

Fan Limit Control Information for Customers

A high-temperature limit switch [also called a fan limit switch or fan / limit control] is an important device used in forced-air furnaces. Simply put, it senses the temperature of the furnace and tells the blower fan to turn on and off at the appropriate times. It also can shut down the furnace burner if things are getting too hot inside the furnace.

Please also see our fan/limit control video at:

<http://www.centralohioheaters.com/videos.html>

How to Identify a Limit Switch

A typical limit switch consists of a long temperature sensor probe attached to a mounting plate or the outside of the furnace. The probe extends through the wall of the furnace housing, or fastens to the outside of the furnace. The mounting plate usually contains two or more terminals that receive control wires for the blower fan and burner itself. The location of the switch varies by the furnace model, but it is typically located in the hot-air supply plenum, above the combustion chamber or on the heat exchanger of the furnace.

How a Fan Switch Works

The fan switch plays an important role in every normal cycle of the furnace. When the thermostat calls for heat, the furnace burner ignites and begins heating the heat exchanger. Initially, the air above the heat exchanger—in the supply plenum—is not warm enough to blow into the building, so the limit switch keeps the blower off. When the air in the plenum reaches operating temperatures the fan switch turns on and activates the blower fan, circulating air through the heat exchanger on its way to the building while simultaneously pulling cool air from the building through the air returns and into the furnace. When the building temperature reaches the designated setting on the thermostat the burner turns off, but the fan switch keeps the blower running for a little while to extract as much heat as possible from the heat exchanger. When the air in the supply plenum drops to the lower setting on the fan switch, it shuts off the fan until the next cycle begins.

How a Limit Switch Works (Fan limit control **may be combined with the fan switch**)!!!!

The next other important function of the fan / limit switch is to shut off the burner if the heat exchanger gets too hot—a condition that can crack the piping in the heat exchanger, effectively ruining the furnace or causing a fire. Overheating can occur if there is a problem with the blower fan causing the furnace / heat exchanger to not get cooled as it should.

Signs of a Bad Fan / Limit Switch

One common symptom of a malfunctioning fan / limit switch is a blower fan that doesn't shut off. This happens when the switch simply fails to shut off the fan after the burner has stopped and the air exchanger is sufficiently cool. A bad switch also can prevent the burner from operating at all. If the limit switch has completely failed and is stuck in the open circuit, or off, position, the burner won't run.

Other Hidden Signs of a Bad Limit Switch

To check this, get shop up to operating temperature [heater good and warm about 160 degrees] on the rotary fan limit temperature dial then gently rotate the temperature clock up to [over 200 degrees] and burner needs to die immediately. If it doesn't, the limit switch has been by-passed or is defective and is very dangerous [call a licensed professional to find and repair the problem]. After you release your gentle twisting grip on the temperature clock and it goes back to warm temperatures the burner should soon relight [recheck yearly]. Also please see our fan / limit control video at:

<http://www.centralohioheaters.com/videos.html>

It is about 5 minutes long. Do not ignore this very important defect as it could cause a serious overheat condition or shop fire if fan fails at 2 AM when no one is around.

Replacing a High-Temperature Limit Switch

A bad limit switch is usually handled by a licensed furnace repair professional, but it can be replaced by a DIYer with some basic understanding of electrical issues, if they understand how to use a multi-meter. The repair involves checking the switch for continuity. If the multimeter shows that resistance is infinite, it means the switch is bad; replacement is a matter of simply unscrewing the switch plate and installing a proper replacement part.

Central Ohio Heaters recommends that you call a professional licensed technician, especially if you are not sure that you understand this.

Other hidden things that damage a Limit Switch

Also another important note: Always recheck this switch immediately if you ever have a dead short that blows the breaker, as this has been known to weld the points in the limit switch closed so that it never will shut down in the event of an over heat condition [not good] !!!!!!!!!!!