

FAN SWITCH

The fan switch is to control the sequence of the blower operation. When the bimetal disc of the fan is heated to the operating temperature, the switch closes. This completes a circuit through the motor. The blower will continue to run as long as the chamber is hot even though the thermostat is satisfied and the main burner is off. When the chamber cools, the fan switch changes back to its original position and shuts the blower off.

LIMIT SWITCH

The purpose of the limit control is to turn off power to the ignition board and the gas control if the furnace becomes overheated. If the circulating air is blocked, even partially, the limit control will function and cause the main burner to short cycle. If short cycling exists, the furnace blower and the circulating air system should be thoroughly cleaned.

If the limit control is found to be defective, it can not be repaired. It must be replaced with a new one.

CAUTION: NEVER SHORT ACROSS OR BYPASS THE LIMIT CONTROL EVEN FOR ONLY TEMPORARY OPERATION.

AIR SWITCH

The combustion air switch has two purposes:

1. It is an "air prover". It operates in response to the current of air generated by the blower. Hence, if for any reason the air from the blower is not sufficient, the switch will not operate. This may be caused by a slow motor due to low voltage, restricted return air, or lint accumulation on the blower wheel.
2. The switch allows time for the blower to pull in sufficient air to support combustion before it engages. Once it engages, the gas valve opens, gas flows to the main burner, and ignition occurs.

MAINTENANCE AND CLEANING

NOTE: For continued satisfactory performance of this unit it is necessary that the control compartment be kept clean. Routine inspection, maintenance and cleaning is recommended at least on a yearly basis.

If for any reason the main burner has been allowed to operate with a high yellow flame, a soot formation is sometimes deposited inside the combustion chamber. The carbon deposit may be of such quantity that cleaning will be necessary. In the combustion chamber a vacuum cleaner is ideal to clean out any carbon deposit.

The unit is equipped with an oiled, sealed motor and requires no oiling.

SERVICE HINTS, DIAGNOSIS AND CORRECTIVE MEASURES

1. PROBLEM - NO HEAT

- a. Check electrical supply to make sure that 120 volt a.c. or 12 volt d.c., or both, are available at unit. Battery must be charged. If battery is low, there may be sufficient power to run the blower, but not enough to run the blower at full speed. If blower does not run at its prescribed speed, the combustion air switch can not engage and gas will not flow to the main burner. Be sure the connections of the voltage lines in the terminal block are tight.
- b. Check fuse located in electrical box. These furnaces use a standard automotive type fuse.
 - 65917 & 65920 - 8 amp.
 - 65925 & 65930 - 10 amp.
 - 65935 & 65940 - 15 amp.
- c. **GAS SUPPLY** - Be sure manual gas valve is in the open position.
- d. **THERMOSTAT OFF** - Check to be sure thermostat is calling for heat. Wire to thermostat could be off terminal.
- e. **MALFUNCTIONING COMBUSTION AIR SWITCH** - Be sure the combustion air switch blade is moving far enough to close its contacts. If the switch is not closing, clear any dust or dirt from the actuator pin. Other reasons for switch not operating are:

1. Insufficient air speed (slow motor due to low charge battery, faulty motor, or lint and dust accumulation on the blower wheels, or restriction of return air to furnace.) Check wiring in accordance with unit's wiring diagram to assure the proper polarity of the 12 volt d.c. power supply is observed. This polarity must be observed so the motor will run the proper direction of rotation to insure correct air delivery.
2. Faulty combustion air switch - Replace switch valve does not open when switch is engaged. Switch should also be replaced if battery is fully charged and blower motor running at top speed fails to engage switch within 3 to 4 seconds.

NOTE: TO SERVICE SWITCH, INNER FURNACE ASSEMBLY MUST BE REMOVED FROM OUTER CASING TO VISUALLY AND MANUALLY CHECK THE SWITCH.

- f. **GAS CONTROL VALVE** - With test light check voltage across valve terminals. If voltage is present, but valve is not opening (when combustion air switch engages) replace control valve.
- g. **BLOWER NOT OPERATING** - Check for burned-out motor. On dual voltage model furnace the a.c./d.c. switching relay could be faulty. If blower operates properly on 12 volt DC, but will not operate when 120 volt AC is supplied to vehicle, replace switching relay.
- h. **DEFECTIVE RELAY** - On both types of units the fan relay could be defective. If this relay does not click when 12 volt DC is applied to terminals A and B, replace relay. If relay does click, but contacts 5 and 7 do not close, replace relay.