

INSTALLATION INSTRUCTIONS

ROOF MOUNT PACKAGED AIR CONDITIONER

MODELS

RPMA30A

RPMA36A

**SPECIALLY DESIGNED FOR ROOFTOP
HEATING/COOLING APPLICATIONS**

1990.02

MANUAL 2100-030 REV. I
SUPERSEDES REV. H
FILE VOL. II, TAB 10

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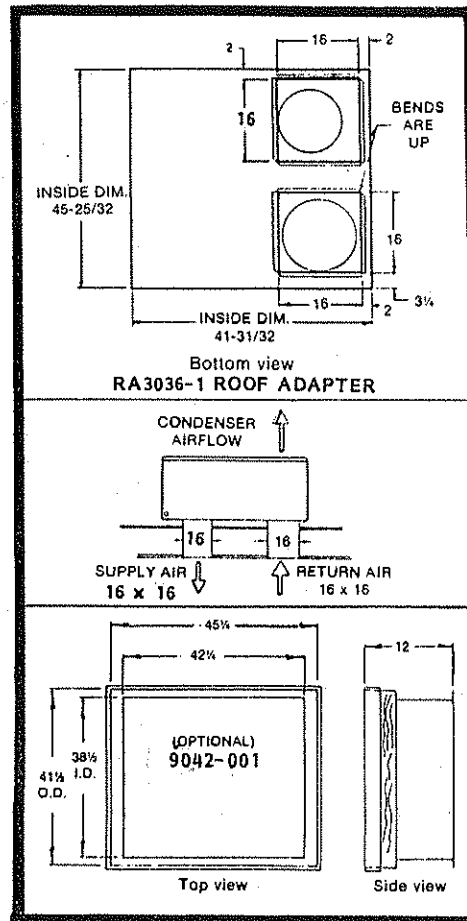
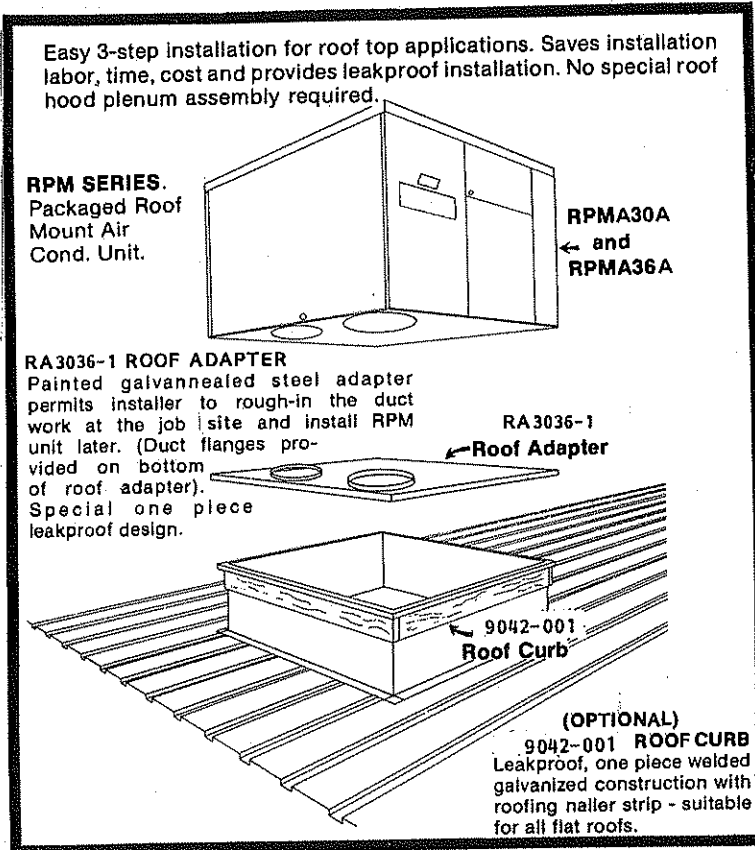
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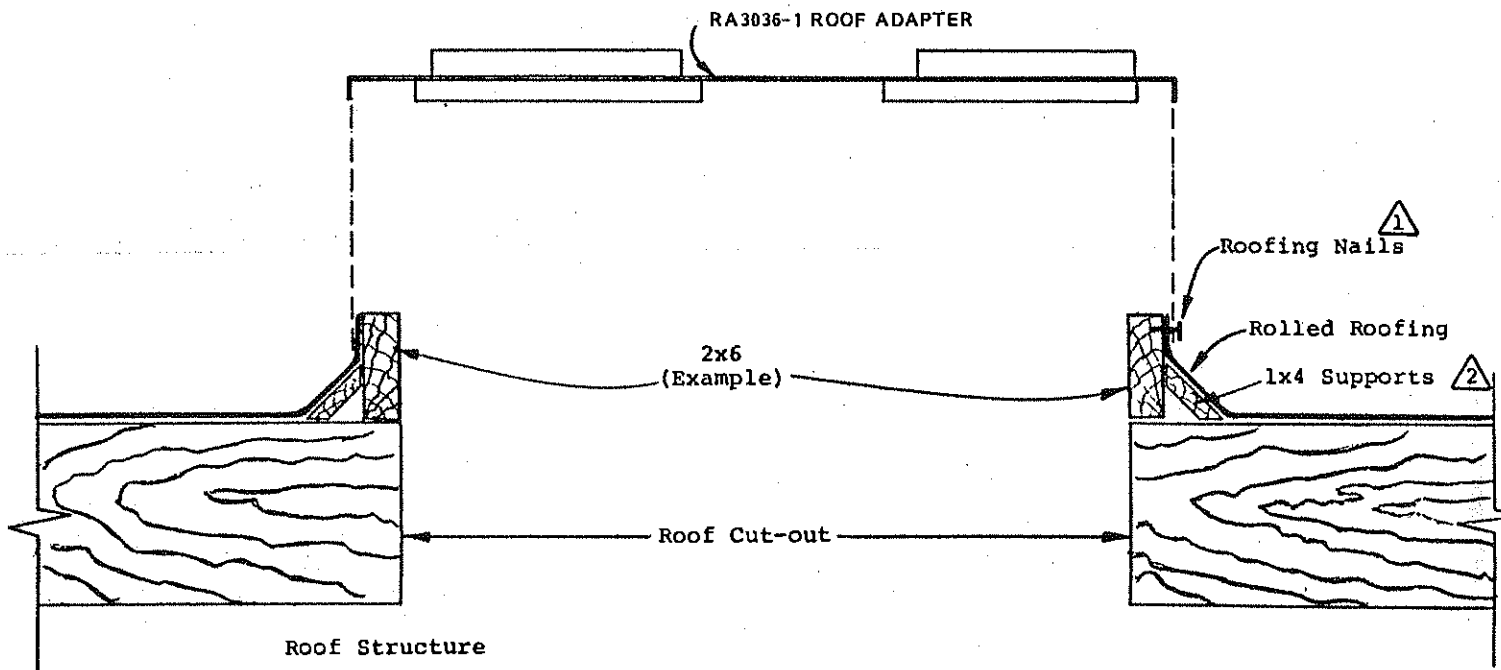
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FIGURE 1



TYPICAL CONSTRUCTION FOR DIMENSIONAL LUMBER EXTENSION CONSTRUCTION



- ① Nail 3/4" from top.
- ② Provides support to roofing material, prevents sharp bends and cracking.

TABLE 1
ELECTRICAL DATA

Model	Rated Volts & PH	Operating Voltage Range	Maximum Unit Amps 230/208	Maximum Fuse	Minimum	Field	Ground
				Or Ckt. Brk * Ckt. A	Circuit Ampacity Ckt. A	Power Wiring** Ckt. A	Wire Size** Ckt. A
RPMA30A	230/208-1	197-253	17.6/18.9	40	25	10	10
RPMA30A-B	230/208-3	187-253	15.3/15.3	25	18	12	10
RPMA30A-C	460-3	414-506	8.2	15	15	14	14
RPMA36A	230/208-1	197-253	20/22.3	40	27	10	10
RPMA36A-B	230/208-3	187-253	14.3/15.8	30	20	12	10
RPMA36A-C	460-3	414-506	8.2	15	15	14	14

*Maximum time delay fuse or HACR type circuit breaker. HACR type not applicable to 460 volt.

**60 degree C copper wire size, basic unit only.

+460 volt not U.L. listed.

TABLE 2
OPTIONAL FIELD INSTALLED HEATER PACKAGES
ARE ONLY TO BE USED WITH THE AIR CONDITIONING MODELS AS INDICATED BELOW

Heater Package Model No.	Volts and Phase	R	R	R	R	R	R
		P	P	P	P	P	P
		M	M	M	M	M	M
		A	A	A	A	A	A
		3	3	3	3	3	3
		0	0	0	6	6	6
		A	A	A	A	A	A
			B	C		B	C
EH3RA-A05	240/1	S	A	A	S	A	A
EH3RA-A10		S	A	A	S	A	A
EH3RA-A15		S	A	A	S	A	A
EH3RA-A20		S	A	A	S	A	A
EH3RA-B09	240/3	A	S	A	A	S	A
EH3RA-B15		A	S	A	A	S	A
EH3RA-B18		A	S	A	A	S	A
EH3RA-C09	480/3	A	A	S	A	A	S
EH5RA-C15		A	A	S	A	A	S
EH5RA-C18		A	A	S	A	A	S

S Standard application--Heater volts and phase same as basic unit.

A Alternate application--Heater volts and phase different from basic unit.

TABLE 3
OPTIONAL FIELD-INSTALLED ELECTRIC HEATER TABLE

Heater Pkg. Model No.	Unit Volts Phase	Htr. KW & Cap. @240V (or 480V if applicable		Heater KW & Capacity @208 Volts		Heater Amp @240V/208 or 480V if Applicable	Heater Internal Fuses	Circuit B				
								No. Field Ckts.	Minimum Circuit Ampacity	Maximum Overcurrent Protection	(1) Field Power Wiring	(2) Ground Wire Size
EH3RA-A05	240/208-1	5	17,100	3.75	12,800	20.8/18.1		1	26/23	30/25	10/10	10
EH3RA-A10	240/208-1	10	34,100	7.5	25,600	41.6/36.2		1	53/46	60/50	6/6	10
EH3RA-A15	240/208-1	15	51,200	11.25	38,400	62.5/54.1	30/60	1	79/68	80/70	3/4	8
EH3RA-A20	240/208-1	20	68,200	15.0	51,200	83.2/72.1	60/60	1	104/91	110/100	2/3(3)	6
EH3RA-B09	240/208-3	9	30,700	6.75	23,000	21.7/18.7		1	28/24	30/25	10/10	10
EH3RA-B15	240/208-3	15	51,200	11.25	38,400	36.2/31.2		1	46/39	50/40	6/8	10
EH3RA-B18	240/208-3	18	61,400	13.5	46,100	43.3/37.5		1	55/47	60/50	6/6	10
EH3RA-C09	480-3	9	30,700	6.75	23,000	10.8		1	15	15	14	14
EH3RA-C15	480-3	15	51,200	11.25	38,400	18.0		1	23	25	10	10
EH3RA-C18	480-3	18	61,400	13.5	46,100	21.7		1	28	30	10	10

- (1) Based on wire suitable for 60 degrees C. Other wiring materials must be rated for marked "Minimum Circuit Ampacity" or greater.
- (2) Based upon Table 250-95 of N.E.C. 1984. See electrical data for basic air conditioning for Ckt. A wiring specification requirements.
- (3) For ampacities over 100 amperes use wire suitable for at least 75 degrees C.

TABLE 4

INDOOR BLOWER PERFORMANCE CFM--DRY COIL						
E. S. P. In H ₂ O ***	RPMA30A			RPMA36A		
	High Speed	Medium Speed	Low Speed	High Speed	Medium Speed	Low Speed
.00	1275	1205	1140	1425	1225	1130
.10	1225	1155	1085	1385	1190	1115
.20	1155	1080	1025	1330	1150	1085
.30	1070	1010	955	1275	1100	1050
.40	980	930	870	1205	1050	1005
.50	895	805	770	1130	995	950
.60	---	---	---	1060	935	890

IMPORTANT: While this electrical data is presented as a guide, it is important to electrically connect, properly size fuses and conductor wires in accordance with the National Electrical Code and all existing local codes.

IMPORTANT

The equipment covered in this manual is to be installed by trained, experienced service and installation technicians. All duct work, supply and return, must be properly sized for the design air flow requirement of the equipment. 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.

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.

UNPACKING THE SELF-CONTAINED UNIT

It is recommended that the unit be unpacked at the installation site to minimize damage due to handling.

1. Cut and remove the metal band from around the unit.
2. Remove the carton from the unit.
3. The installation manual is contained in an envelope shipped with the unit. Make sure that it does not get lost.
4. Carefully block up the unit and remove the shipping skid.
5. CAUTION: DO NOT tip the unit on its side. Oil may enter the compressor cylinders and cause starting or operating trouble. If unit has set on its side, restore to upright position and do not run for several hours. Also run intermittently for a few seconds. Do this three or four times with three minutes in between. Observe abnormal compressor noises.

GENERAL

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

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.

INSTALLATION

Size of unit for a proposed installation should be based on heat loss calculation made according to methods of National Warm Air Heating and Air Conditioning Association. 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.

CONDENSATE DRAINAGE

A 3/4" FPT coupling is provided to connect a condensate drain line to and is located on the side opposite outdoor coil.

DUCTWORK

Design the ductwork according to methods given by the National Warm Air Heating and Air Conditioning Association. 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.

LOCATING THE UNIT

A location on the roof must be chosen that will provide adequate support to the unit, while at the same time allowing clearance for the supply air and return air duct connections to the RA3036-1 roof adapter (see layout and dimensions).

NOTE: The RA3036-1 roof adapter **MUST BE USED** to assure a leak-free installation and the UL approval is contingent upon the use of this mating adapter.

ROOF CURB FABRICATION

The roof curb (extension section between actual roof and RA3036-1 roof adapter) could be fabricated from either sheet steel or nominal dimensional lumber. In either case, the OD dimension of the extension section must be sized to fit the RA3036-1 adapter dimensions as shown.

All corners, seams or joints must be sealed to assure a leak-free installation. The height of the curb section is determined by installation requirements such as degree slope of roof, direction that the outdoor (exposed) coil faces, and geographic location. The unit **MUST SET LEVEL** when installed.

A suggested design for a wood frame type construction is shown in Figure 1.

OPTIONAL ELECTRIC HEATER PACKAGES

The EH3RA series electric heater packages are available as options. Each package comes complete with heaters and controls.

IMPORTANT: A separate power entrance is required for the heater package. **DO NOT** attempt to wire a basic unit and a heater package to one power circuit.

INSTALLATION

Installation of the heat package requires removing the unit blower from its securing slide mount, inserting the heat package into the same mount and reinstalling the unit blower into a similar mount on the heat package. A minimal amount of wiring is required. Refer to the heat package installation instructions for detailed installation information.

WIRING--MAIN POWER

Refer to the unit rating plate for wiring sizing information and maximum fuse or "HACR Type" circuit breaker size. Each unit is marked with a "Minimum Circuit Ampacity." This means that the field wiring used must be sized to carry that amount of current. Refer to the National Electrical Code for complete current carrying capacity data on the various insulation grades of wiring material.

If an optional heater package is installed, a separate power circuit must be added. Refer to the Electrical Information Chart for circuit information. DO NOT ATTEMPT TO COMBINE A BASIC UNIT AND A HEATER PACKAGE TO ONE POWER SUPPLY CIRCUIT.

The unit rating plate lists a "Maximum Time Delay 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.

PRESSURE SERVICE PORTS

High and low pressure service ports are installed on all unit so that the system operating pressures can be observed. Pressure charts can be found later in the manual covering all models. It is imperative to match the correct pressure chart to the unit by model number.

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 Degree F OD Temperature	82 Degree F OD Temperature
RPMA30A	1050	47 - 49	59 - 61
RPMA36A	1300	49 - 51	56 - 58

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

AIR FILTER

A 24" x 24" x 1" disposable fiberglass type filter is located inside the unit for air filtration of both return air from structure and for optional fresh air intake (see below).

Access to the filter is by removing the corner panel where either the fresh air blank off plate or fresh air intake hood is located.

FRESH AIR INTAKE

The fresh air intake cover is a manual damper operated device to allow intake of fresh air whenever indoor blower is operating. The damper position can be manually set and locked in position with a wing nut. It is held in place by two screws and has a hardware cloth screen to prevent entry of birds or rodents. An optional cover plate is available if fresh air intake is not used.

CRANKCASE HEATERS

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.

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 2 is affixed to all outdoor units detailing start-up procedure. This is very important. Please read carefully.

FIGURE 2

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.

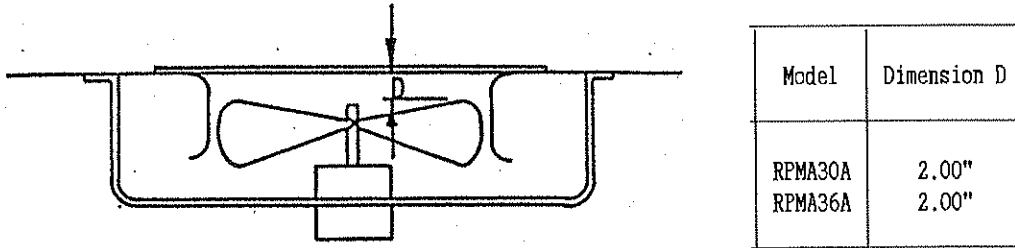
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FAN BLADE SETTING DIMENSIONS

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 3



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. The 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.
3. Check all power fuses or circuit breakers to be sure that they are the correct rating.
4. Periodic cleaning of the outdoor coil to permit full and unrestricted air flow circulation is essential.

If this unit is operated in cooling below a 65 degree outdoor ambient temperature, the installation of low ambient control (LAC-1) to unit is required.

TABLE 6

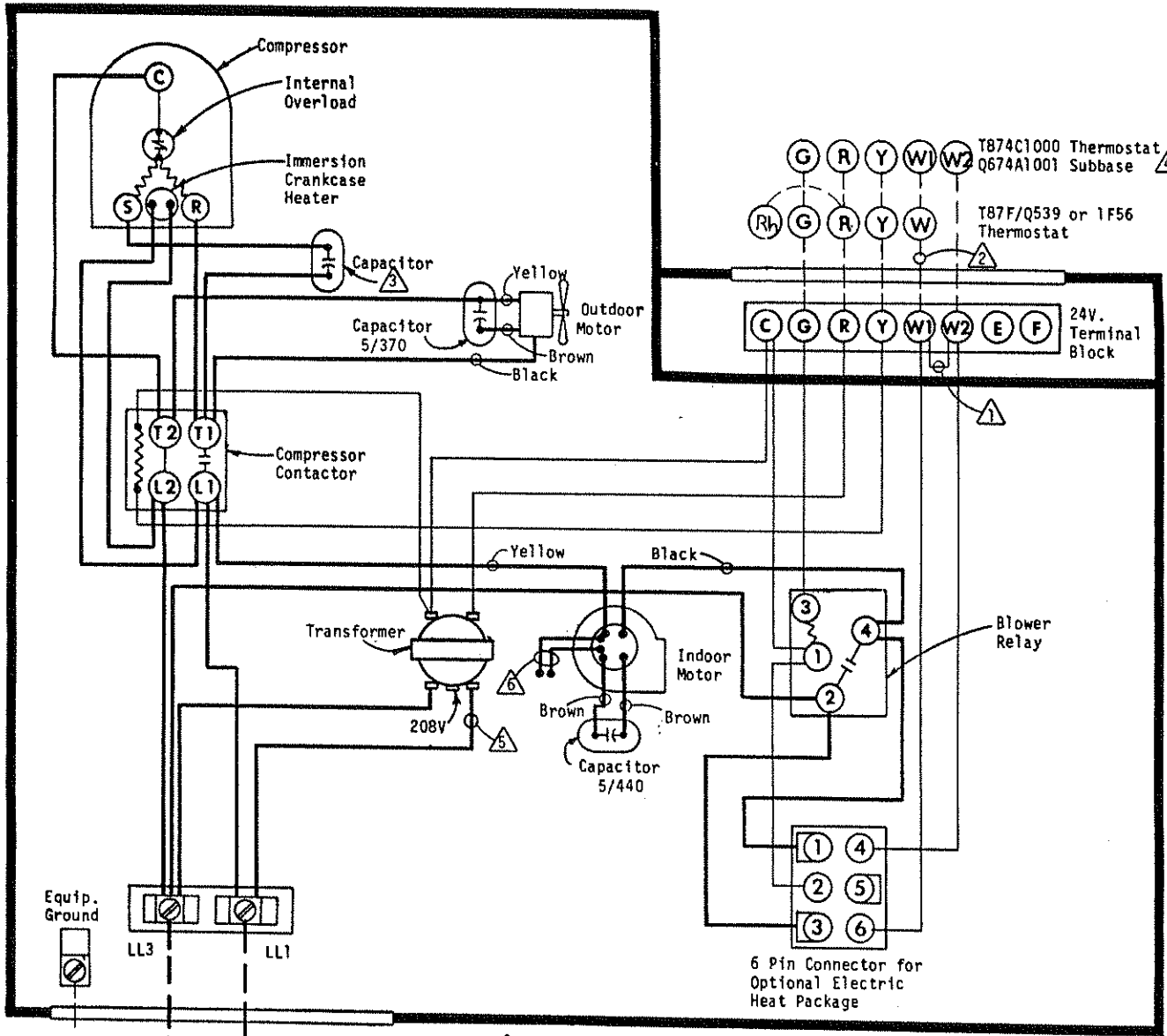
COOLING

Air Temperature Entering Outdoor Coil Degree F

Model	Return Air Temperature	Pressure	°	°	°	°	°	°	°	°	°
			75	80	85	90	95	100	105	110	115
RPMA30A	75 deg. DB	Low Side	66	68	70	71	73	76	78	79	79
	62 deg. WB	High Side	213	228	244	259	275	291	307	323	339
	80 deg. DB	Low Side	71	73	74	76	78	80	81	83	85
	67 deg. WB	High Side	218	234	250	266	282	298	315	331	348
	85 deg. DB	Low Side	76	78	80	82	84	86	88	89	91
	72 deg. WB	High Side	226	242	259	275	292	309	326	343	360
RPMA36A	75 deg. DB	Low Side	69	71	73	74	76	77	79	80	81
	62 deg. WB	High Side	230	243	256	270	284	298	312	326	341
	80 deg. DB	Low Side	74	76	78	79	81	83	84	86	87
	67 deg. WB	High Side	235	249	263	277	291	305	320	335	350
	85 deg. DB	Low Side	80	82	84	85	87	89	90	92	94
	72 deg. WB	High Side	244	258	272	286	301	316	331	346	362

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

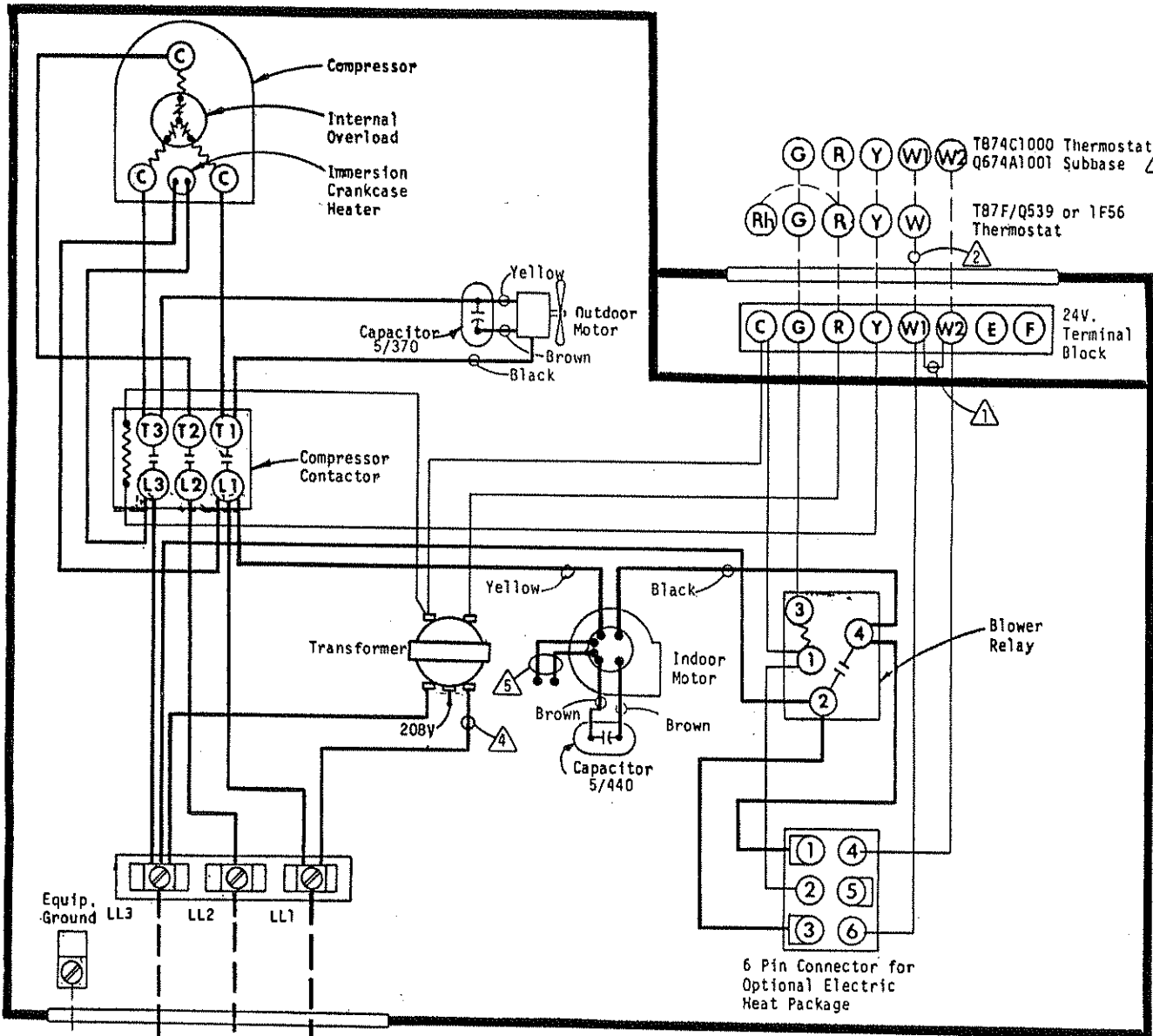
Tables are based upon rated CFM (airflow) across the evaporator coil and should be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged to serial plate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



- ⚠ Remove jumper for two stage heat
- ⚠ Not required when Optional Heat Packages are not installed
- ⚠ RPMA30A - 35/370
RPMA36A - 40/370
- ⚠ Required only for use with Optional Electric Heat Packages.
- ⚠ For 208V operation move this wire to 208V transformer tap.
- ⚠ Black - High Speed, Blue - Med. Speed, Red - Low Speed. Tape unused leads separately. See Installation Manual for Max. Static Pressure operation on each speed.

USE COPPER OR ALUMINUM WIRE

FACTORY WIRING	FIELD WIRING
Low Voltage ———	-----
High Voltage ———	-----



- ⚠ Remove jumper for two stage heat
- ⚠ Not required when Optional Heat Packages are not installed
- ⚠ Required only for use with Optional Electric Heat Packages.
- ⚠ For 208V operation move this wire to 208V transformer tap.
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USE COPPER OR ALUMINUM WIRE

FACTORY WIRING	FIELD WIRING
Low Voltage	-----
High Voltage	-----

