MANUAL 2100-018

MODELS
P24A1, P30A1, P36A3,
P48A2, P60A2

PACKAGED AIR CONDITIONER

INSTALLATION INSTRUCTIONS

FOR RESIDENTIAL AND COMMERCIAL
HEATING / COOLING APPLICATIONS

BARD MANUFACTURING CO. • BRYAN, OHIO 43506

Dependable quality home equipment . . . since 1914

SPECIFICATIONS • PACKAGED AIR CONDITIONERS

MODEL	P24A1	P30A1	P36A3	P36A3(3)	P48A2	P48A2(3)	P60A2	P60A2(3)
Cooling Capacity BTU	23,000	28,000	38,000	38,000	48,000	48,000	56,000	56,000
Heating Capacity BTU	SEE ELECTRIC HEAT TABLES 1 AND 2							
Electrical Rating - 60 Hz	230-1	230-1	230/208-1	230/208-3	230/208-1	230/208-3	230/208-1	230/208-3
Cooling Watts	3200	4200	5200	5100	6200	6000	7000	6800
Operating Voltage	197-253V	207-253V	197-253V	187-253V	197-253V	187-253V	197-253V	187-253V
*Field Wire Supply	2 No 12 AWG	2 No 10 AWG	2 No 8 AWG	3 No 10 AWG	2 No 6 AWG	3 No 10 AWG	2 No 6 AWG	3 No 8 AWG
Delay Fuse/Max Amps	30	40	60	35	60	40	60	50
Total Unit Amps	16 3	20.6	30 9	20 4	34 5	22 0	41 9	28 4
Compressor-Circuit A								
Volts	230/208	230	230/208	230/208	230/208	230/200	230/208	230/200
Name Plate Amps	12 2	16.5	24.0	13.5	28	15 5	34.0	20 5
Lock Rotor Amps	64	76	110	75	140	109	147	138
Fan Motor & Condenser								
Fan Motor-HP/RPM	1/2/1075	1/2/1075	1/5/1075	1/5/1075	1/3/825	1/3/825	1/2/1075	1/2/1075
Fan Motor-Amps	4 1	4 1	3 6	3 6	2 6	2 6	4 0	4 0
Fan Dia./CFM	18"/1600	18"/1600	20"/2000	20"/2000	24"/2900	24"/2900	24"/3900	24"/3900
Face Area Sq Ft./Row/Fins per in	3.75/2/15	3 75/2/15	5 04/2/18	5 04/2/18	7 7/2/12	7 7/2/12	7 7/2/15	7 7/2/15
Condenser Air Flow	Push	Push	Push	Push	Push	Push	Push	Push
Motor & Evaporator								
Blower Motor-HP/RPM	Common	Common	1/3/1075	1/3/1075	1/2/1075	1/2/1075	1/2/1075	1/2/1075
Blower Motor-Amps	W/Fan	W/Fan	3 3	3 3	3 9	3 9	3 9	3 9
CFM Cooling w/Filter (Rated)	860 @ .25"	900 @ .10"	1300 @ .15"	1300 @ .15"	1760 @ .30"	1760 @ .30"	1950 @ .20"	1950 @ .20"
Face Area Sq Ft./Row/Fins per in	2 08/3/12	2 08/3/12	3 21/3/13	3 21/3/12	4.03/3/12	4 03/3/12	3 96/4/14	3 96/4/14
Shipping Weight Lbs.	300	300	350	350	470	470	495	495

*Basic Model only Does not include electric heaters 60°C copper

ELECTRIC HEAT TABLE NO. 1

MODEL	P24A1	P30A1	P36A3	P36A3(3)	P48A2	P48A2(3)	P60A2	P60A2(3)
Standard KW	10KW	10KW	10KW	9KW	10KW	9KW	10KW	9KW
Max Installed KW	10KW	10KW	15KW*	15KW	20KW*	18KW	20KW*	18KW

*Internal Fusing Built In

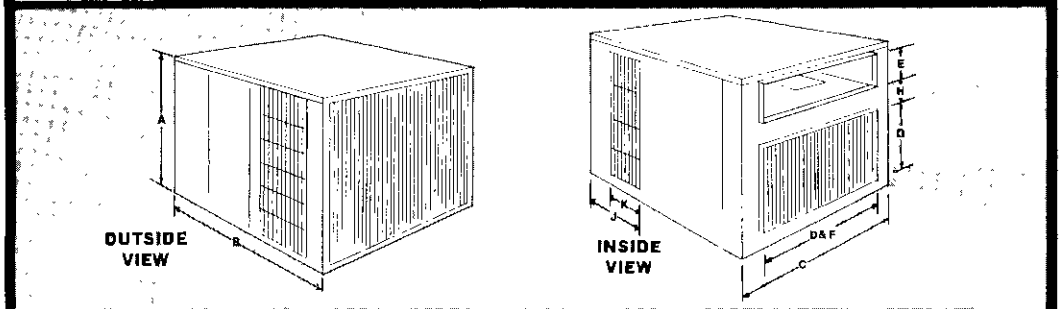
ELECTRIC HEAT TABLE NO. 2

MODEL	240V BTUH	240V AMP
5KW	17,065	20 8
9KW-3ph	30,600	21.7
10KW	34,130	41.7
15KW	51,195	62 5
15KW-3ph	51,195	36 2
18KW-3ph	61,200	43.4
20KW	68,260	83.3

IMPORTANT: The AMP values listed in this Table No. 2 are for electric heating elements only. CIRCUIT B — Some units permit the electric heating element to be wired on the compressor Circuit A.

INDOOR BLOWER PERFORMANCE

E.S.P. in H₂0	CFM-DRY COIL WITH FILTER P24A1 P30A1	P36A3	P48A2	P60A2
0	975	1500	2350	2350
.10	925	1450	2155	2160
.20	870	1400	1980	2000
.30	820	1350	1800	1820
.40	765	1300	1630	1640
.50		1250	1460	



MODEL	NOMINAL CABINET DIMENSIONS (Inches) A	B	C	H	J	K	DUCT OPENINGS (Inches) Discharge D	E	Return Air F	G
P24A1	23¼	40	32	17⅞	21⅛	11	24	6	24	12
P30A1	23¼	40	32	17⅞	21⅛	11	24	6	24	12
P36A3	24¼	42-3/16	38⅛	7⅛	20⅛	11¼	33	6	33	14
P48A2	31¼	50	42	17⅛	22⅞	16¼	38	10	38	16
P60A2	31¼	50	42	17⅛	22⅞	16¼	38	10	38	16

LISTED

IMPORTANT:

While the above 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.

· Underwriters' listed for outdoor installation.

Specifications subject to change without notice.

LIMITED WARRANTY for Air Conditioner System Products

Bard warrants for one year from date of original purchase in U.S., replacement or repair of parts found defective as to workmanship or material under normal use and when parts are returned through Bard's dealer-distributor organization.

Bard warrants for five years from date of original purchase in U.S., the motor compressor, F.O.B. Bryan, Ohio.

Owner is responsible for any labor charges, local cartage, replacement of gaskets, filters, rubber or plastic parts, drier, strainer, refrigerant charge, installation materials and installation in accordance with manufacturer's instructions and local ordinances and codes, where applicable. Owner is also responsible for normal maintenance service (cleaning of coils, water drains, motor lubrication) and normal deterioration of appearance items due to wear or exposure.

Any product subjected to accident, misuse, negligence, abuse, defacement of serial plate, improper installation and misapplication or alteration, shall void the warranty and Bard shall not be liable for damages related thereto.

OPTIONAL FOUR-YEAR PARTS & LABOR WARRANTY

In addition to the normal one-year warranty, as outlined above, the owner may purchase an optional parts and labor warranty which provides an additional four years coverage of service and maintenance after the Limited Warranty has expired. The installation of the heat pump system must be certified by Bard Manufacturing Company as its authorized representative in order to qualify.

APPLICATION AND INSTALLATION INSTRUCTIONS
FOR SINGLE PACKAGE AIR CONDITIONERS

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 duct work, supply and return, must be properly sized for the design air flow requirement of the equipment. NESCA 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.

GENERAL

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.

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 on both cooling and heating cycles. It is imperative to match the correct pressure curve to the unit by model number.

LOCATION

The unit must be located outside, or in a well ventilated area. It must not be in the space being heated or cooled. A sound absorbing material should be considered if the unit is to be installed in such a position or location that might cause transmission of sound or vibration to the living area or adjacent buildings.

TYPICAL INSTALLATIONS

1. Roof-Mounted - The unit is mounted on a sturdy base on the roof of the building. Return air to the unit is brought through a single return grille (grilles with built-in filters are best, since they enable easy access for filter changing). Return air ducts are attached to the lower section of the front panel. Supply air is brought from the unit to attic duct work or to a furred down hall. Supply air duct is attached to the top of the front panel. CAUTION: All outdoor duct work must be thoroughly insulated and weatherproofed. All attic duct work must be thoroughly insulated. Two inch thick insulation with suitable vapor barrier is recommended for both outdoor and attic runs. In rooftop installation, as in all installations, the heat pump must be level from side to side. However, the unit should have a pitch along the length to assure complete external drainage of precipitation and of defrost condensate.

2. Crawl Space - Duct work installed in crawl space must be well insulated and provided with a vapor barrier. In addition, the crawl space must be thoroughly ventilated and provided with a good vapor barrier as a ground cover. It is most desirable to install the unit outdoors, rather than inside the crawl space, so that it will be readily accessible for service. In addition, it is necessary to dispose of the condensate from the outdoor coil on the heating cycle, and this is virtually impossible with the unit installed inside the crawl space.

3. Slab Mounted at Ground Level - This type installation is ideal for homes with slab floor construction, where a roof-mounted unit is not desired. The supply and return duct work can be run through a furred closet space.

4. Thru-The-Wall - This type installation requires a suitable framework to be fabricated, capable of withstanding the unit weight. Normally the unit will be installed so as to minimize supply and return duct work.

5. Other Installations - Many other installations are possible with the packaged air conditioner. No matter what the installation, always consider the following facts:

   a. Insure that the discharge air is not obstructed in any way so as to cause operation difficulties.

   b. The indoor coil drain pan is equipped with a coupling that must be piped through a condensate drain trap to a suitable drain.

   c. Always mount the unit in such a position that it may be easily reached for servicing and maintenance.

   d. Insure that the unit is clear so that proper air flow over the outdoor coil will be maintained.

WIRING - MAIN POWER

Refer to the unit rating plate for wiring sizing information and maximum fuse 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. Some models are suitable only for connection with copper wire, while others can be wired with either copper or aluminum wire. Each unit and/or wiring diagram will be marked "Use Copper Conductors Only" or "Use Copper or Aluminum Conductors." These instructions MUST BE adhered to. Refer to the National Electrical Code for complete current carrying capacity data on the various insulation grades of wiring material.

The electrical specifications on page 18 lists fuse and wire sizes (60°F 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 Fuse" that is to be used with the equipment. The correct size fuse 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.

WIRING - CONTROL CIRCUIT

All units are provided with a 24 volt terminal board which is marked C, G, R, Y, W1 and W1. DO NOT wire to terminal C. This will cause transformer burnout. Refer to specific unit wiring diagram for details.

SEQUENCE OF OPERATION

Cooling - R-Y at thermostat pulls in the compressor contactor starting the compressor and outdoor fan. The same R-Y also feeds G, which pulls in the fan relay for blower operation. The reversing valve is not energized, so the system is in the cooling cycle.

Heating - R-W1 (and W2 on higher Kw models) energize the installed electric heat contactors. The indoor motor circuit is completed through the normally closed contact on the blower relay when the first electric heat contactor pulls in.

In most cases, a two-stage heating thermostat is desirable whenever there are more than one electric heat contactors. There is a nominal 1-1/2 degree differential between stages of the thermostat to allow better operating efficiency.

FILTERS

PRIOR THOUGHT SHOULD BE GIVEN TO RETURN AIR LOCATION AND PLACEMENT OF THE AIR FILTERS(S). The air filter(s) must be of adequate size and readily accessible to the homeowner. Filters must be adequate in size and properly maintained for proper operation. If this is not done, excessive energy use and multiple service problems will result. IT IS IMPOSSIBLE TO OVERSIZE AIR FILTERS. Generous sizing will result in cleaner air and coils, as well as lower operating costs and extend time between required changes. The following is minimum recommended filter sizes, suggested total static and expected air flows with dry coil.

MODEL	P24A1	P30A1	P36A3	P48A2	P60A2
Total Static	.25"	.10"	.15"	.30"	.20"
CFM	860	900	1300	1760	1950
Air Filter	2.18 sq.ft. 314 sq.in.	2.25 sq.ft. 324 sq.in.	3.56 sq.ft. 513 sq.in.	4.5 sq.ft. 648 sq.in.	5 sq.ft. 720 sq.in.
Approx. Size Example	16x20	16x20	20x25	(2)16x20	(2)20x20

INSTALLER NOTE: Optimum unit performance will occur with a refrigerant charge resulting in a suction line temperature (near the compressor) of 53° to 58°F with 95°F outdoor temperature and 80°F dry bulb/67°F wet bulb (50% R.H.) indoor temperatures and rated air flow across the indoor coil.

ROOF HOOD ACCESSORY
FOR
SINGLE PACKAGE HEAT PUMPS AND AIR CONDITIONERS

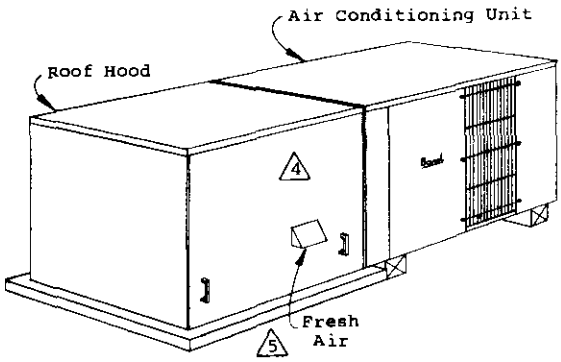


FIG. 1 - TYPICAL ROOFTOP INSTALLATION

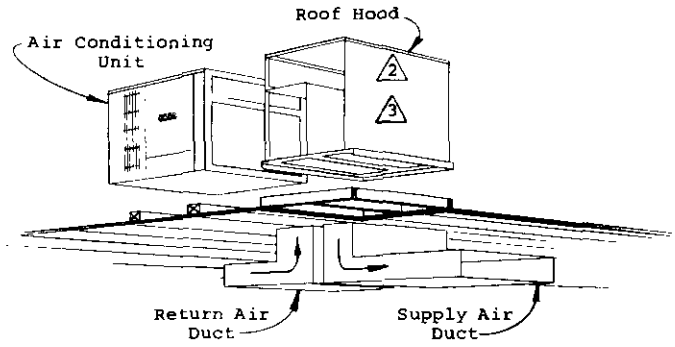


FIG. 2 - TYPICAL DUCT INSTALLATION

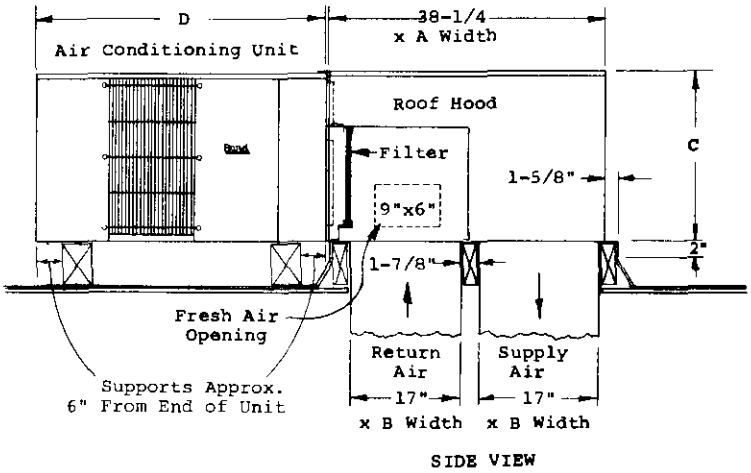
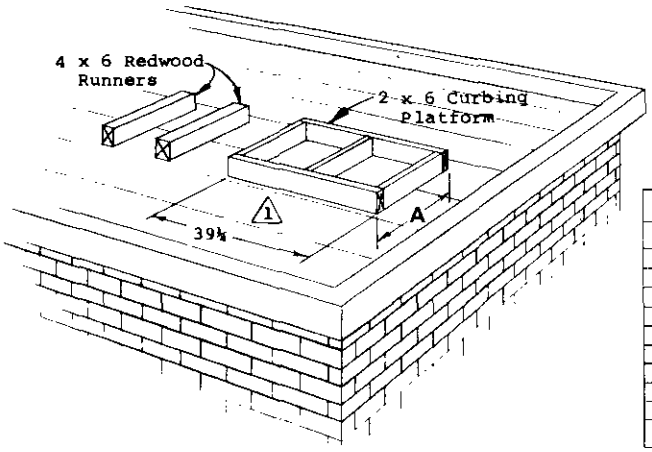


FIG. 3 - UNIT AND ROOF HOOD DETAILS

UNIT DIMENSIONS

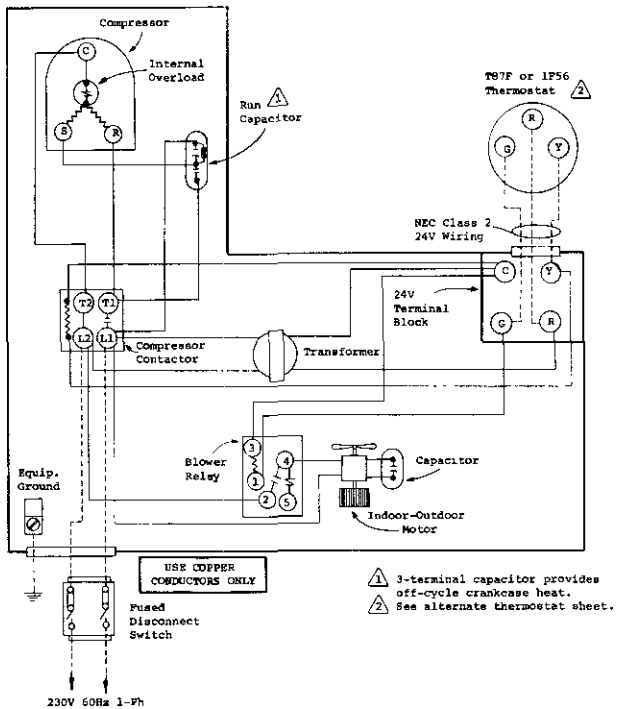
MODEL	A	B	C	D	1" Filter
P24A1	32	31-1/2	23-1/8	40	15 x 30-3/8
PH24	32	31-1/2	23-1/8	40	15 x 30-5/8
P30A1	32	31-1/2	23-1/8	40	15 x 30-5/8
PH30	32	31-1/2	23-1/8	40	15 x 30-5/8
PH31	38-1/8	37-1/2	24	42-3/16	(1) 16x16 & (1) 16x20
P36A3	38-1/8	37-1/2	24	42-3/16	
PH36-1	38-1/8	37-1/2	24	42-3/16	
P48A2	42	41-1/2	31-1/8	50	(2) 16 x 20
PH48-1	42	41-1/2	31-1/8	50	(2) 16 x 20
P60A2	42	41-1/2	31-1/8	50	(2) 16 x 20
PH60-1	42	41-1/2	31-1/8	50	(2) 16 x 20

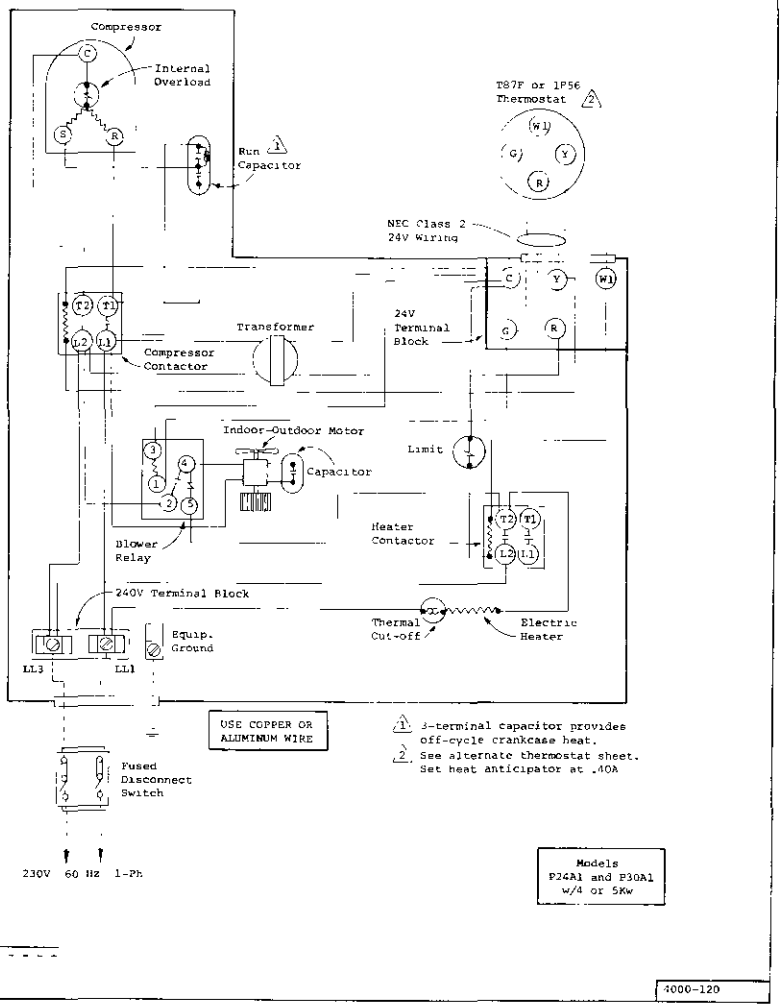


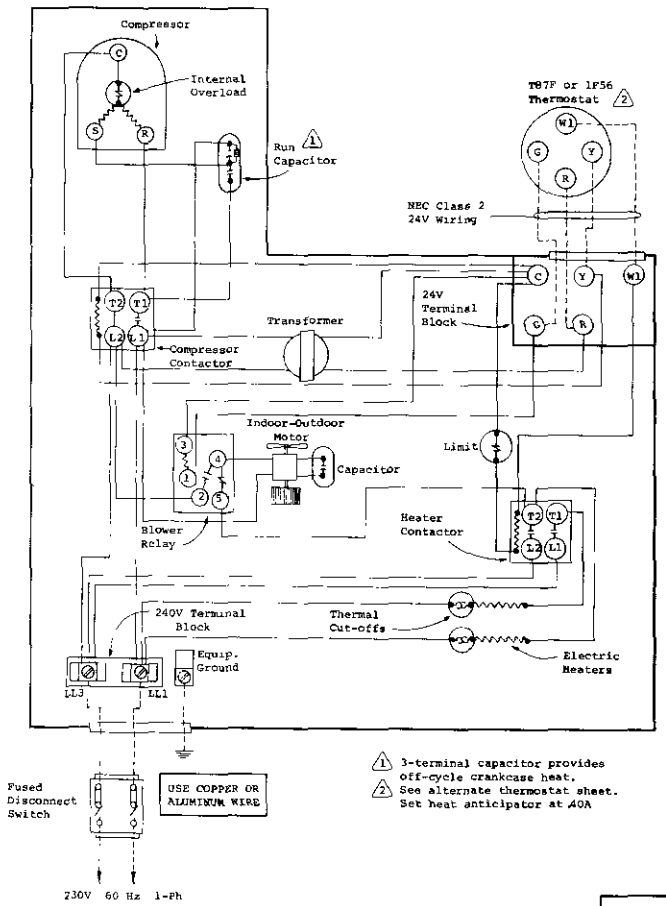
MODEL	A
P24A1	34-7/8
PH24	34-7/8
P30A1	34-7/8
PH30	34-7/8
PH31	41
P36A3	41
PH36-1	41
P48A2	44-7/8
PH48-1	44-7/8
P60A2	44-7/8
PH60-1	44-7/8

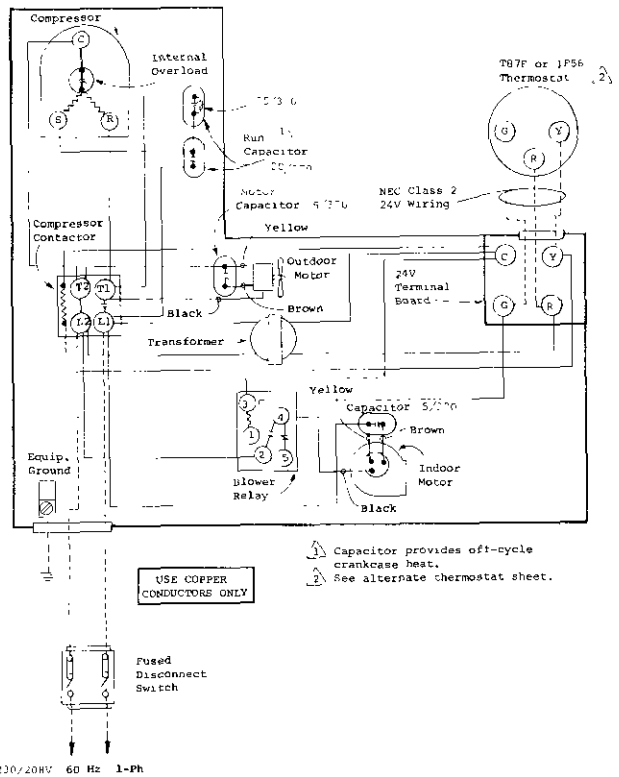
FIG. 4 - CURBING DETAILS (FIELD FABRICATED)

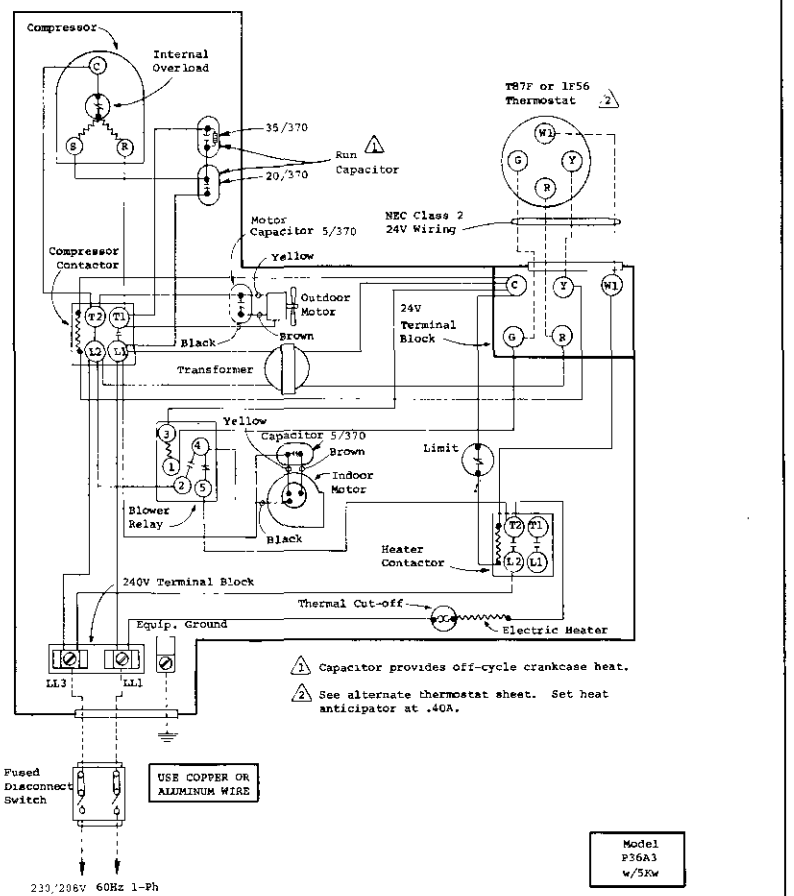
1. A separate metal flashing should be installed around wood curbing. Caulk and seal all joints and weather roof.
2. Galvannealed cabinets painted to match basic unit design - heavy insulation - built-in filter included.
3. Roof hood to be assembled in field. (See FIG. 5 on back side)
4. Remove this side to gain access to air filter.
5. Provides 15% fresh air

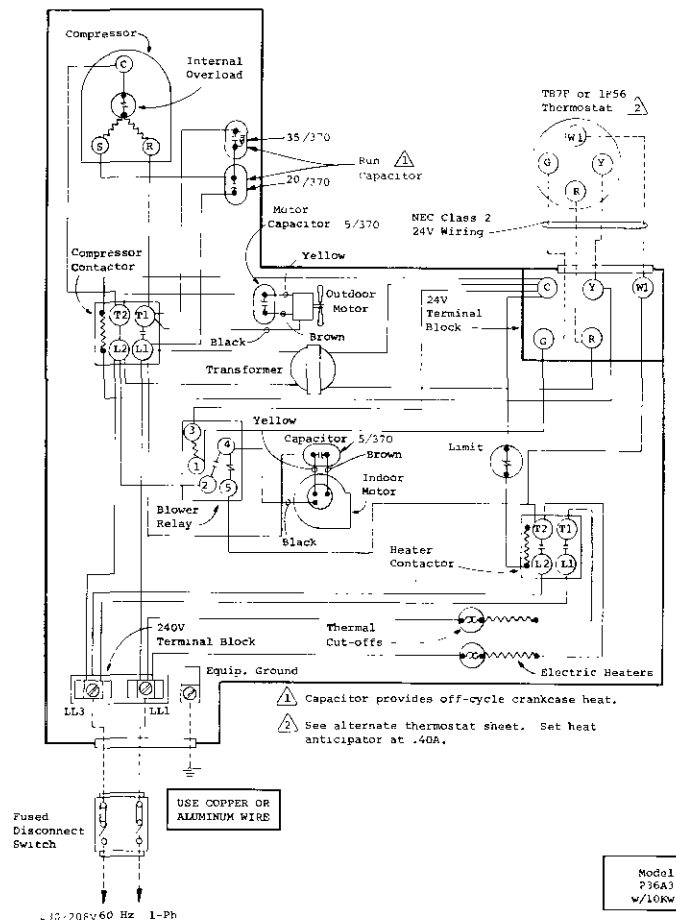

Compressor
Internal Overload
Run 1 Capacitor
T87F or 1F56 Thermostat 2
NEC Class 2 24V Wiring
24V Terminal Block
Compressor Contactor
Transformer
Blower Relay
Capacitor
Indoor-Outdoor Motor
Equip. Ground
USE COPPER CONDUCTORS ONLY
Fused Disconnect Switch
230V 60Hz 1-Ph
1 3-terminal capacitor provides off-cycle crankcase heat.
2 See alternate thermostat sheet.
Models P24A1 and P30A1
Factory Wiring
Field Wiring
4000-110

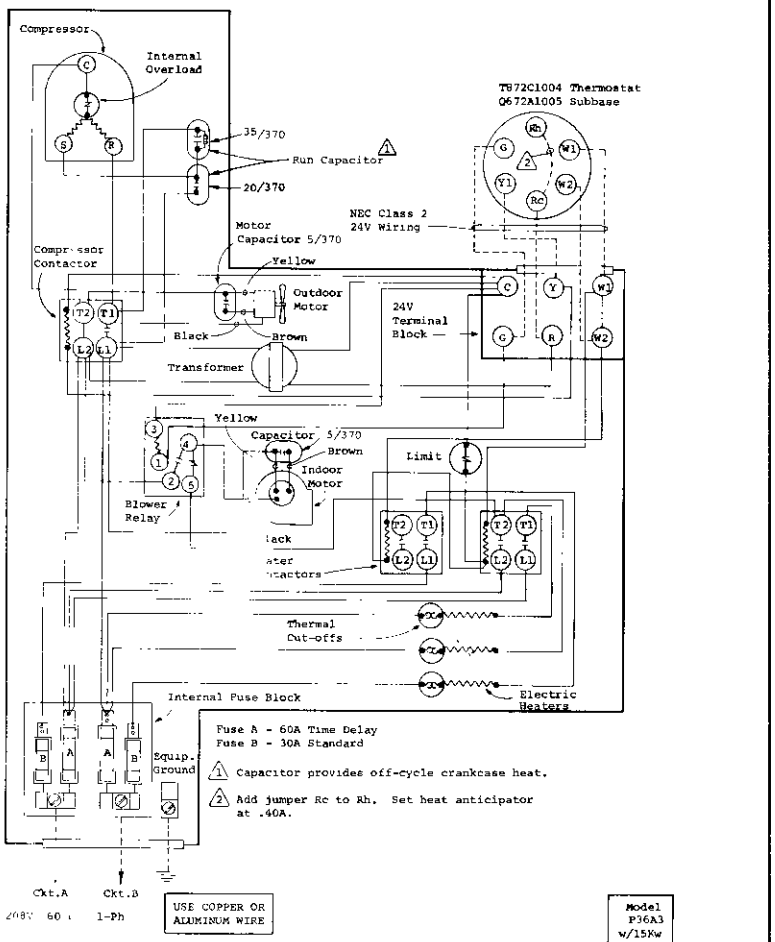

Compressor
Internal Overload
Run 1 Capacitor
T87F or 1F56 Thermostat 2
NEC Class 2 24V Wiring
Transformer
24V Terminal Block
Compressor Contactor
Indoor-Outdoor Motor
Capacitor
Limit
Heater Contactor
Blower Relay
240V Terminal Block
Thermal Cut-off
Electric Heater
Equip. Ground
LL3
LL1
USE COPPER OR ALUMINUM WIRE
Fused Disconnect Switch
230V 60 Hz 1-Ph
1 3-terminal capacitor provides off-cycle crankcase heat.
2 See alternate thermostat sheet. Set heat anticipator at .40A
Models P24A1 and P30A1 w/4 or 5Kw
Factory Wiring
Field Wiring
4000-120

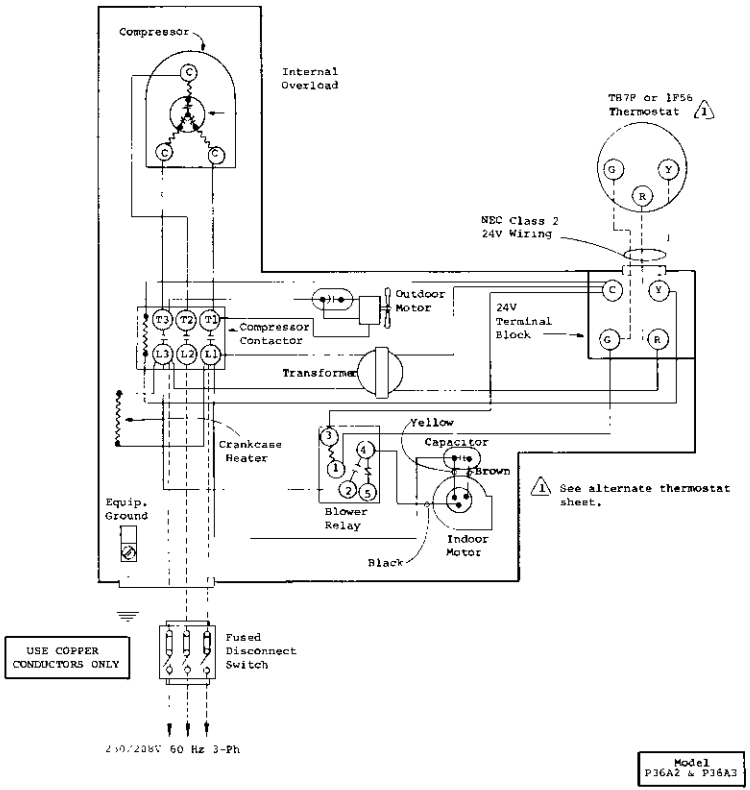

Compressor
C
Internal Overload
S
R
Run Capacitor
1
T87F or 1P56 Thermostat
2
W1
G
Y
R
NEC Class 2 24V Wiring
T2
T1
L2
L1
Compressor Contactor
Transformer
24V Terminal Block
C
Y
W1
R
Indoor-Outdoor Motor
Capacitor
Limit
3
4
1
2
5
Blower Relay
Heater Contactor
240V Terminal Block
Thermal Cut-offs
Electric Heaters
Equip. Ground
LL3
LL1
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
230V 60 Hz 1-Ph
1 3-terminal capacitor provides off-cycle crankcase heat.
2 See alternate thermostat sheet. Set heat anticipator at .40A
Models P24A1 and P30A1 w/8 or 10Kw
Factory Wiring
Field Wiring
4000-130

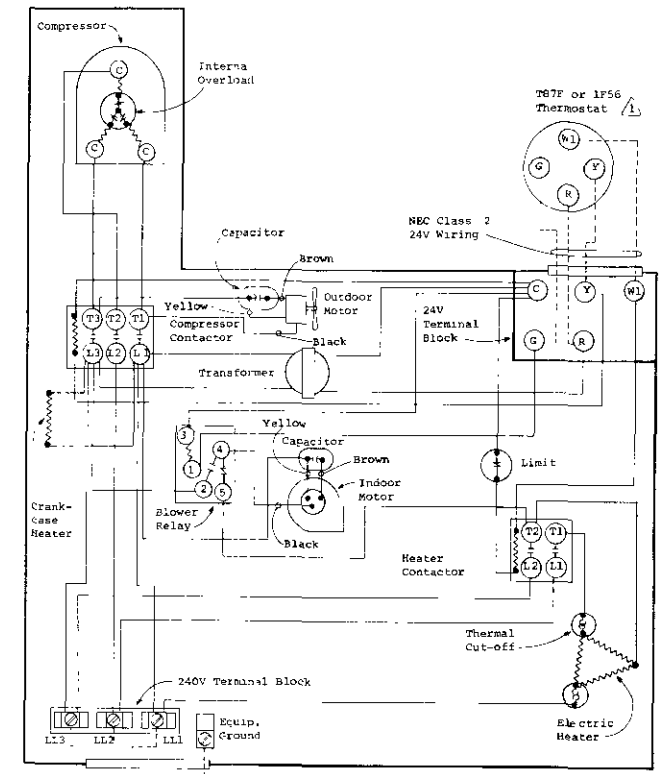

Compressor
C
Internal Overload
S
R
Run Capacitor
T87F or 1P56 Thermostat
2
G
Y
R
NEC Class 2 24V Wiring
Yellow
Compressor Contactor
T2
T1
L2
L1
Outdoor Motor
Black
Brown
24V Terminal Board
Transformer
Yellow
Capacitor
Brown
Indoor Motor
Black
Equip. Ground
Blower Relay
1 Capacitor provides off-cycle crankcase heat.
2 See alternate thermostat sheet.
USE COPPER CONDUCTORS ONLY
Fused Disconnect Switch
230/208V 60 Hz 1-Ph
Model P36A3
Factory Wiring
Field Wiring
4001-110 Rev. C


Compressor
Internal Overload
C
S
R
35/370
20/370
Run Capacitor
1
T87F or 1F56 Thermostat
2
W1
G
Y
R
Motor Capacitor 5/370
NEC Class 2 24V Wiring
Yellow
Compressor Contactor
T2
T1
L2
L1
Outdoor Motor
Black
Brown
24V Terminal Block
Transformer
3
4
1
2
5
Capacitor 5/370
Limit
Indoor Motor
Blower Relay
Heater Contactor
240V Terminal Block
Thermal Cut-off
Equip. Ground
Electric Heater
LL3
LL1
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
239/206V 60Hz 1-Ph
1 Capacitor provides off-cycle crankcase heat.
2 See alternate thermostat sheet. Set heat anticipator at .40A.
Model P36A3 w/5KW
Factory Wiring
Field Wiring
4001-120 Rev. C


Compressor
Internal Overload
C
S
R
35/370
20/370
Run Capacitor
1
T87F or 1F56 Thermostat
2
W1
G
Y
R
Motor Capacitor 5/370
NEC Class 2 24V Wiring
Yellow
Compressor Contactor
T2
T1
L2
L1
Outdoor Motor
Black
Brown
24V Terminal Block
Transformer
3
4
1
2
5
Capacitor 5/370
Limit
Indoor Motor
Blower Relay
Heater Contactor
240V Terminal Block
Thermal Cut-offs
Equip. Ground
Electric Heaters
LL3
LL1
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
60 Hz 1-Ph
1 Capacitor provides off-cycle crankcase heat.
2 See alternate thermostat sheet. Set heat anticipator at .40A.
Model P36A3 w/10KW
Factory Wiring
Field Wiring
1001-130 Rev. C


Compressor
Internal Overload
T872C1004 Thermostat
Q672A1005 Subbase
35/370
Run Capacitor
20/370
NEC Class 2 24V Wiring
Motor Capacitor 5/370
Yellow
Compressor Contactor
Outdoor Motor
24V Terminal Block
Black
Brown
Transformer
Capacitor 5/370
Limit
Indoor Motor
Blower Relay
Thermal Cut-offs
Electric Heaters
Internal Fuse Block
Equip. Ground
Fuse A - 60A Time Delay
Fuse B - 30A Standard
1 Capacitor provides off-cycle crankcase heat.
2 Add jumper Rc to Rh. Set heat anticipator at .40A.
Ckt.A
Ckt.B
1-Ph
USE COPPER OR ALUMINUM WIRE
Model P36A3 w/15Kw
Factory Wiring
Field Wiring
4001-140 Rev.C


Compressor
Internal Overload
TB7F or 1F56 Thermostat 1
NEC Class 2 24V Wiring
Outdoor Motor
24V Terminal Block
Compressor Contactor
Transformer
Crankcase Heater
Yellow
Capacitor
Brown
Blower Relay
Indoor Motor
Black
Equip. Ground
1 See alternate thermostat sheet.
USE COPPER CONDUCTORS ONLY
Fused Disconnect Switch
60 Hz 3-Ph
Model P36A2 & P36A3
Factory Wiring
Field Wiring
4001-210 Rev.D

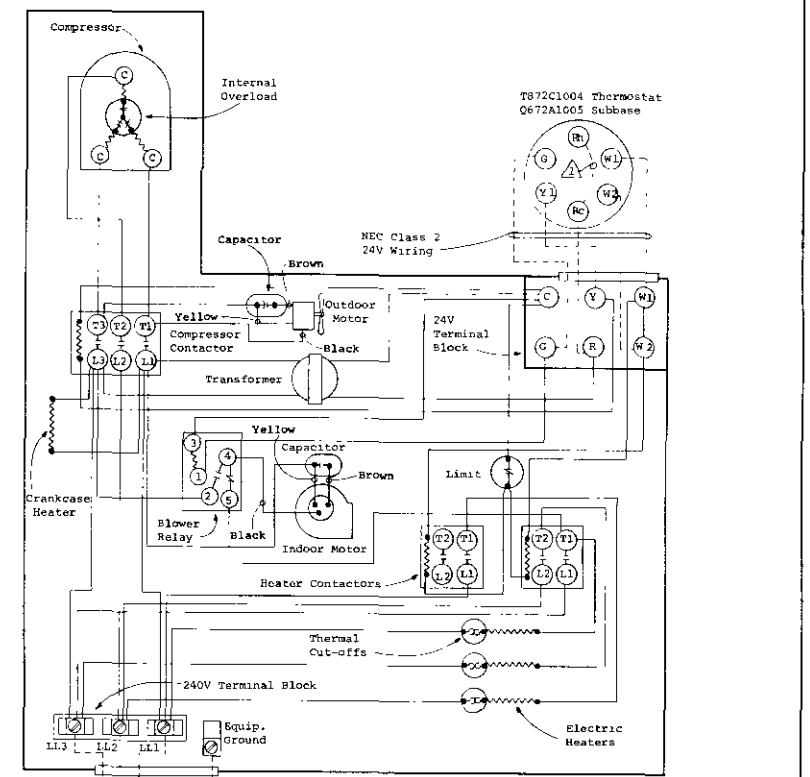


1 See alternate thermostat sheet. Set heat anticipators at .40A.

Model P36A2 & P36A3 w/9Kw

Factory Wiring _____
Field Wiring - - - - -

4001-220 Rev.B

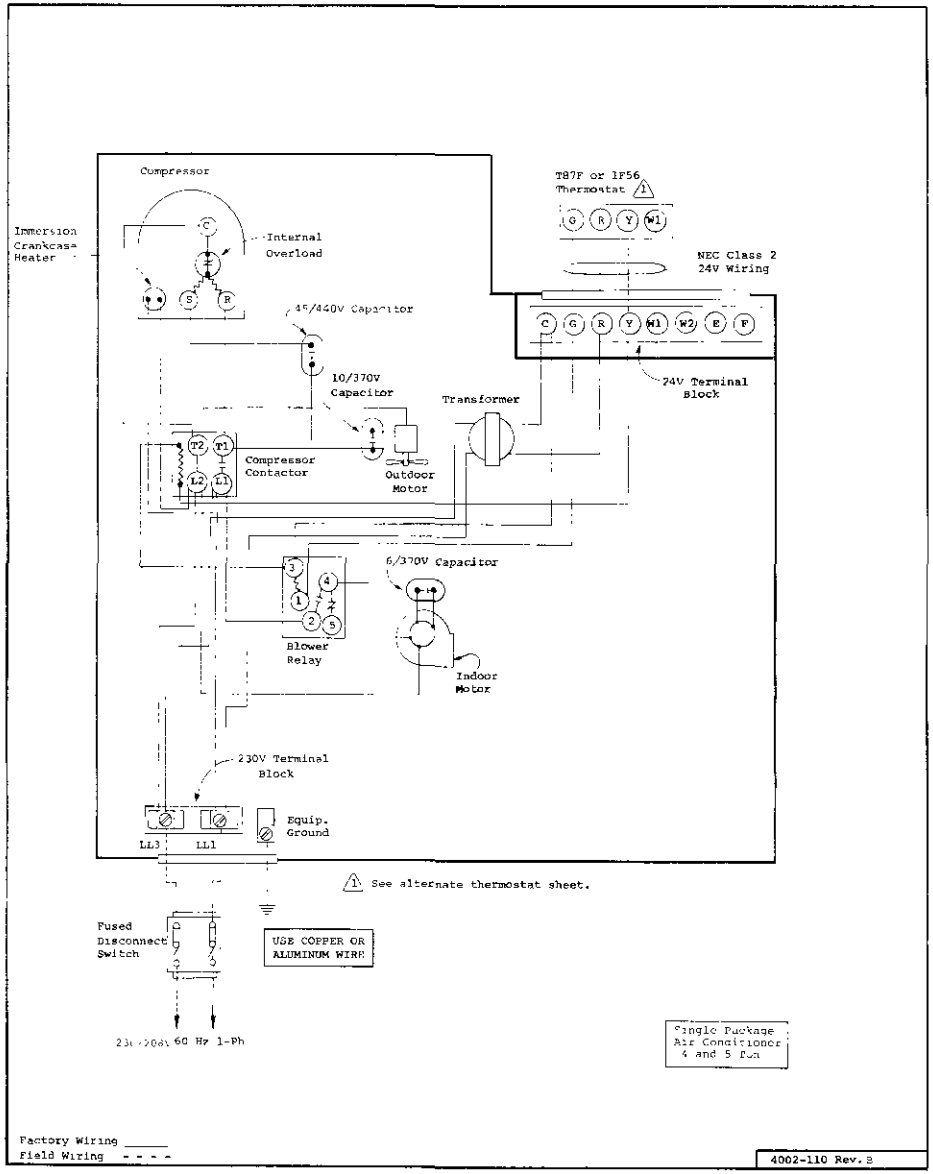


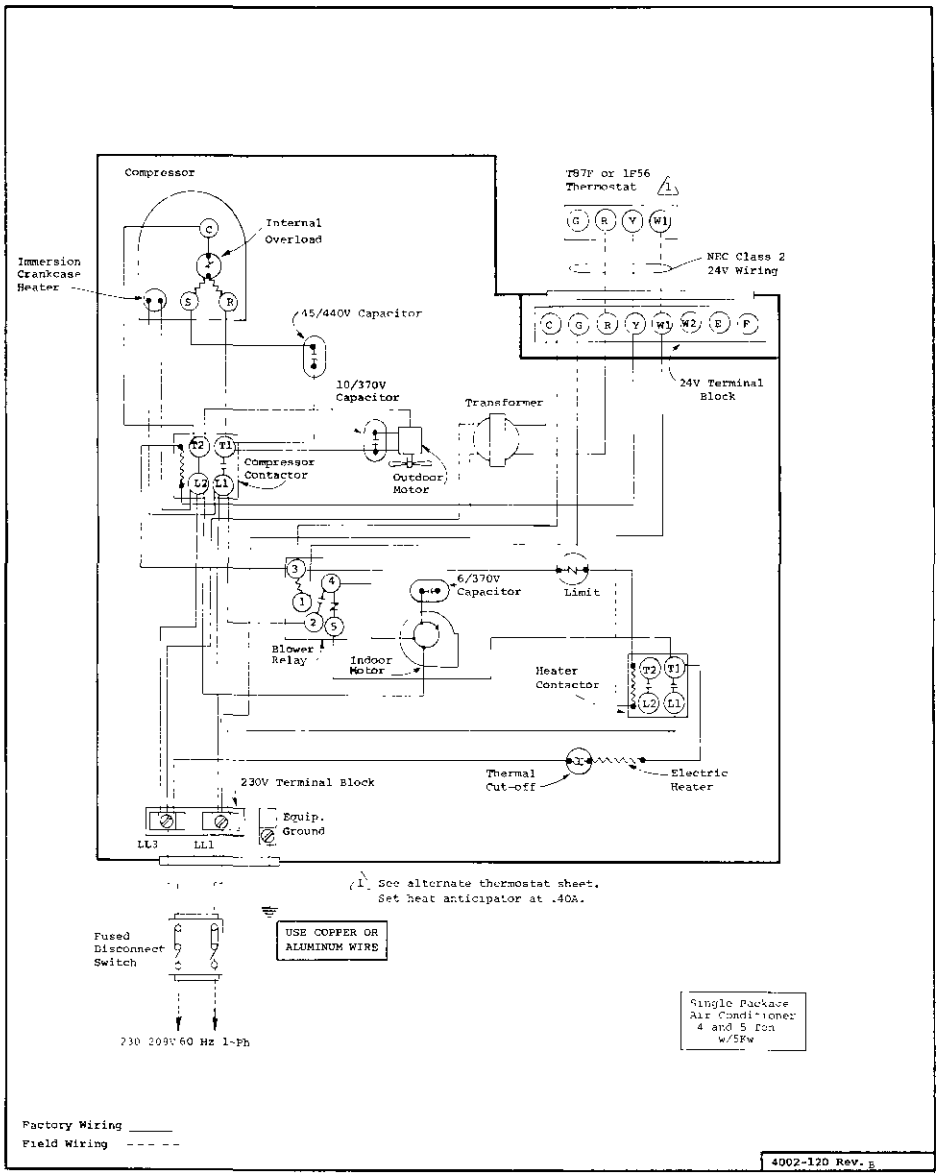
1 Add jumper Rc to Rh. Set heat anticipators at .40A.

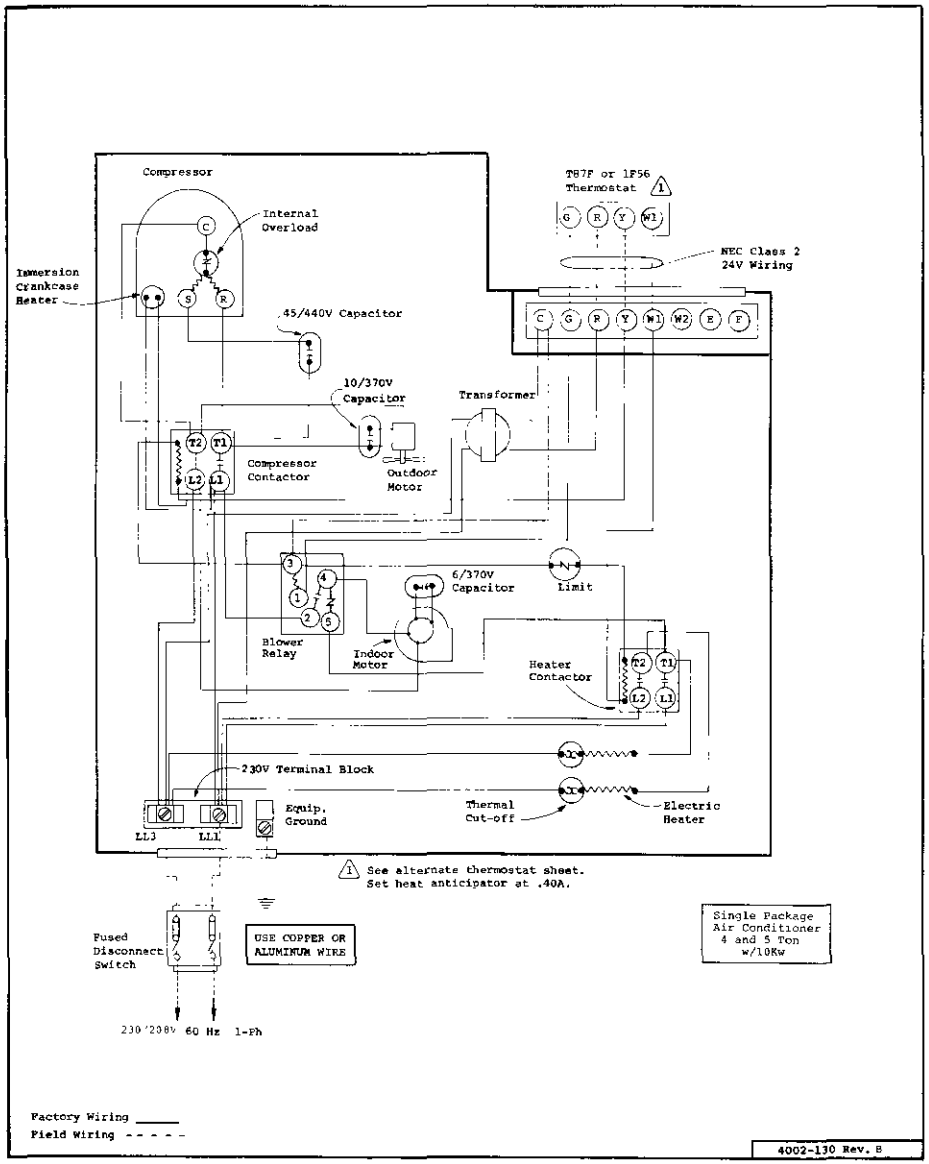
Model P36A2 & P36A3 w/12 or 15Kw

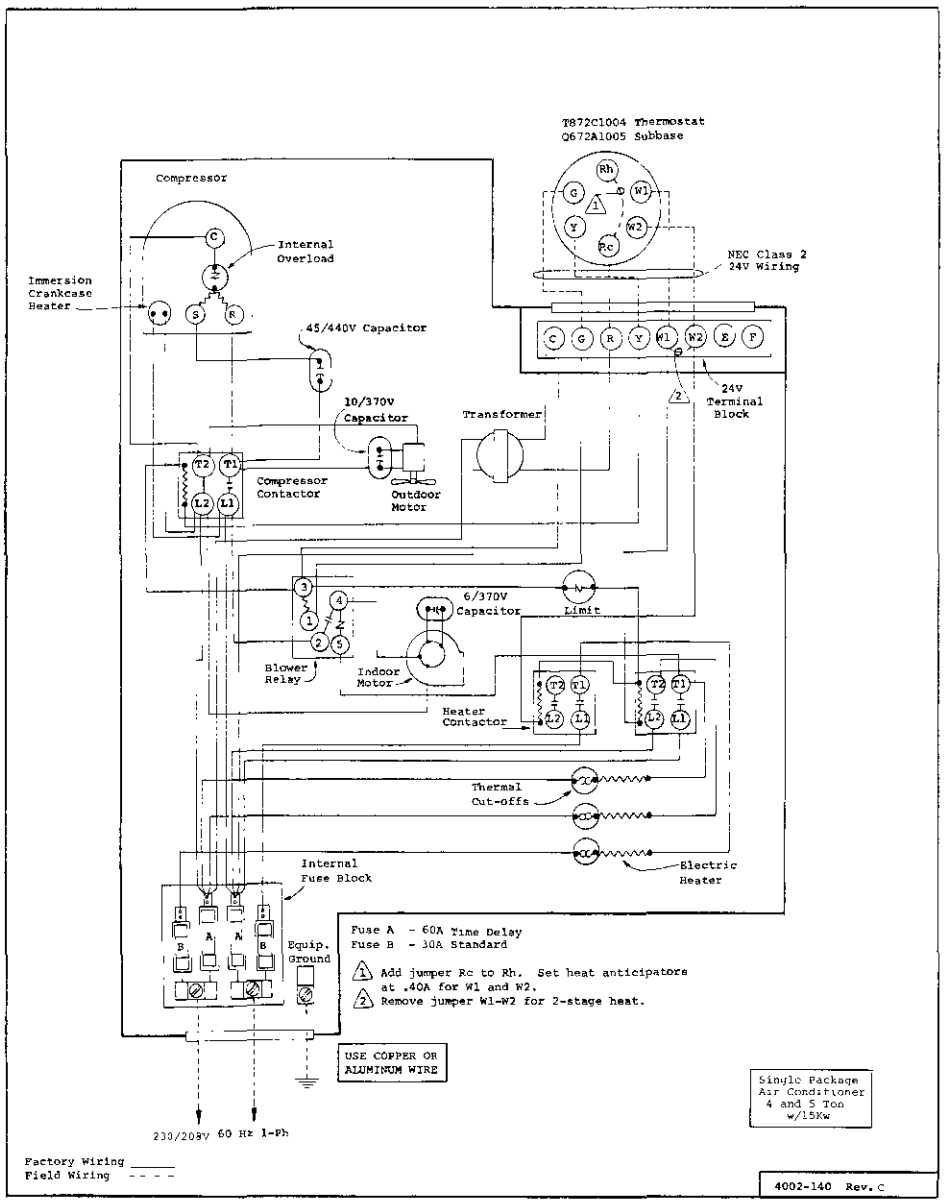
Factory Wiring _____
Field Wiring - - - - -

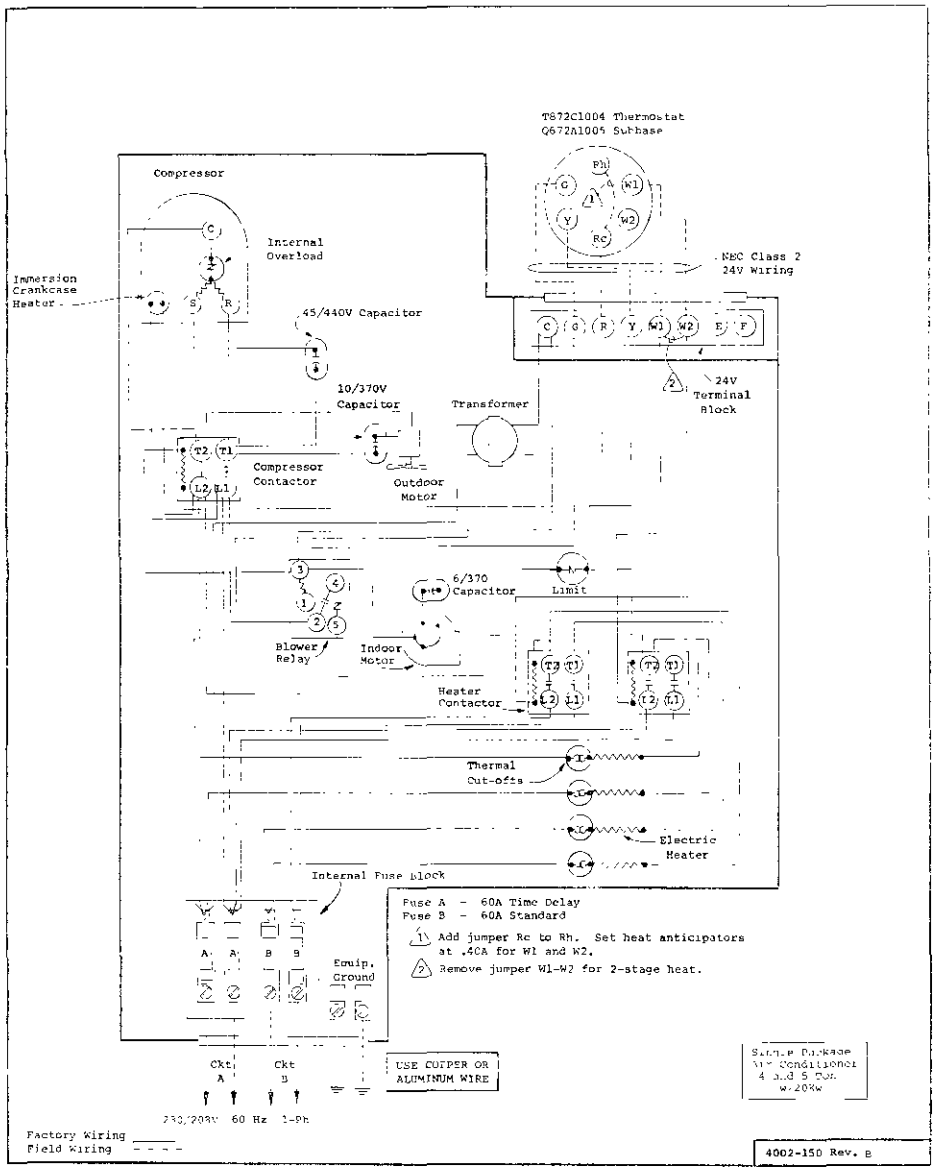
4001-230 Rev.B

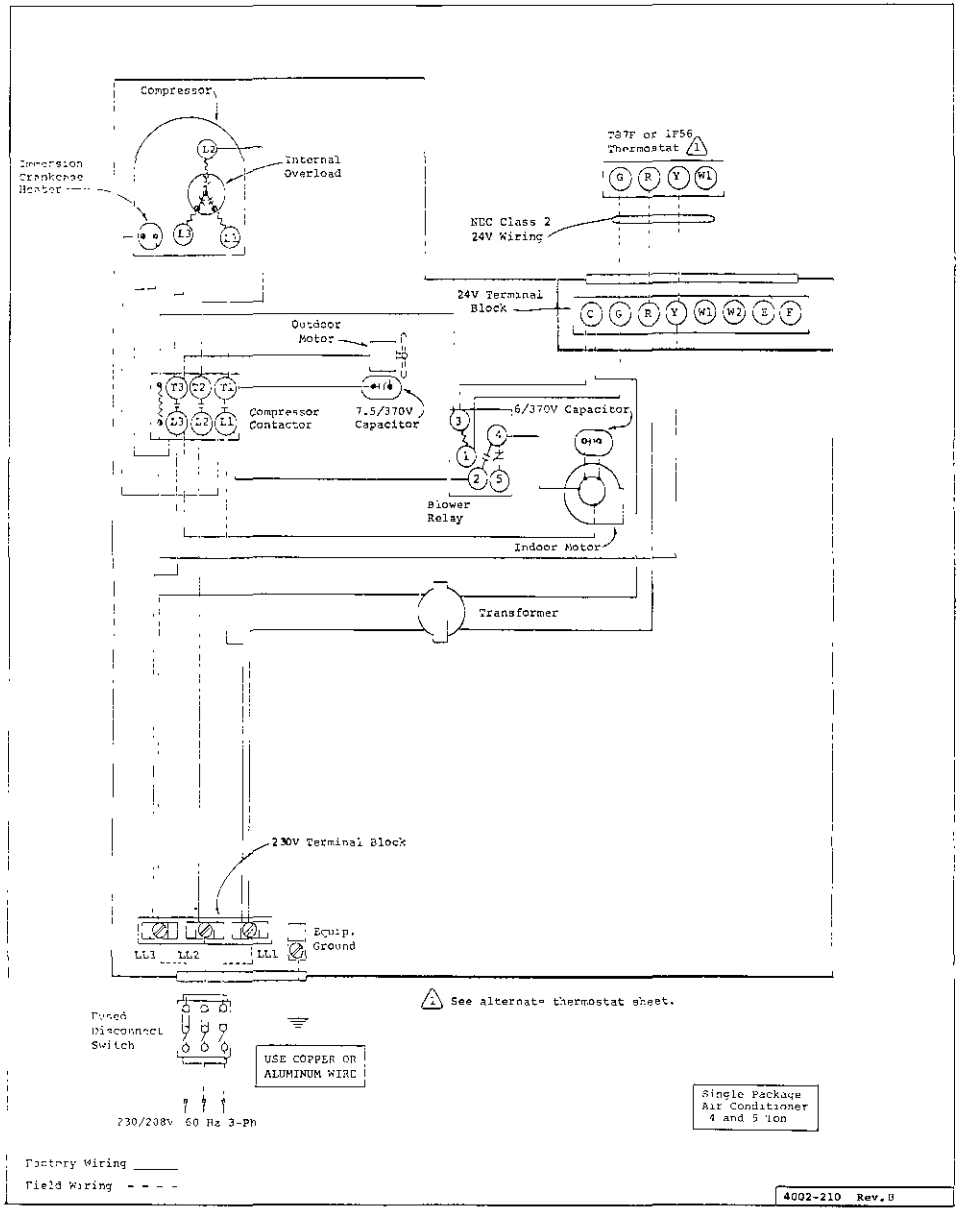

Compressor
Immersion Crankcase Heater
Internal Overload
T87F or 1F56 Thermostat
NEC Class 2 24V Wiring
45/440V Capacitor
10/370V Capacitor
Transformer
24V Terminal Block
Compressor Contactor
Outdoor Motor
6/370V Capacitor
Blower Relay
Indoor Motor
230V Terminal Block
Equip. Ground
LL3
LL1
See alternate thermostat sheet.
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
230/208V 60 Hz 1-Ph
Single Package Air Conditioner 4 and 5 ton
Factory Wiring
Field Wiring
4002-110 Rev. B

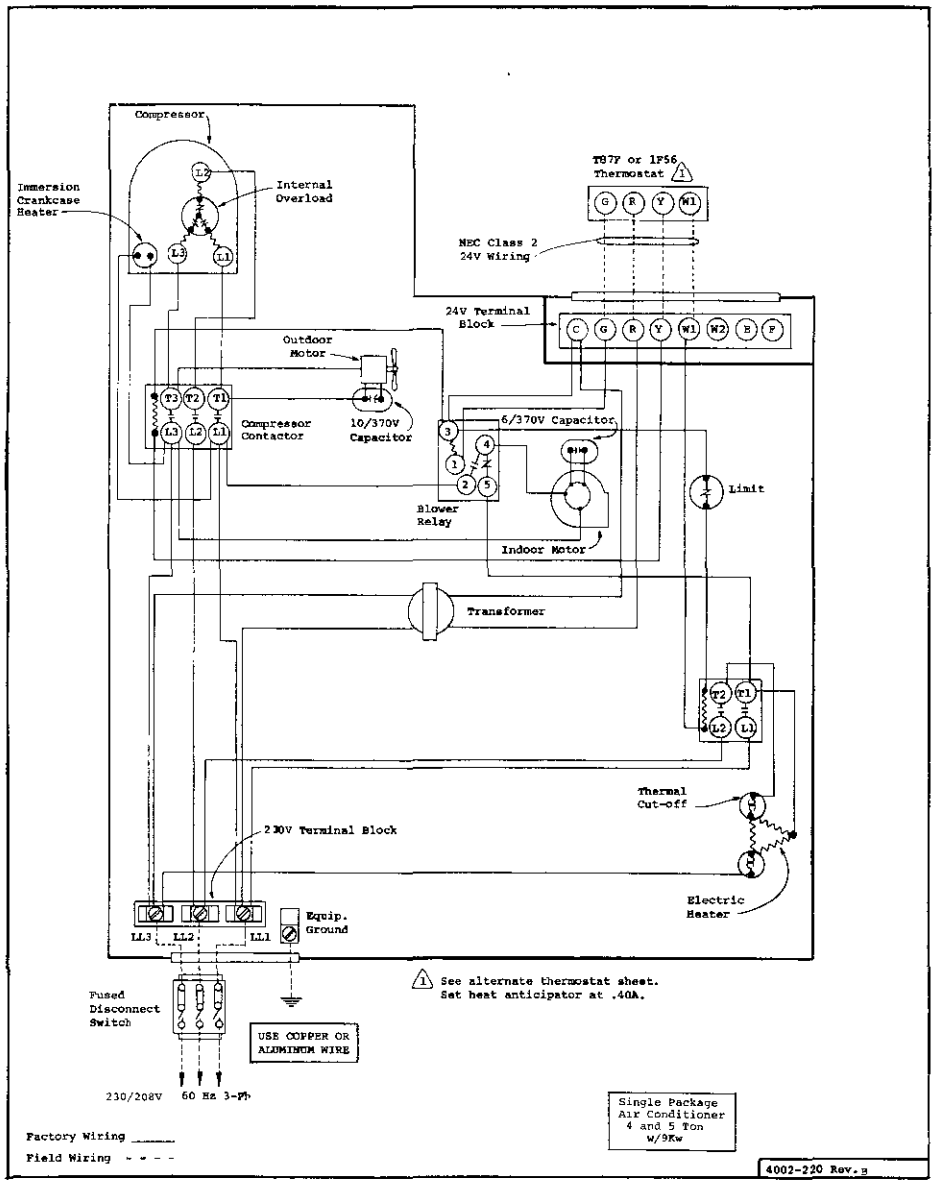

Compressor
Immersion Crankcase Heater
Internal Overload
T87F or 1F56 Thermostat
NEC Class 2 24V Wiring
45/440V Capacitor
10/370V Capacitor
Transformer
24V Terminal Block
Compressor Contactor
Outdoor Motor
6/370V Capacitor
Limit
Blower Relay
Indoor Motor
Heater Contactor
Thermal Cut-off
Electric Heater
230V Terminal Block
Equip. Ground
LL3
LL1
See alternate thermostat sheet. Set heat anticipator at .40A.
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
230/208V 60 Hz 1-Ph
Single Package Air Conditioner 4 and 5 ton w/5Kw
Factory Wiring
Field Wiring
4002-120 Rev. B

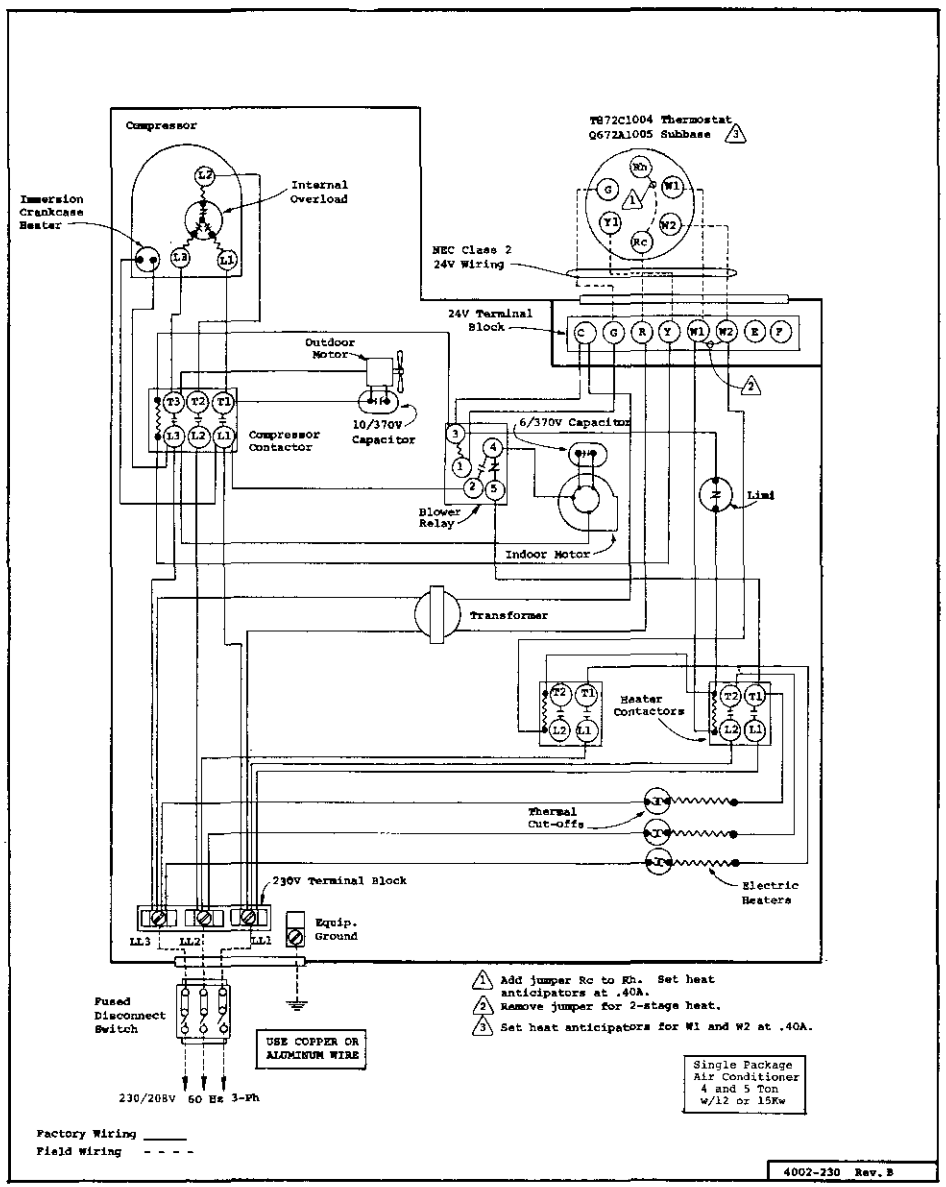

Compressor
Internal Overload
Immersion Crankcase Heater
T87F or 1F56 Thermostat
1
NEC Class 2 24V Wiring
C G R Y W1 W2 E F
45/440V Capacitor
10/370V Capacitor
Transformer
Compressor Contactor
Outdoor Motor
6/370V Capacitor
Limit
Blower Relay
Indoor Motor
Heater Contactor
230V Terminal Block
Equip. Ground
Thermal Cut-off
Electric Heater
LL3
LL1
1 See alternate thermostat sheet. Set heat anticipator at .40A.
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
230/208V 60 Hz 1-Ph
Single Package Air Conditioner 4 and 5 Ton w/10Kw
Factory Wiring
Field Wiring
4002-130 Rev. B

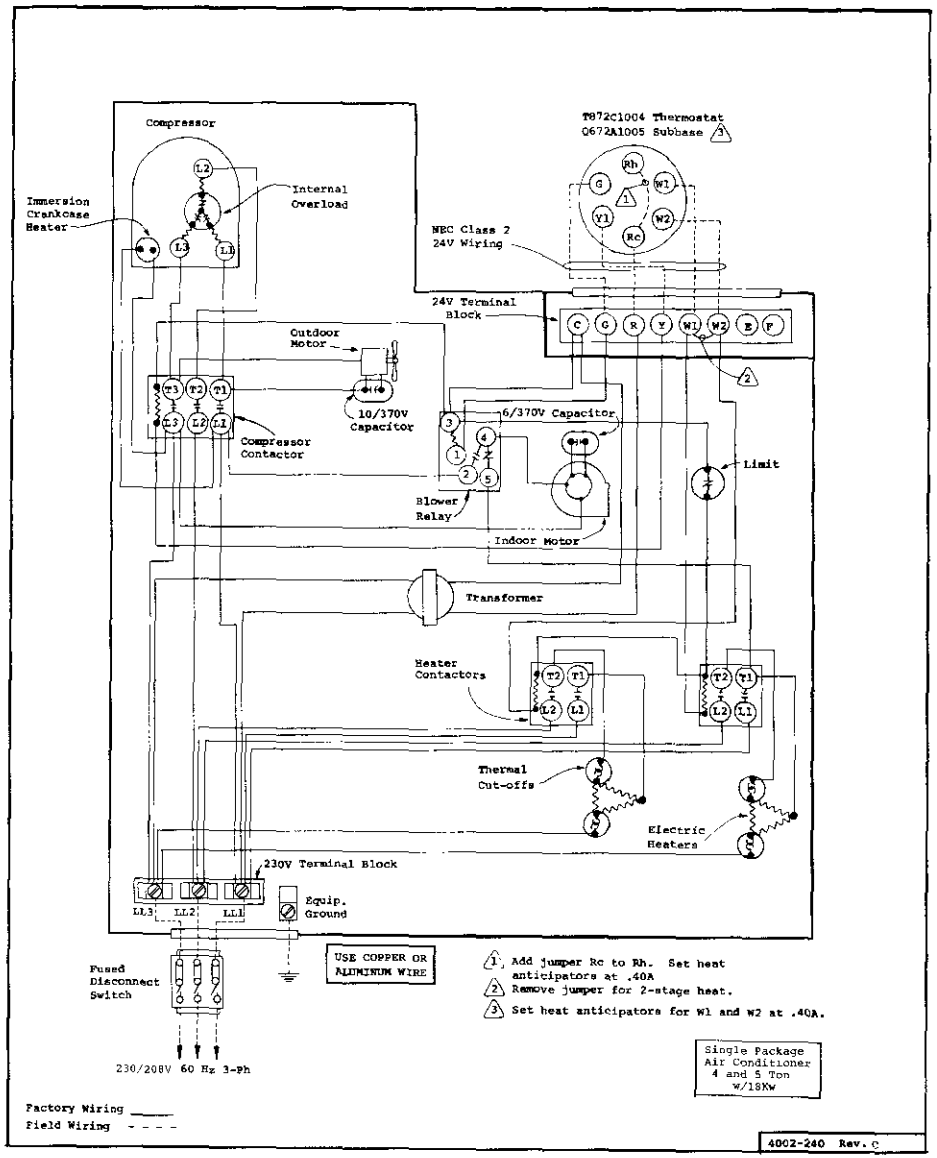

T872C1004 Thermostat
Q672A1005 Subbase
Rh G W1 Y W2 Rc
Compressor
Internal Overload
Immersion Crankcase Heater
NEC Class 2 24V Wiring
C G R Y W1 W2 E F
45/440V Capacitor
24V Terminal Block
10/370V Capacitor
Transformer
Compressor Contactor
Outdoor Motor
6/370V Capacitor
Limit
Blower Relay
Indoor Motor
Heater Contactor
Thermal Cut-offs
Internal Fuse Block
Electric Heater
B A N B
Equip. Ground
Fuse A - 60A Time Delay
Fuse B - 30A Standard
1 Add jumper Rc to Rh. Set heat anticipators at .40A for W1 and W2.
2 Remove jumper W1-W2 for 2-stage heat.
USE COPPER OR ALUMINUM WIRE
230/208V 60 Hz 1-Ph
Sinyle Package Air Conditioner 4 and 5 Ton w/15Kw
Factory Wiring
Field Wiring
4002-140 Rev. C

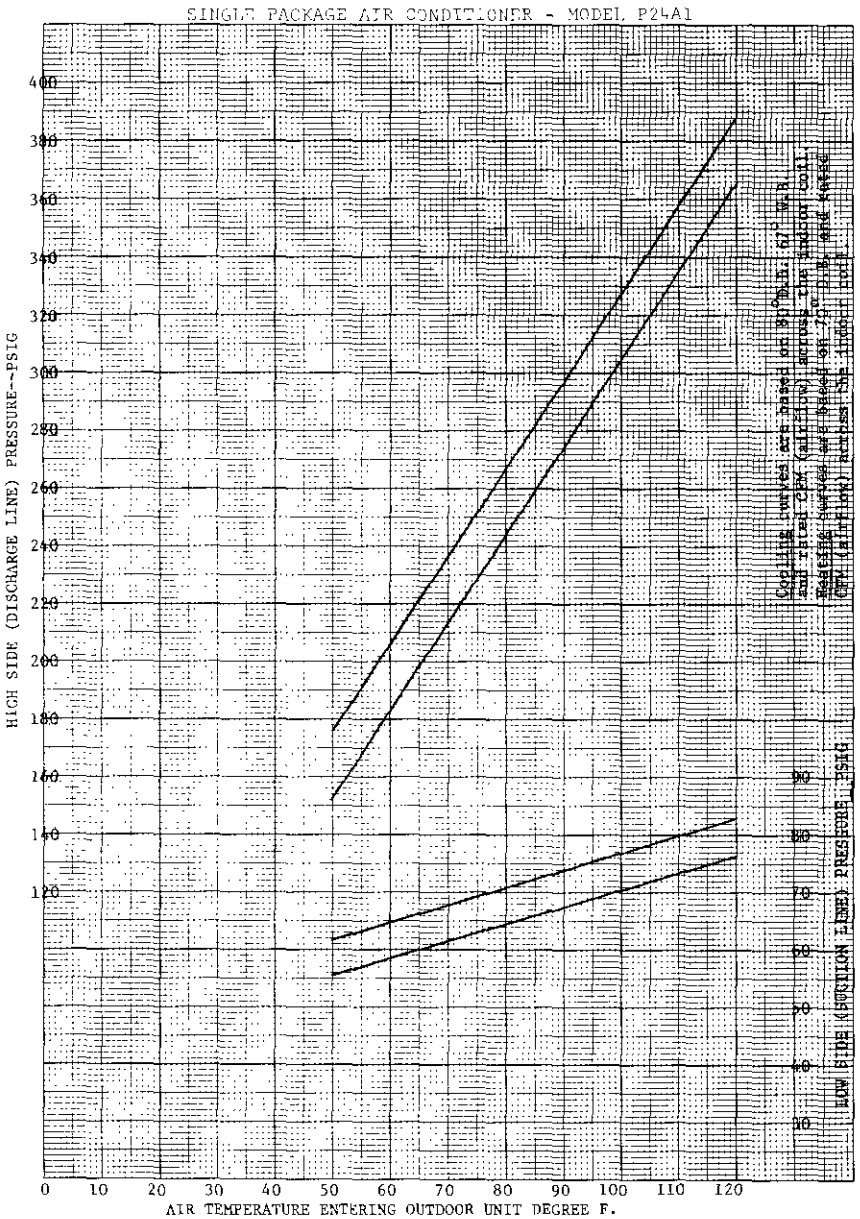

T872C1004 Thermostat
Q672A1005 Subbase
Compressor
Internal Overload
Immersion Crankcase Heater
45/440V Capacitor
10/370V Capacitor
Transformer
NEC Class 2 24V Wiring
24V Terminal Block
Compressor Contactor
Outdoor Motor
6/370 Capacitor
Limit
Blower Relay
Indoor Motor
Heater Contactor
Thermal Cut-offs
Electric Heater
Internal Fuse Block
Equip. Ground
Fuse A - 60A Time Delay
Fuse B - 60A Standard
1 Add jumper Rc to Rh. Set heat anticipators at .40A for W1 and W2.
2 Remove jumper W1-W2 for 2-stage heat.
Ckt A
Ckt B
USE COPPER OR ALUMINUM WIRE
Single Package Air Conditioner 4 and 5 Ton w/208V
230/208V 60 Hz 1-Ph
Factory Wiring
Field Wiring
4002-150 Rev. B


Compressor
Immersion Crankcase Heater
Internal Overload
T87F or 1F56 Thermostat 1
NEC Class 2 24V Wiring
24V Terminal Block
Outdoor Motor
Compressor Contactor
7.5/370V Capacitor
6/370V Capacitor
Blower Relay
Indoor Motor
Transformer
230V Terminal Block
Equip. Ground
LL3 LL2 LL1
1 See alternate thermostat sheet.
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
230/208v 60 Hz 3-Ph
Single Package Air Conditioner 4 and 5 Ton
Factory Wiring
Field Wiring
4002-210 Rev. B

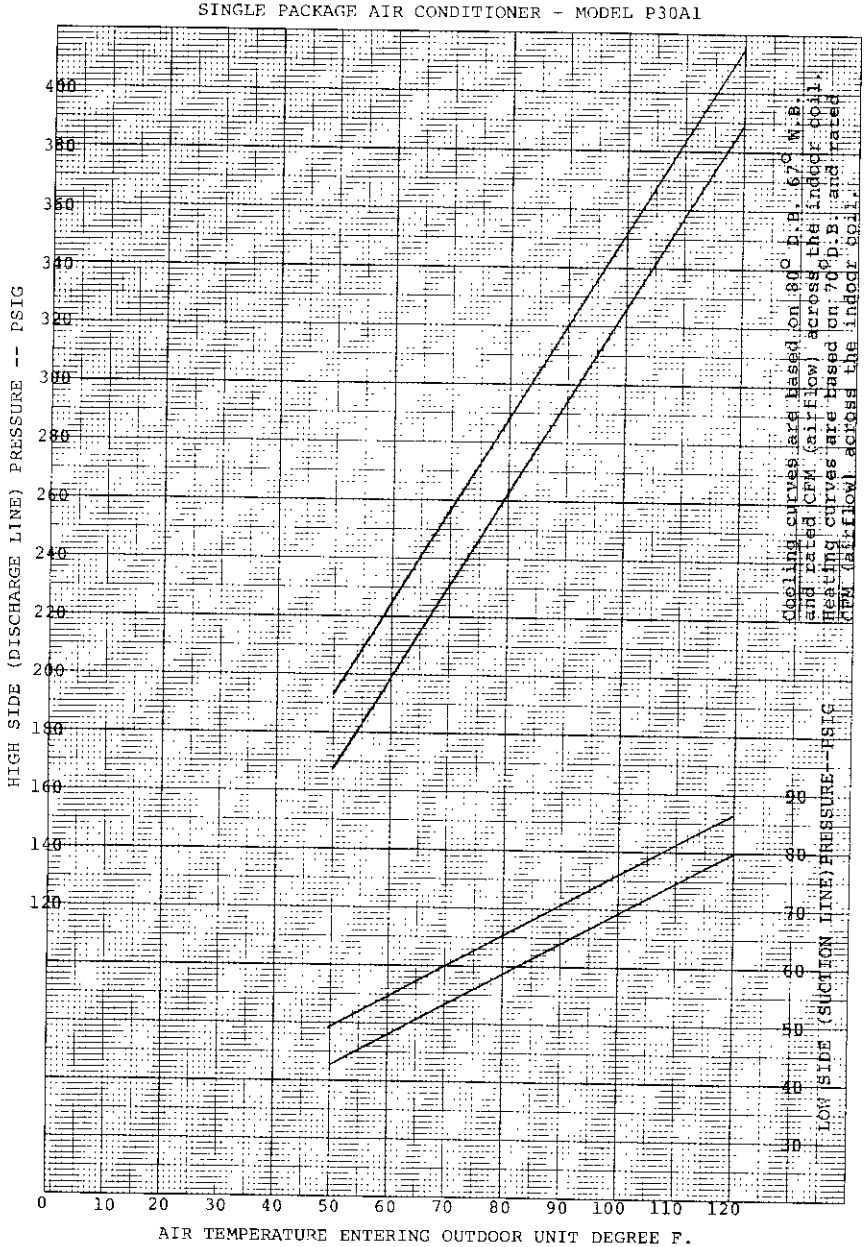

Compressor
Immersion Crankcase Heater
Internal Overload
T87F or 1F56 Thermostat
NEC Class 2 24V Wiring
24V Terminal Block
C G R Y W1 W2 E F
Outdoor Motor
Compressor Contactor
10/370V Capacitor
6/370V Capacitor
Blower Relay
Limit
Indoor Motor
Transformer
Thermal Cut-off
230V Terminal Block
Electric Heater
LL3 LL2 LL1
Equip. Ground
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
230/208V 60 Hz 3-Ph
1 See alternate thermostat sheet. Set heat anticipator at .40A.
Factory Wiring
Field Wiring
Single Package Air Conditioner 4 and 5 Ton w/9Kw
4002-220 Rev. B


Compressor
T872C1004 Thermostat
Q672A1005 Subbase
3
Immersion Crankcase Heater
Internal Overload
NEC Class 2 24V Wiring
24V Terminal Block
C G R Y W1 W2 E F
Outdoor Motor
Compressor Contactor
10/370V Capacitor
6/370V Capacitor
Blower Relay
Limi
Indoor Motor
Transformer
Heater Contactors
Thermal Cut-offs
230V Terminal Block
Electric Heaters
LL3 LL2 LL1
Equip. Ground
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
230/208V 60 Hz 3-Ph
1 Add jumper Rc to Rh. Set heat anticipators at .40A.
2 Remove jumper for 2-stage heat.
3 Set heat anticipators for W1 and W2 at .40A.
Factory Wiring
Field Wiring
Single Package Air Conditioner 4 and 5 Ton w/12 or 15Kw
4002-230 Rev. B

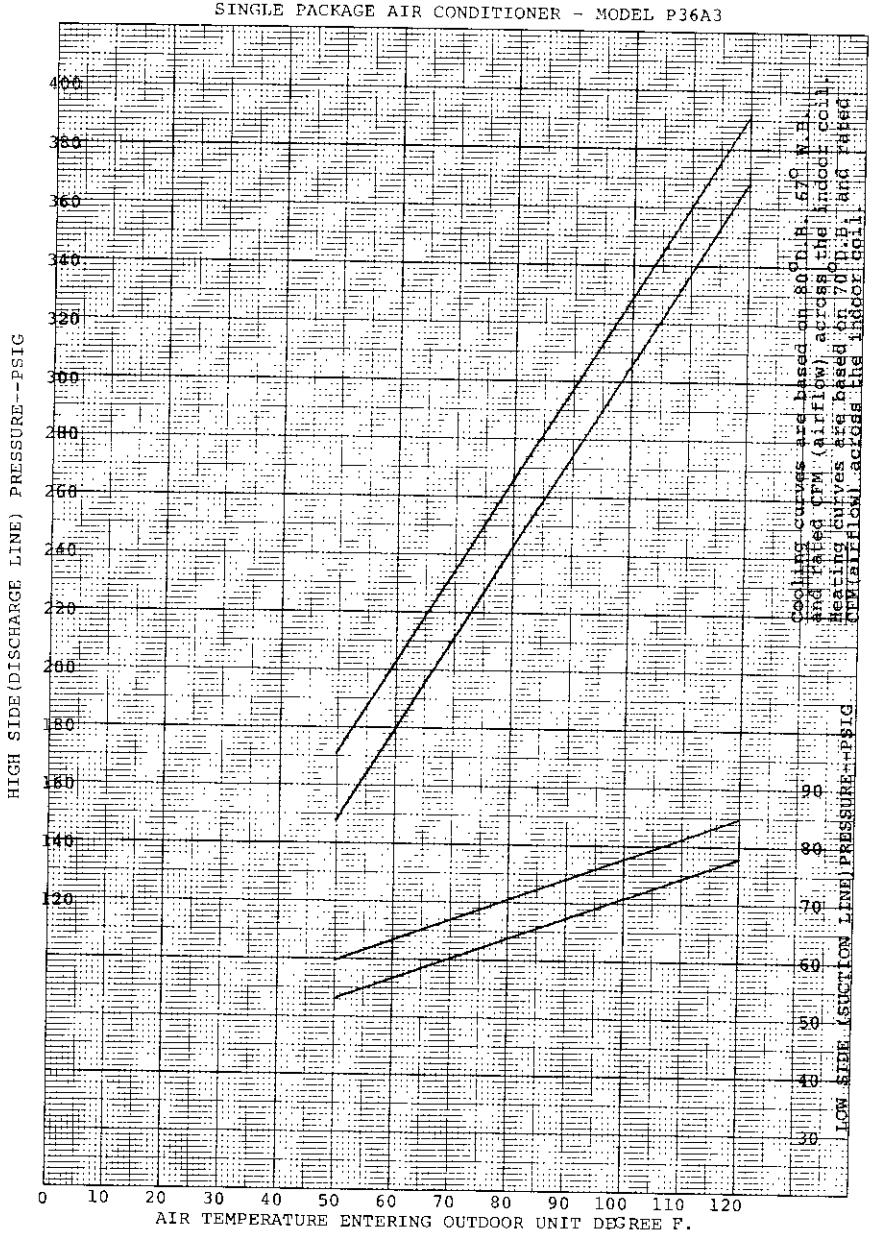

Compressor
Immersion Crankcase Heater
Internal Overload
T872C1004 Thermostat
Q672A1005 Subbase
NEC Class 2 24V Wiring
24V Terminal Block
C G R Y W1 W2 E F
Outdoor Motor
10/370V Capacitor
Compressor Contactor
6/370V Capacitor
Blower Relay
Limit
Indoor Motor
Transformer
Heater Contactors
Thermal Cut-offs
Electric Heaters
230V Terminal Block
LL3 LL2 LL1
Equip. Ground
Fused Disconnect Switch
230/208V 60 Hz 3-Ph
USE COPPER OR ALUMINUM WIRE
1 Add jumper Rc to Rh. Set heat anticipators at .40A
2 Remove jumper for 2-stage heat.
3 Set heat anticipators for W1 and W2 at .40A.
Single Package Air Conditioner 4 and 5 Ton w/18Kw
Factory Wiring
Field Wiring
4002-240 Rev. C

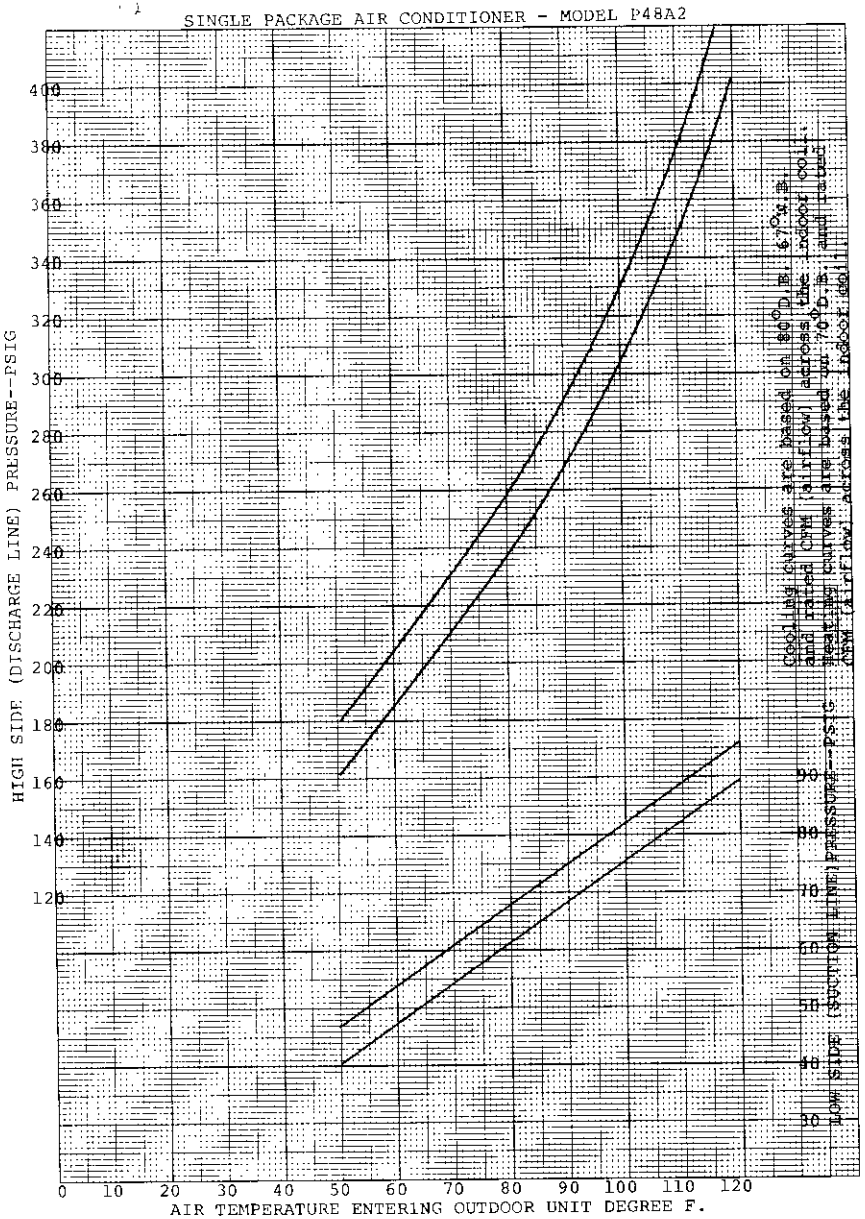

SINGLE PACKAGE AIR CONDITIONER - MODEL P24A1
HIGH SIDE (DISCHARGE LINE) PRESSURE--PSIG
LOW SIDE (SUCTION LINE) PRESSURE--PSIG
AIR TEMPERATURE ENTERING OUTDOOR UNIT DEGREE F.
Cooling curves are based on 80°D.B., 67° W.B. and rated CFM (airflow) across the indoor coil.
Readings (where applicable) are taken after 20 minutes of operation at each test point.

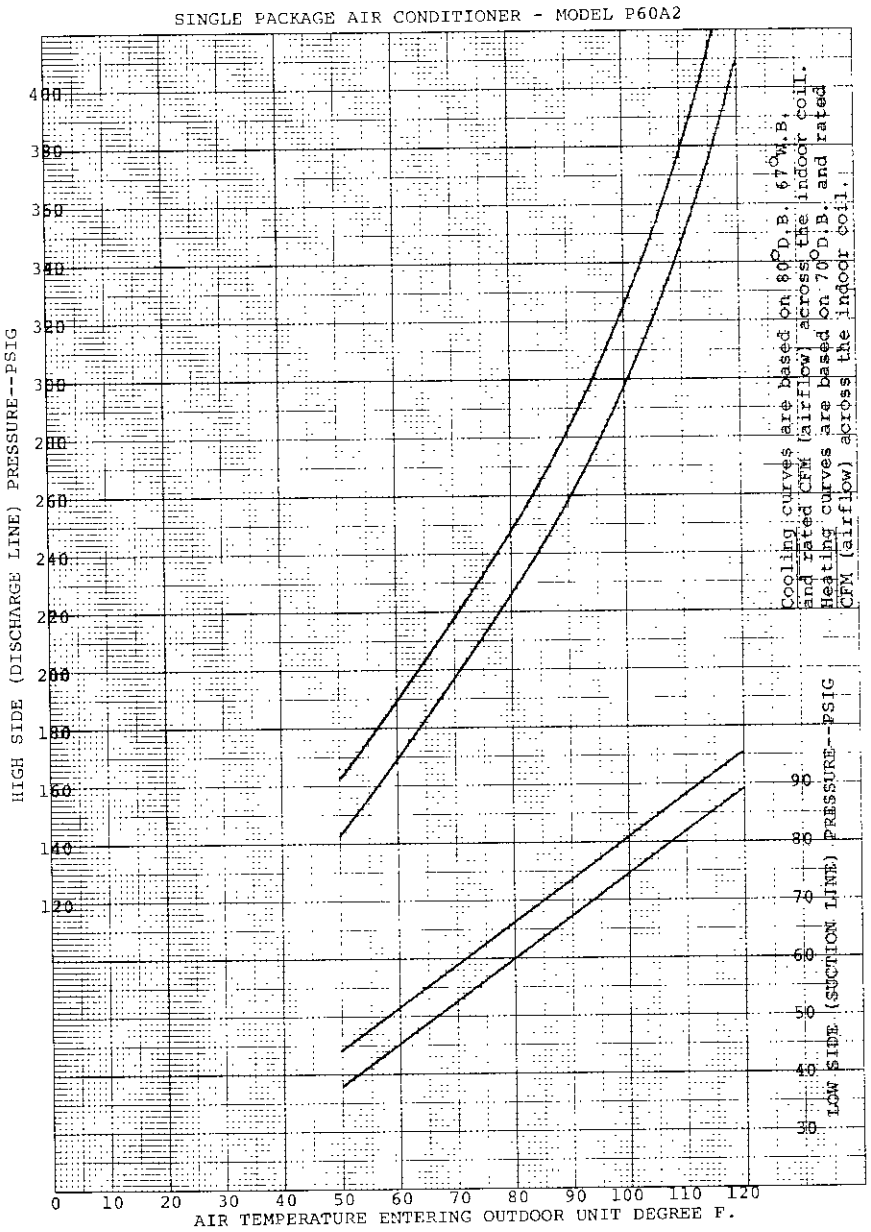
SINGLE PACKAGE AIR CONDITIONER - MODEL P30A1



SINGLE PACKAGE AIR CONDITIONER - MODEL P36A3




SINGLE PACKAGE AIR CONDITIONER - MODEL P48A2
HIGH SIDE (DISCHARGE LINE) PRESSURE--PSIG
LOW SIDE (SUCTION LINE) PRESSURE--PSIG
AIR TEMPERATURE ENTERING OUTDOOR UNIT DEGREE F.
Cooling curves are based on 80°D.B. 67°W.B. and rated CFM (airflow) across the indoor coil.
Heating curves are based on 70°D.B. and rated CFM (airflow) across the indoor coil.


SINGLE PACKAGE AIR CONDITIONER - MODEL P60A2
HIGH SIDE (DISCHARGE LINE) PRESSURE--PSIG
LOW SIDE (SUCTION LINE) PRESSURE--PSIG
AIR TEMPERATURE ENTERING OUTDOOR UNIT DEGREE F.
Cooling curves are based on 80°D.B. 67°W.B. and rated CFM (airflow) across the indoor coil.
Heating curves are based on 70°D.B. and rated CFM (airflow) across the indoor coil.

PART NO.	DESCRIPTION	P24A1	P30A1	P36A3	P36A3-3	P48A2	P48A2-3	P60A2	P60A2-3	P36A3-3 460V	P48A2-3 460V	P60A2-3 460V
5152-020	Blower Housing S1110-6	x	x									
5152-026	Blower Housing 10-8			x	x					x		
5152-027	Blower Housing 10-10					x	x	x	x		x	x
5152-009	Blower Wheel 10x5½	x	x									
5152-013	Blower Wheel DD10-8A			x	x					x		
5152-015	Blower Wheel DD10-10A					x	x	x	x		x	x
8552-007	Capacitor 20/15-370V	x	x									
8552-017	Capacitor 45/440V					x		x				
8552-001	Capacitor 4/370V			x	x					x		
8552-002	Capacitor 5/370V	x	x	x	x					x		
8552-003	Capacitor 6/370V					x	x	x	x		x	x
8552-004	Capacitor 7½/370V							x	x			x
8552-005	Capacitor 10/370V					x	x				x	
5811-021	Cap Tube	x										
5811-026	Cap Tube		x									
5811-022	Cap Tube			(2)	(2)					(2)		
5811-008	Cap Tube					(3)	(3)				(3)	
5811-025	Cap Tube							(2)	(2)			(2)
8000-002	Compressor AB114FT	x										
8000-006	Compressor AH152GT		x									
8000-045	Compressor H2EA413AB			x								
8000-046	Compressor H2EA413DB				x							
8000-026	Compressor AG111ET					x						
8000-030	Compressor AG111RT						x					
8000-027	Compressor AG122ET							x				
8000-031	Compressor AG122RT								x			
8000-010	Compressor AH302TT									x		
8000-047	Compressor AG111UT										x	
8000-048	Compressor AG122UT											x
83494	Compressor O'Load					x						
83493	Compressor O'Load						x					
83672	Compressor O'Load							x				
83684	Compressor O'Load								x			
5051-006	Condenser Coil	x	x									
5051-020	Condenser Coil			x	x					x		
5051-009	Condenser Coil					x	x	x	x		x	x
8401-007	Contactor - Comp. 25A	x	x									
8401-002	Contactor - Comp. 25A				x		x		x	x	x	x
8401-016	Contactor - Comp. 35A							x				
8401-003	Contactor - Comp. 30A			x		x						
8401-006	Contactor - Heater 20A	x	x	x	x	x	x	x	x		x	x

PART NO.	DESCRIPTION	P24A1	P30A1	P36A3	P36A3-3	P48A2	P48A2-3	P60A2	P60A2-3	P36A3-3 460V	P48A2-3 460V	P60A2-3 460V
8552-020	Capacitor 35/370V			x								
8552-022	Capacitor 20/370V			x								
8605-001	Crankcase Heater				x							
8605-002	Crankcase Heater									x		
5060-005	Evaporator Coil	x	x									
5060-006	Evaporator Coil			x	x					x		
5060-001	Evaporator Coil					x	x				x	
5060-011	Evaporator Coil							x	x			x
5151-009	Fan Blade FF1827-4	x	x									
5151-004	Fan Blade TP2026			x	x					x		
5151-021	Fan Blade FA2430-4B					x	x				x	
5151-022	Fan Blade FA2425-4B							x	x			x
8614-022	Fuse - Compressor 60A			x		x		x				
8614-006	Fuse - Heater 30A			x		x		x				
8614-007	Fuse - Heater 60A			x				x				
8614-017	Fuse Block 15Kw			x		x		x				
8614-013	Fuse Block 20Kw			x		x		x				
8604-042	Heat Strip 5Kw	x	x	x								
8604-044	Heat Strip 10Kw	x	x	x		x		x				
8604-047	Heat Strip 15Kw			x	x	x	x	x	x			
8604-046	Heat Strip 12Kw				x		x		x			
8604-048	Heat Strip 9Kw				x		x		x			
8604-050	Heat Strip 9Kw									x	x	x
8604-052	Heat Strip 15Kw									x	x	x
8402-015	Limit Switch	x	x									
8402-012	Limit Switch			x	x	x	x	x	x	x	x	x
8106-005	Motor-Blower & Fan 1/2	x	x									
8105-007	Motor - Blower 1/3			x	x					x		
8106-006	Motor - Blower 1/2					x	x	x	x		x	x
8103-009	Motor - Fan 1/5			x	x					x		
8105-005	Motor - Fan 1/3					x	x				x	
8106-007	Motor - Fan 1/2							x	x			x
8200-010	Motor Cradle	x	x									
8200-007	Motor Mt. -Blower			x	x					x		
8200-003	Motor Mt. -Blower					x	x	x	x		x	x
8200-001	Motor Mt. - Fan			x	x					x		
8200-004	Motor Mt. - Fan					x	x				x	
8200-011	Motor Mt. - Fan											x
5451-011	Motor Mounting Parts			x	x	x	x	x	x	x	x	x

PART NO.	DESCRIPTION	P24A1	P30A1	P36A3	P36A3-3	P48A2	P48A2-3	P60A2	P60A2-3	P36A3-3 460V	P48A2-3 460V	P60A2-3 460V
8201-009	Relay - Blower	x	x	x	x	x	x	x	x			x
8201-008	Relay - Blower									x	x	
5210-002	Strainer	x	x							x		
5210-004	Strainer			x	x					x		
5210-003	Strainer					x	x				x	
5210-005	Strainer							x	x			x
8607-006	Terminal Board 24V	x	x	x	x	x	x	x	x	x	x	x
8607-001	Terminal Block 230V	x	x	x	x	x	x	x	x	x	x	x
8607-002	Terminal Block 230V								x	x	x	x
8402-026	Thermal Cut-off	x	x	x	x	x	x			x	x	
8402-025	Thermal Cut-off					x	x	x	x			x
8407-007	Transformer	x	x	x								
8407-015	Transformer				x	x	x	x	x	x	x	x
8407-003	Transformer-Stepdown									x		
8407-005	Transformer-Stepdown											x

Minimum Net Billing $15.00. Supersedes all previous lists.
Subject to change without notice. F.O.B. Bryan, Ohio

ELECTRICAL INFORMATION												WIRING INFORMATION ⚠1			
Model	Volts-Ph	Heater Kw @ 240V	Max. Unit Amps	No.Field Power Circuits	Internal Fuses Ckt.A	Internal Fuses Ckt.B	Req'd. Maximum External Fuses Ckt.A	Req'd. Maximum External Fuses Ckt.B	Min. Ckt. Ampacity Ckt.A	Min. Ckt. Ampacity Ckt.B	Power Ckt. Wiring Ckt.A	Power Ckt. Wiring Ckt.B	Ground Wire Size ⚠2 Ckt.A	Ground Wire Size ⚠2 Ckt.B
P24A1	230/1	0	17.4	1			30		21		10		10	
		5	25.2	1			35		32		8		10	
		10	46	1			60		57		4		10	
P30A1	230/1	0	20.9	1			40		25		10		10	
		5	25.2	1			40		32		8		10	
		10	46	1			60		57		4		10	
P36A3	230/208-1	0	29	1			50		35		8		10	
		5	29	1			50		35		8		10	
		10	45	1			60		56		4		10	
		15	65.9	1	60	30	90		82		2		8	
P36A3	230/208-3	0	19.5	1			35		23		10		14	
		9	25.1	1			35		31		8		12	
		12	32.3	1			40		40		8		12	
		15	39.6	1			50		50		6		10	
P48A2	230/208-1	0	31.7	1			60		38		8		10	
		5	31.7	1			60		38		8		10	
		10	45.5	1			60		57		4		10	
		15	66.4	1	60	30	90		83		2		8	
		20	87.1	2	60	60	60	50	57	52	4	6	10	10
P48A2	230/208-3	0	24.7	1			45		29		10		10	
		9	25.6	1			45		32		8		10	
		12	32.8	1			45		41		6		10	
		15	40.1	1			50		50		6		10	
		18	47.3	1			60		59		4		10	
P60A2	230/208-1	0	37.2	1			60		44		6		10	
		5	37.2	1			60		44		6		10	
		10	45.8	1			60		57		4		10	
		15	66.4	1	60	30	90		83		2		8	
		20	87.1	2	60	60	60	60	57	52	4	6	10	10
P60A2	230/208-3	0	29.2	1			50		34		8		10	
		9	29.2	1			50		34		8		10	
		12	32.8	1			50		41		6		10	
		15	40.1				50		50		6		10	
		18	47.3	1			60		59		4		10	

⚠1 Based upon the use of 60°C copper wiring material.

⚠2 Based upon Table 250-95 of N.E.C., 1978.

IMPORTANT

PURCHASER'S RESPONSIBILITIES

Below are the responsibilities of the purchaser and these items cannot be considered as defects in workmanship or material.

1. Air filter cleaning or replacement.

2. Failure to operate due to improper air distribution over indoor and outdoor equipment sections.

3. Failure to start due to voltage conditions, blown fuses or other damage due to inadequacy or interruption of electrical service.

4. Damage caused directly or indirectly by improper installation.

5. Damage due to lack of proper and periodic maintenance.

6. Damage resulting from transportation, moving or storage of unit.

7. Unit must be readily accessible for servicing and/or repair at all times.

8. Any adjustment or service to the unit should be made by qualified service personnel.

9. Misapplication of product.

MODEL NO._____ SERIAL NO._____ DATE INSTALLED_____

INSTALLER: Please fill in above blanks and leave this manual with equipment owner/operator.