

Sequence of Operation - DC Models

2-Stage Excalibur™ Furnace ONLY

The digital thermostat controls the operating circuit to the furnace by reacting to room temperature. When the room temperature is below the thermostat set point by 2°F a heat demand signal will be sent to the controller module (see MPD 38463).



The ON/OFF switch is an agency safety power shut off to the furnace ignition and gas valve systems.



The circuit breaker limits amperage draw of the motor.



Current flows to the controller module and during the first seconds the micro-processor confirms inputs and verifies correct operation of safety redundancies. This module will perform the following diagnostic checks of the system.

- a. Sail Switch is open
- b. Internal Microprocessor faults
- c. Voltage inputs
- d. Ignition
- e. Open Limit Switch

In the event of a failure an LED on the controller module will flash a code. See chart.



The motor receives current from the controller module and will run at high speed or low speed depending on the demand signal the digital thermostat sends to the controller module. One end of the motor shaft is for the circulating air wheel and the other end 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.

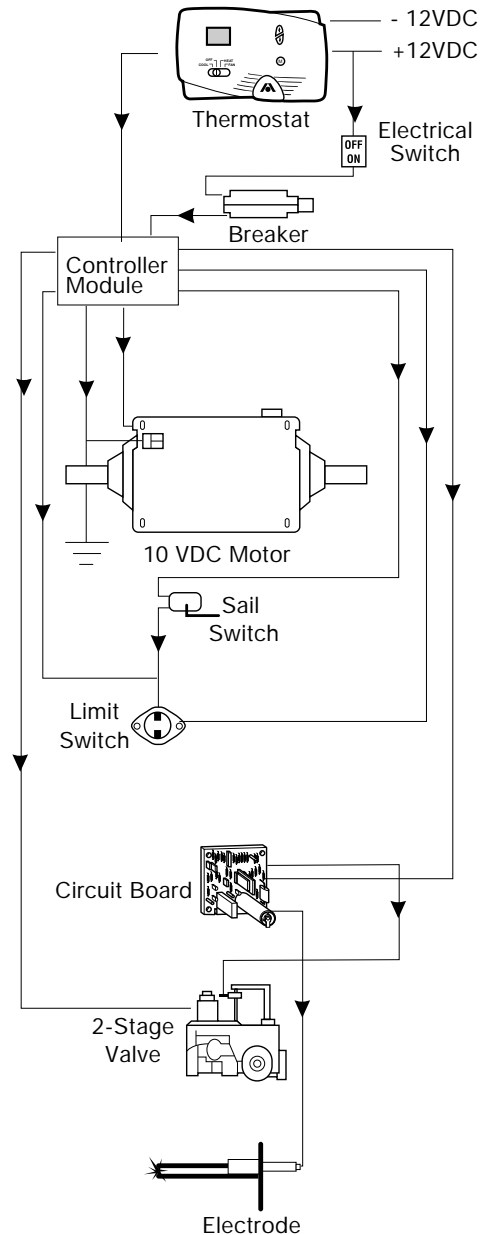


The limit switch is a safety device that protects the furnace from over heating. the contacts in the limit switch open at a given temperature setting, shutting off power. This activates the open limit switch diagnostics and makes the LED on the controller module to flash and shuts down the gas valve. See chart.



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

- a. timing circuits allows the blower to purge the heat chamber for 15 seconds.
- b. current is supplied to the gas valve and causes it to open to high burn. (The controller module activates the low burn operation on the valve.)
- c. as the valve opens, the ignition module sends a high voltage spark to the electrode at the burner. The ignition module detects the presence of a flame. If the flame is not sensed after 7 seconds of sparking a signal is sent to the controller module that there is no ignition and shuts off the valve. After another 25 second purge, it will try again. After a third try, the controller will go into "soft" lockout, timing for one hour and the diagnostic LED will flash a code, see chart. After the timed hour, the controller will initiate (3) more tries for ignition. If there is no ignition, the timing sequence begins again.
- d. If the system does not ignite and the thermostat is still calling for a heat demand, the blower will run for 90 seconds as a post purge then shut off.



When the thermostat senses the desired room air temperature, a signal is sent to the controller module to shut down operation of the gas valve and run the blower for 90 seconds as a post purge of heat from the furnace heat chamber.