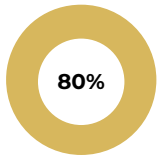


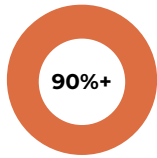
Sequence of Operation on a Gas Furnace

If you're having issues with your gas furnace and can't figure out why it won't switch on, it helps to learn how it works. Knowing the sequence of operation of a gas furnace will save time and money on gas furnace troubleshooting calls. You'll be able to diagnose the problem and get the gas furnace repair you actually need.

Types of Gas Furnace Systems



80%
efficient furnace systems have a metal flue and before the 2010s, usually have a PSC blower motor

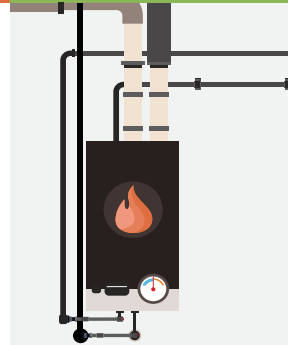


90%+
high-efficiency furnace systems have PVC intake & exhaust vents and primary & secondary heat exchangers



97%+
high-efficiency furnace systems are similar to other high-efficiency systems but can fully modulate gas flow

Common Gas Furnace Problems



- Thermostat malfunction
 - Dirty or clogged filters
 - Flickering or odd-colored pilot light
 - Cracked heat exchanger
 - Frequent and over-cycling
 - Limit switch*, flame sensor, or ignitor malfunction
 - The furnace isn't blowing air or it blows cold air
 - Worn motor bearings
 - Rattling or popping noises
- *(It's important to check the root cause of a safety device tripping first before assuming it's faulty)*

Sequence of Operation

Here are 10 steps of how a standard furnace system operates:

1



Call for Heat

The thermostat reaches a set temperature, or is turned up by the homeowner and sends a signal for the furnace to turn on. While your furnace is waiting for a call for heat it is in standby mode.

6



Gas Valve Opens

The gas valve will open allowing gas to flow through the venturi tube where it is combined with air to ensure proper combustion (as long as the self-safety test was okay).

2



Control Board Safety Check

The thermostat provides 24 volts to the W terminal on the control board. When you check with a voltmeter you should have 24 volts AC (alternating current) between W and C (com) on the control board.

7



Flame Sensor Senses Ignition

The flame sensor will sense ignition and turn the ignition source off. If the gas burners do not ignite in 5 to 8 seconds the flame sensor does not sense the flame and the control board turns the gas valve off.

3



Inducer Motor Starts

The control board sends 110-125 volts AC to the draft inducer to start it. The inducer motor/venter motor begins to spin and creates a vacuum to ensure the leftover gasses go out the exhaust pipe.

8



Blower Motor Starts

After a pre-determined amount of time, the blower motor will start, passing air over the system's heat exchangers to provide heated air for your home.

4



Pressure Switch Closes

If the inducer comes up to speed and the flue is unblocked then the pressure switch closes the connection between the two wires that go into the pressure switch.

9



Satisfied Thermostat

The furnace blower motor and gas continue to burn until the thermostat on your wall satisfies the need for heat (reaches the set temperature) then the thermostat breaks the voltage in the W (white) wire and cuts the gas burners off.

5



Furnace Ignitor

The control board sends power to the furnace ignitor which should glow bright orange for a set number of seconds.

10



Blower Motor Shut Down

The furnace blower motor continues to run for a set amount of time that is determined by the furnace's control board until the heat is removed from the furnace's heat exchanger.

Get The Repair Parts You Need

Technical Hot & Cold supplies furnace parts for all major brands with a 1-year warranty and returns for uninstalled parts.

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