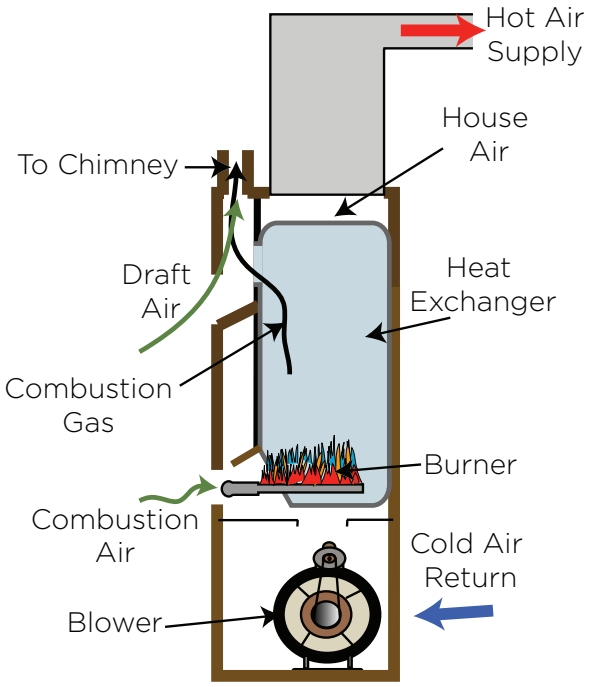
Forced Air Gas Furnace

The forced-air gas furnace is the most common heating system in North America. It has undergone many improvements over the past few years making them efficient, quiet and reliable.



Conventional Furnace

Efficiency

Most of the heat generated when a gas furnace burns goes into the house, but some of the heat goes up the chimney. Furnace efficiency refers to the amount of heat delivered into the house relative to the total amount of fuel energy used. Another way to look at it: if you burn $1 worth of gas and you get 80 cents worth of heat into the house, your furnace is operating at 80% efficiency. This quotient is often called AFUE, or annual fuel utilization efficiency.

Furnaces are classified into three efficiency categories, each correlating to a specific design: conventional, mid, and high efficiency designs.

Conventional Efficiency

A conventional furnace is the oldest type and is generally 55% to 65% efficient. In other words, a great deal of heat is lost up the chimney during the operation of the furnace. Conventional furnaces are no longer made but many still exist in homes.

Mid Efficiency

Improvements in design led to the mid-efficiency furnace, operating at around 80% AFUE. The big development, the induced draft fan, sucks the combustion products through the furnace and discharges them into the flue. No longer reliant on natural draft to run, the heat exchanger design was optimized in order to extract more heat before the combustion gasses went up the chimney.

High Efficiency

Further developments in furnace design led to the modern high-efficiency furnace, operating at an AFUE of 90 to 97%. A high-efficiency furnace has two heat exchangers, the second's job being to condense the gases, thus extracting most of the heat that would otherwise have been lost up the chimney.

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Other benefits of a high-efficiency furnace:

- Does not require a chimney: Gasses are vented through a plastic pipe directly through the wall of the house to the exterior.
- Doesn't burn household air: combustion air can be drawn directly from the outside through one plastic pipe and a second plastic pipe discharges combustion gas to the exterior. Not all high efficiency furnaces are set up this way.

Maintenance

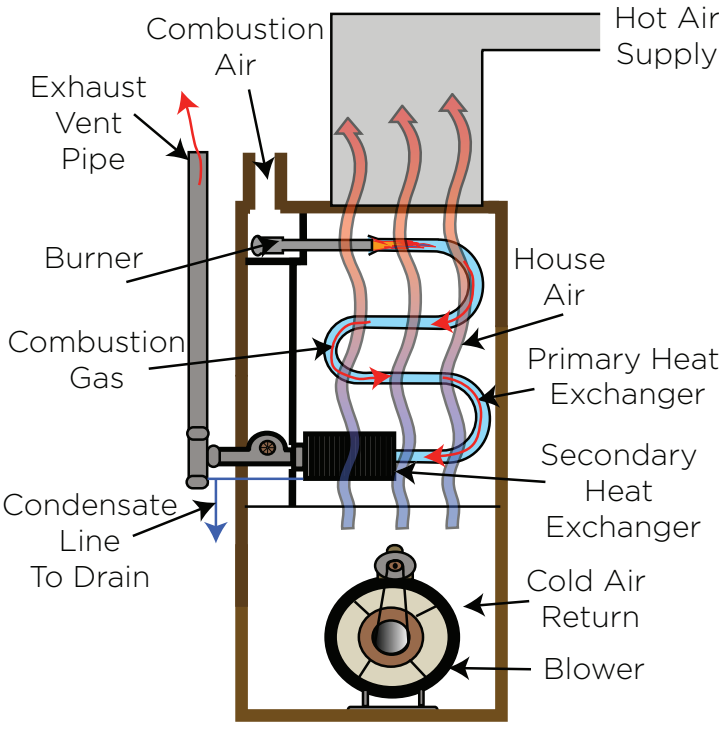
Clean or change the filter: The filter protects the furnace as well as cleaning the air. This is especially important for a high efficiency furnace. The secondary heat exchanger can clog with dirt, preventing air from properly flowing through the furnace. Without good air flow, a high-efficiency furnace cannot operate within its normal operating temperature, becoming, as a result, less efficient, more expensive to run, and a risk for potential premature failure of the heat exchanger.

Do not block air registers: It is not uncommon to see mats, shoes and pieces of furniture blocking return air registers. Proper air flow through the furnace is very important.

Look for leaks: Water can leak down into your furnace several ways, ultimately causing failure. If you discover these leaks early it is an easy fix for your furnace technician.

- Check for water leaks from the air-conditioning evaporator, located in the supply duct on top of the furnace.
- Humidifiers can also leak and damage the furnace.
- High-efficiency furnaces create a steady stream of condensation (water). If the drain tubes get disconnected, water leaks in and around the furnace. Since this condensate is also slightly acidic, it will corrode steel very fast.

Have your furnace serviced regularly; all furnaces require regular checkups for optimal operation.



High Efficiency Furnace