

The Conventional Forced Air Furnace

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The forced air furnace is the most common heating device widely installed in detached and town houses for its reliability and simplicity. Normally it is a vertical rectangle cabinet set up in the closet of garage, hall way or laundry, also horizontally in crawl space as possible. The furnace combined with exhaust vent, air supply and return ducts, thermostat to become the heat supply system to the living space. In addition, due to he readily built duct, it is easy to add air condition facility to the building.



According to Annual Fuel Utilization Efficiency(AFUE) or Seasonal Efficiency, the furnaces can be divided into conventional(60%), medium(80%) and high efficiency(95%). This indicated that we paid \$10 gas bill but we only got \$6, \$8 or \$9.5 actual heat. The difference wasted to exterior air. It is easy to tell the efficiency of the furnace. There is standing pilot and open draft hood on conventional furnaces; Instead of standing pilot the medium efficiency adopted the electric igniter and put a damper or induce fan on exhaust vent; the high efficiency has the different principle from the other. There is no metal vent and opening on the cabinet. We usually saw 2 PVC pipes coming out from furnaces. To simply explain the basic principle of the furnace: the heat is generated from the gas burning at the burner and then going through the heat exchanger. Finally the smoke vented to outside via chimney. In the other side of the heat exchanger, the fan circulated the interior air which absorbed the heat from heat exchanger and supplied the living space. The high efficiency reduced heat released from the vent. It controlled combustion exhaust pass and moved air cross heat exchanger faster on room side, which caused the steam condensation from the exhaust and kept more heat left interior rather than wasted outside. Therefore, not only improved efficiency but removed conventional chimney on roof. We can find lots of new buildings without chimney due to the high efficiency furnace installed. Whereas the water tank has to be chosen accordingly either electrical without vent or power vented from wall. Because furnaces had long history, simple configuration, and well developed, they can last 25-30 years in good working condition. I personally inspected a 40 year-old furnace working well. But some failed in 2-3 years, which must be manufacturing defects though not often. In addition, BC has legislated the distributor to offer high efficiency furnace only since 2010 unless the ready stock of other types. This means no matter new the built or replacement it will be high efficiency since then.