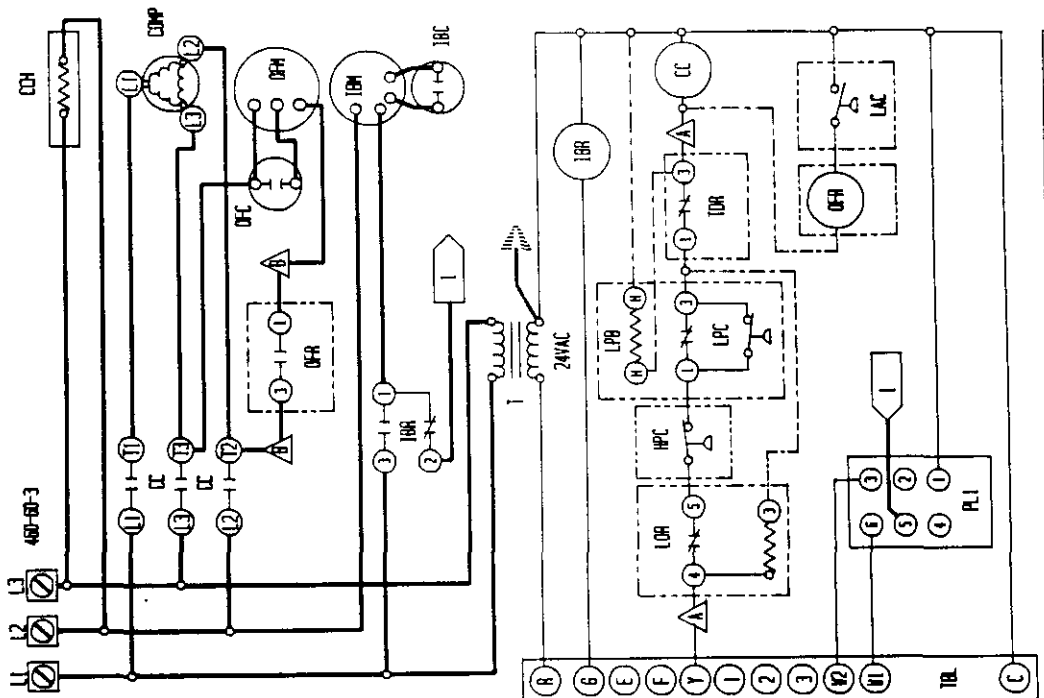


COMPONENT CODE	DESCRIPTION
1BR	ROOM BLOWER RELAY
1CR	LOW AMBIENT CONTROL
1DR	LOCK OUT RELAY
1SR	LOW PRESSURE BRASS
1TR	LOW PRESSURE CONTROL
1UR	UNIT SWITCH
1VR	OUTDOOR FAN MOTOR
1WR	ALAS 01
1XR	START KIT
1YR	TEMPERATURE
1ZR	TEMPERATURE BLOCK
1AR	LOW VOLTAGE TEMPERATURE BLOCK
1BR	THERMAL DRIVE
1CR	THE DELAY RELAY

WIRE COLOR	WIRE TYPE	WIRE SIZE	WIRE LENGTH
BLACK	---	---	---
BROWN	---	---	---
RED	---	---	---
ORANGE	---	---	---
YELLOW	---	---	---
GREEN	---	---	---
BLUE	---	---	---
WHITE	---	---	---
PINK	---	---	---
LAVENDER	---	---	---

RED (LINE) BLACK (NEUTRAL)
 WIRE COLOR CODE
 WIRE TYPE
 WIRE SIZE
 WIRE LENGTH

240V/208-50-1 PBI INVERTER
 240V/208-50-1 PBI INVERTER
 240V/208-50-1 PBI INVERTER



USE COPPER CONDUCTORS

COMPONENT CODE		COLOR CODE		BARD MFG. CO.	
CC	COMPRESSOR CONTACTOR	Y	YELLOW	T	PK
COH	COMPRESSOR CHAMBER HEATER	6	GREEN	V	VIOLET
CDP	COMPRESSOR	B	BLUE	P	PURPLE
END	EQUIPMENT GROUND	R	RED	BY	GRAY
H1	HEAT STRIP #1	O	ORANGE	L	LAVENDER
H2	HEAT STRIP #2	W	WHITE	S	SLATE
HC1	HEATER CONTACTOR #1				
HC2	HEATER CONTACTOR #2				
HC	HIGH PRESSURE CONTROL				
IBC	INDOOR BLOWER CAPACITOR				
IBN	INDOOR BLOWER MOTOR				
IBR	INDOOR BLOWER RELAY				
IAC	LOW AMBIENT CONTROL				
IOR	LOCK OUT RELAY				
LOR	LOW PRESSURE BYPASS				
LPC	LOW PRESSURE CONTROL				
LS	LOW PRESSURE SWITCH				
DPC	OUTDOOR FAN CAPACITOR				
DFN	OUTDOOR FAN MOTOR				
DFR	OUTDOOR FAN RELAY				
FD	PULL OUTS/CONNECT				
PL1	PLUS #1				
TR	TRANSFORMER				
T	TERMINAL BLOCK				
TB	LOW VOLTAGE TERMINAL BLOCK				
TBL	LOW VOLTAGE TERMINAL BLOCK				
TOD	THERMAL CUTOFF				
TOR	TIME DELAY RELAY				

▲ Labeled wires connect if no options used. ▲ Red (Low) Black (High)

FACTORY STD. FIELD OPTIONAL

HIGH VOLTAGE --- ---

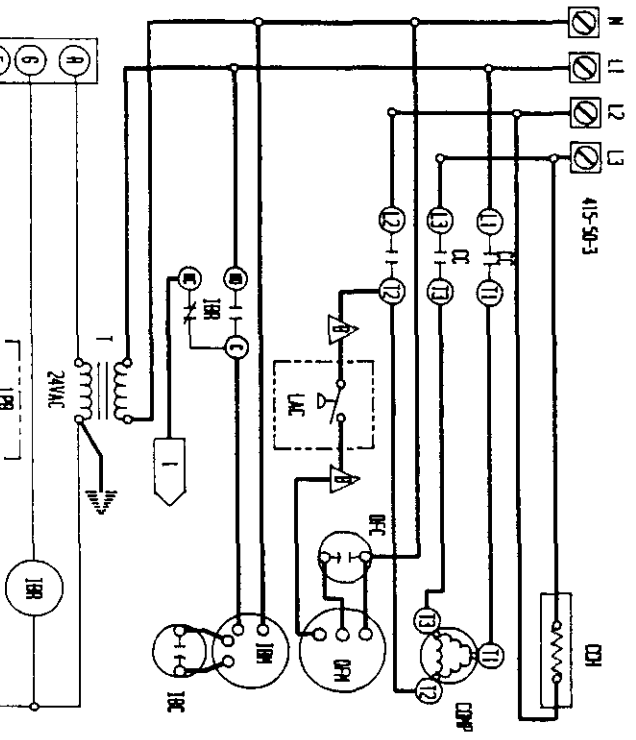
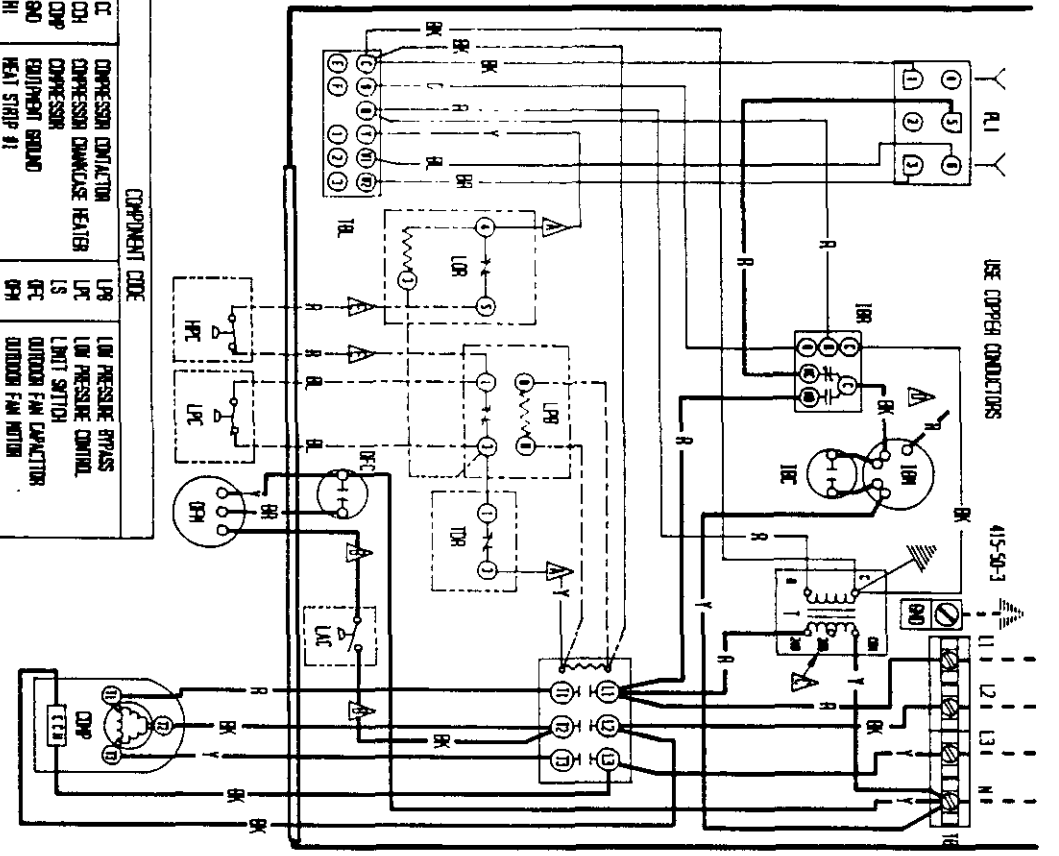
LOW VOLTAGE --- ---

ACCESSORY --- ---

400-00-3

24VAC

400-00-3



COMPONENT	COMPONENT CODE
COMPRESSOR CONTACTOR	L18
COMPRESSOR OVERCURRENT HEATERS	L19
COMPRESSOR	LS
EQUIPMENT GROUND	L20
HEAT STRIP #1	GR1
HEAT STRIP #2	GR2
HEATER CONTACTOR #1	RA1
HEATER CONTACTOR #2	RA2
HIGH PRESSURE CONTROL	R1
INDOR BLOWER CAPACITOR	TR1
INDOR BLOWER MOTOR	TR2
INDOR BLOWER RELAY	TR3
LOW AMBIENT CONTROL	TR4
LOCK OUT RELAY	

LOW PRESSURE SWASS	LOW PRESSURE CONTROL	LIMIT SWITCH	OUTDOOR FAN CAPACITOR	OUTDOOR FAN MOTOR	OUTDOOR FAN RELAY	RELAY DISCONNECT	RHS #1	TRANSFORMER	TRIP BLOCK	LOW VOLTAGE TRIP BLOCK	TRIP BLOCK	MECHAN. OUTLET	TRIP RELAY
L25	L26	L27	GR1	GR2	RA1	RA2	R1	TR1	TR2	TR3	TR4	TR5	TR6
FACTORY STD.	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
OPTIONAL	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

▲ LABELLED WIRES CONNECT IF NO OPTIONS USED. **▲** RED (LOW) BLACK (HIGH). **▲** NONE RED WIRE TO 209V 1HP FOR 300V OPERATION

BLACK	BROWN	RED	GREEN	BLUE	WHITE	YELLOW	GREEN (M)	VIOLLET	PINK	LAMP	PINK	PINK
R	BR	RD	S	BL	W	Y	GR (M)	V	PK	L	LAMP	LAMP

415-50-3
 USE COPPER CONDUCTORS
 415-50-3
 N L1 L2 L3
 415-50-3
 W

BARD MFG. CO.
 ENG. 405-510 A
 DIM. 100/100/100
 CR./APR.