

# Heat Pump Tips

## What is a Heat Pump?

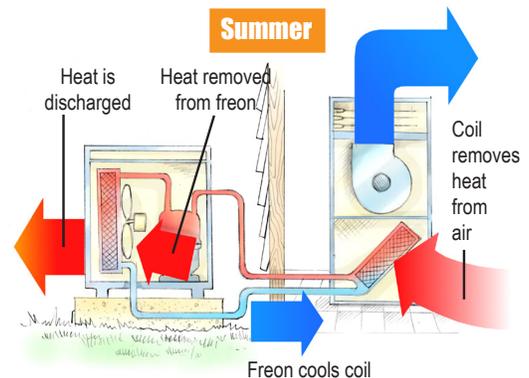
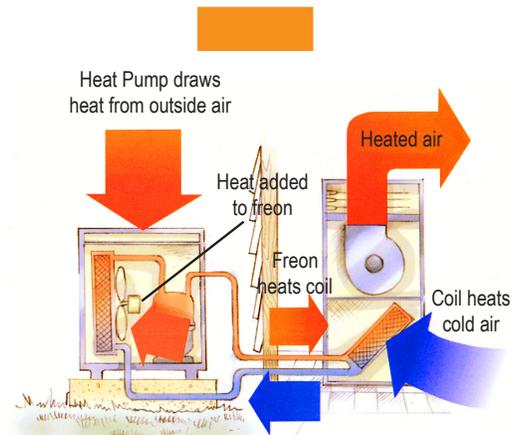
A heat pump is a year-round comfort conditioning system that uses refrigeration equipment to supply warm air in the winter and cool air in the summer.

## How an Air-to-Air Heat Pump Works

An “air-to-air” heat pump has two parts—an indoor unit with a coil and a blower that pushes the warm or cool air through your house (like a standard furnace); and an outdoor unit with another coil, fan, and a compressor (like a standard air conditioner). Unlike the standard central air conditioner and furnace system in which the furnace heats in the winter and the air conditioner cools in summer (using the furnace blower to move cool air), the heat pump uses both indoor and outdoor units year-round.

In the summer, refrigerant removes heat from the air inside your home and releases it outside. The resulting cool air is forced through your duct system and spread throughout your home.

In the winter, the process reverses. The refrigerant absorbs heat from the outside air and releases it inside where it warms the air moving through your duct system.



## Settings for Heat Pumps

### Heating Season

When the house is occupied and residents are active, the recommended setting during the winter is 68°F.

### Temperature Set Back

Most of today’s electronic heat pump thermostats have a “smart” feature that allows the temperature to rise to the occupied temperature setting gradually and avoids using the less-efficient back up system. If you have an older, non-electronic thermostat, you should only set the temperature back a few degrees below the occupied temperature setting. This should allow the heat pump to regain the occupied setting without bringing on the backup heating system. However, with most electronic thermostats, it is reasonable to set back the temperature 5-10 degrees depending on how cold it is outside and how long you are in the unoccupied/overnight setting.

### Cooling Season

Set the thermostat at 78°F. Each degree higher saves approximately 6 percent on air conditioning costs.

### Temperature Set Back

The opposite principles of setting the thermostat “back or down” in the winter apply to setting the thermostat “up” in the summer. When the home is unoccupied during the day, set the thermostat between 80°F to 83°F.



## **What is Auxiliary Heat?**

Unfortunately, a heat pump's refrigeration compressor cannot produce enough heat when the outdoor temperature drops below a certain balance point. The balance point is where the heat pump needs to have assistance in providing the necessary heat for the home. This should be set by the installer when the heat pump is put in. The heat pump will automatically call on the less-efficient auxiliary heat (electric strip heat or fossil fuel heat) to help during very cold periods. Depending on the size of the heat pump, the auxiliary heat will usually come on when outdoor temperatures drop below 10°F to 25°F.

## **Role of the "Emergency Heat" Setting on the Thermostat**

Homeowners misuse this setting more than any other. The "Emergency Heat" setting should only be used when the outdoor heat pump is not working properly. It allows the furnace to run and heat the home until a technician can resolve the problem. If you switch your unit to this setting just because it is cold outside, it will cost you more money to heat your home.

## **Thermostats**

The way you operate your indoor thermostat is very important. There are two practices you should to avoid. First, do not change the thermostat to a higher-than-needed setting in an attempt to bring the temperature up or down faster. The thermostat is not a gas pedal. Trying to use it as such will often cause you to operate it inefficiently. Set your thermostat to the temperature you would like your home to be and let the system do the rest. Second, avoid the emergency heat setting. Both of these practices often increase your energy consumption.

## **When Should I Change the Filter?**

The furnace filter should be checked every month and changed when dirty.

## **How often should I Service the Heat Pump?**

The heat pump system should be inspected and serviced yearly. It is recommended to have a NATE (North American Technical Excellence) Certified technician service the heat pump.

## **The Defrost Cycle**

When the outside temperature drops, frost often forms on the surface of the outdoor coil. The frost decreases the efficiency of the heat pump by making it run longer. The frost must be removed. A heat pump has a defrost cycle, which removes the frost from the outdoor coil.

A heat pump unit will defrost regularly when frost conditions occur. In the defrost cycle, the heat pump automatically operates in reverse for a period of time. This allows the outdoor coil to melt the frost. During the defrost cycle, the outdoor fan stops to allow a quick defrosting of the outside coil. To keep from blowing cold air into the home during this process, the backup heat may be provided by the furnace. It is not uncommon for a water vapor cloud to rise from the outdoor unit during this process. This is normal operation.

## **Summary**

Congratulations! You have a very efficient heating and cooling system. Hopefully, these tips will help you understand how your system works and how you can maximize your comfort, system longevity, and energy savings potential.

If You Have Questions, Contact Your Local Dealer, Power Supplier or Your  
Local Nebraska Public Power District Office.



Polk County RPPD