

# **MODELS**

**MU32A, MU36B, MU42C**

## **PACKAGED AIR CONDITIONER INSTALLATION INSTRUCTIONS**

**FOR RESIDENTIAL COMMERCIAL,  
OR MOBILE HOME  
HEATING / COOLING APPLICATIONS**

**BARD MANUFACTURING COMPANY**  
P. O. Box 607      Bryan, Ohio 43506  
(419) 636-1194

## 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.

## INSTALLING THE SUPPLY AND RETURN FITTINGS ON THE SELF-CONTAINED UNIT

The Supply and Return Fittings are to be fastened with sheet metal screws on three sides. Seal with duct tape on all four sides.

## LOCATING AND INSTALLING THE RETURN-AIR ASSEMBLY - MOBILE HOME APPLICATION

To avoid complications, locate and install the return-air assembly first. The return-air box with grille and filter can be located anywhere in the floor of the mobile home. Keep in mind that the closer to the cooling unit the better because less duct will be needed. Always use at least one 7' length of duct, however, a good spot is under the television set in a corner or under a table or davenport if a minimum two inch clearance is available. If desired, the return opening can be located inside a closet with louvered doors. The return-air grille can be placed in the wall of a closet and the air conducted into the filter box through a boxed-in area at the closet floor level. Make sure filter is readily accessible.

After determining the location of the return air opening, start the installation from under the home by cutting a small hole in the fiber board to determine how the floor joist location will affect the cutting of the opening needed for the box. Floor joists generally are located on 16" centers leaving 14-3/8" between joists. After measuring the return air box cut the hole so the box will fit between the floor joists. In most installations it will be necessary to cut a similar hole in the fiber-board directly under the one in the floor. However, if the floor is more than 10" deep, it will only be necessary to cut a round hole for the collar on the return air box or for the insulated duct.

Finally, set the box into the opening and fasten with screws or nails. Put the filter and the return air grille in place.

## LOCATING AND INSTALLING THE SUPPLY DUCT CONNECTORS - MOBILE HOME APPLICATION

When locating the supply duct connector, check carefully for floor joists, sills, wheels and frame members that could interfere with the installation of the connector or with the running of the flexible duct. Ideally, the supply duct connector should be located in the bottom of the main duct, forward of center of the mobile home **BUT NOT UNDER A REGISTER**.

To locate the center of the duct, first cut a 6" hole in the fiberboard below the duct at the desired location. After locating the duct center, increase the hole in the fiberboard to approximately the size of the connector to be used. Next cut an opening in the bottom of the duct 1/8" larger than the actual dimension of the connector being used. After inserting the connector, bend the tabs flat inside the duct.

It is a good practice to seal all connections with duct tape. Seal the opening in the fiberboard around the duct connector.

For double wide homes or for special applications, these connectors are fed by two flexible ducts.

## CONNECTING THE INSULATED RETURN-AIR AND SUPPLY FLEXIBLE DUCTING

All flexible ducts are furnished with a male and female metal end. The ducts can be connected to the corresponding fitting and sheet metal screwed in place. Slide the insulation and outer jacket over the end and use duct tape to seal joints.

If the flexible ducts are long enough, it will be easier to connect them to the fittings on the unit before sliding the unit into place.

## RECOMMENDED REGISTER TYPE

Satisfactory heating/cooling of a mobile home will depend greatly on what type register is used. A very open type with no deflection (allowing the air to move straight up) is best. If these are not available, straighten the fins of the present registers as much as possible.

## DUCT REQUIREMENTS

THE SUPPLY DUCT SYSTEM, INCLUDING THE NUMBER AND TYPE OF REGISTERS, WILL HAVE MUCH MORE EFFECT ON THE PERFORMANCE OF AN AIR CONDITIONING SYSTEM THAN ANY OTHER FACTOR! The duct must be sufficiently large to conduct an adequate amount of air to each register. The registers must be designed to throw the cooled air up to the ceiling. The duct must be built tightly enough to prevent loss of cooled air to the outside.

The output delivery of the system will not cool the home if the air is lost to the outside through leaks in the duct system. Also, the duct can be large enough in dimension but too small because it is collapsed or restricted with a foreign object. See page 2 for airflow and static pressure capabilities.

For rooftop or permanent structure applications, either round pipe or rectangular ductwork can be used, following standard duct sizing and layout techniques.

## 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. Temperature	82°F O.D. Temperature
MU32A	1100	58 - 60	64 - 66
MU36D	1100	59 - 61	63 - 65
MU42C	1100	58 - 60	60 - 63

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.

ELP. #	Models MU32A, MU36D, MU42C**	CFM - 400 ft/min
10	1170	1000
15	1340	1100
20	1510	1200
25	1680	1300
30	1850	1400
35	2020	1500
40	2190	1600
45	2360	1700
50	2530	1800
55	2700	1900
60	2870	2000
65	3040	2100
70	3210	2200
75	3380	2300
80	3550	2400
85	3720	2500
90	3890	2600
95	4060	2700
100	4230	2800

\*Based on 1000 ft/min  
\*\*CFM and BHP values are based on 1000 ft/min and 1/2" Hg. vacuum  
†The 2000 Performance Free & Return Air Filter Box optional

ELECTRICAL INFORMATION										WIRING INFORMATION 				
Model	Volts-Ph	Heater Kw @ 240V	Max. Unit Amps	No. Field Power Circuits	Internal Fuses		Req'd. Overcurrent Protection 		Min. Ckt. Ampacity		Power Ckt. Wiring		Ground Wire Size 	
					Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B	Ckt. A	Ckt. B
MU32A	230/208-1	0	22	1			40		27		10		10	
		5	23.3	1			40		30		10		10	
		10	44.1	1			60		56		6		10	
		15	65	1	60	30	90		82		2		8	
		20	85.7	2	60	60	60	60	56	52	6	6	10	10
MU36B	230/208-1	0	26	1			50		34		8		10	
		5	28	1			50		34		8		10	
		10	44.1	1			60		56		6		10	
		15	65	1	60	30	90		82		2		8	
		20	85.7	2	60	60	60	60	56	52	6	6	10	10
MU42C	230/1	0	28	1			50		34		8		10	
		5	28	1			50		34		8		10	
		10	44.1	1			60		56		6		10	
		15	65	1	60	30	90		82		2		8	
		20	85.7	2	60	60	60	60	56	52	6	6	10	10

-  Time delay fuses or "NACR Type" circuit breakers must be used for 60 and smaller sizes. Standard fuses or circuit breakers are suitable for sizes 70 and larger.
-  Based on 60°C copper wire. Other wiring materials must be rated for marked "Minimum Circuit Ampacity" or greater.
-  Based upon Table 250-95 of N.E.C., 1981.

#### WIRING - MAIN POWER

Refer to the unit rating plate for wire sizing information and maximum fuse or "NACR 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. 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 data 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" or "NACR 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.

#### CRANKCASE HEATERS

All units are provided with some form of compressor crankcase heat. Some single phase units utilize the compressor motor start winding in series with a portion of the run capacitor to generate heat within the compressor shell to prevent liquid refrigerant migration.

Some three phase units utilize a wraparound type of crankcase heater that warms the compressor oil from the outside.

Some 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.

Refer to unit wiring diagram to find exact type of crankcase heater used.

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

Model	Rated CFM	Rated E.S.P.	Recommended Airflow Range
MU32A	1100	.50	1025 - 1260
MU36B	1100	.52	1025 - 1260
MU42C	1100	.50	1025 - 1260

### 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.

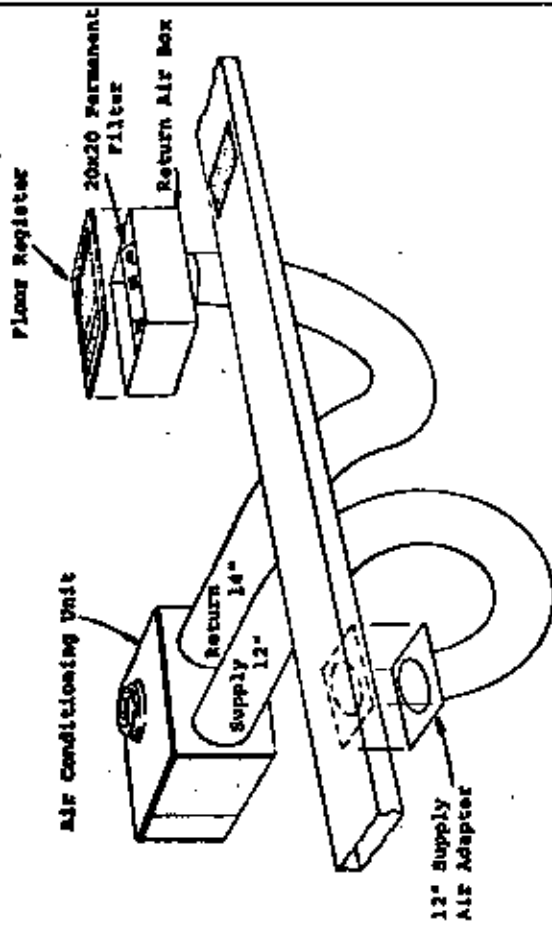
3. ALLOW 4 HOURS OR 60 MINUTES PER POUND OF REFRIGERANT IN THE SYSTEM AS NOTED ON THE UNIT RATING PLATE WHICHEVER IS GREATER.

4. AFTER PROPERLY ELAPSED TIME THE THERMOSTAT MAY BE SET TO OPERATE THE COMPRESSOR.

5. ENSURE AS REQUIRED FOR SAFETY WHILE SERVICING - DO NOT OPEN SYSTEM DISCONNECT SWITCH.

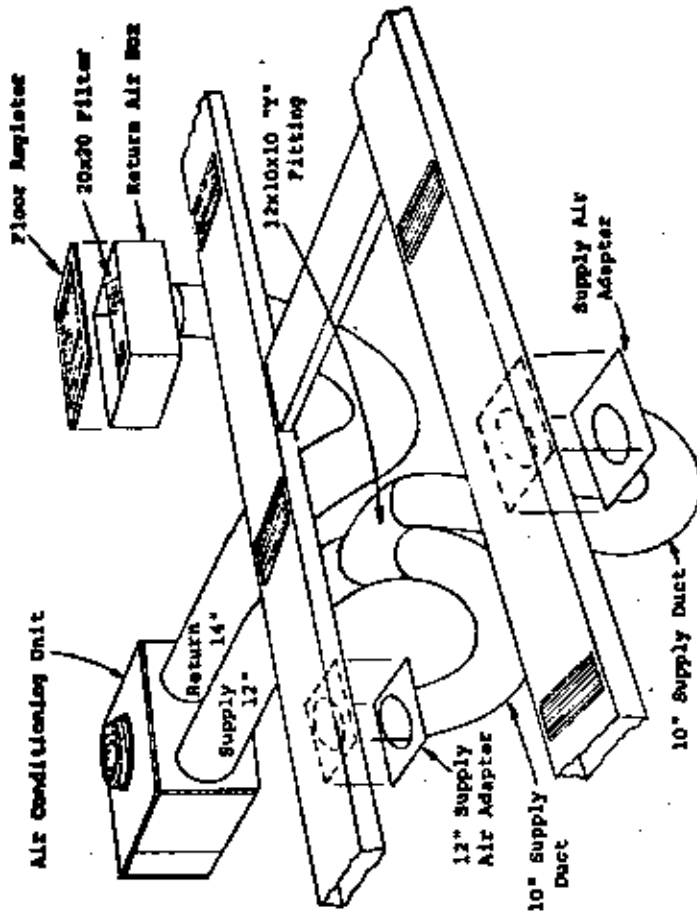
7061 061

**SINGLE SUPPLY DUCT SYSTEM**



- QTY. 1** 7001-014 Fitting Pack  
 (1) 12 1/4 x 20 x 10 1/4 Return Air Box  
 (1) 20 x 20 Permanent Filter  
 (1) 12 x 20 Floor Register  
 (1) 12" Supply Air Adapter
- QTY. 2** 7001-018 Flex Duct Pack  
 (1) 14" Dia. x 7' Insulated Duct  
 (1) 12" Dia. x 7' Insulated Duct

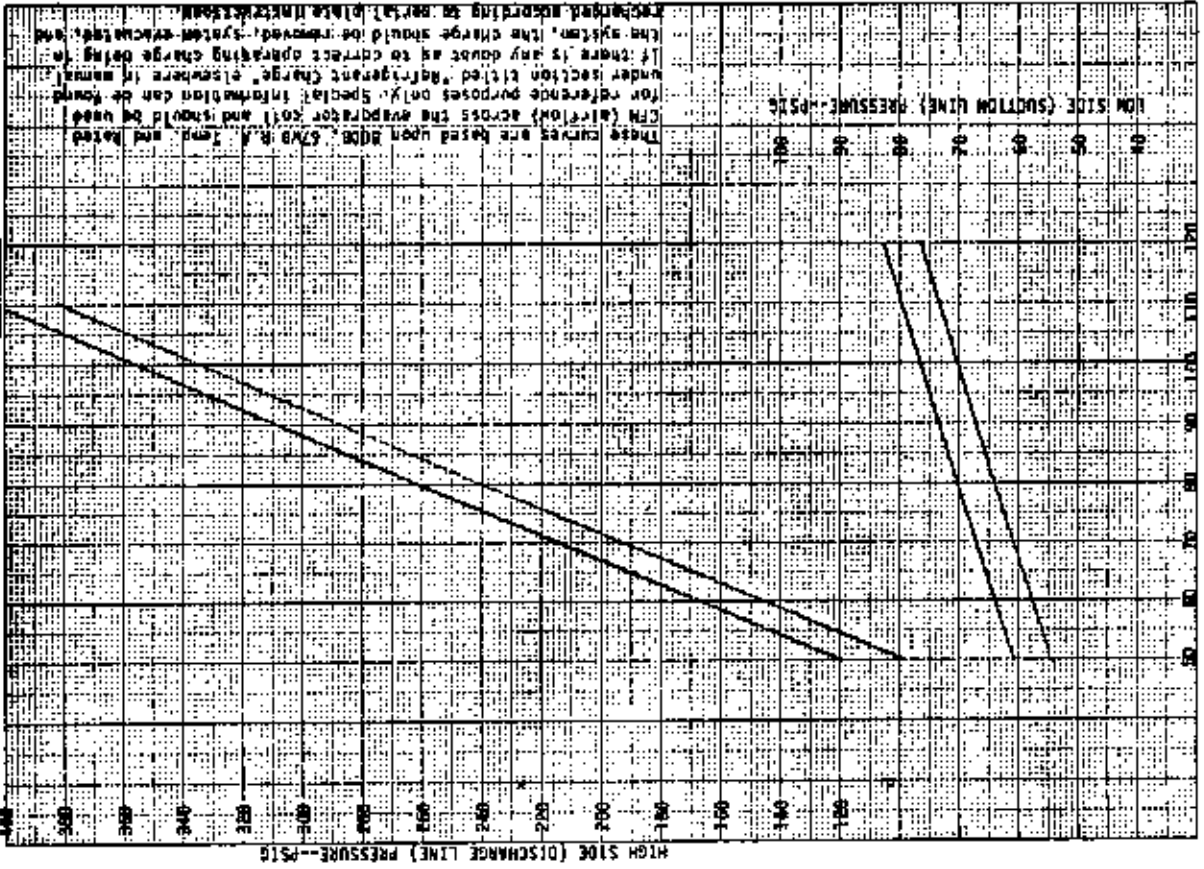
**DOUBLE SUPPLY DUCT SYSTEM**



- QTY. 1** 7001-014 Fitting Pack  
 (1) 12 1/4 x 20 x 10 1/4 Return Air Box  
 (1) 20 x 20 Permanent Filter  
 (1) 12 x 20 Floor Register  
 (1) 12" Supply Air Adapter
- QTY. 2** 7001-015 Fitting Pack  
 (1) 12 x 10 x 10 "Y" Fitting  
 (2) 10" Supply Air Adapter
- QTY. 1** 7001-018 Flex Duct Pack  
 (1) 14" Dia. x 7' Insulated Duct  
 (1) 12" Dia. x 7' Insulated Duct
- QTY. 2** 7001-001 Flex Duct Pack  
 (1) 10" Dia. x 7' Insulated Duct

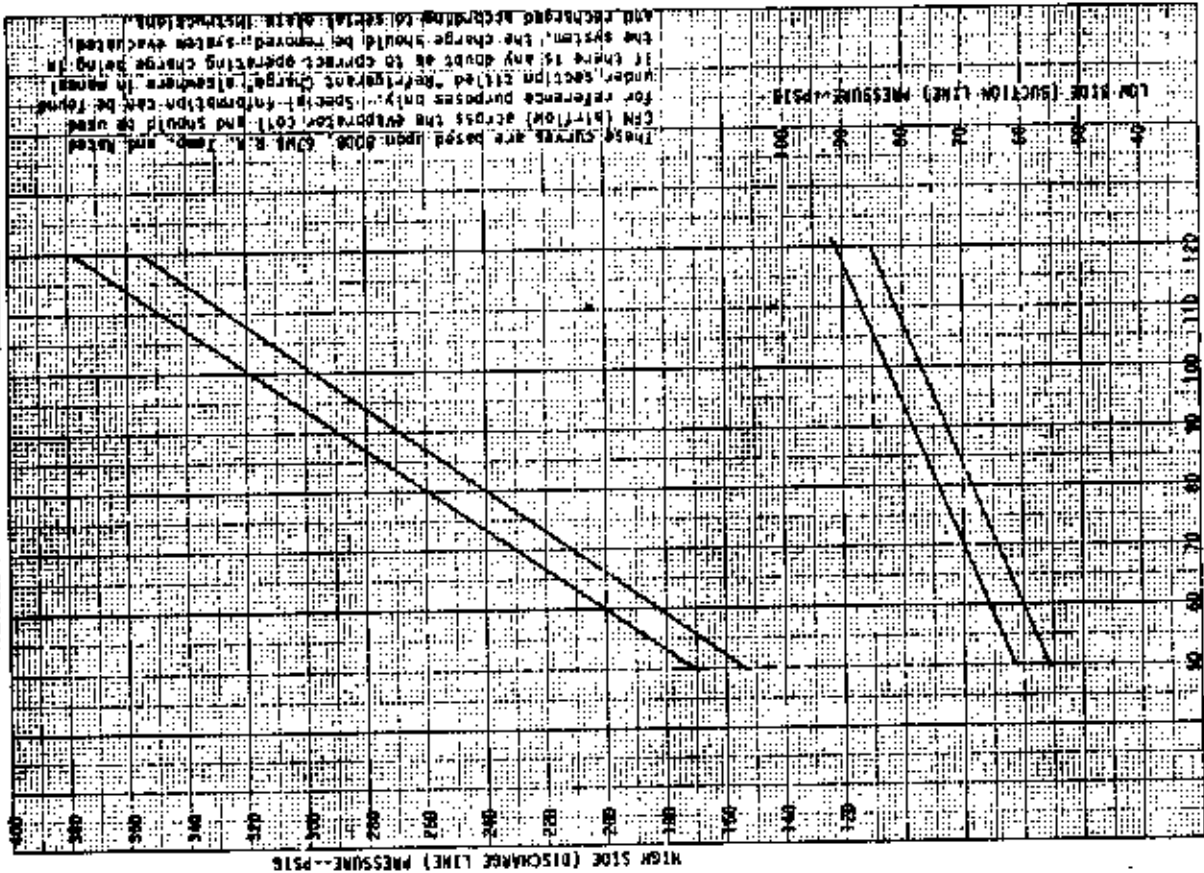
982

PACKAGED AIR CONDITIONER MODEL 143300



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PACKAGED AIR CONDITIONER MODEL 143300



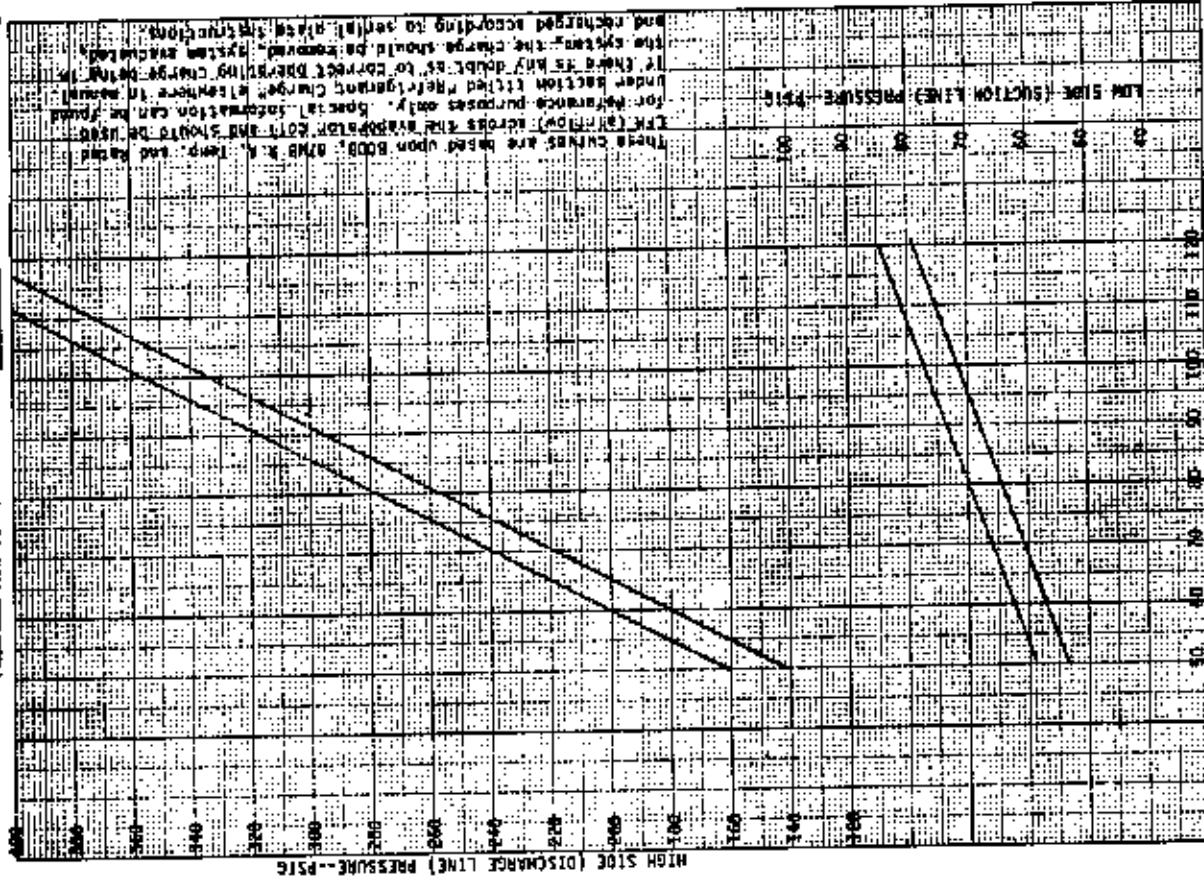
These curves are based upon 8000 CFM (airflow) across the evaporator coil and should be used for reference purposes only. Special information can be found under section titled "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged according to serial plate instructions.

These curves are based upon 8000 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.

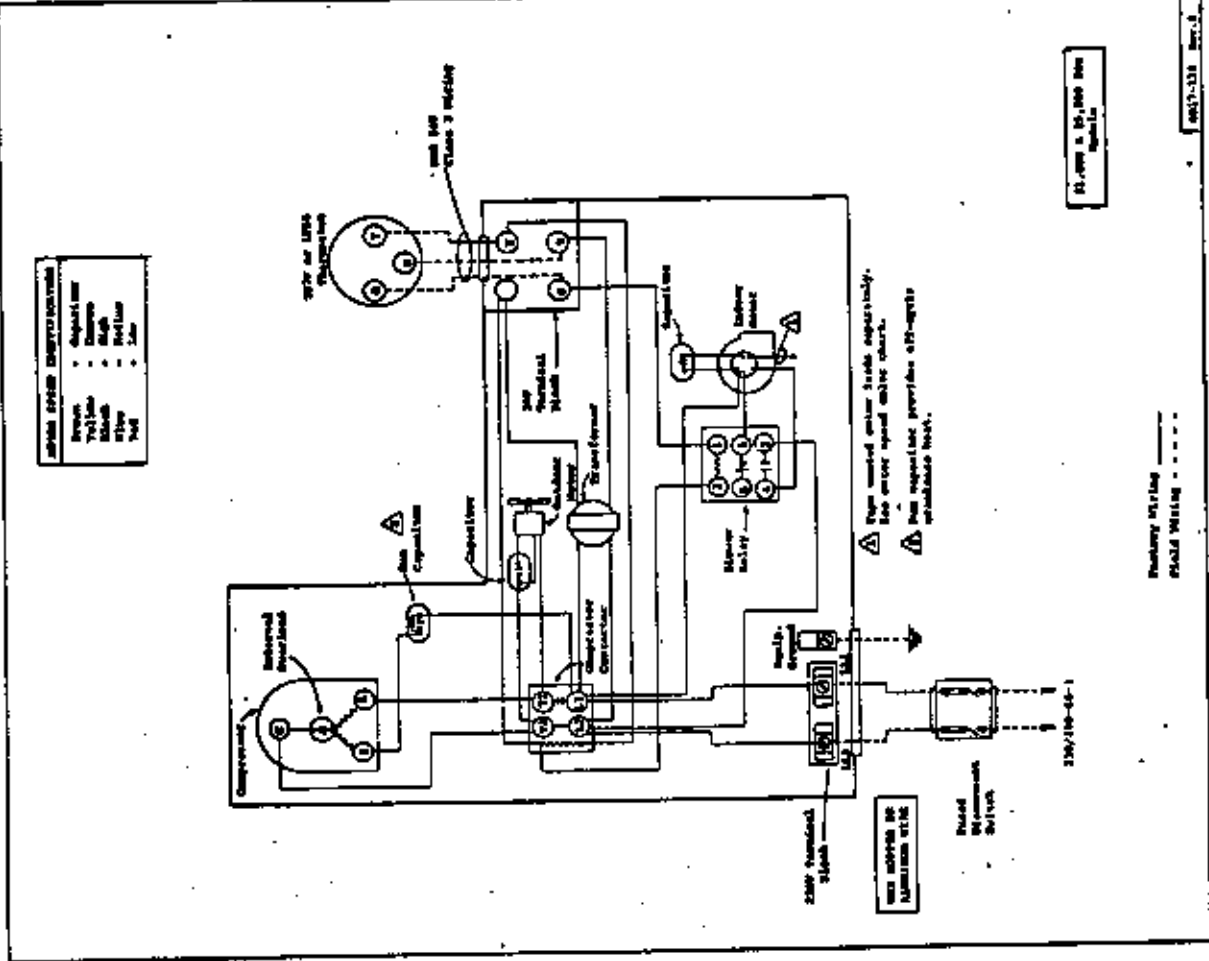
NO. 3490-20 SYSTEM SERIAL PLATE  
 1954  
 FOREIGN REGISTRATION

PACKAGED AIR CONDITIONER MODEL MAZC

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AIR TEMPERATURE ENTERING OUTDOOR COIL - DEGREE F.

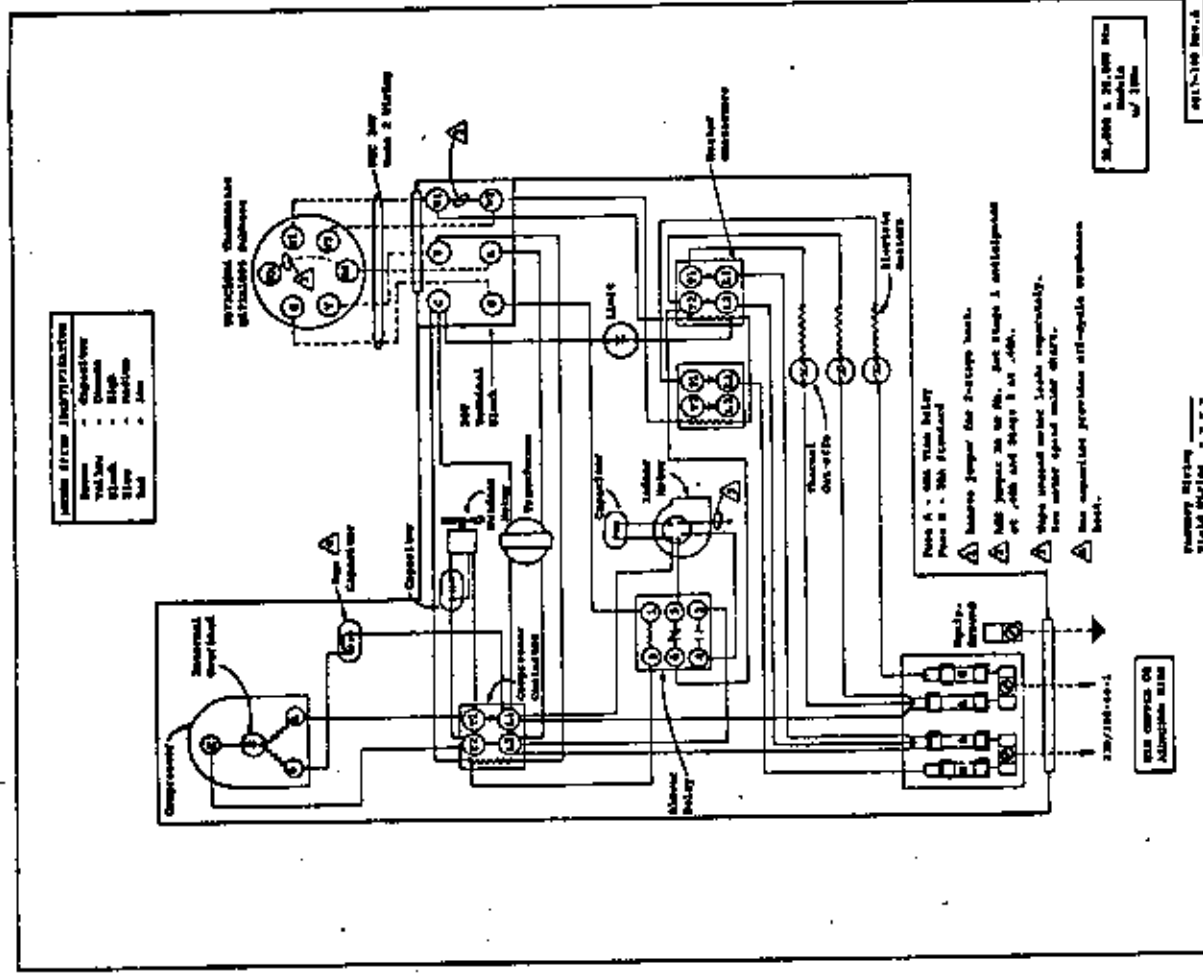
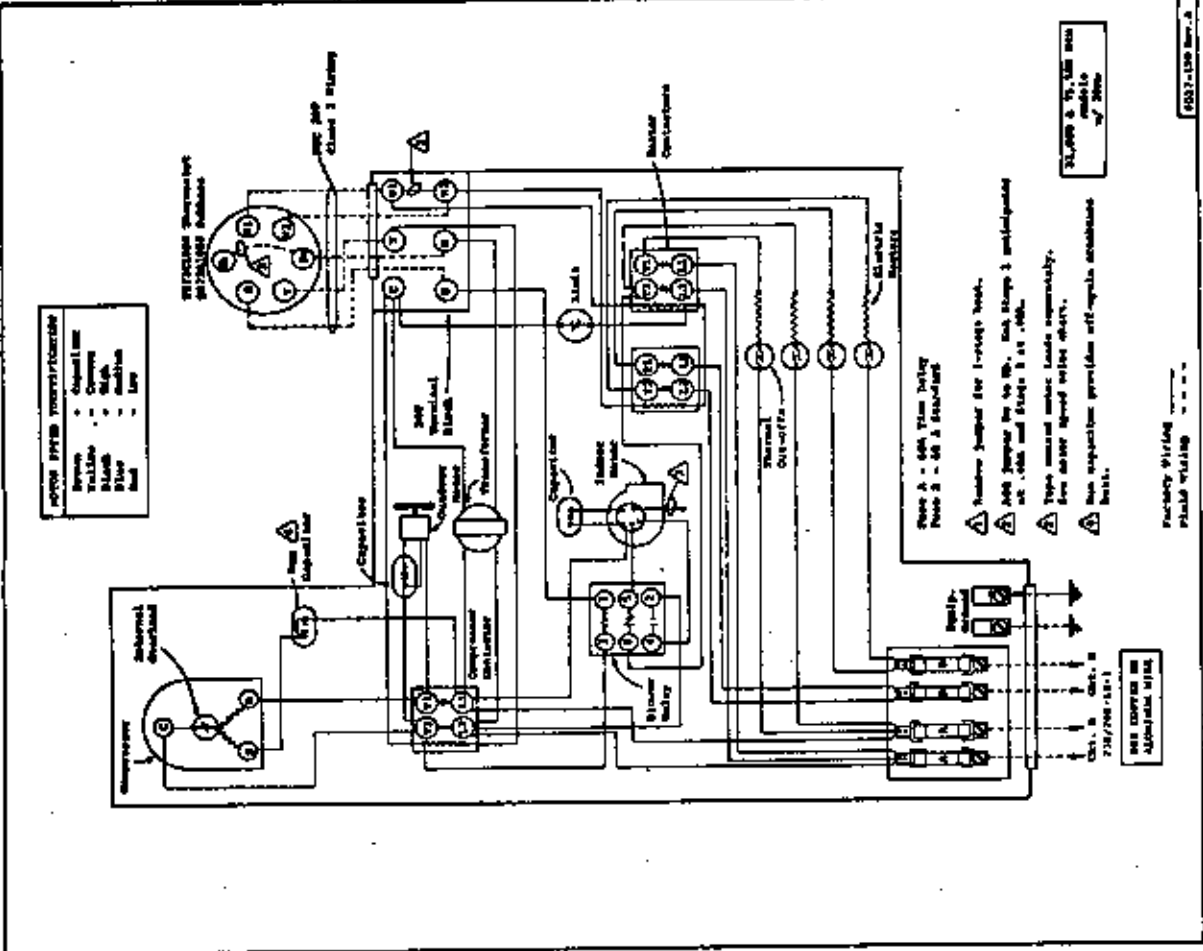


14,000 Btu/h Capacity

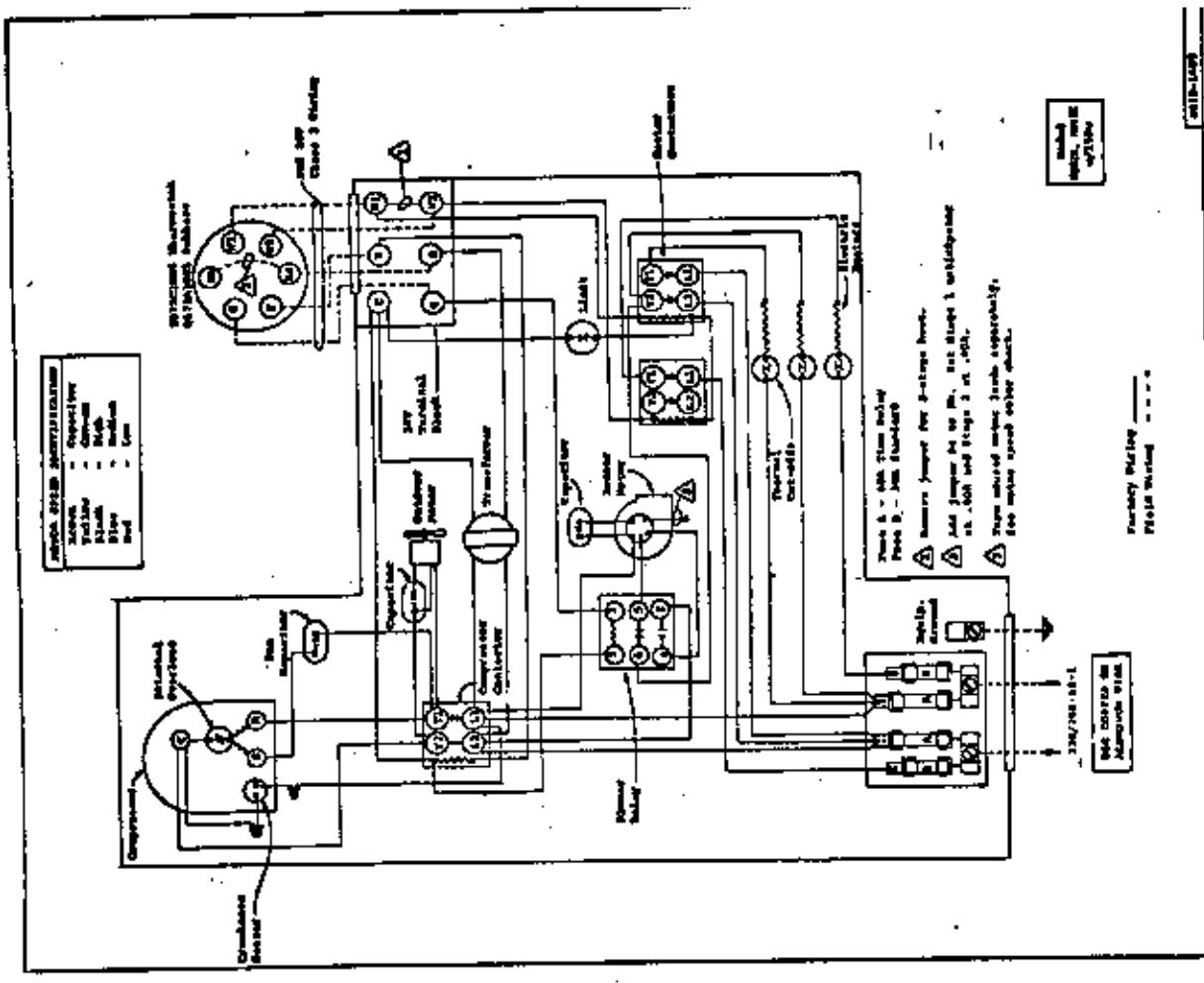
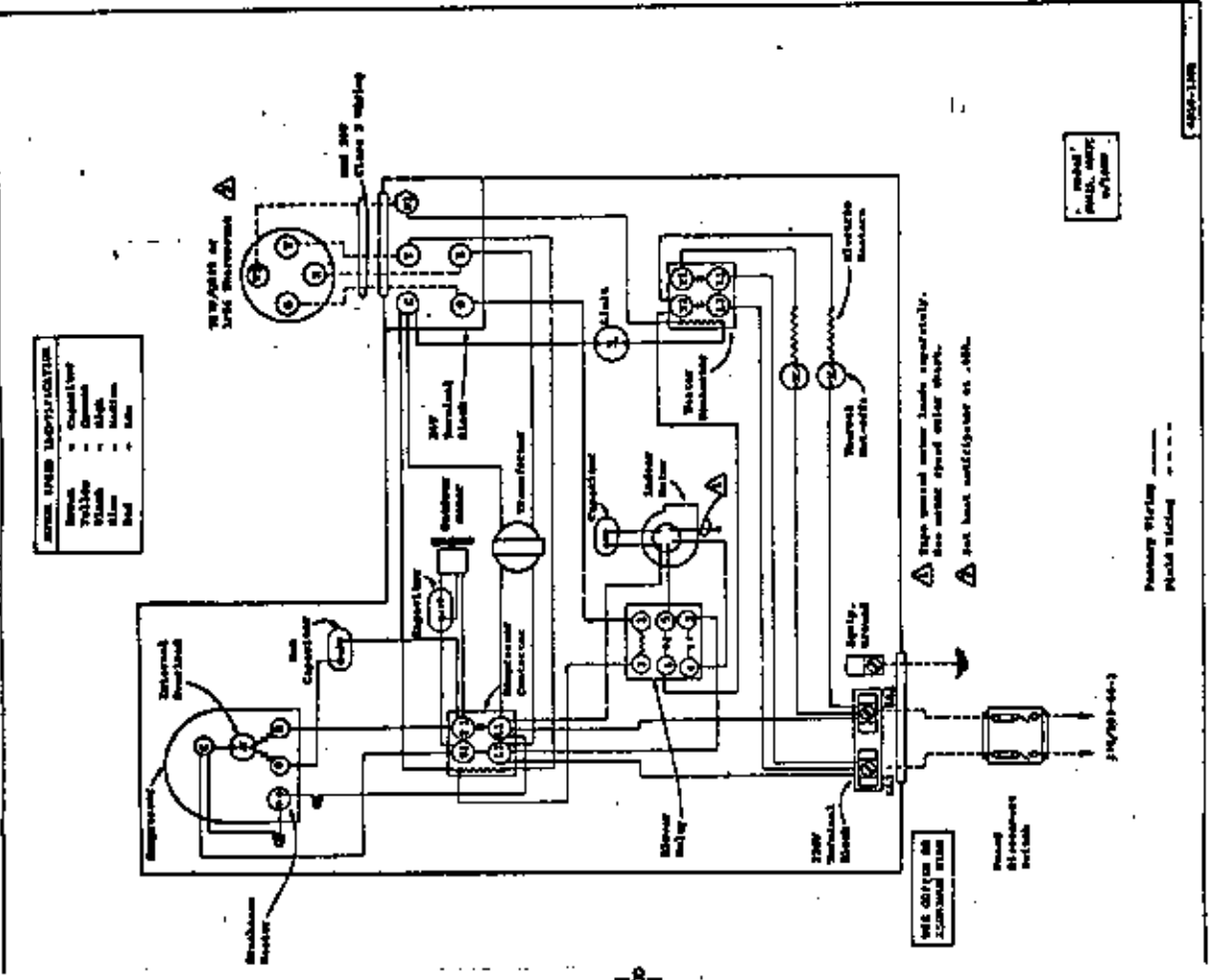
Pressure Rating  
 Scale Rating

982-133 Rev. 2











**PARTS LIST  
SINGLE PACKAGE AIR CONDITIONERS**

PART NO.	DESCRIPTION	MESA	MUGB	MUAC
5152-018	Blower Housing 10-8	X	X	X
8552-032	Blower Wheel D010-8A	X	X	X
8552-062	Capacitor 35/370V	X	X	X
8552-028	Capacitor 35/440V	X	X	X
8552-010	Capacitor 40/440V	X	X	X
8552-019	Capacitor 57/420V	X	X	X
8442-041	Capacitor 25/15-440V	(3)	(3)	(3)
5811-013	Capillary Tube	X	X	X
5811-009	Capillary Tube	X	X	X
8000-024	Compressor H20A323AB	X	X	X
8000-024	Compressor H20B403AB	X	X	X
8000-073	Compressor GRLT-0330-PPV-270	X	X	X
5051-001	Condenser Coil	X	X	X
5051-016	Condenser Coil	X	X	X
7051-001	Condenser Grille	X	X	X
8401-007	Contact - Comp. 25A	X	X	X
8401-003	Contact - Comp. 30A	X	X	X
8301-008	Contact - Heater 20A	X	X	X
5080-015	Evaporator Coil	X	X	X
5080-008	Evaporator Coil	X	X	X
5151-001	Fan Blade TF1835	X	X	X
7051-006	Fan Guard	X	X	X
8614-007	Fuse - Heater 60A	X	X	X
8614-022	Fuse - Comp. 60A	X	X	X
8614-006	Fuse - Heater 30A	X	X	X
8614-017	Fuse Block 150W	X	X	X
8614-013	Fuse Block 20W	X	X	X
8604-024	Heat Strip 50W	X	X	X
8604-023	Heat Strip 100W	X	X	X
8604-025	Heat Strip 150W	X	X	X
8402-011	Limit Switch 140° 1.5	X	X	X
8105-010	Motor - Blower 1/3 hp	X	X	X
8103-007	Motor - Fan 1/5 hp	X	X	X
8200-003	Motor Mount - Blower	X	X	X
8200-019	Motor Mount - Fan	X	X	X
5451-011	Motor Mounting Parts - Blower	X	X	X
5451-009	Motor Mounting Parts - Fan	X	X	X
5153-022	Rain Shield	X	X	X
8201-014	Relay - Blower	X	X	X
5210-003	Strainer	X	X	X
8607-001	Terminal Block 230V	X	X	X
8402-030	Thermal Cut-off	X	X	X
8407-007	Transformer	X	X	X
8501-006	Terminal Block	X	X	X

\*Please order by model number.  
Minimum Ret Billing \$15.00. Supersedes all previous lists.  
Subject to change without notice. F.O.B. Bryan, Ohio.

