

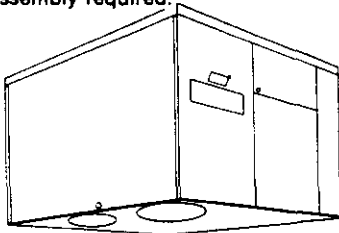
MODELS
RPMA30A & RPMA36A
ROOF MOUNT
PACKAGED AIR CONDITIONER
INSTALLATION INSTRUCTIONS

SPECIALLY DESIGNED FOR ROOFTOP
HEATING / COOLING APPLICATIONS

COPYRIGHT APRIL, 1989
BARD MANUFACTURING COMPANY
BRYAN, OHIO

Easy 3-step installation for roof top applications. Saves installation labor, time, cost and provides leakproof installation. No special roof hood plenum assembly required.

RPM SERIES.
Packaged Roof Mount Air Cond. Unit.



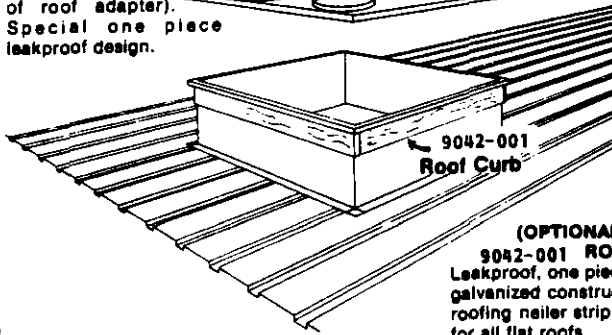
RPMA30A
← and
RPMA36A

RA 3036-1 ROOF ADAPTER

Painted galvanized steel adapter permits installer to rough-in the duct work at the job site and install RPM unit later. (Duct flanges provided on bottom of roof adapter). Special one piece leakproof design.

RA 3036-1

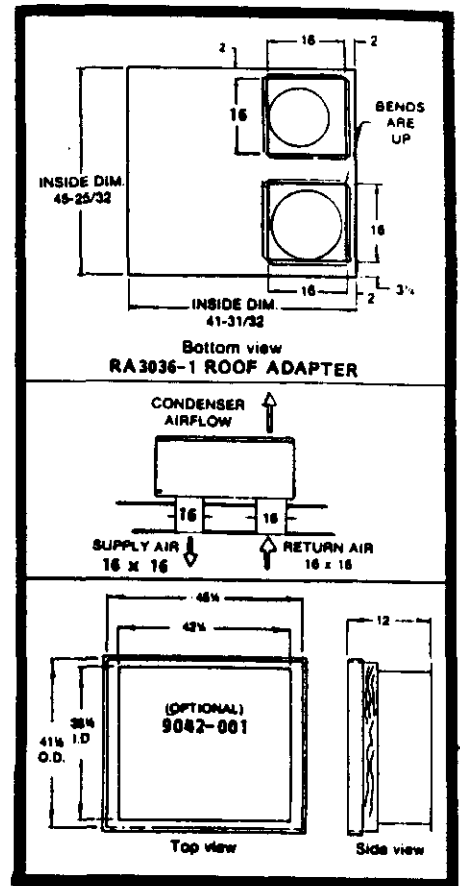
← **Roof Adapter**



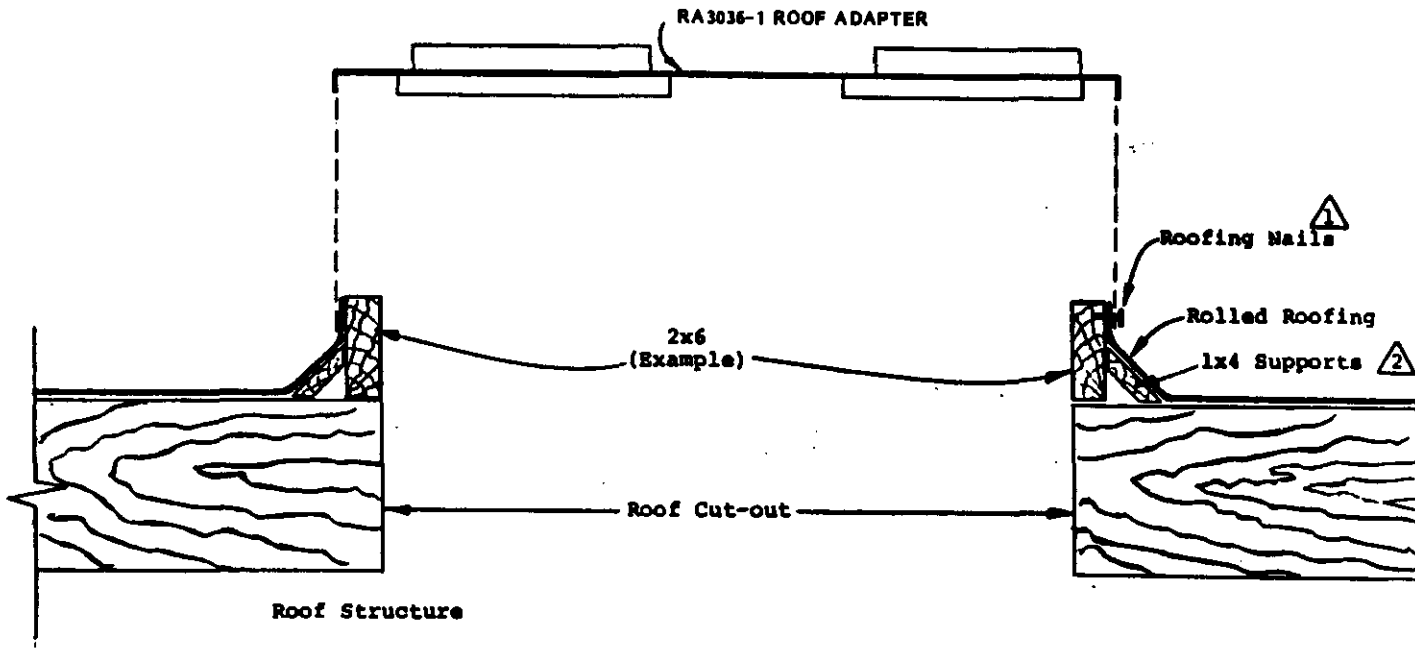
9042-001
Roof Curb

(OPTIONAL)

9042-001 ROOF CURB
Leakproof, one piece welded galvanized construction with roofing neiler strip - suitable for all flat roofs.



TYPICAL CONSTRUCTION FOR DIMENSIONAL LUMBER EXTENSION CONSTRUCTION



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

IMPORTANT

The equipment covered in this manual is to be installed by trained, experienced service and installation technicians. Any heat pump is more critical of proper operating, charge and an adequate duct system than a straight air conditioning unit. All ductwork, 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 ductwork 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 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 noise.

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 the 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 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. UL 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 on page 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 wire 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.

| INDOOR BLOWER PERFORMANCE CFM - Dry Coil With Filter | | | | | | |
|---|---------------|-----------------|--------------|---------------|-----------------|--------------|
| E. S. P. in H ₂ O | RPMA 30A | | | RPMA 36A | | |
| | High Speed | Medium Speed | Low Speed | High Speed | Medium Speed | Low Speed |
| .0 | 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 |

| BASIC UNIT ELECTRICAL DATA | | | | | | | |
|----------------------------|------------------------|-------------------------------|---------------------------------|--|--------------------------------|----------------------------|--------------------------|
| Model | Rated Volts & Ph | Operating Voltage Range | Max. Unit Amps 230/208 | Maximum Fuse or Circuit Breaker* | Minimum Circuit Ampacity | Field** Power Wiring | Ground** Wire Size |
| | | | | Ckt. A | Ckt. A | Ckt. A | Ckt. A |
| RPMA 30A | 230/208-1 | 197-253 | 17.6/18.9 | 40 | 25 | 10 | 10 |
| RPMA 30A-B | 230/208-3 | 187-253 | 15.3/15.3 | 25 | 18 | 12 | 10 |
| RPMA 30A-C | 460-3 | 414-506 | 8.2 | 15 | 15 | 14 | 14 |
| RPMA 36A | 230/208-1 | 197-253 | 20/22.3 | 40 | 27 | 10 | 10 |
| RPMA 36A-B | 230/208-3 | 187-253 | 14.3/15.8 | 30 | 20 | 12 | 10 |
| RPMA 36A-C | 460-3 | 414-506 | 8.2 | 15 | 15 | 14 | 14 |

*Maximum time delay fuse or HACR type circuit breaker. HACR not applicable to 460 volt.
 **60°C copper wire size, basic unit only.
 +460V not UL listed.

| OPTIONAL FIELD-INSTALLED ELECTRIC HEATER TABLE | | | | | | | | | | | | |
|--|-------------------------------------|---|--------|--|--------|--|-----------------------------|--------------------------|--------------------------------|-------------------------------------|--------------------------|--------------------------|
| Heater Package Model No. | Heater Package Volts Phase | Htr. Kw & Capacity @ 240V (or 480V if applicable) | | Heater Kw & Capacity @ 208 Volts | | Heater Amps @ 240/208 (or 480V if applicable) | Heater Internal Fuses | CIRCUIT B | | | | |
| | | Kw | Btuh | Kw | Btuh | | | Number Field Ckts. | Minimum Circuit Ampacity | Max. Over- Current Protection | Field Power Wiring | Ground Wire Size ② |
| | | | | | | | | | | | | |
| EH 3RA-A05 | 240/208-1 | 5 | 17,100 | 3.75 | 12,800 | 20.8/18.1 | | 1 | 26/23 | 30/25 | 10/10 | 10 |
| EH 3RA-A10 | 240/208-1 | 10 | 34,100 | 7.5 | 25,600 | 41.6/36.2 | | 1 | 53/46 | 60/50 | 6/6 | 10 |
| EH 3RA-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 |
| EH 3RA-A20 | 240/208-1 | 20 | 68,200 | 15.0 | 51,200 | 83.2/72.1 | 60/60 | 1 | 104/91 | 110/100 | 2/3③ | 6 |
| EH 3RA-B09 | 240/208-3 | 9 | 30,700 | 6.75 | 23,000 | 21.7/18.7 | | 1 | 28/28 | 30/25 | 10/10 | 10 |
| EH 3RA-B15 | 240/208-3 | 15 | 51,200 | 11.25 | 38,400 | 36.2/31.2 | | 1 | 46/39 | 50/40 | 6/8 | 10 |
| EH 3RA-B18 | 240/208-3 | 18 | 61,400 | 13.5 | 46,100 | 43.3/37.5 | | 1 | 55/47 | 60/50 | 6/6 | 10 |
| EH 3RA-C09 | 480-3 | 9 | 30,700 | 6.75 | 23,000 | 10.8 | | 1 | 15 | 15 | 14 | 14 |
| EH 3RA-C15 | 480-3 | 15 | 51,200 | 11.25 | 38,400 | 18.0 | | 1 | 23 | 25 | 10 | 10 |
| EH 3RA-C18 | 480-3 | 18 | 61,400 | 13.5 | 46,100 | 21.7 | | 1 | 28 | 30 | 10 | 10 |

- ① Based on wire suitable for 60°C. Other wiring materials must be rated for marked "Minimum Circuit Ampacity" or greater.
 ② Based upon Table 250-95 of N.E.C. 1989.
 ③ For ampacities over 100 amperes use wire suitable for at least 75°C.
 See electrical data for basic air conditioning for Circuit A wiring specification requirements.

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

| Heater Model Number | Volts & Phase | RPMA 30A | RPMA 30A-B | RPMA 30A-C | RPMA 36A | RPMA 36A-B | RPMA 36A-C | S=Standard application. Heater volts and phase same as basic unit. A=Alternate application. Heater volts and phase different from basic unit. |
|------------------------|------------------|----------|------------|------------|----------|------------|------------|---|
| EH 3RA-A05 | 240/208-1 | S | A | A | S | A | A | |
| EH 3RA-A10 | 240/208-1 | S | A | A | S | A | A | |
| EH 3RA-A15 | 240/208-1 | S | A | A | S | A | A | |
| EH 3RA-A20 | 240/208-1 | S | A | A | S | A | A | |
| EH 3RA-B09 | 240/208-3 | A | S | A | A | S | A | |
| EH 3RA-B15 | 240/208-3 | A | S | A | A | S | A | |
| EH 3RA-B18 | 240/208-3 | A | S | A | A | S | A | |
| EH 3RA-C09 | 480-3 | A | A | S | A | A | S | |
| EH 3RA-C15 | 480-3 | A | A | S | A | A | S | |
| EH 3RA-C18 | 480-3 | A | A | S | A | A | S | |

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.

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:

| Model | Rated Airflow | 95°F O.D. Temp. | 82°F O.D. Temp. |
|----------|---------------|-----------------|-----------------|
| RPMA 30A | 1050 | 47 - 49 | 59 - 61 |
| RPMA 36A | 1300 | 49 - 51 | 56 - 58 |

The above suction line temperatures are based upon 80°F dry bulb/67°F wet bulb (50% R.H.) 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 panel 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 following decal is affixed to all outdoor units detailing the start-up procedure. This is very important. Please read carefully.

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.

7961-081

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 increases 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 airflow circulation is essential.

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

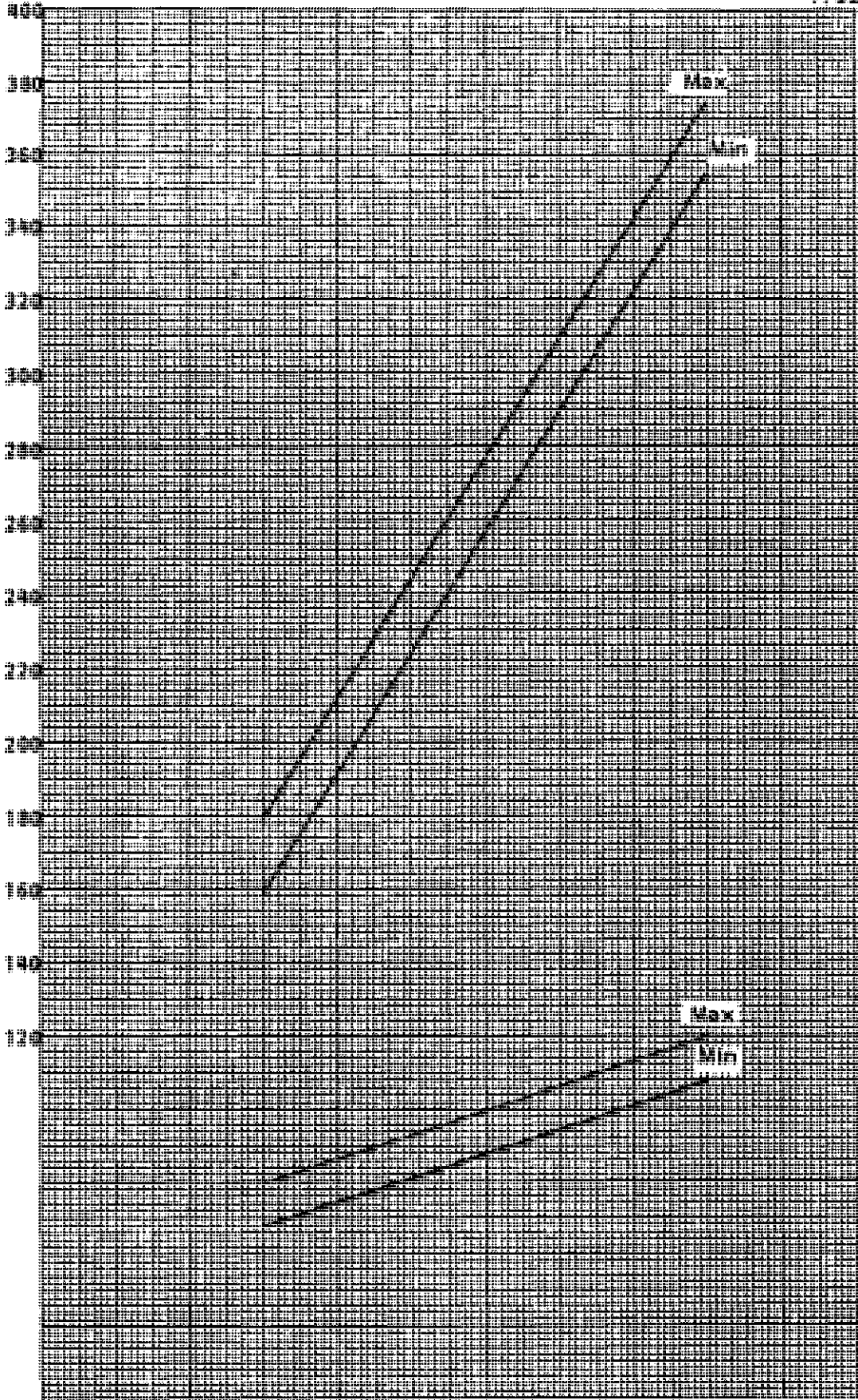
PARTS LIST
SINGLE PACKAGE AIR CONDITIONERS

Date: 05/10/89

| Part No. | Description | 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 |
| | | O | O | O | 6 | 6 | 6 |
| | | A | A | A | A | A | A |
| | | | | | | | |
| | | | B | C | | B | C |
| 4072-110 | Wiring Diagram | X | | | X | | |
| 4072-210 | Wiring Diagram | | X | | | X | |
| 4072-310 | Wiring Diagram | | | X | | | X |
| 5051-035 | Condenser Coil | X | X | X | X | X | X |
| 5060-012 | Evaporator Coil | X | X | X | | | |
| 5060-022 | Evaporator Coil | | | | X | X | X |
| 5151-031 | Fan Blade A-1831-5 cw | X | X | X | X | X | X |
| * | Blower Housing | X | X | X | X | X | X |
| 5152-005 | Blower Wheel DD9-8A | X | X | X | | | |
| 5152-010 | Blower Wheel DD10-7A | | | | X | X | X |
| 5153-022 | Rain Shield | X | X | X | X | X | X |
| 5210-003 | Strainer | X | X | X | | | |
| 5210-004 | Strainer | | | | X | X | X |
| 5451-009 | Motor Mounting Parts--Fan | X | X | X | X | X | X |
| 5811-017 | Capillary Tube | | | | (2) | (2) | (2) |
| 5811-031 | Capillary Tube | (3) | (3) | (3) | | | |
| 7004-015 | Filter 24 x 24 x 1 | X | X | X | X | X | X |
| 7051-014 | Fan Guard | X | X | X | X | X | X |
| 8000-053 | Compressor CRG3-0250-TP5-270 | | X | | | | |
| 8000-054 | Compressor CRG3-0250-TPD-270 | | | X | | | |
| 8000-055 | Compressor CRH3-0275-PPV-270 | | | | X | | |
| 8000-056 | Compressor CRH3-0275-TP5-270 | | | | | X | |
| 8000-057 | Compressor CRH3-0275-TPD-270 | | | | | | X |
| 8000-086 | Compressor 701268-06-0433 | X | | | | | |
| 8103-013 | Motor--Fan | X | X | X | X | X | X |
| 8105-010 | Motor--Blower 1/3 hp | X | X | X | X | X | X |
| 8200-033 | Motor Mount Band | X | X | X | X | X | X |
| 8200-034 | Motor Mount Arm | 3 | 3 | 3 | 3 | 3 | 3 |
| 8200-022 | Motor Mount--Fan | X | X | X | X | X | X |
| 8201-008 | Relay--Blower | X | X | X | X | X | X |
| 8401-002 | Contactactor 3P25A | | X | X | | X | X |
| 8401-007 | Contactactor 1P25A | X | | | X | | |
| 8407-003 | Transformer 1.5 KVA | | | X | | | X |
| 8407-034 | Transformer 40VA | X | X | X | X | X | X |
| 8552-002 | Capacitor--Fan 5/370V | X | X | X | X | X | X |
| 8552-019 | Capacitor--Blower 5/440V | X | X | X | X | X | X |
| 8552-032 | Capacitor--Comp. 35/370V | X | | | | | |
| 8552-035 | Capacitor--Comp. 40/370V | | | | X | | |
| 8607-006 | Terminal Board | X | X | X | X | X | X |
| 8607-013 | Terminal Block | X | | | X | | |
| 8607-014 | Terminal Block | | X | X | | X | X |
| 8607-015 | Phenolic Insulator | | | X | | | X |
| 8607-017 | Terminal Block | | | X | | | X |

*Please order by model number.

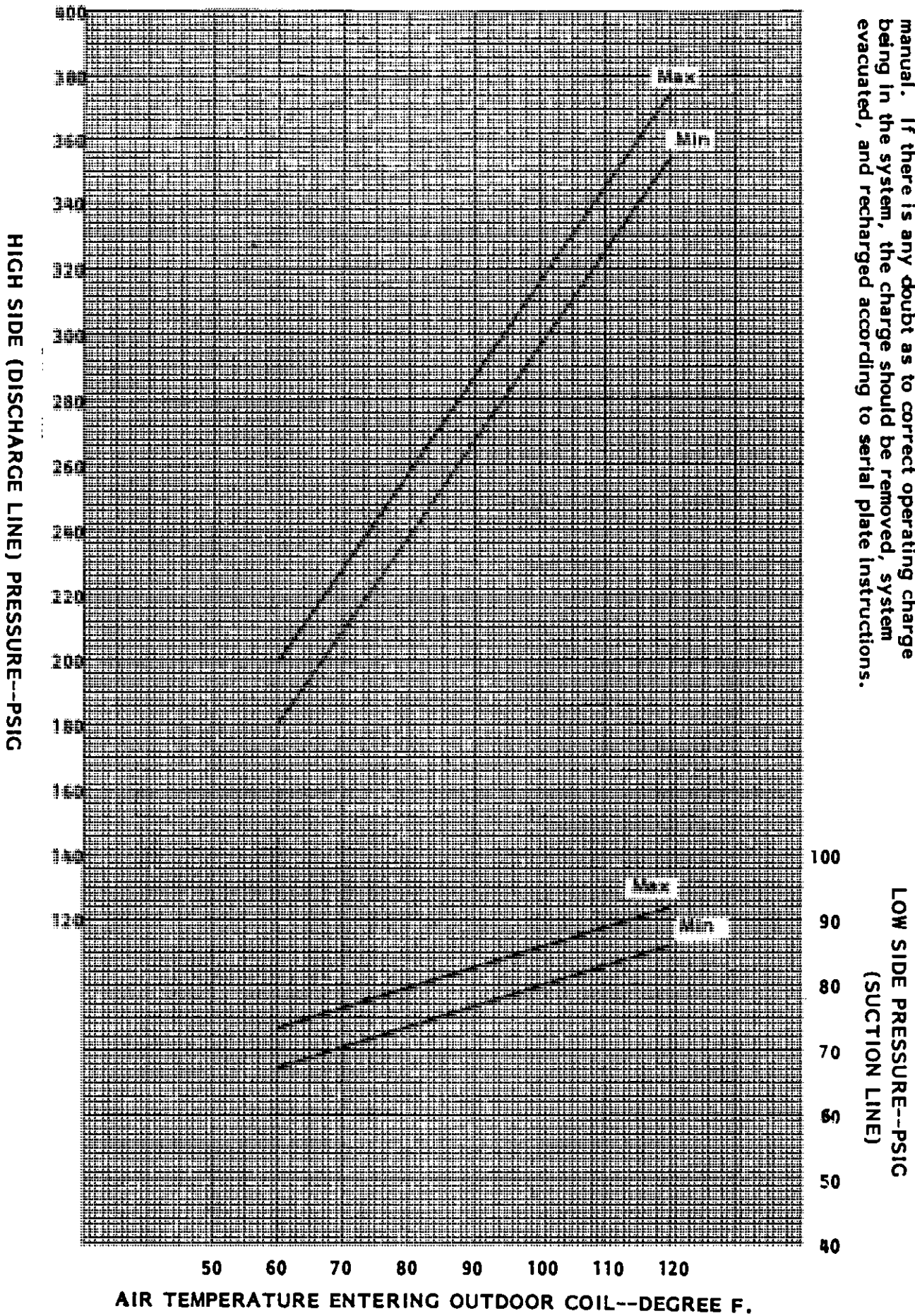
HIGH SIDE (DISCHARGE LINE) PRESSURE--PSIG



AIR TEMPERATURE ENTERING OUTDOOR COIL--DEGREE F.

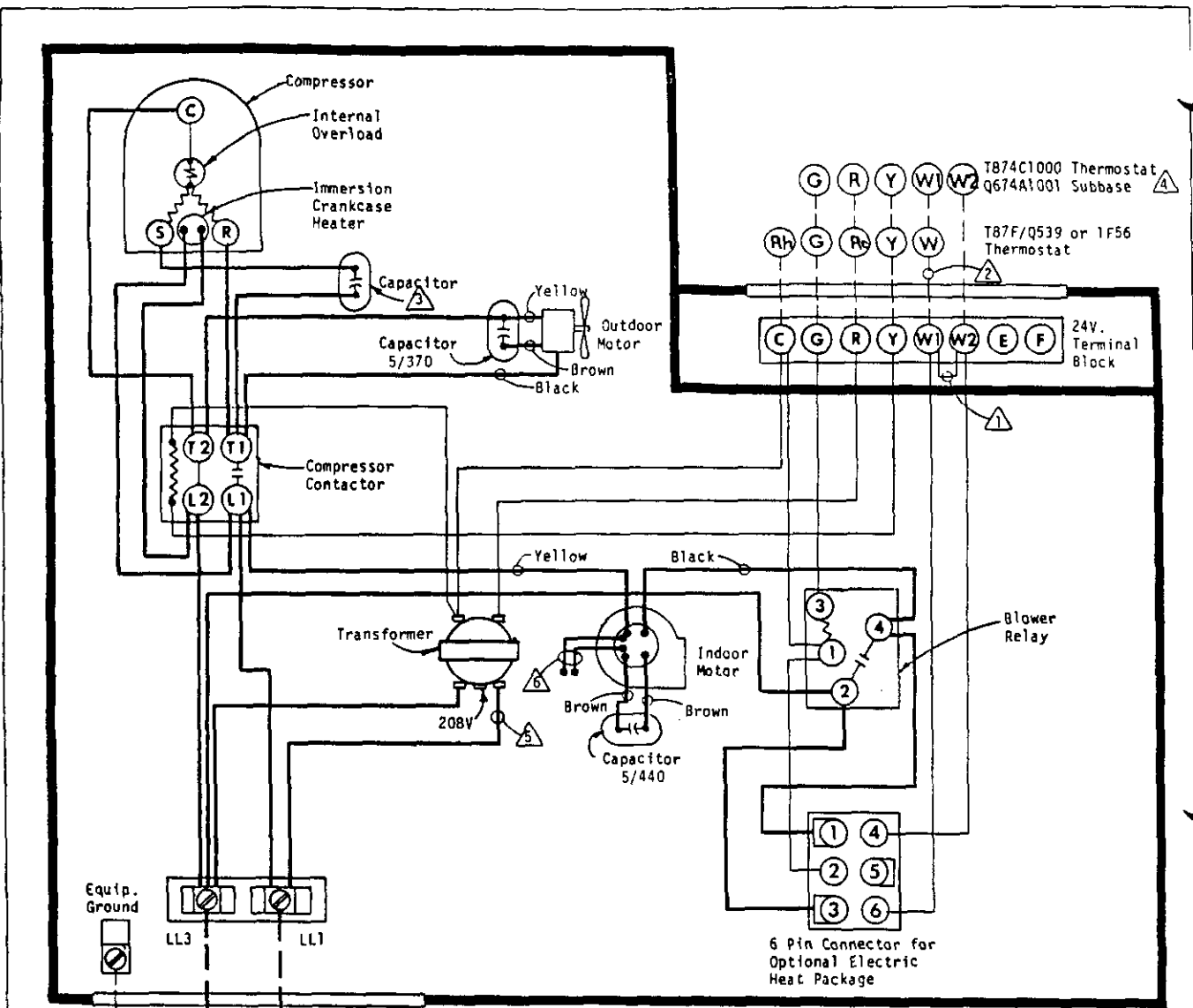
These curves are based upon 80°DB, 67°WB R.A. Temp. and rated (airflow) across the evaporator coil and should be used for reference purposes only. Special information can be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged according to serial plate instructions.

LOW SIDE PRESSURE--PSIG (SUCTION LINE)



These curves are based upon 80°DB, 67°WB R.A. Temp. and rated CFM (airflow) across the evaporator coil and should be used for reference purposes only. Special information can 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 according to serial plate instructions.

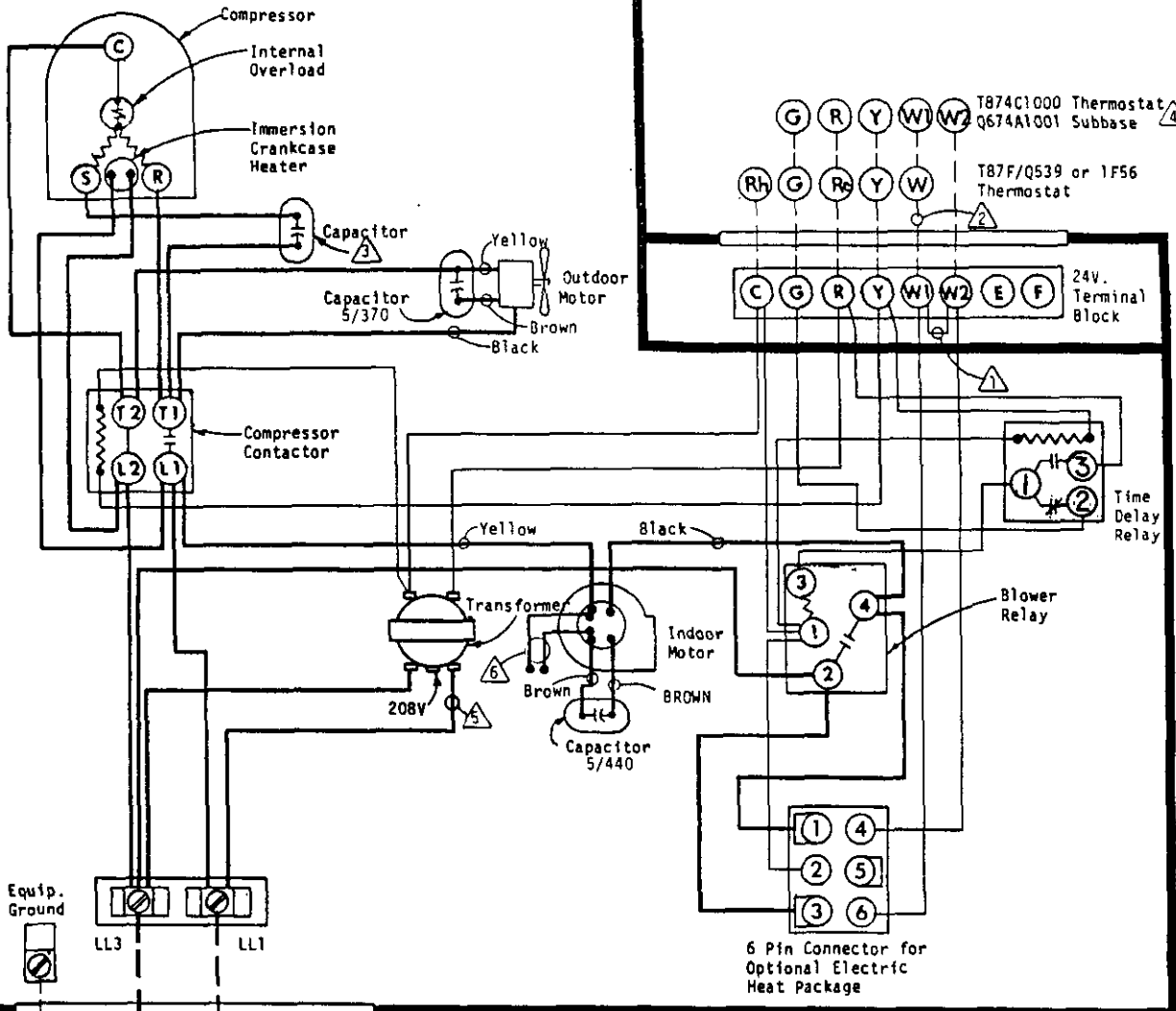
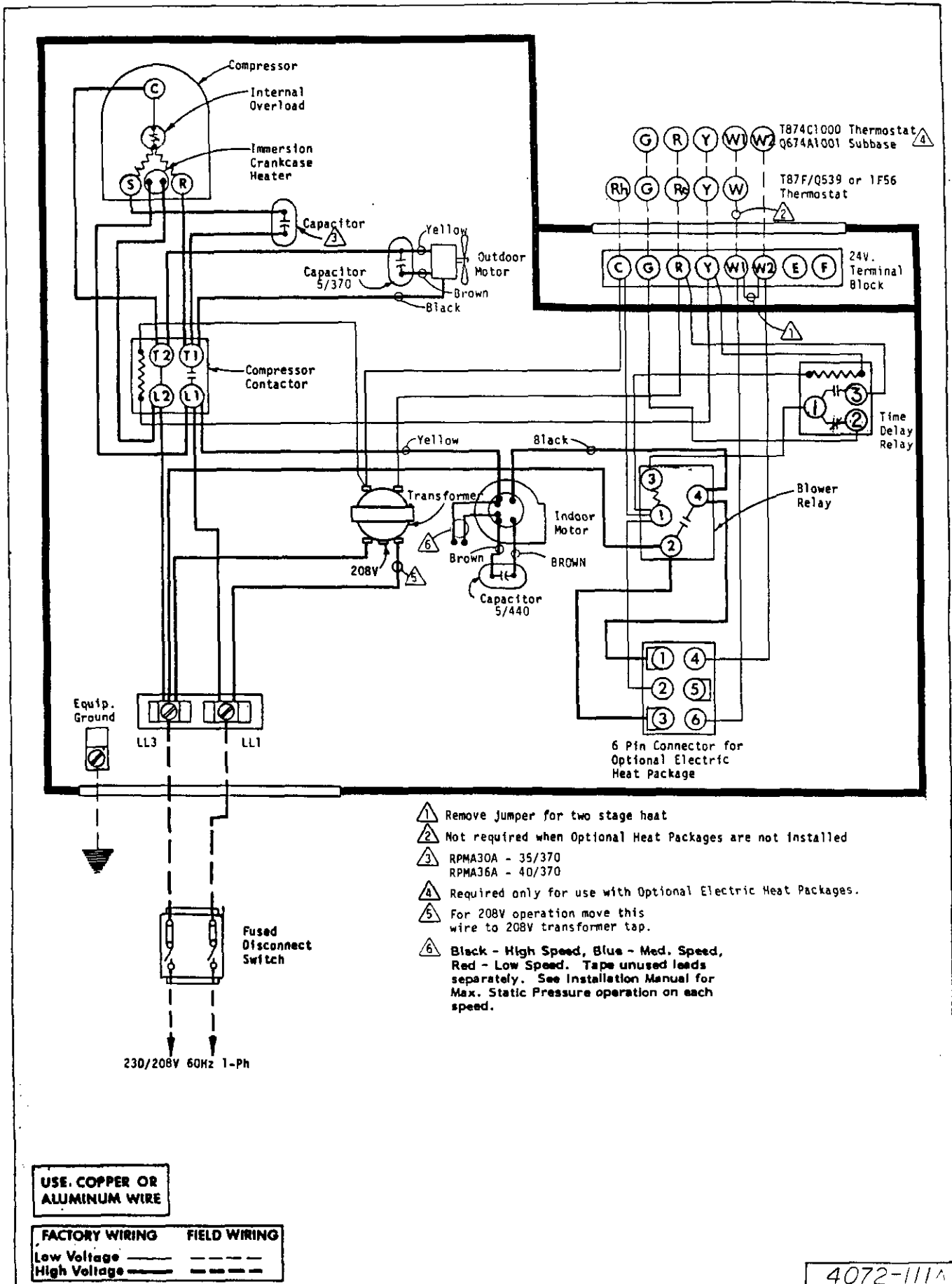
AIR TEMPERATURE ENTERING OUTDOOR COIL--DEGREE F.



- ⚠ 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

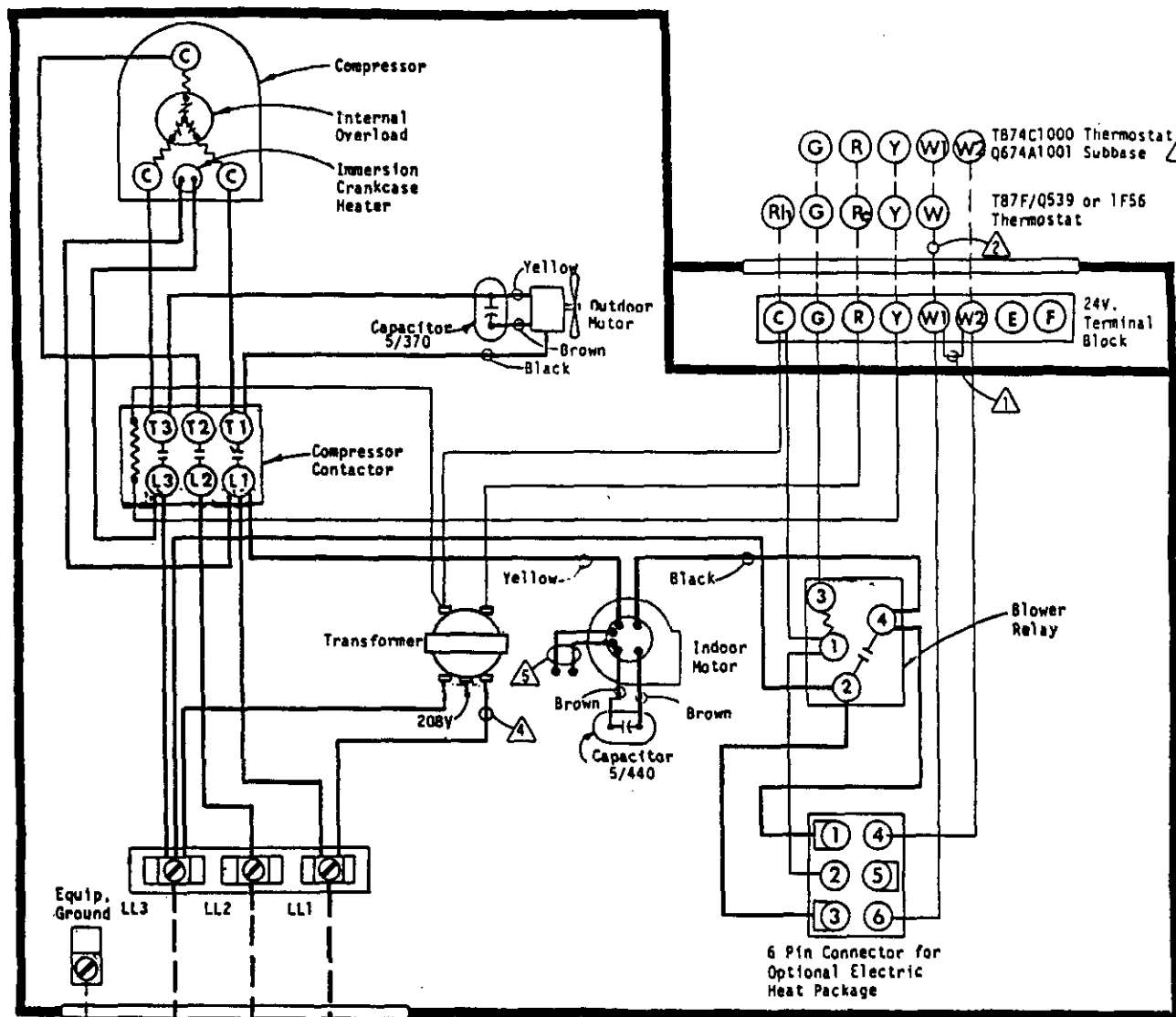
| FACTORY WIRING | FIELD WIRING |
|------------------|------------------------|
| Low Voltage ——— | Low Voltage - - - - - |
| High Voltage ——— | High Voltage - - - - - |



- ⚠ 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.
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USE COPPER OR ALUMINUM WIRE

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

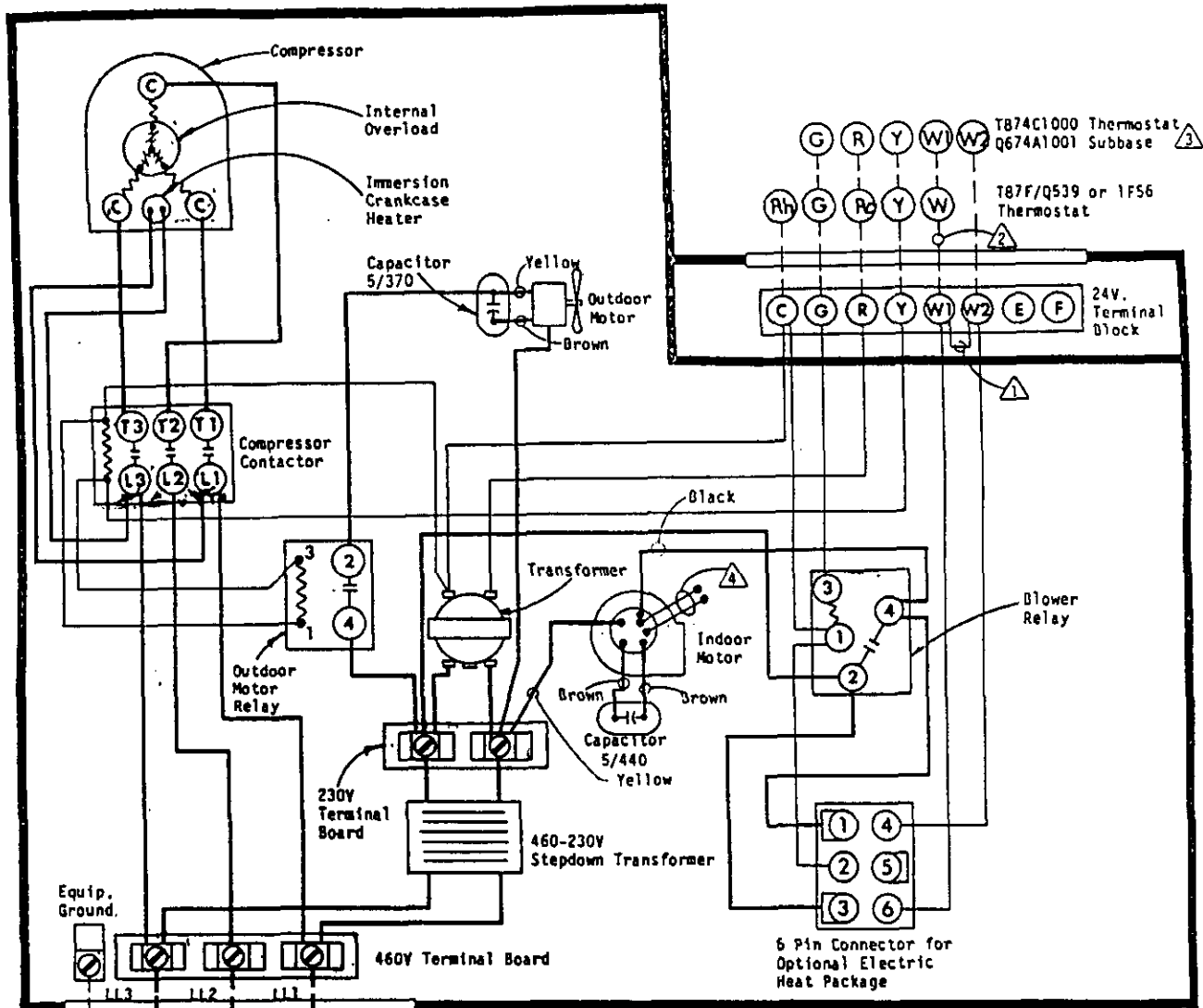


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230/208V 60 Hz 3-Ph

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 Heat Packages
- ⚠ 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 ———— | ----- |

4072-310A

