



Air Conditioning & Heating

USE AND CARE INSTRUCTIONS

SPLIT SYSTEM
HEAT PUMPS



Photo shown is a typical unit and will vary by model and size.

Chas Roberts

AIR CONDITIONING & HEATING

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Important Facts You Should Know About Your Heat Pump

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- During the cooling season, the heat pump operates like a conventional system.
- Do Not turn the air conditioning system off. Part-time cooling is poor economy. If the system is left off during the morning, the home will soak up heat and be more difficult to cool in the afternoon. You can actually save money by letting the thermostat determine when cooling is needed.
- During the hot, dry seasons, we recommend keeping the air conditioner blower on continuously. The air conditioning unit cools more evenly when the blower switch is in the ON position. The blower provides refreshing air movement and even temperatures throughout the home. The blower also circulates air through the filter, which helps remove dust, lint and other pollutants more efficiently.
- Shades, drapes, shutters, or screens should be installed on windows that are exposed to direct sunlight. Also, plant a tree or put up a canopy to protect your windows from the direct sun.
- **During the heating season**, the heat pump will deliver warm air, but not hot air like other systems, and will operate for long periods of time. THIS IS NORMAL. *Remember*, air which is 80 degrees is warm air and will heat the house even though it may feel cool to a hand, which is 98 degrees.
- During the cold weather, frost will accumulate on the outdoor coil. This will cause the heat pump to go into a defrost cycle. During this cycle, the outdoor fan will stop running and you will hear the humming of the compressor and feel cool air coming from the registers. You may also notice steam or water runoff from the outdoor unit and hear a “whooshing” sound. *THIS IS A NORMAL FUNCTION DURING THE DEFROST CYCLE*. Do not turn off the unit, change the temperature, or adjust the thermostat during this cycle. The defrost cycle will last from 1-10 minutes depending on the amount of ice on the coil. Then the unit will return to the heating mode.
- Night setback during the heating season is NOT recommended. The heat pump is not designed to raise space temperatures quickly.
- **For cooling and heating** . . . Leave your thermostat alone. When you have found a temperature that you prefer, it is best to leave the thermostat at that setting.
- Clean or replace the filters frequently. Dirty filters will lower performance and efficiency of your cooling. The filters are usually located at the return grille or at the indoor section of your unit.

INTRODUCTION

Your Heat Pump system is a complete heating and cooling system and is designed to give you many years of comfort. Even so, you must learn to live with it. Any heating and cooling system has its limitations and any equipment will function more effectively and be better able to give you the comfort you expect if the family knows and follows the proper procedure.

The purpose of the OWNER'S GUIDE is to acquaint you with your Heat Pump, with heating and cooling in general, and to suggest some procedures which, if followed, will allow your system to function more effectively.

A Heat Pump is considered by many people to be the ultimate in efficient, economical, modern home air conditioning. Living with a Heat pump can be pleasant and comfortable, but comfort is a subjective thing. Often misunderstandings develop as to what a Heat Pump system will do.

While reading through this booklet, it is useful to keep in mind that a Heat Pump is designed for efficiency of operation as well as to provide comfort. In many respects the heating operation of a Heat Pump is quite different than other systems.

In this booklet we will try to explain the operation of the system with respect to how it feels to live with and also with respect to how it can be most effectively used.

THE HEAT PUMP COOLING CYCLE

Many people condemn a home air conditioning system because it doesn't keep the rooms as cool and comfortable in hot, muggy weather as they think it should. This may be unfair. Any residential cooling system has definite limitations. It is the reverse of the heating system. Family living habits that help the heating system are arch enemies of a cooling system. The Heat Pump delivers heat into the room and the extraneous heat that is created within the house from electric lights, cooking, the TV set, etc., helps to heat the rooms. Just that much less is required from the Heat Pump in the heating cycle.

Cooling is just the reverse. The cooling equipment removes heat from the house and any extra heat released in the rooms from these same sources will make the room air warmer and place an additional burden upon the equipment. Further, with heating, we are primarily concerned with the thermometer temperature and relative humidity (the amount of moisture in the air). Relative humidity is an important factor in the comfort cooling and the removal of moisture from the air is essential.

The effect of humidity upon comfort can be illustrated by a familiar outdoor condition. There are days when the temperature is relatively high, yet it is comfortable because the air feels "balmy". This is because the relative humidity is low. There are other days when the temperature is about the same but there is discomfort from a "muggy" feeling and perspiration does not dry on the skin. This is because the humidity is high. The same condition can exist indoors. The air must be both cool and relatively dry for comfort.

There is nothing very mysterious about the operation of a cooling unit. The theory in home air conditioning is the same as that used in the electric refrigerator in your kitchen. Room air is drawn into the cooling unit by a fan, first passing through a filter that removes most of the dirt, dust and pollen.

It next passes over the surface of a coil that is cooled by a refrigerant circulating through the inside of the coil. Here the temperature of the air is reduced and then discharged through ducts and registers into the rooms.

When this air passes through the coil, it also loses some of its moisture which collects upon the coil surfaces in the form of water and is wasted to the sewer by a condensate drain. Your unit is designed to remove the maximum amount of heat and moisture: however, you should never lose sight of the fact that there are definite limits on its capacity to do either.

Since the purpose of the cooling is to remove heat from the inside of the house, the first step should be to keep as much heat as possible from entering the house. Heat enters the house through walls heated by outdoor air and the sun. It comes in through the ceiling from the roof or attic above.

When the temperature outside is 90 degrees, it is very possible for your attic temperature to reach 130 degrees if it is not properly ventilated. You should have cross ventilation to remove the excessive heat. An attic fan may be added at one end of the attic to give the ultimate in attic ventilation. The fan may be thermostatically controlled, or it may be manually controlled by you.

Glass areas exposed to the sun are responsible for a very substantial amount of the heat that enters a house. The sun not only heats the glass but also all the surfaces indoors that it shines upon. The most effective way to eliminate this heat is to keep the sun off the glass area and windows. A roof overhang of two or three feet on the south side of the house will effectively shade the windows on that side. Exterior awnings and sun shades will offer partial protection on the east and west sides, and the fewer the windows on these two sides of the house the better. Tall shrubs and plantings, a vine covered trellis or a garden wall are particularly effective. Screen shades, Venetian blinds and heavy draperies will also help. A few trees that shade the house are of value.

Some of these protective methods will be difficult to provide on an existing house, but every one that is practical should be used for comfort and for operating economy. As a matter of information, even the orientation of the house on the lot can mean much to the cooling system.

A temperature of seventy-six to seventy-eight degrees is preferred by most people. You may select a lower temperature setting if you wish and you will probably have that temperature a good portion of the time. However, do not be disappointed if the temperature gets a few degrees warmer during the very hot afternoon. Most residential systems are designed for a maximum cooling that will maintain the indoor temperature 30 degrees below the normal outdoor temperature and they cannot do much better than that.

We have already learned that the function of the air conditioning system is to remove both heat and moisture from the home. When it is extremely hot and "muggy" any residential air conditioning system has to work hard to obtain the differential between indoor and outdoor temperature mentioned in the paragraph above.

It naturally follows that on hot, "muggy" days, any additional heat and moisture that is released within the house will place an additional burden on the cooling system and may even be the accused of inadequate cooling. This is where you must learn to live with the cooling system and realize its limitations.

We have outlined in the following paragraphs several recommendations on how to reduce heat and moisture released within the house.

Families living in air conditioned houses have better appetites than those in homes which are not air conditioned. Also, cooking releases a large amount of heat and moisture. A kitchen range with all burners operating can release more heat into the home than a two or three ton cooling unit can remove if it did nothing else. A kitchen ventilating fan should always be running while cooking is in progress. A kitchen window should be slightly open to replace the air the fan moves out. Mopping floors, washing furniture and other cleaning operations, requiring water, will release moisture into the air as the wet surfaces dry. These operations should be done on a cool day or at during the coolest part of a warm day, when the full cooling capacity of the equipment is not required.

Laundry, including baby clothes and lingerie, should never be dried indoors when cooling. The water released from the clothes enters the air and then must be removed by the cooling equipment.

Never permit an automatic clothes drier to discharge its heat and moisture inside an air conditioned house. It will place a load upon the cooling unit that may cause discomfort for hours. Many complaints of unsatisfactory cooling have been traced to this one cause. Driers must be vented to the outdoors. When venting to the outdoors, never vent close to the outdoor portion of the Heat Pump as you will quickly fill its coils with lint.

A hand iron or a mangle releases heat into the air, the difference between the two, only being the amount of heat released. Ironing should be done on a cool day or late in the evening when the cooling system has reserve capacity and can remove this extra heat without noticeable difficulty.

Tub and shower baths release heat and moisture (steam) into the air. The shower bath releases more than the tub bath, and of course, the longer the shower the more released heat and moisture. A bathroom ventilating fan in operation while the baths are being taken, will remove the heat and moisture. Do not use a shower curtain that absorbs water – use one of plastic materials or other non-absorbent materials.

Your Heat Pump will remove odors from the house that are dust-borne because the dust will be eliminated by the filters and the wet surfaces of the cooling coil. Incidentally, the water that drips off the cooling coil is not equivalent to distilled water, since it is filled with dust, germs and dust-borne odors.

Your Heat Pump was sized and designed to keep you and your family comfortable. Unless your Dealer was told to provide cooling for an additional 15 or 20 people, your system will probably not keep this many people comfortable on a hot day. Lowering the thermostat setting will not help.

Filters should be cleaned periodically. Dirty ones affect the operation of the equipment by reducing the amount of air that can be moved through it.

Mold or mildew should not appear on clothing or household furnishing in air conditioned houses. If it does appear, the indoor relative humidity is probably too high and should be investigated. Most conditions of this kind can be traced back to an undiscovered source of moisture within the house and to where more moisture is entering the room air than the air conditioner can remove. This source must be located and promptly eliminated. There are many possible sources. The most common is moisture coming from the following:

1. Through a concrete floor that is improperly protected from soil moisture.
2. Through the floor over a crawl space which does not have a moisture barrier over the ground.
3. Through the floor over a damp basement.

It is recommended that the blower for air circulation be run continuously during the operation. During mild weather when the unit does not operate for long periods, this circulation in the air conditioned area will eliminate any "muggy" feeling.

Windows on the east, south and west sides of the house that are not protected from the sun on the outside, should be protected on the inside with Venetian blinds or heavy draperies. Keep them closed or drawn when the sun is on their side of the house. Inside protection against sun will not be as effective as outside protection but it will help tremendously.

Windows should remain closed throughout the cooling season. To open them lets in warm air and often highly humid air, particularly at night. Do not open the doors more often than necessary and then for as short a period as possible. It usually costs more to cool a house with children that are running in and out at frequent intervals because each time the door is opened warm air come in.

Your unit is thermostatically controlled and should be allowed to operate as required throughout the cooling season. The thermostat will operate the unit only as necessary to keep you comfortable and requires no help. There are technical reasons why uninterrupted operation is the most satisfactory.

The physical thermal shock to the body of a person going out of or into an air conditioned space, so often associated with cooling during hot weather, has been no major problem with residential air conditioning. There appears to be no dangerous physical shock to a normally healthy person entering or leaving an air conditioned space, although the change may be temporarily unpleasant. This however, may not be the case with persons in ill health. With such persons the greater the difference in temperature between the air conditioned space and the outdoors, the greater the reaction or discomfort will be. Mothers with small children who go in and out of doors frequently have avoided the possibility of this by maintaining a slightly higher temperature indoors.

You will learn that there are many more things that your Heat Pump will do for you which we have not mentioned. Many of these you will recognize when they present themselves. If you will remember to minimize the release of heat and moisture indoors, especially on hot "muggy" days, you will realize maximum comfort for your air conditioning system.

Folks who live in air conditioned homes generally eat better, stay at home more, and are more amiable, along with countless other blessings that only domestic air conditioning can bring.

THE HEAT PUMP HEATING CYCLE

There are certain preparations that must be made for the heating season. The same as for the cooling season.

For instance, close the attic ventilators to keep out cold winds. Be sure that storm windows indoors are in position to eliminate any drafts that might occur.

All the family living habits that were curtailed during the cooling season, do not have to be watched so closely in the heating season. On the contrary, any activity that will give off heat or moisture will be beneficial as long as it has no direct bearing on the thermostat.

To obtain the Heating Cycle, move the System Switch from "Cool" to "Heat". Here again, the most desirable comfort setting at the thermostat that is satisfactory to you should be maintained throughout the heating season. Turning the thermostat up and down at frequent intervals will give you unsatisfactory operation, poor comfort conditions as well as unbalanced conditions.

The operation of this portion of the thermostat is also automatic in that when the temperature increase is desired, the Heat Pump will turn on automatically. Here again, it is our recommendation that the fan switch be allowed to operate in the ON position rather than cycle with heating requirements. This will eliminate stratification of air; it will maintain a better temperature gradient between floor and ceilings, and generally will make the thermostat much more sensitive.

There are a number of points in the operation of the Heat Pump which do differ considerably from other heating systems. While these points are not necessarily bad, it is useful to understand how the system should operate for your own peace of mind.

AIR DELIVERY . . . The air-volume requirement of a Heat Pump is considerably more than that of a gas or oil fire heating system. The greater air-volume is needed for maximum efficiency of operation. The fact that so much air-volume is required leads to several important considerations. The temperature of the air delivered is lower than with other systems. At some time, the Heat Pump will be delivering air at a temperature just over 80 degrees. Even though this temperature is warm enough to heat your house, it may feel cool to the touch. It is very important that the system be allowed to move the full air-volume for which it is designed. This means that registers should never be blocked with furniture or pictures. It means that the filters must be kept clean so as not to restrict air delivery. It also means that you should resist the impulse to close off registers, even in occupied rooms.



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OPERATION . . . The Heat Pump system is designed to run more of the time than other systems. This does not mean that it is wasting power. On the contrary, it conserves power by operating on a smoother temperature cycle. It also means your temperature stays a little more constant, and your home a little more comfortable. In many cases when the outdoor temperature drops to the 20's or 30's or below, the unit runs constantly. Don't worry, this is normal and it won't make your electric bill go out of sight. At the same time this happens, the indoor temperature may drop one or two degrees below the point where your thermostat is set. The system could be designed so this would not happen, but if so it would not be as efficient. If the lowered temperature is uncomfortable, you may want to increase the thermostat setting for a while. When the temperature comes back up outside, the effect will go away again.

NIGHT SET-BACK . . . Currently, it is quite common to reduce the temperature setting on a heating system at night and then return it to normal in the morning. This can be done either manually or with a special thermostat. However, it is not recommended that a Heat Pump system be set-back. It appears from what is now known, that night set-back of a Heat Pump actually costs you money rather than saving it.

DEFROST . . . The normal heating operation of a Heat Pump results in a coating of frost accumulating on the outdoor unit. Periodically, the unit will automatically defrost itself. When the unit goes into defrost a "whooshing" sound is audible if you happen to be near the unit. (This same sound can be heard when the unit shuts off during heating operation.) The sound is normal and should be no cause for alarm. It is also normal for steam to come off the outdoor coil during the defrost. Defrost is completely automatic and is controlled by sensors in the outdoor unit.

QUESTIONS . . . If you still have questions or doubts about the performances of operation of your Heat Pump system, contact Chas Roberts Air Conditioning. They are experts in heating and cooling and will be happy to assist you.

UNDER NO CIRCUMSTANCES SHOULD THE THERMOSTAT BE TURNED OFF AND THEN IMMEDIATELY TURNED ON AGAIN. THIS QUICK CYCLING CAN AND WILL BURN OUT CONTROLS IN STARTING CIRCUITS AND ALSO IN THE COMPRESSOR. IF THE THERMOSTAT IS TURNED OFF, DO NOT TURN BACK ON FOR AT LEAST THREE (3) MINUTES.

OPERATING THE THERMOSTAT:

HEATING CYCLE:

Switch the system lever to HEAT. Then set the Temperature Selection Lever to the desired temperature.

COOLING CYCLE:

Switch the system lever to COOL.

FAN CONTROL:

Your thermostat has a Fan Selection Switch which will allow you to run the fan continuously or cycle it automatically with the heating or cooling system. Switch the lever to ON for continuous operation and to AUTO for automatic cycling. For maximum comfort satisfaction, constant fan operation throughout the year is recommended.

SERVICE HINTS AND POINTS TO CHECK IF YOUR UNIT BECOMES INOPERATIVE:

1. CHECK FUSES

Use only Fusetron or Fusestat type fuses. On cartridge types, some type of fuse tester should be used. These fuses might be found in the optional disconnect attached to the unit or wall adjacent to the outdoor unit. They also might be found in the main electric panel inside the building.

2. DIRTY FILTERS

When operating on the cooling cycle and the filters are dirty, your unit may short cycle (go off and on) and frost may form on the indoor coil as well as the large line between the outdoor unit and the coil installed in the indoor Air Handler.

When operating on the heating cycle, and the filters are dirty, the compressor will be running at an abnormally high temperature. This can cause the compressor to shut-off.

Clean or replace the filters if they are the disposable type. The filter can be found contained in the Air Handler filter rack or box adjacent to or under the Air Handler or in a return air filter grille.

3. INDOOR EVAPORATOR COIL COVERED WITH ICE OR NO BLOWER ACTION

Check for broken blower belt or defective blower motor.

4. CLOGGED COIL IN OUTDOOR UNIT (SUMMER)

Grass cutting, leaves, dirt and dust, lint from clothes dryer, fall-off from trees, can be drawn into the coil by movement of the air. A clogged condenser coil will lower the efficiency of your unit and could cause damage to the condenser. Damage of this type is not covered by the Warranty. Use a brush to remove debris from the coil.

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AIR CONDITIONING & HEATING

The Most Comfortable Call You Can Make!

Chas Roberts Air Conditioning is proud to be a family owned and operated business, serving Arizona since 1942.

As your HVAC system Installer, we can provide you with services to meet all of your Heating and Air Conditioning needs after you have taken possession of your new home:

- Sales
- Service & Repair
- Extended Warranties
- Preventative Maintenance

We are available to speak with you Monday-Friday 7am to 8pm, Saturday 7am to 5pm, and Sunday 9am to 4pm with extended hours during the summer.

Please call, or visit our website, with all of your HVAC questions or concerns.

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LIMITED WARRANTY

Models: ACNF, ADPF, AEPF, AR, ARPF, ARUF, ASPF, AWUF, MBE, MBR

This heating or air conditioning unit is warranted by Goodman Manufacturing Company, L.P. ("Goodman") to be free from defects in materials and workmanship that affect performance under normal use and maintenance, as described below:

- **To the original registered owner** and his or her spouse ("owner"), **all parts** are warranted for a period of **10 YEARS** or for so long as the owner owns the home in which the unit was originally installed (whichever ends first), except as provided below. However, this warranty applies only if:
 - 1) The unit is installed in an owner-occupied, single family residence, and
 - 2) The unit is properly registered with Goodman online within 60 days after the original installation. To register, follow the instructions found at www.goodmanmfg.com.
- If the above warranty does not apply, then **all parts** are warranted for a period of **5 YEARS**.

Neither warranty continues after the unit is removed from the location where it was originally installed.

Neither warranty applies to, and no warranty is offered by Goodman on, any unit ordered over the Internet.

The warranty period begins on the date of the original installation. If that date cannot be verified, the warranty period begins three months from the month of manufacture (indicated by the first four digits of the serial number (yymm)).

As its only responsibility, and your only remedy, Goodman will furnish a replacement part, without charge for the part only, to replace any part that is found to be defective due to workmanship or materials under normal use and maintenance. For warranty credit, the defective part must be returned to a Goodman heating and air conditioning products distributor by a state certified or licensed contractor. Any part replaced pursuant to this warranty is warranted only for the unexpired portion of the warranty term applying to the original part.

These warranties do not apply to labor, freight, or any other cost associated with the service, repair or operation of the unit.

These warranties are in lieu of all other express warranties. **ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO**

WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS WARRANTY. Some states and provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

GOODMAN SHALL IN NO EVENT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO EXTRA UTILITY EXPENSES OR DAMAGES TO PROPERTY. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

Goodman is not responsible for:

1. Damage or repairs required as a consequence of faulty installation or application.
2. Damage as a result of floods, fires, winds, lightning, accidents, corrosive atmosphere or other conditions beyond the control of Goodman.
3. Use of components or accessories not compatible with this unit.
4. Products installed outside the United States or Canada.
5. Normal maintenance as described in the installation and operating manual, such as cleaning of the coils, filter cleaning and/or replacement and lubrication.
6. Parts not supplied or designated by Goodman.
7. Damage or repairs required as a result of any improper use, maintenance, operation or servicing.
8. Failure to start due to interruption and/or inadequate electrical service.
9. Any damage caused by frozen or broken water pipes in the event of equipment failure.
10. Changes in the appearance of the unit that do not affect its performance.

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

Owner Name _____

Address of Installation _____

City/State-Province/Zip-Postal Code _____

Installer Name _____

City/State-Province/Zip-Postal Code _____

Phone # / Fax # _____

Distributor Name _____

City/State-Province/Zip-Postal Code _____

Phone # / Fax # _____

Model # & Serial # _____

Installation Date _____

Part No. PWCAHPA
Printed in USA
02/07

For further information about this warranty, contact Goodman Consumer Affairs at (877) 254-4729 or by mail to 7401 Security Way, Houston, Texas 77040.

