

Relay

ALL CURRENT PRODUCTION MODELS USE THE RELAY ON THE CIRCUIT BOARD

This component is commonly referred to as a time delay relay. **The same relay is used on the 7900, 8500 and 8900 series furnaces.**

FUNCTION - The relay has one primary function.

- to purge the plenum of heat and the chamber of any unburned gases after each heating cycle.

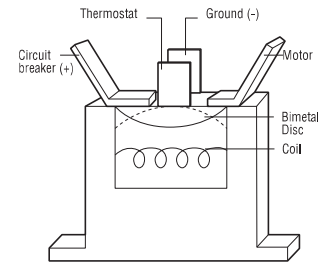
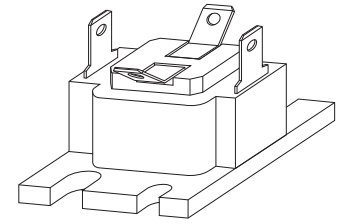
OPERATION - The motor voltage path of relay is normally open. There should always be voltage from the circuit breaker to the relay terminal of the circuit breaker. There should always be continuity between the thermostat terminal connection and ground terminal connection or the relay.

Only when the thermostat contacts are closed is voltage supplied to the

thermostat terminal of the relay. This voltage heats a coil in the relay body. In approximately 20 seconds this heated coil causes a bimetal disc to close. Voltage now passes through the relay and on to the motor, which in turn should allow the furnace to ignite and start a heating cycle.

When a heating cycle is complete, the contacts of the thermostat open and voltage ceases to the heater coil of the relay. In approximately 45 - 90 seconds, the heater coil cools down, the bi-metal disc opens and voltage ceases to the motor as well.

AMP Draw - The relay should draw no more than 1 amp. If the relay should draw more than 1 amp, it will burn out the anticipator.



Sail Switch

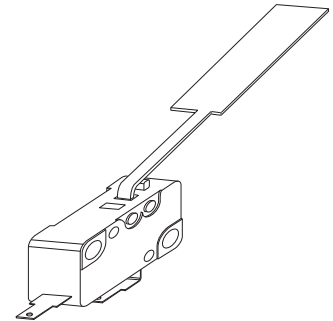
The sail switch is an air proving device. It is a safety component that will not let ignition occur until it sees 75% of the motor's rpm's. It insures that the combustion wheel is rotating fast enough so that there is a proper air and gas mixture for smooth ignition.

There are different size sail switches. The noticeable difference is the size of the paddle on the switch. Each switch is matched to the size of motor it must respond to.

NOTE: All 85-IV use the same sail switch.

When the paddle of the switch is depressed, there should be continuity through the switch. If a sail switch needs to be replaced, it should be replaced with the exact same size. If a larger switch than the original is used, it will probably not close when the motor reaches 75% of its rpm's and therefore keep ignition from occurring.

The most common problems with these switches are bent paddles, loose wire connections or an obstruction between the paddle and switch contact.



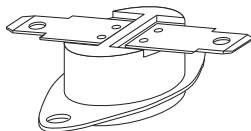
Limit Switch

The limit switch is a very important safety device on a furnace. The function of a limit switch is to protect the furnace from overheating. These switches come in a variety of temperature ratings and are located at critical locations above the heat chamber on the various models of furnaces. Therefore, it is very important that when one of these switches is replaced, you do so with the properly rated switch.

Failure to do so could cause an unsafe condition with the heating system. When in doubt as to whether you are using the proper limit switch for a furnace, look at the temperature at the base of the switch and match it to the temperature and related switch noted below.

Part Number 36205 is a thermal cut-off and was a specific safety component used on some 89-II furnaces. It was located above the chamber and tripped in the event of a burn through chamber.

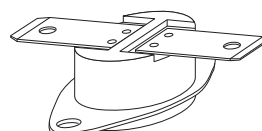
79-II, 89-II, 89-III, 2540
Part # 37021 (was 34781)
3/16" / 3/16" terminals



Markings
on Switch

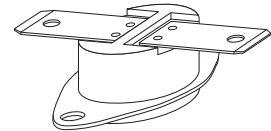
L77 or L170
(170°F)

85-II, 89-I
Part # 35132
1/4" terminals



L54
(130°F)

85-III, 85-IV, 1522, 2334
Part # 37022 (was 36176)
1/4" terminals



L190
(190°F)