Manual 2100-027B

MODELS
MH30 and MH36

PACKAGE HEAT PUMPS

INSTALLATION INSTRUCTIONS

FOR RESIDENTIAL COMMERCIAL,
OR MOBILE HOME
HEATING / COOLING APPLICATIONS

BARD MANUFACTURING COMPANY
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(419) 636-1194

SPECIFICATIONS

MODEL	MH30	MH36
Cooling Capacity BTUH	28,800	34,800
Hi-Temp Heating BTUH @ 47°†	30,000	37,200
Electrical — Less Kw (V-Ph @ 60 Hz)	**230-1**	**230/208-1**
Operating Voltage Range	207-253	197-253
Minimum Circuit Ampacity	22	31
**Field Wire Supply	12	8
*Max. Fuse or Circuit Breaker	30	50
Total Unit Amps	18	25
Compressor		
Volts	230/208	230/208
Rated Load Amps	14	21
Lock Rotor Amps	68	110
Fan Motor and Condenser		
Fan Motor — HP/RPM	1/5/1075	1/5/1075
Fan Motor — Amps	1.5	1.5
Fan Dia. — CFM	18"/2100	18"/2100
Face Area Sq. Ft./Rows/Fins per inch	5.04/3/14	5.04/3/14
Motor and Evaporator		
Blower Motor — HP/RPM	1/3/1075	1/5/1075
Blower Motor — Amps	2.5	2.5
CFM Cooling w/Filter (Rated)	1100	1100
Face Area Sq. Ft./Rows/Fins per inch	3.21/3/14	3.21/3/14
Connections (Inches)		
Supply Air Duct Diameter	12	12
Return Air Duct Diameter	14	14
Refrigerant 22 (oz)	83	77
Shipping Weight (lbs)	370	370

*Max. Time Delay Fuse or HACR Type Circuit Breaker.
**60°C Copper wire size, basic unit only. See Electrical Data for models with electric heat.
†For additional heating capacity, add Kw from Table 2. Also see electrical data table.

ELECTRIC HEAT TABLE NO. 2

MODEL	240V BTUH	240V AMPS
5KW	17,065	20.8
10KW	34,130	41.7
15KW	51,195	62.5
20KW	68,260	83.3

IMPORTANT: The AMP values listed in this Table No. 2 are for electric heating elements only.

INDOOR BLOWER PERFORMANCE

E.S.P.†† In H_2O	CFM — Dry Coil Models MH30, MH36** High	Med	Low
.00	1370	1200	1075
.05	1340	1180	1060
.10	1315	1160	1050
.15	1290	1140	1035
.20	1260	1120	1020
.25	1230	1100	1005†
.30	1200	1075	
.35	1175	1055	
.40	1150	1035	
.45	1125	1000†	
*.50	1100		
.55	1060		
.60	1025†		

*Rated CFM 1100.
**CFM with 20KW heaters installed.
†Maximum E.S.P. on heating.
††w/20x20 Permanent Filter & Return Air Filter Box Installed

ELECTRIC HEAT TABLE NO. 1

Model	Volts/PH	Heater KW @ 240V	Max Unit Amps	Heater Amps	Internal Fuses Ckt. A	Req'd Max. External Fuses or Ckt. Breaker **Ckt. A	Min. Circuit Ampacity Ckt. A	Power Circuit Wiring *Ckt. A	Ground Wire Size *Ckt. A
MH30	230/1	0	18.0			30	22	12	12
		5	38.8	20.8		50	48	6	10
		10†	59.6	41.6	60/30	80	74	3	8
		15†	65.0	62.5	60/60	90	82	2	8
		20†	85.7	83.2	60/60	110	108	1	6
MH36	230/208-1	0	25.0			50	31	8	10
		5	45.8	20.8		60	57	4	10
		10	66.6	41.6	60/30	90	83	2	8
		15†	66.6	62.5	60/60	90	83	2	8
		20†	85.7	83.2	60/60	110	108	1	6

*Based upon the use of 60°C copper wiring material.
**Must be time delay type fuse or HACR Type Circuit Breaker for 60A or smaller and standard circuit breaker for larger than 60A.
†Maximum of 10Kw operates with heat pump, extra 5 or 10Kw operates during emergency heat operation.

HEATING APPLICATION DATA

MODEL		OUTDOOR TEMPERATURE °F* 0°	5°	10°	15°	17°	20°	25°	30°	35°	40°	45°	47°	50°	55°	60°	65°
MH30	BTUH	10,500	12,000	13,300	14,700	15,200	16,200	17,500	19,000	20,400	24,500	28,400	30,000	31,500	33,700	36,000	38,200
	Watts	2,480	2,550	2,630	2,710	2,750	2,790	2,880	2,980	3,080	3,200	3,350	3,420	3,500	3,680	3,870	4,100
	COP	1.24	1.37	1.48	1.59	1.60	1.70	1.78	1.87	1.94	2.24	2.48	2.55	2.63	2.68	2.72	2.73
MH36	BTUH	13,600	15,500	17,500	19,500	20,200	21,400	23,300	25,200	27,100	31,400	35,500	37,200	38,800	41,600	44,500	47,500
	Watts	3,000	3,180	3,350	3,520	3,580	3,680	3,840	3,980	4,120	4,250	4,360	4,400	4,470	4,570	4,660	4,740
	COP	1.32	1.43	1.53	1.62	1.65	1.70	1.78	1.86	1.93	2.16	2.39	2.50	2.54	2.67	2.80	2.94

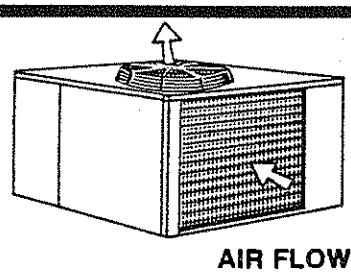
70°F DB Indoor Return Air at Rated CFM

NOMINAL DIMENSIONS

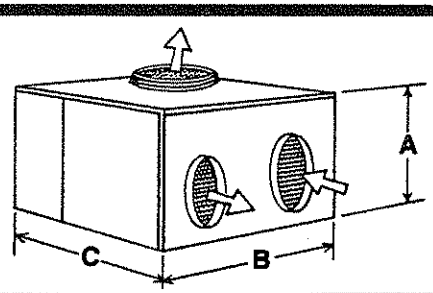
Models	A	B	C
MH30 MH36	24⅛"	46¾"	35⅜"

CERTIFIED

LISTED



AIR FLOW



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.

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 underboard 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 fiberboard 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, axles, 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 NUMBBR 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.

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. 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.

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.

WIRING - MAIN POWER

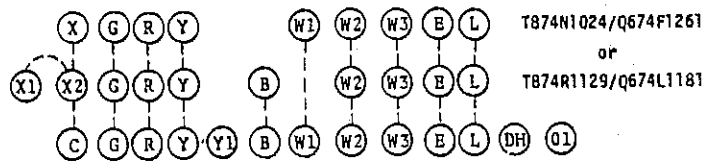
Refer to the unit rating plate for wire sizing information and maximum fuse or "HACR Type" circuit breaker size. Each outdoor unit is marked with a "Minimum Circuit Ampacity." This means that the field wiring used must be sized to carry that amount of current. Depending on the installed Kw of electric heat, there may be two field power circuits required. If this is the case, the unit serial plate will so indicate. 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 "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.

WIRING - 24V CONTROL CIRCUIT

Nine (9) wires should be run from thermostat subbase to the 24V terminal board in the unit. A nine conductor, 18 gauge copper, color-coded thermostat cable is recommended. The connection points are shown on most of the wiring diagrams and are also shown below.



Unit 24V Terminal Board

IMPORTANT NOTE: Only the thermostat and subbase combinations as shown above will work with this equipment. The stat and subbase MUST be matched, and correct operation can be assured only by proper selection and application of these parts.

COMPRESSOR MALFUNCTION RELAY (Single Phase Models Only)

Actuation of the green "check" lamp is accomplished by a voltage type relay which is factory installed. Any condition such as loss of charge, defective capacitor, defective contactor, etc., that will prevent compressor from operating will cause green lamp to activate. This is a signal to the operator of the equipment to place system in emergency heat position.

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.

SEQUENCE OF OPERATION

Cooling - Circuit R-Y makes at thermostat pulling in compressor contactor starting the compressor and outdoor motor. The G (indoor motor) circuit is automatically completed on any call for cooling operation, or can be energized by manual fan switch on subbase for constant air circulation.

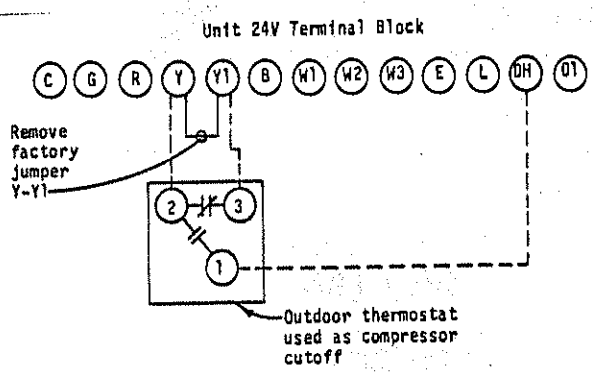
Heating - A 24V solenoid coil on reversing valve controls heating cycle operation. Two thermostat options, one allowing "Auto" changeover from cycle to cycle and the other constantly energizing solenoid coil during heating season and thus eliminating pressure equalization noise except during defrost, are to be used. On "Auto" option, a circuit is completed from R-W1 and R-Y on each heating "on" cycle, energizing reversing valve solenoid and pulling in compressor contactor starting compressor and outdoor motor. R-G also make starting indoor blower motor. Heat pump heating cycle now in operation. The second option has no "Auto" changeover position, but instead energizes the reversing valve solenoid constantly whenever the system switch on subbase is placed in "Heat" position, the "B" terminal being constantly energized from R. A thermostat demand for heat completes R-Y circuit, pulling in compressor contactor starting compressor and outdoor motor. R-G also make starting indoor blower motor.

COMPRESSOR CUT-OFF THERMOSTAT AND OUTDOOR THERMOSTATS

Heat pump compressor operation at outdoor temperatures below 0°F are neither desirable nor advantageous in terms of efficiency. Since most equipment at time of manufacture is not designated for any specific destination of the country, and most of the equipment is installed in areas not approaching the lower outdoor temperature range, the compressor cut-offs are not factory installed.

NOTE: Maximum amount of electric heat which can be operated in conjunction with the compressor during heating mode is 10Kw on 1 phase and 12Kw on 3 phase. The balance of the electric heat can be operated only during compressor cut off or emergency heat mode.

COMPRESSOR CUT-OFF AND OUTDOOR THERMOSTAT WIRING



HEAT ANTICIPATION

Both of the thermostats shown below have a fixed heat anticipator for stage 1 with no adjustment required. Stage 2 has an adjustable anticipator for the W2 connection and fixed for the W3 connection. Both the W2 and W3 circuits are controlled by the stage 2 bulb. The only heat anticipator that needs to be checked is stage 2 and it should be set to match the load carried by the W2 circuit. The normal factory wiring provides for only one electric heat contactor to be controlled by W2, and the anticipator should be set at .40A. If special field wiring is done, it is best to actually measure the load but a good rule is .40A for <u>each</u> heat contactor controlled by W2.

WALL THERMOSTAT AND SUBBASE COMBINATIONS

Group	Thermostat	Subbase	Predominant Feature
A	8403-017 (T874R1129)	8404-009 (Q674L1181)	Heat or Cool No Auto (1)
B	8403-018 (T874N1024)	8404-010 (Q674F1261)	Automatic Heat-Cool Changeover Position (2)

(1) No automatic changeover position—must manually place in heat or cool. Reversing valve remains energized at all times system switch is in heat position (except during defrost cycle). No pressure equalization noise when thermostat is satisfied on either heating or cooling.

(2) Allows thermostat to control both heating and cooling operation when set in "AUTO" position. Reversing valve de-energizes at end of each "ON" heating cycle.

<u>IMPORTANT NOTE</u>: Both thermostat and subbase combinations shown above incorporate the following features; Man-Auto fan switch, Off-Heat-Cool-Em. Heat Switch, and two (2) indicator lamps—one for emergency heat and one for compressor malfunction.

THERMOSTAT INDICATOR LAMPS

The red lamp marked "EM.HT." comes on and stays on whenever the system switch is placed in the Em. Ht. position. The green lamp marked "check" will come on if there is any problem that prevents the compressor from running when it is supposed to be.

EMERGENCY HEAT POSITION

The operator of the equipment must manually place the system switch in this position. This is done when there is a known problem with the outdoor section, or when the green "check" lamp comes on indicating a problem.

DEFROST CYCLE

The defrost cycle is controlled by time and temperature. The 240 volt timer motor runs all the time the compressor is in operation. When the outdoor temperature is in the lower 40°F temperature range or colder, the outdoor coil temperature is 32°F or below. This temperature is sensed by the defrost thermostat mounted near the bottom of the outdoor coil on a return bend. The defrost thermostat closes at approximately 32°F. Every 60 (or 30) minutes that the compressor is running, contacts 3-5 close for 7 minutes, with contacts 3-4 closed for the first 40 seconds of that 7 minutes. If the defrost thermostat is closed, the defrost relay energizes and places the system in defrost mode. An interlocking circuit is created with timer contact 3-5 and defrost relay contact 7-9 in series.

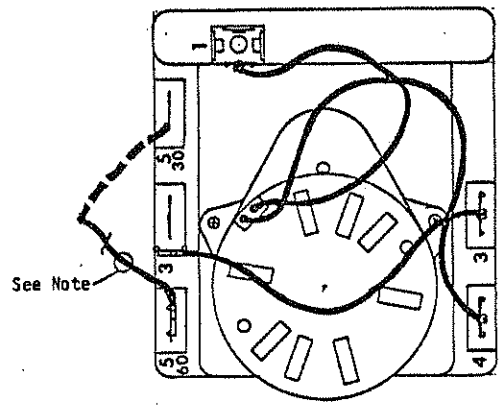
During the defrost mode, the refrigerant cycle switches back to the cooling cycle, the outdoor motor stops, electric heaters are energized, and hot gas passing through the outdoor coil melts any accumulated frost. When the temperature rises to approximately 57°F, the defrost thermostat opens, de-energizing the defrost relay and returning the system to heating operation.

If some abnormal or temporary condition such as a high wind causes the heat pump to have a prolonged defrost cycle, contacts 3-5 of the defrost timer will open after 7 minutes and restore the system to heating operations automatically.

There are two time settings on the defrost timer—30 minutes and 60 minutes. Most models are shipped wired on the 60 minute setting for greatest operating economy. If special circumstances require a change to the shorter time, remove wire connected to terminal 5/60 and reconnect to terminal 5/30.

There is a manual advance knob located on the timer. This can be used to advance timer to contact closure point if it is desired to check out defrost cycle operation, without waiting for time to elapse.

DEFROST TIMER WIRING



NOTE: All models are connected to 5/60 terminal (60 minute). Any model can be changed from 60 minutes to 30 minutes by unplugging from 5/60 terminal and reconnecting to 5/30 terminal as shown by dotted line.

SERVICE HINTS

1. Caution homeowner to maintain clean air filters at all times. Also, not to needlessly close off supply and return air registers. This reduces air flow through the system, which shortens equipment service life as well as increasing operating costs.

2. Switching to heating cycle at 75°F or higher outside temperature may cause a nuisance trip of the manual reset high pressure switch.

3. The heat pump wall thermostats perform multiple functions. Be sure that all function switches are correctly set for the desired operating mode before trying to diagnose any reported service problems.

4. Check all power fuses or circuit breakers to be sure that they are the correct rating.

5. Periodic cleaning of the outdoor coil to permit full and unrestricted airflow circulation is essential.

IMPORTANT INSTALLER NOTES:

1. For improved start-up performance wash the indoor coil with a dishwasher detergent.

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
MH30	1100	73 - 75	77 - 79
MH36	1100	69 - 71	74 - 76

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.

RATED CFM AND E.S.P. (Wet Coil—Cooling)			
Model	Rated CFM	Rated E.S.P.	Recommended Airflow Range
MH30	1100	.50	1025 - 1260
MH36	1100	.50	1025 - 1260

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.

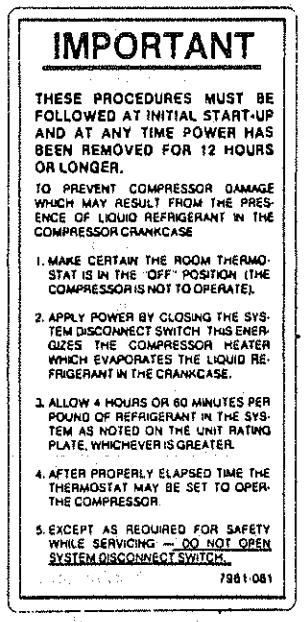
Some three phase units utilize a wraparound type of crankcase heater that warms the compressor oil from the outside.

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.

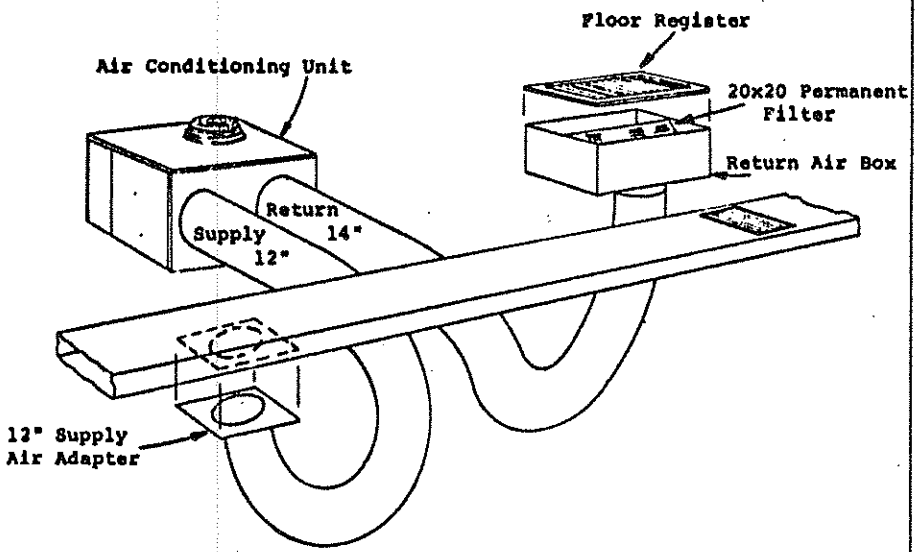
Some form of crankcase heat is essential to prevent liquid refrigerant from migrating to the compressor, causing oil pump out on compressor start-up and possible valve failure due to compressing a liquid.

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.



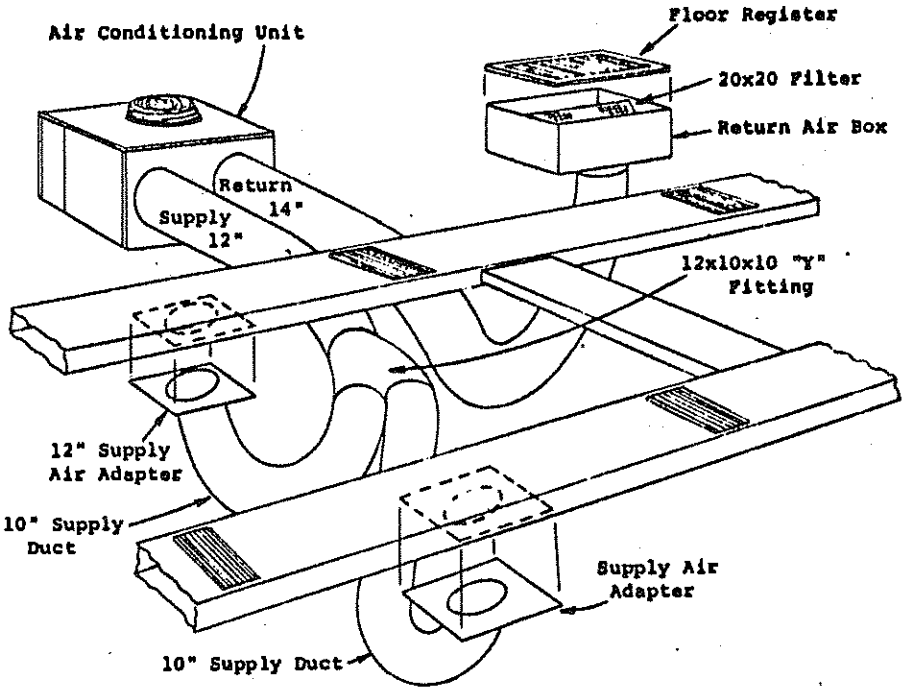
SINGLE SUPPLY DUCT SYSTEM



Qty. 1 7001-014 Fitting Pack
- (1) 12½ x 20 x 10½ Return Air Box
- (1) 20 x 20 Permanent Filter
- (1) 12 x 20 Floor Register
- (1) 12" Supply Air Adapter

Qty. 1 7001-018 Flex Duct Pack
- (1) 14" Dia. x 7' Insulated Duct
- (1) 12" Dia. x 7' Insulated Duct

DOUBLE SUPPLY DUCT SYSTEM



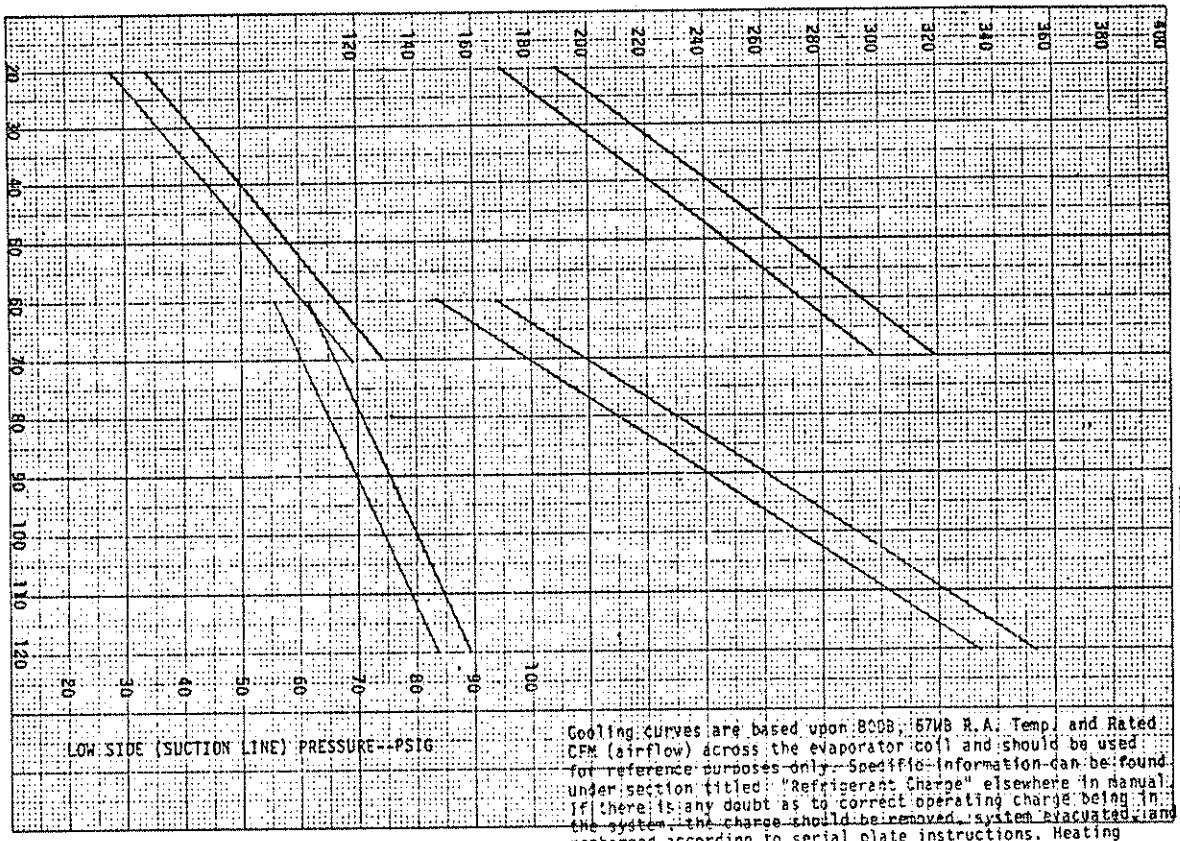
Qty. 1 7001-014 Fitting Pack
- (1) 12½ x 20 x 10½ Return Air Box
- (1) 20 x 20 Permanent Filter
- (1) 12 x 20 Floor Register
- (1) 12" Supply Air Adapter

Qty. 1 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

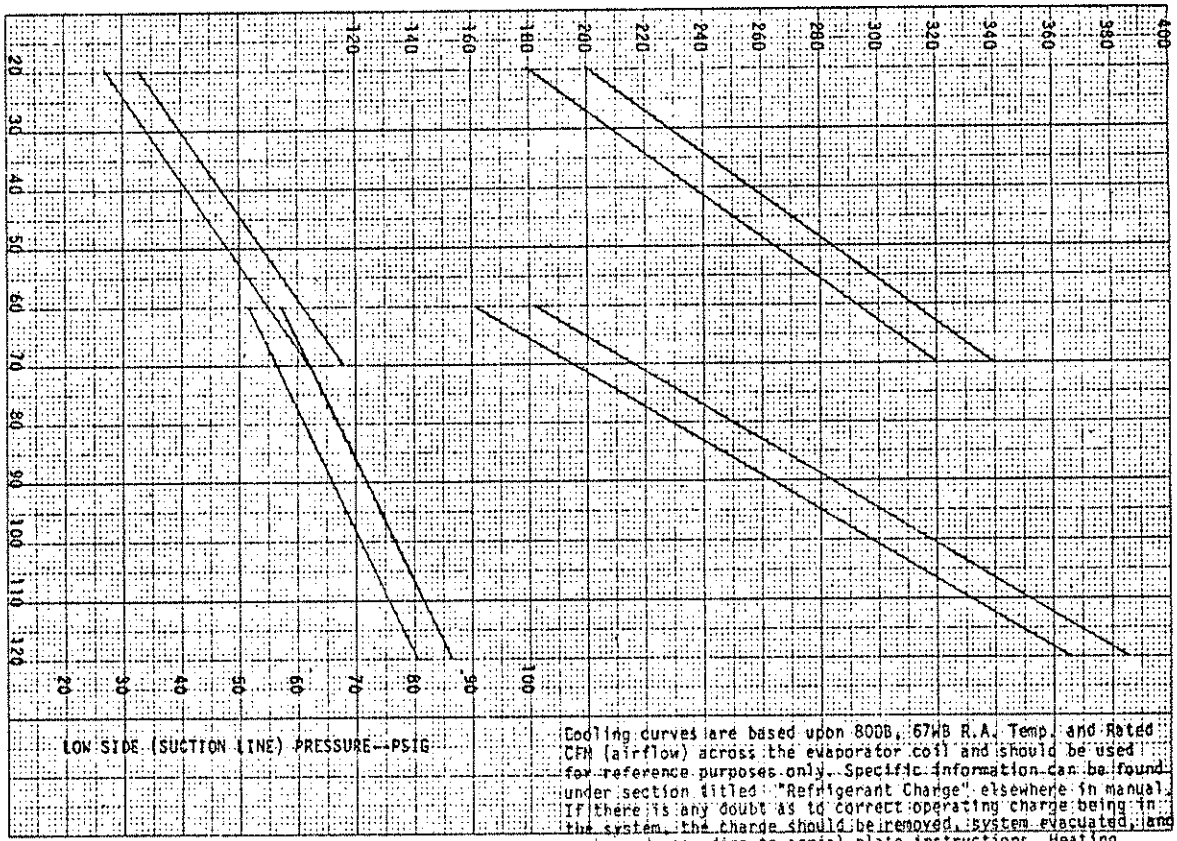
HIGH SIDE (DISCHARGE LINE) PRESSURE -- PSIG



PACKAGED HEAT PUMP MODEL MH30 982

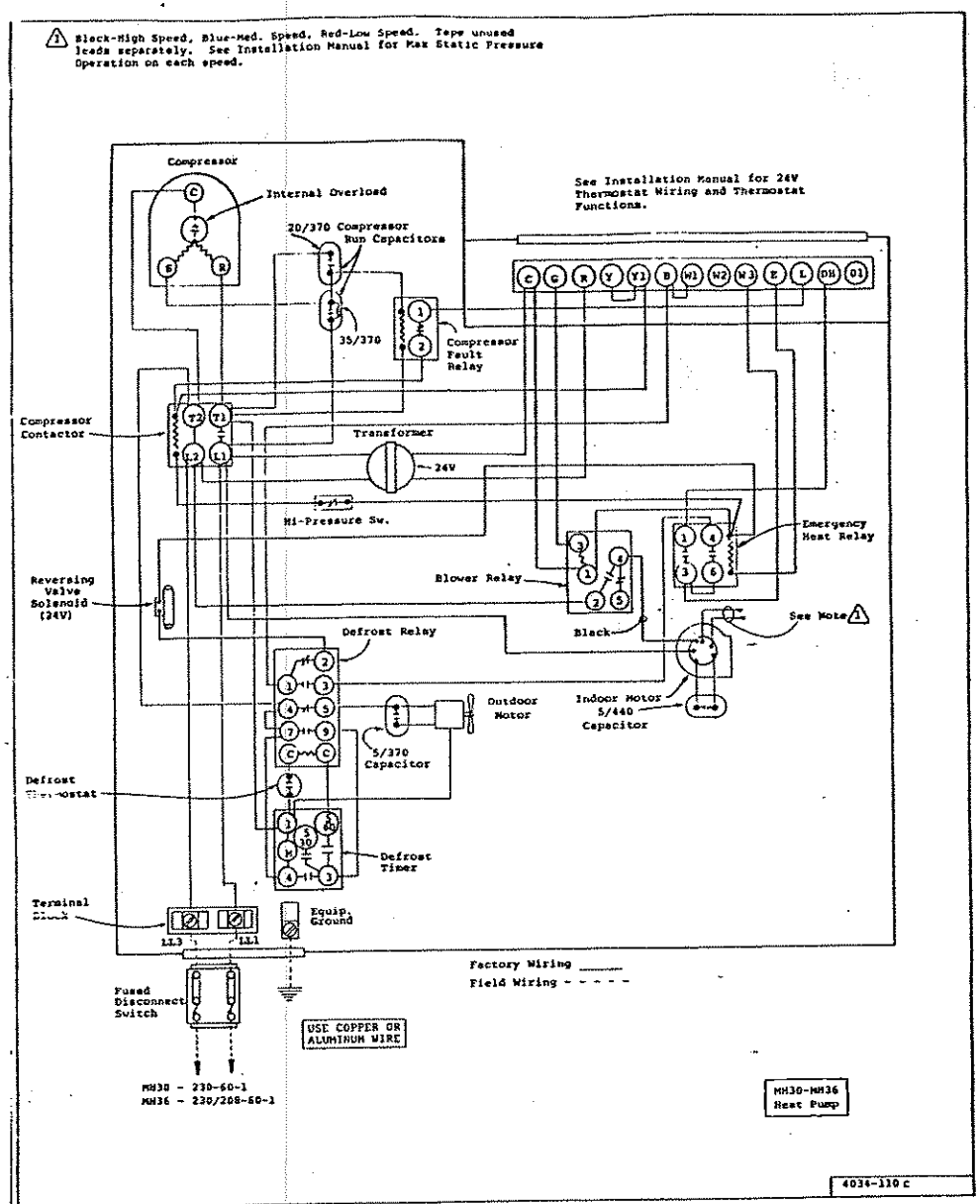
Cooling curves are based upon 80DB, 67WB R.A. Temp. and Rated CFM (airflow) across the evaporator coil and should be used for reference purposes only. Specific information can be found under section titled: "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged according to serial plate instructions. Heating curves are based upon 70DB R.A. Temp.

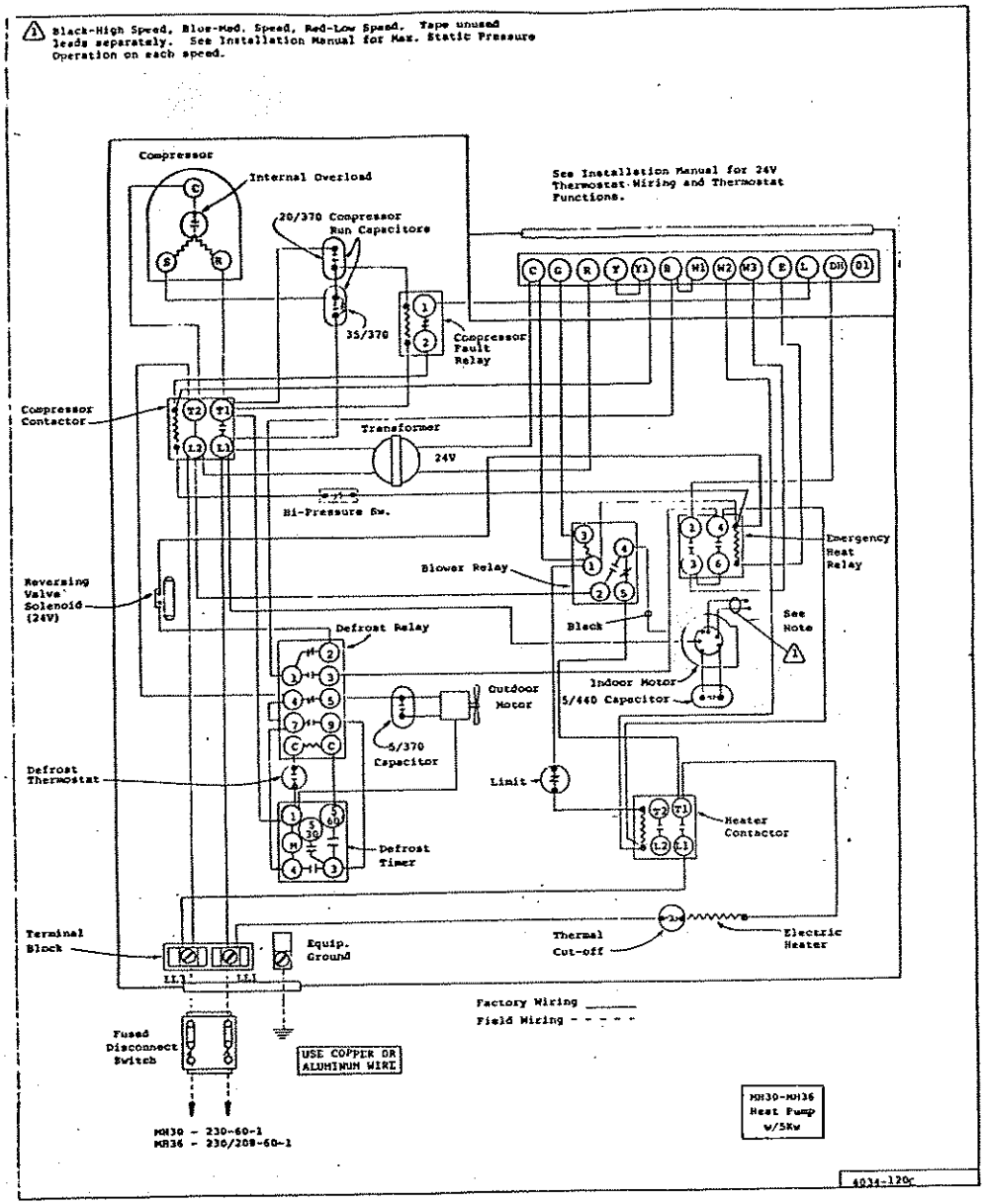
HIGH SIDE (DISCHARGE LINE) PRESSURE -- PSIG

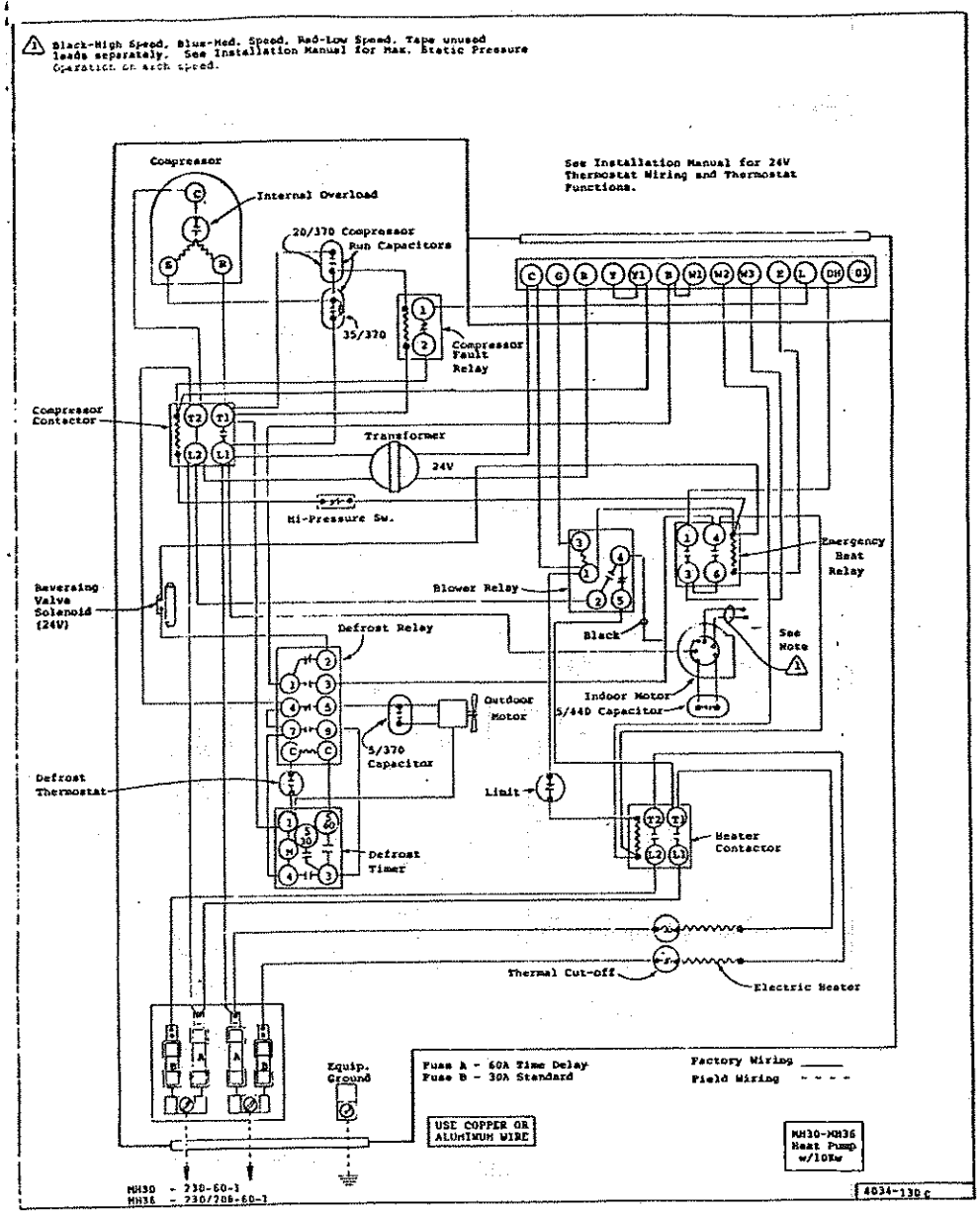


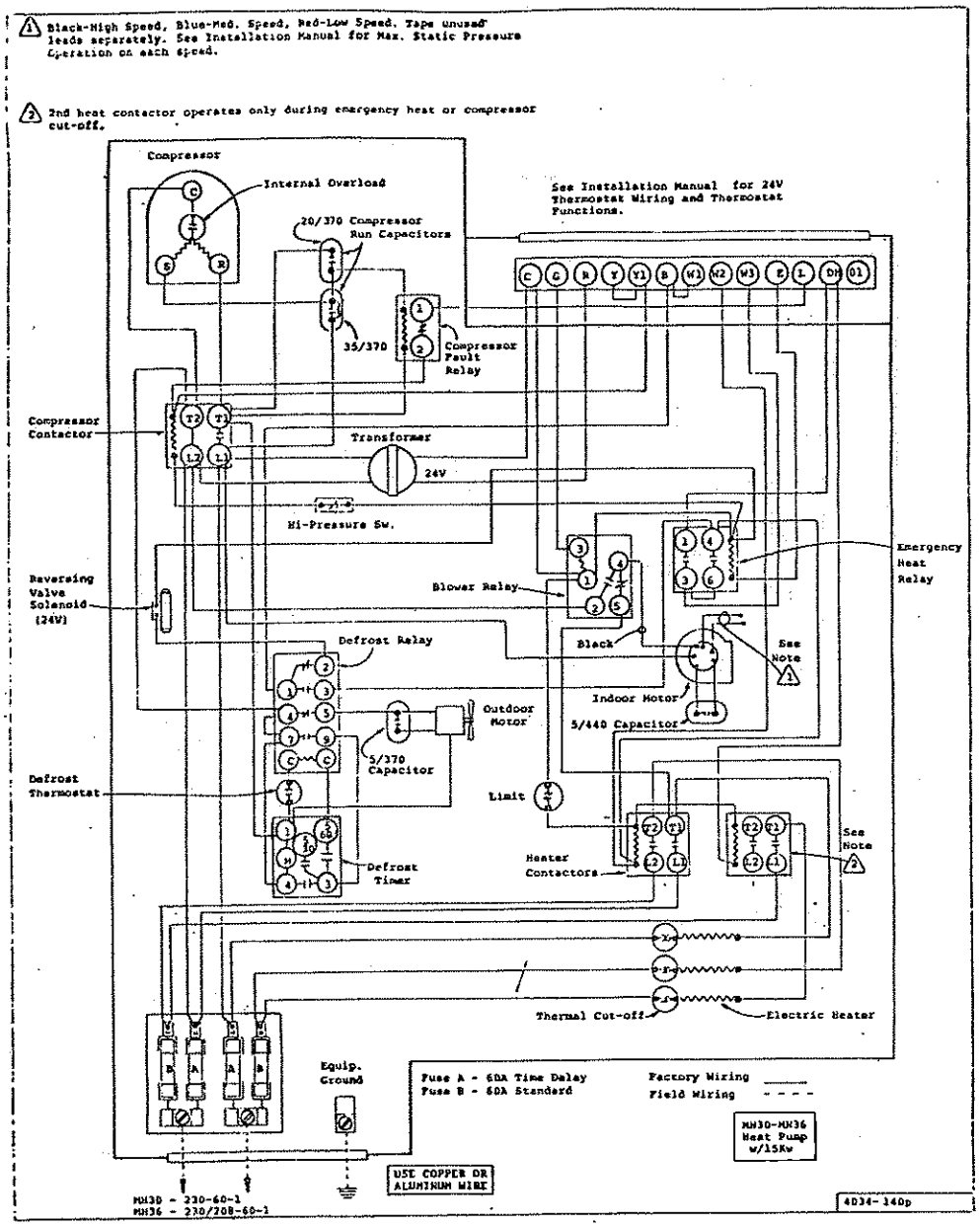
PACKAGED HEAT PUMP MODEL MH36 982

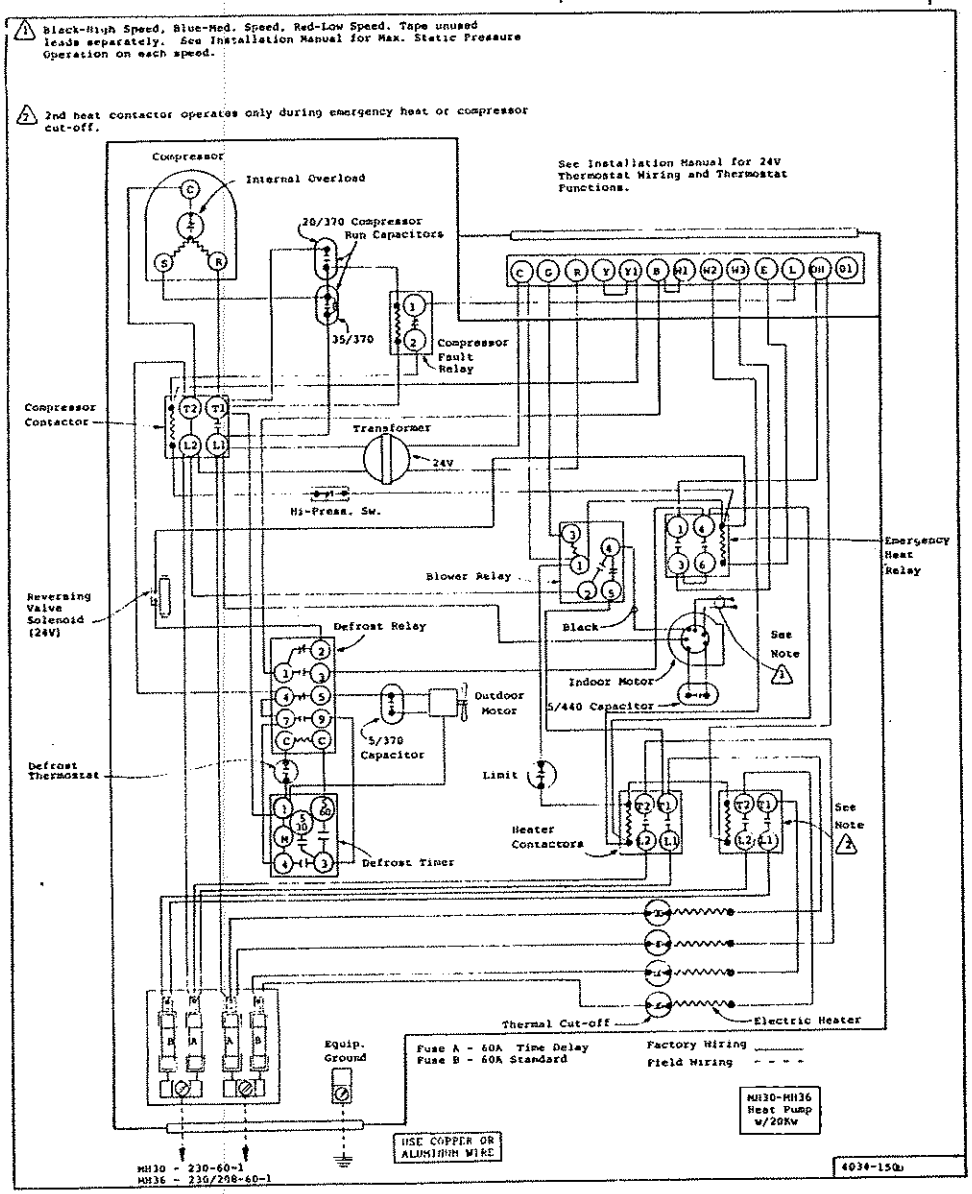
Cooling curves are based upon 80DB, 67WB R.A. Temp. and Rated CFM (airflow) across the evaporator coil and should be used for reference purposes only. Specific information can be found under section titled: "Refrigerant Charge" elsewhere in manual. If there is any doubt as to correct operating charge being in the system, the charge should be removed, system evacuated, and recharged according to serial plate instructions. Heating curves are based upon 70DB R.A. Temp.


1 Black-High Speed, Blue-Med. Speed, Red-Low Speed. Tape unused leads separately. See Installation Manual for Max Static Pressure Operation on each speed.
Compressor
Internal Overload
20/370 Compressor Run Capacitors
35/370
Compressor Fault Relay
See Installation Manual for 24V Thermostat Wiring and Thermostat Functions.
C G R Y Y1 B W1 W2 W3 E L DH O1
Compressor Contactor
Transformer
24V
Hi-Pressure Sw.
Reversing Valve Solenoid (24V)
Blower Relay
Emergency Heat Relay
Black
See Note 1
Defrost Relay
Outdoor Motor
Indoor Motor 5/440 Capacitor
5/370 Capacitor
Defrost Thermostat
Defrost Timer
Terminal Block
L2.3
L1.1
Equip. Ground
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
Factory Wiring
Field Wiring - - - - -
MH30 - 230-60-1
MH36 - 230/208-60-1
MH30-MH36 Heat Pump
4034-110 C


1 Black-High Speed, Blue-Med. Speed, Red-Low Speed. Tape unused leads separately. See Installation Manual for Max. Static Pressure Operation on each speed.
Compressor
Internal Overload
20/370 Compressor Run Capacitors
35/370
Compressor Fault Relay
See Installation Manual for 24V Thermostat Wiring and Thermostat Functions.
C G R Y Y1 B W1 W2 W3 E L DH O1
Compressor Contactor
Transformer
24V
Hi-Pressure Sw.
Reversing Valve Solenoid (24V)
Blower Relay
Emergency Heat Relay
Black
See Note 1
Defrost Relay
Outdoor Motor
Indoor Motor 5/440 Capacitor
5/370 Capacitor
Defrost Thermostat
Defrost Timer
Limit
Heater Contactor
Terminal Block
L2.3
L1.1
Equip. Ground
Thermal Cut-off
Electric Heater
Fused Disconnect Switch
USE COPPER OR ALUMINUM WIRE
Factory Wiring
Field Wiring - - - - -
MH30 - 230-60-1
MH36 - 230/208-60-1
MH30-MH36 Heat Pump w/5Kw
4034-120C


1 Black-High Speed, Blue-Med. Speed, Red-Low Speed. Tape unused leads separately. See Installation Manual for Max. Static Pressure Operation on each speed.
Compressor
Internal Overload
20/370 Compressor Run Capacitors
35/370
Compressor Fault Relay
See Installation Manual for 24V Thermostat Wiring and Thermostat Functions.
C G R Y Y1 B W1 W2 W3 E L DH O1
Compressor Contactor
Transformer
24V
Hi-Pressure Sw.
Reversing Valve Solenoid (24V)
Blower Relay
Emergency Heat Relay
Defrost Relay
Black
See Note 1
Indoor Motor 5/440 Capacitor
Outdoor Motor
5/370 Capacitor
Defrost Thermostat
Limit
Heater Contactor
Defrost Timer
Thermal Cut-off
Electric Heater
Equip. Ground
Fuse A - 60A Time Delay
Fuse B - 30A Standard
Factory Wiring
Field Wiring
USE COPPER OR ALUMINUM WIRE
MH30-MH36 Heat Pump w/10Kw
MH30 - 230-60-1
MH36 - 230/208-60-1
4D34-130c


1 Black-High Speed, Blue-Med. Speed, Red-Low Speed. Tape unused leads separately. See Installation Manual for Max. Static Pressure Operation on each speed.
2 2nd heat contactor operates only during emergency heat or compressor cut-off.
Compressor
Internal Overload
20/370 Compressor Run Capacitors
35/370
Compressor Fault Relay
See Installation Manual for 24V Thermostat Wiring and Thermostat Functions.
C G R Y Y1 B W1 W2 W3 E L DH O1
Compressor Contactor
Transformer
24V
Hi-Pressure Sw.
Reversing Valve Solenoid (24V)
Blower Relay
Emergency Heat Relay
Defrost Relay
Black
See Note 1
Indoor Motor 5/440 Capacitor
Outdoor Motor
5/370 Capacitor
Defrost Thermostat
Limit
Heater Contactors
See Note 2
Defrost Timer
Thermal Cut-off
Electric Heater
Equip. Ground
Fuse A - 60A Time Delay
Fuse B - 60A Standard
Factory Wiring
Field Wiring
USE COPPER OR ALUMINUM WIRE
MH30-MH36 Heat Pump w/15Kw
MH30 - 230-60-1
MH36 - 230/208-60-1
4D34-140p



PARTS LIST

Effective 5/11/81
Supersedes 1/29/81

PART NO.	DESCRIPTION	MH30	MH36
5202-003	Accumulator	x	
5202-004	Accumulator		x
*	Blower Housing 10-8	x	x
5152-013	Blower Wheel DD10-8A	x	x
8552-032	Capacitor 35/370V	x	x
8552-033	Capacitor 20/370V	x	x
8552-019	Capacitor 5/440V	x	x
8552-002	Capacitor 5/370V	x	x
5811-010	Capillary Tube - Cool		(3)
5811-021	Capillary Tube - Heat	x	x
5651-006	Check Valve	(2)	(2)
5051-003	Condenser Coil	x	x
8000-042	Compressor H2EA293AB	x	
8000-045	Compressor H2EA413AB		x
8401-007	Contactor 1P25A	x	
8401-003	Contactor 1P30A		x
8401-006	Contactor 2P20	x	x
8408-004	Defrost Mounting Plate	x	x
8408-002	Defrost Thermostat	x	x
5060-015	Evaporator Coil	x	x
5151-001	Fan Blade TF1839 ccw	x	x
7051-008	Fan Guard	x	x
8614-006	Fuse OT30	x	x
8614-007	Fuse OT60	x	x
8614-022	Fuse TR60	x	x
8614-017	Fuse Block 10Kw	x	x
8614-018	Fuse Block 15-20Kw	x	x
8604-023	Heat Strip 5Kw	x	x
8604-024	Heat Strip 10Kw	x	x
8604-025	Heat Strip 15Kw	x	x
8406-011	Hi Pressure Switch	x	x
8402-011	Limit Switch 140°-125°	x	x
8105-010	Motor - Blower 1/3 hp	x	x
8103-007	Motor - Fan 1/5 hp	x	x
8200-003	Motor Mount - Blower	x	x
8200-019	Motor Mount - Fan	x	x
5451-011	Motor Mounting Parts	x	x
5451-009	Motor Mounting Parts (Fan)	x	x
8201-009	Relay - Blower	x	x
8201-031	Relay - Compressor Fault	x	
8201-024	Relay - Compressor Fault		x
8201-023	Relay - Defrost	x	x
8201-013	Relay - Emergency Heat	x	x
5650-005	Reversing Valve	x	
5650-006	Reversing Valve		x
5650-008	Solenoid Coil	x	x
5210-003	Strainer	x	x
5210-002	Strainer	x	x
8607-001	Terminal Block	x	x
8607-010	Terminal Board	x	x
8402-030	Thermal Cut-off	x	x
8612-011	Timer	x	x
8407-015	Transformer 55VA	x	x
5153-022	Rain Shield	x	x
7051-001	Condenser Grille	x	x
5811-005	Capillary Tube - Cool	(3)	