

# Sequence of Operations - DC Models

The thermostat controls the operating circuit to the furnace by reacting to room temperature. When room temperature is below the thermostat set point, the contact closes to allow current to flow to the relay.



The circuit breaker limits amperage draw of the motor.



The relay allows current to pass to the motor by closing a switch within the relay. A heater coil within the relay actuates a bimetal disc which closes the relay circuit. This takes 17-20 seconds.



Current flows to the motor to operate the blower. One end of the motor shaft is for the circulating air wheel and the other side is for the combustion air wheel.



Circulating air blows against the sail switch and closes the contacts, completing the circuit. The sail switch is a safety device that insures air flow before ignition.



The limit switch is a safety device that protects the furnace from over heating. The contacts in the limit switch open at a given temperature setting, shutting off power to the direct spark ignition (DSI) system that controls the gas valve.



As power is applied to the DSI board, the system does the following:

1. A timing circuit allows the blower to purge the chamber (15-17 seconds)
2. The board supplies current to the gas valve and causes it to open. A manual electrical switch is provided and must be in the "ON" position for current to reach the valve.
3. As the valve opens, the board sends a high voltage spark to the electrode at the burner. The board detects the presence of a flame. If the flame is not sensed after approximately six seconds, the board will lock out (three try for ignition, one hour lockout and then three retry), shutting off power to the valve.
4. If the system does not ignite and the thermostat remains closed, the blower will remain on until the thermostat is reset manually.



When the thermostat senses the desired room air temperature, the contacts open, removing power from the ignition system and shutting off the gas valve. The blower runs until the heater in the relay cools and opens the circuit, shutting off current to the motor.

**⚠ WARNING**  
**FURNACE PRODUCES HIGH TEMPERATURE**

- Locate furnace out of traffic and away from furniture and draperies.
- Do not touch or put combustibles near appliance. Hot surface temperature may occur.
- Supervise young children in the same room as the furnace.
- Do not place clothing or flammable materials on or near the furnace.

