OWNER'S MANUAL

HEAT PUMP AND AIR CONDITIONER

THIS MANUAL BELONGS TO:

Name _____

Street _____

City _____ State _____ Zip _____

(See Back of Booklet for Equipment Description)

DO NOT REMOVE THIS MANUAL FROM BUILDING

BARD MANUFACTURING COMPANY

P. O. Box 607 - Bryan, Ohio 43506 - (419) 636-1194

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GENERAL INFORMATION

These instructions have been prepared to acquaint you with the unit's care and operation in order that you may enjoy many years of comfort from your new air conditioning or heat pump system. It will give you all the comforts of complete air conditioning — temperature control, dehumidification, circulation, and filtering — you have complete control, yet the unit is as automatic as you desire.

In this pamphlet we have put together the basic principles of our Heat Pumps and Air Conditioners that we feel each owner should know. It also contains hints which might help you to save money in the future.

These instructions are important. . .and there are not many of them. Your unit is a modern air-cooled design which combines simplicity with maximum trouble-free performance. But, like changing the oil in your car. . . or not racing the engine when it's cold. . .there are a few do's and don'ts for air conditioners and heat pumps as well. So please take a few minutes now and familiarize yourself with the contents of this booklet and keep it handy for future reference.

GOOD AIR CONDITIONING PRACTICES

KEEP FILTERS CLEAN

This is **"your"** most important responsibility. A dirty, clogged filter reduces the efficiency of your system, causes erratic performance of controls and can result in damage to the motor, heating element, or to the compressor. **Replace or clean filter at the beginning of each season and thereafter as needed.** On new homes, check filter every week for four weeks to begin with. Sawdust and insulation may be unavoidably introduced into the duct during installation.

In all cases, inspect your filters at least once a month when the system is in constant operation — replace as needed with the same size and type as removed from the unit. Dirty filters **"choke"** the airflow to a point where the system cannot do an efficient job. The unit must then run longer to maintain the temperature you have set on the thermostat. This increases your operating costs.

(Note: Do not operate heat pump or air conditioner with the blower door removed, or the filter access door off.)

KEEP THE OUTDOOR COIL CLEAN

Have your dealer show you where the outdoor coil is on your air conditioner or heat pump. When the unit is cooling in the summer, this coil does the same job as your car radiator. . .it dissipates the heat which was absorbed by the cooling system. On heat pump models which provide heating in the winter, this outdoor coil absorbs heat from the outside air. Like your car radiator, this coil doesn't work as well when clogged with windblown leaves, papers or foreign debris. A periodic check will save money on operating costs!

Efficient operation of the heat pump depends on free circulation of air over the indoor and outdoor coils. At no time should anything be stacked against the sides of the outdoor unit nor should anything ever be draped over it, summer or winter. DO NOT plant flowers, vines or shubbery too near the unit. These will just as effectively block air flow as will stacking things against it. Do not worry about rain falling into the unit. . .it was designed and manufactured for outdoor use.

In areas of heavy snow accumulation snow should not be permitted to bank up against the sides of the outdoor unit. The most frequent cause of restricted outdoor coil airflow is the build-up of snow and ice resulting from severe weather conditions. **As soon as practical after such inclement weather, you should clear the snow and ice from the area around the unit and as much as possible from the wire grilles on the unit.**

KEEP WINDOWS AND DOORS CLOSED AS MUCH AS POSSIBLE

Normal air leakage through window sashes, door jambs and other points, will provide a sufficient rate of fresh air intake. When you leave doors and windows open, you increase the work load on your air conditioner or heat pump. This results in higher operating costs.

DURING THE SUMMER, USE YOUR WINDOWS AND SHADES TO KEEP OUT DIRECT SUNLIGHT

Why does a greenhouse stay "warm" during the winter? Because the glass construction allows the sun's rays to enter and heat the inside. The glass areas of your building are no different. Every bit of sunlight that enters, tends to increase the temperature and, thus, increase the work load on your unit during the cooling season.

A WORD ABOUT SUMMER HUMIDITY

"It isn't the heat. . . it's the humidity!" How often have you heard that statement? There is a lot of truth in it, so here are a few tips about the moisture in the air which causes that muggy, "close" feeling.

Your unit is designed to do more than cool the air. During the summer, it also removes excess moisture and keeps the humidity down to a comfortable level. It may surprise you to know that an air conditioner "works harder" when removing moisture than when simply cooling the air. Consequently, any steps you take to reduce the moisture load will mean money saved in operating costs. Rooms which have moisture-producing items... (examples are clothes dryers, steam tables, etc.) should be vented to the outside with exhaust fans when in use. This will prevent excess accumulation of moisture in other living spaces. . . moisture which your unit must remove when cooling your building.

BASIC OPERATING PRINCIPLES

COOLING — SUMMER OPERATION

(Air Conditioner and Heat Pump)

The cooling system operates similarly to your refrigerator. There are three main parts: (1) The evaporator coil where cold refrigerant absorbs heat from the air which circulates through the duct system in your home; (2) the condenser coil, outdoors, where the heat which was absorbed indoors is discharged from the refrigerant; and (3) the compressor which is a pump that moves the refrigerant through the system.

An air conditioner cannot cool a house off rapidly. It pulls the temperature down slowly. Therefore, do not turn the unit on and expect immediate action. It may take 3-4 hours to pull down a hot, moist house when the unit is first installed or anytime it is turned off for a long period of time.

HEAT PUMP — WINTER OPERATION

A heat pump is designed to heat and cool. The operation of your heat pump is entirely automatic. It is controlled by a thermostat which you set at the temperature most comfortable to you (68° - 70°). When the inside temperature drops below this setting, your thermostat senses this and turns on the system.

A heat pump acquires its heat from the outside air. At any time the outside temperature approaches 40° F, the outside coil temperature will be below 32° F or below freezing. Frost or ice will begin to form on this coil from the moisture contained in the air. After any continuous run time of 30 minutes, the unit will automatically go into a defrost cycle.

DEFROSTING

As the unit goes into the defrost cycle, a hissing noise will be heard from the outside unit. The unit continues to run during defrost, except the outdoor fan motor stops, and as the frost is melted, steam will probably emit from the unit. Many times there is also water draining at the bottom of the

coil as well. When the coil is defrosted, again a hissing noise will be heard and the unit will reverse back on heat cycle. There is no definite time limit for this cycle (1-7 min.). The lower the outside temperature and the higher the humidity, the longer the defrost cycle will last.

A heat pump, unlike an electric furnace, will not supply extremely hot air from the discharge ducts. Depending on the outside temperature, the air leaving the discharge grille will vary from as low as 75° F, to as high as 110° F. Any air temperature below 98.6° F will feel cool to the human body. This does not mean that your system is not working properly.

(Note: See section on "Supplemental Electric Heat")

NIGHT SETBACK — HEATING CYCLE

A heat pump, like an air conditioner, is not designed for a rapid change of indoor temperature, but is designed to maintain a constant temperature 24 hours a day. If a heat pump is turned down, or off, at night, it will require 4 to 6 hours to reheat the house to 68° F. This again consumes as much power as would be required on automatic operation.

SUPPLEMENTAL ELECTRIC HEAT — (Does not apply to add-on fossil fuel units)

It is recommended that supplemental electric heat be installed with every unit. Not only will the electric heater temper the indoor air during defrost cycles but it will also help to maintain the desired room temperature over a 24 hour period. When a heat pump is installed without a heat strip, the inside temperature should never be turned below 70° F. With an inside temperature of less than 70° F, a heat pump will lose its efficiency very rapidly. If the temperature is allowed to drop to 62° F, a heat pump may not be able to reheat the house without additional heat from another source.

When supplemental electric heaters are installed as a part of the system, they are controlled by the second stage of the wall thermostat and possibly also by an outdoor

thermostat. The use of outdoor thermostats depends upon climate and number of electric heaters required for a given installation.

The air discharge temperature may sometimes be higher than described under **"Winter Operation,"** . . . this occurring whenever second stage of wall thermostat or an outdoor thermostat calls for additional heating capability because of lower outdoor temperatures requiring more heat to be put into the building to maintain indoor set point temperature.

HEATING-COOLING SYSTEM OPERATION

THERMOSTAT

For most efficient operation, set the thermostat at the temperature you prefer — and let it take over. Set the SYSTEM switch to "COOL" or "HEAT." Set FAN switch to "AUTO." Everything else is automatic. **Don't be a "thermostat jiggler."**

Although outside temperatures may vary 10 to 20 degrees from morning to night, inside temperatures will vary only 6 to 8 degrees during a normal 24 hour period. The operation of your air conditioning unit is automatic. It is controlled by a thermostat which you set at a temperature most comfortable to you (75° to 80° for cooling and 68° to 70° for heating). When the inside temperature changes above or below these cooling or heating settings, your thermostat senses this and turns on the system.

As you no doubt know, setting the thermostat to a position lower than you actually want does NOT make it **"cool faster,"** and the same hold true for heating. The greater the difference between outdoor and indoor temperatures, the greater the operating cost.

HEAT PUMP THERMOSTATS

All heat pump thermostats have indicating lights of some type located at the bottom of the thermostat.

2-Light Models - Green and Red Bulbs

1. When the green light comes on and stays on, it is a signal that something is not working properly in the outdoor heat pump unit.
2. Move the system mode lever to "EM HT" and call your service man.
3. The red light will come on and stay on continuously, even if the indoor unit is not operating. You still have automatic temperature control indoors, with the supplemental electric heaters providing the necessary heat.
4. It may be necessary to raise the set point lever one or two degrees to maintain the same indoor temperature, because the thermostat will now operate on 2nd stage only.

1-Light Models - White Reflector Lens

1. There is no automatic signal of a potential problem as above, but if it is suspected there is a problem with the outdoor unit, move the system mode lever to "EM HT" and call your service man.
2. The white reflector lens will come on and stay on continuously, and same operation results as in number 3 above.
3. A resetting of the set point lever from two to six degrees above normal temperature may be necessary to maintain the same indoor temperature. This is because a greater amount of heat is generated by this type of bulb than the red bulb mentioned above and causes a false **"warmth"** at the thermostat location.

VENTILATION WITHOUT COOLING OR HEATING

There may be periods when you want ventilation only, with no heating or cooling (available on most units). Ventilation is also controlled by the thermostat. Set SYSTEM switch to

"OFF". Set FAN switch to "ON". This will give you **"filter clean"** air circulating in your home. Some people prefer constant air circulation.

EMERGENCY HEAT SWITCH (heat pumps only)

All heat pump thermostats discussed above are equipped with a manually operated switch designed into your system to control the supplemental heat portion of your heating system independently of the heat pump compressor. When to use the "EM HT" switch is described under the heat pump thermostat descriptions. Use of this switch interrupts the compressor control circuit and allows the supplemental heating system to supply heat in its place. The system is still under automatic thermostat temperature control. **Call your local service man or installer to check your system.**

RUNNING TIME

The most serious concern of the average new owner of a heat pump is: "Why does it run so much? Won't it use a lot of electricity?" The answer is "NO", and here's why:

The heat pump produces a low level of heat and uses a modest amount of electricity in the process. It does not get as hot as a gas or oil fired furnace and the air coming from your supply registers will not feel as warm as that from a gas or oil fired furnace. Once you recognize this and accept the lower discharge temperature, you will be much more comfortable. Comfort isn't necessarily the result of frequent blasts of hot air, but of a steady, smooth flow of lower temperature air for a longer period of time. That's how your heat pump system does it.

At temperatures below approximately 40° F the heat pump may be expected to run continuously. This is normal operation.

POWER OFF

Do not shut off the power to your air conditioner or heat pump in the spring and fall when neither heating nor cooling is required. This also applies when you are on vacation or away from home for the weekend or for a few

days. If you do not wish the unit to operate during your absence, turn the thermostat "system" switch to "OFF" but do not open the power switch.

Why? Refrigerant compressors (pumps) are designed to pump gaseous refrigerant only — no liquid. Refrigerant gas is, therefore, constantly flowing in and out of the compressor when the unit is in operation. When it isn't operating the gas tends to migrate and condense inside the compressor where it definitely isn't wanted. To avoid this, there is an electric heater in, or attached to, the housing of the compressor. This little heater draws very little current and is, therefore, relatively inexpensive to operate. By causing any liquid refrigerant to revert to the gaseous form, it effectively prevents the accumulation of liquid in the compressor sump and permits the pump to operate only as it should. This "crankcase heater", as it is called in the industry, is fed from the same line service as the compressor motor. Thus, the main power to the outdoor unit should remain on at all times.

POWER OFF DURATION

If the power is removed, for any reason at all, for more than two or three hours, the heat pump should not be restarted until power has been restored to the unit for at least four hours. This gives the crankcase heater time to drive any liquid out of the compressor. Be sure the thermostat is set at "OFF" before power is applied to the outdoor unit. Additional information can be found on a decal located on the outdoor unit.

MAINTENANCE

CLEANING OR REPLACING FILTERS

Filter life will vary depending upon local conditions. If examination of the filters indicates an accumulation of dirt that restricts the passage of light through the filters, they should be cleaned or replaced. Some units have filters that can be cleaned (and re-oiled where required), and reused. Always replace filters with the same size and type filters supplied with your unit. DIRTY FILTERS WILL AFFECT

THE PROPER PERFORMANCE OF YOUR AIR CONDITIONER OR HEAT PUMP AND SHOULD NOT BE NEGLECTED. Filters are usually located in the return air duct or at the indoor section of your unit. Check your installing dealer for location on your unit.

NOTE: Arrows on the filters must always point in the direction of the air flow through the filter.

LUBRICATION CARE — Direct drive motors are permanently lubricated and should require no oiling. Belt-drive motors and blower assemblies should be oiled at the beginning of each season. **(Note: All motors which have provision for oiling should be oiled)**. Oil cups or plugs are at each end of the motor and on the bearings on the shaft at each side of the blower wheel.

Do not over-oil motor. Three drops of SAE No. 20 motor oil in each oil cup is enough (more than that will attract dirt inside). Blower bearings will take more oil than motors do. Fill each reservoir at least once a year.

Belt-drive - check pulleys and belt. Belt tension should be no more than 3/4" depression.

At no time should re-oiling of the fan motor(s) be attempted without shutting off all electric power to the unit(s).

WATER DRAINAGE — INDOOR UNIT

Excess moisture is removed from the air by the inside coil. This water is carried away by a permanent drain connection. Periodically check drain to make sure it is clear of obstructions and is carrying off the water.

CARE OF CABINET

Washing off the coil with a garden hose is permissible as long as the unit is turned off. The surface of the cabinet is finished with a high quality baked-on enamel, especially designed for outdoor use. To further protect and preserve the cabinet, it is recommended that a high grade automobile polish be rubbed on every 6 months.

INSUFFICIENT HEATING OR COOLING

In extremely hot or cold weather your unit will continually deliver its normal supply of conditioned air. If the unit operates but fails to provide sufficient comfort, check the following (before calling a serviceman).

a. Be sure thermostat setting is correct.
b. Air filters — replace or clean if dirty.
c. Be sure air can circulate freely throughout the house — do not block supply registers or return grilles.
d. Keep the surface of the outdoor coil free from dirt, lint, leaves and other foreign matter.

FAILURE TO OPERATE

a. Check thermostat for proper temperature and SYSTEM switch is turned to either "COOL" or "HEAT."
b. Check to be sure that electrical power is ON. Check the thermostat setting.
c. Check for blown fuses and replace. Be sure fuses are the time delay type and are proper size as shown on outdoor unit rating plate.
d. Check air circulation at the outdoor unit to be sure it is not obstructed.
e. Check to see that filters are clean, and that the air intake on the air conditioner is free from restriction.
f. Make sure that all supply registers are open and that rugs or furniture are not obstructing cold air returns.
g. Check High Pressure Reset Switch. The air conditioning system is protected from damage during operation by built-in motor overload protection. A condition may develop which will stop operation of the unit. Motor overload reset is automatic and does not require thermostat adjustments.

NOTE: Wait at least 3-5 minutes before restarting the unit to give the pressure a chance to balance out. If the unit is restarted in less than 3 minutes, it may blow a fuse or cycle on its overload and stop complete operation for one hour or longer.

If the unit still does not start, or starts but continues to cycle off, it indicates an operating defect. Turn the unit "OFF" and call your service man.

SERVICE

At no time should you attempt mechanical adjustments or service on your air conditioner or heat pump unless, of course, you are a qualified heat pump serviceman and only then. The heat pump is much more than the average household appliance and "Do-it-Yourself" service is discouraged. **Evidence of self-service or tinkering with an in-warranty unit may void the remainder of your warranty.**

Limited Warranty

Bard

Bard Manufacturing Company ("Bard") warrants Bard equipment to the original retail purchaser when subjected to normal use and service to be free from defects in material and workmanship for a warranty period of one (1) year from date of original installation, as evidenced by receipt at Bard of the warranty registration card.

Bard further warrants the heating elements originally installed in electric furnaces, air conditioning units, and heat pump units, to be free of defects in material and workmanship when subjected to normal use in service for a warranty period of one (1) year from the date of original installation.

Bard further warrants to be free from defects in material and workmanship for the following warranty periods as specified, the following parts:

1. Hermetic Compressor - Five (5) years from the date of original installation.
2. Steel Heat Exchangers (used in the following equipment).
   (a) All gas-fired Hi-Boy, Counterflow and Horizontal furnaces, ten (10) years pro-rated from the date of original installation.
   (b) All gas-fired Lo-Boy furnaces - twenty (20) years pro-rated from the date of original installation.
   (c) All oil furnaces except "S" series, Horizontal - twenty (20) years pro-rated from the date of original installation.
   (d) All "S" series, Horizontal oil furnaces - ten (10) years pro-rated from the date of original installation.

After the first year, Bard will furnish a replacement steel heat exchanger at a pro-rated charge to the purchaser of one-tenth (1/10) or one-twentieth (1/20) (as may be appropriate) of the latest list price of such heat exchanger for the full year from the date of original installation.

Should any parts prove defective in use, the purchaser shall promptly notify Bard of the defect and shall return the defective part to Bard, Evansport Road, Bryan, Ohio 43506, or such other place as the parties may mutually agree upon. Bard, at its option, will repair or repace the defective part and return it to the purchaser, F.O.B. Bryan, Ohio. The buyer shall be responsible for all labor, service charges, and transportation charges incidental to the removal and replacement of the defective part. The warranty period for any repair part or replacement part is limited to the unexpired portion of the original warranty period as herein provided.

THIS WARRANTY IS IN LIEU OF ANY EXPRESS WARRANTIES RELATIVE TO THESE PRODUCTS IN THE PRECEDING PARAGRAPHS. HOWEVER, THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE, IS LIMITED TO A PERIOD OF ONE (1) YEAR EXCEPT FOR THOSE PARTS WITH LONGER WARRANTY PERIODS IN WHICH CASE THE DURATION OF IMPLIED WARRANTIES SHALL BE LIMITED TO THE SPECIFIED WARRANTY PERIOD FOR EACH SUCH PART. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

Continued on the next page

Limited Warranty

BARD SHALL NOT BE LIABLE, IN ANY EVENT, FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, LOSSES OR INJURIES IN CONNECTION WITH ANY USE OR FAILURE OF THIS UNIT, INCLUDING WITHOUT LIMITATION, LIABILITY FOR YOUR EXPENSES WHILE ANY BARD EQUIPMENT IS OUT OF OPERATION AND FAILURE OF PRODUCT TO CONFORM WITH ANY EXPRESS, IMPLIED, OR STATUTORY WARRANTIES. Some states do now allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty covers defects in workmanship and materials. It does not apply if the damage or defect does not result from workmanship or materials but results from such things as: misuse of equipment; improper installation, negligence; accident in transit; negligent servicing; operation of equipment contrary to limitations stated on rating plate, etc.; alteration, improper repair, and operation and maintenance contrary to Bard's printed instructions.

Bard shall not be liable for any default or delay in performance under this warranty, caused by any contingency beyond its control, including but not limited to war, insurrection, government restrictions or restraint, strikes, floods, fire, a short or reduced supply of materials, or Acts of God.

The completion and return of the warranty registration card is a condition precedent to warranty coverage and performance. This warranty is not valid unless this card is completed and mailed to the factory within thirty (30) days of the date of original installation by or for the purchaser.

This warranty willbe considered void if the Bard equipment is (a) tampered with, (b) improperly serviced, maintained or repaired, (c) removed from the original place of installation, or (d) damaged by an event beyond Bard's control.

No change in this warranty, or the terms and conditions hereof, shall be valid unless made in writing and signed by an officer of Bard.

Bard's liability is expressly limited to the replacement of defective equipment as set forth above and does not cover:

1. Labor or transportation costs,
2. Cost of labor for any adjustment or service calls,
3. Cost of labor for replacing defective parts or components,
4. If the equipment in the good faith judgment of Bard has been subjected to misuse, negligence, transportation damage, tampered or altered, effaced, or removed.
5. Any unit or parts thereof which have not been installed and operated in accordance with the installation and operation instructions furnished by Bard.
6. Cleaning and replacement of filters.

This warranty applies only to Bard equipment installed within the United States.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Bard

BARD MANUFACTURING COMPANY
P. O. BOX 607
BRYAN, OHIO 43506

EQUIPMENT INSTALLATION RECORD

OUTDOOR UNIT MODEL _____

SERIAL NUMBER _____

INDOOR UNIT MODEL _____

SERIAL NUMBER _____

INSTALLATION DATE _____

START-UP DATE _____

INSTALLED BY:

COMPANY _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

PHONE _____

CONTACT INSTALLER ABOVE FOR ALL SERVICE

If additional information is required concerning this equipment, contact:

Customer Service Department
Bard Manufacturing Company
P. O. Box 607, Bryan, Ohio 43506
Phone (419) 636-1194