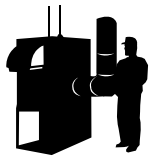




## Forced Air Heating

### Furnaces

A furnace is the most common forced air system. A furnace is made up of a blower, air filter and heating elements, all held within a metal cabinet. They also contain contactors or relays, blower controls and a high temperature safety cut-out. Switching the heater elements is generally done in denominations of 5 kilowatts or fewer to prevent the lights from dimming or flickering, which occasionally occurs when larger loads are switched. Furnaces come in sizes that range from 10 kilowatts to 25 kilowatts. For large areas two or more furnaces might be considered. Low-voltage thermostats best control furnaces. It is best that they are located in an area where they will sense the average conditions inside your whole home. An electronic programmable thermostat will improve comfort and energy savings, if properly used.



### Tips for Installation

Make sure that your equipment is sized properly. A furnace that is too small for the area won't keep your home warm enough in cold weather. A furnace that is too large for the area results in higher costs for the furnace and more ductwork required. An oversized furnace will also be an extra load on the service panel as well as shorter cycles on the furnace. It is also important to make sure that you have a quality and safety specific product by ensuring that it is CSA approved. You should have good duct design and installation. Use a two-speed fan for more even temperature distribution. The fan goes to a low speed when the heating elements are off and kicks into high when the heating elements turn on. Finally, you should use an electronic high-efficiency bag -type air filter for better air cleanliness.



## Furnaces with variable speed motors

Today furnaces provide more than just heat. They provide ventilation and cooling functions for the home. Each function requires a different motor speed, so that the blower is able to distribute the appropriate amount of air.

Heating; requires one or two medium speeds

Cooling; requires the highest speed to be able to deliver the heavier cool air.

Ventilation; requires the lowest speed to provide a continuous circulation.

## Benefits of motors with variable speeds

Motors with variable speeds have reduced operating costs during their operation. When the motor is operating at higher speeds the savings of the efficient motor can add up to a third less of the cost and can be even greater at lower speeds.

Even though the initial cost of purchasing a high efficient motor is greater, the reduced operating costs can offset that problem in a few years.

The two-stage furnaces are designed to add to the furnace's gas efficiency and occupant comfort by operating for a longer time span than a single stage furnace.

These furnaces are designed to operate at the speed appropriate for what is needed. At the low-fire the blower operates at a slower speed.

Another benefit of the variable speed motor is that there is greater occupiers comfort. When in the ventilation mode the airflow can be adjusted to ensure that the amount of air being circulated is just right. If there is too much airflow it can create uncomfortable drafts and excessive noise through the ductwork. This tends to discourage use of the furnace's ventilation feature where and when it would be most beneficial. The variable speed motor will supply better overall temperature control in your house. A longer motor life is beneficial in many ways. These motors are generally made with higher quality parts, which make them less susceptible to overheating and stress on the motor parts. More functional capabilities with the variable speed motors provide for proper zoning, which may reduce gas consumption as well. These motors allow for more flexibility and are able to operate over a range of speeds.