

How your Heat Works

Gas Furnace

A furnace creates heat by burning a natural resource such as gas, oil, or propane. Your furnace heats by mixing the gas with air, and then ignites it with a pilot light. The flame that is created heats up a metal box, the heat exchanger, and the exhaust gas given off by the burners vent outside through a flue that goes up through the roof or through the wall.

Your heating system can be combined with air conditioning for cooling, a humidifier for maintaining proper moisture balance and an air filter. With your system, the blower will draw cool air in from rooms through the ductwork. Inside of the furnace, the air passes through a filter into a heat exchanger where the burner heats it, and then it's blown back to room through ducts and registers. The thermostat signals the furnace to turn on when the air temperature falls below the setpoint. When this happens, a gas valve regulates and delivers fuel to the burners. The burners are ignited inside a combustion chamber, creating heat that is transformed to the heat exchanger. Combustion fumes are then exited through a flue out of the rooftop or through the wall.

Electric Furnaces

Your electric furnace (air handler) works by forcing air across the heating strips (which are coils of wire that use electricity to create heat). Your air is then circulated throughout your home or place of business in order to warm it.

Electric furnaces are generally cleaner and safer than a gas furnace, and can also benefit from an annual heating check-up. In order to insure your heating system is running at its maximum efficiency, a thorough inspection needs to be performed at least once a year. Your inspection can also detect small problems which could lead to major problems in the future.

Heat Pumps

Heat pumps transfer heat from one place to another providing both heating and cooling. They work on the fundamental principle that heat exists in air even at extremely low temperatures. In the winter, a heat pump extracts heat from outside air and delivers it indoors. The most common type of heat pump is a split system. Split systems have an outdoor unit, which includes a compressor, outdoor coil, fan, and a reversing valve. That unit is connected with refrigerant filled lines leading to an indoor coil. The indoor unit consists of a fan, indoor coil, and a supplemental resistance heating element. A packaged unit simply combines both of its components into one single system.

Depending on whether the heat pump is in a cooling or heating mode, the refrigerant moving through the system makes the indoor coil either hot or cold. A blower draws room air in through a filter and pulls it across the indoor coil. An optional electric-resistance heating element can kick on when needed. As the air passes by the coil, it either gathers or gives off heat. Warm air is then distributed throughout your ductwork and throughout your home.

How your Air Conditioner Works

Your air conditioner is basically like your refrigerator. It uses the evaporation of Freon to provide cooling.

How your air is cooled

Your home cooling system will consist of one of the following: a split system, where you have a inside unit, the air handler, and an outside unit, the condenser. Or you will have a packaged unit, where it simply contains everything outside your home. Whichever system you may have the function of it will be the same, it will use a vehicle known as Freon to carry heat from inside your home to the outside.

Here's how the cycle goes:

1. The compressor compresses cool Freon gas, causing it to become hot, high-pressure Freon gas
2. This hot gas runs through a set of coils so it can dissipate its heat, and it condenses into a liquid.
3. The Freon liquid runs through an expansion valve and in the process it evaporates to become cold, low pressure Freon gas.
4. This cold gas runs through a set of coils that allow the gas to absorb heat and cool down the air inside the building.

How your home's air is dehumidified

What is a dehumidifier? A dehumidifier is a technique that removes moisture from the air. If you have ever poured a glass of ice water on a hot humid day, you know that the water will bead up on the side of the glass. That is because when air cools it loses the ability to hold moisture. In the case of your unit the moisture will condense on the evaporator coil, and then the moisture is carried away through a drain.

Every once in a while your drain lines could become clogged. This could result in a major problem.

Matching your System Properly

Your cooling system works on the principle of BTU's. In order for your system to provide top performance, maximum efficiency, and comfort, your system must be matched properly. For instance if you have a 1800sq foot house, you may need a 3 ton, 36,000 BTU air conditioner. That would mean if you have a split system, you need a 3 ton outside condenser and a 3 ton indoor coil to match it. Also to maintain your system's efficiency, you will need to install a new outdoor, and a new indoor unit at the same time. Mismatching your equipment could cause your unit to sacrifice comfort or have difficulty cooling your house on the hottest days. Finally, if your system is mismatched, it could put unnecessary stress on your system, resulting in premature failure.

Heat Pumps

Your heat pump is an air conditioner that contains a valve that lets it switch between air conditioner and heater. It uses the flow of Freon to heat/cool your home through an expansion valve that reverses the flow of Freon for your heating and cooling needs.