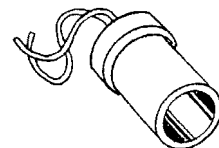


# Hot Surface Ignition Tips

## Photocell/H.S.I.

The photocell works by sending a pulsating signal back to the PC board. The more intense the flame, the more intense the signal will be to the board. If the signal drops below a maintainable level, the photocell will tell the PC board to shut down the heater. A common symptom involving the photocell will be that the heater fires for five seconds, and then shuts down. Make sure that the pump pressure is set to factory specifications, since the pressure can drastically change the output of the flame and confuse the photocell. There are two ways to test the HSI photocell: 1) Use an HA1170 tester to effectively bypass the photocell, OR, 2) Replace the suspected bad photocell with a known working photocell. For instructions on using an HA1170, please refer to repair manual SM70101. Without an HA1170, the photocell CANNOT be bypassed.



Photocell

## Glowbar/HSI

There are two types of glowbars: an older 85 VAC elongated glowbar, a 120 VAC "L-Shaped" glowbar, and a newer 85 VAC elongated glowbar made in heaters after 2004. The descriptions refer to the shape of the ceramic portion of the glowbars. The glowbar heats up to about 2,500°F and radiates enough heat to ignite the fuel spraying from the nozzle. Power will remain at the glowbar, coming from the PC board, for approximately 7 seconds. The glowbar will not come on again unless the thermostat calls for heat. The main symptom that occurs with the glowbar is that motor comes on, but the glowbar will not glow.

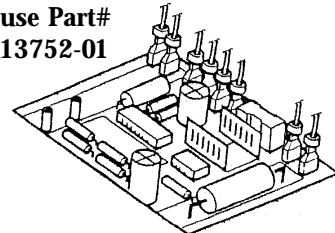
### *Testing the Glowbar*

Disconnect the glowbar leads from the PC board and carefully remove the glowbar from the combustion chamber. Set a multi-meter to the 1000 ohm setting and connect the leads to each of the wires on the glowbar. The multi-meter should show a reading of 30 – 175 ohms. Next, gently tap the CERAMIC portion of the glowbar against your hand and observe the needle on the multi-meter. If you see any movement in the needle, the glowbar has developed a hair line crack. The glowbar is defective and should be replaced immediately.

## PC/HSI BOARD

The PC board is basically the brains of the hot surface ignition heater. The PC board works specifically by timing when certain components will receive power. The PC board also is the recipient of the signal from the photocell, which determines if the heater is operating safely. When the heater is plugged into a 120VAC, the board sends power to the glowbar. Approximately five seconds later, the board sends power to the motor. The motor rotates and reaches full RPM, sending air to the nozzle. The nozzle siphons fuel from the tank and is ignited from the radiant heat on the glowbar. Power is then removed from the glowbar and ignition has occurred. The board senses the photocell signal and keeps the heater operating. The main symptom that will occur with the PC board is that the heater does nothing when the thermostat calls for heat or the heater is connected to a power source. The PC board should be the main focus of the testing. Make sure that the heater is connected to a reliable 120VAC source. The first thing to do is check for power coming from the terminals that the glowbar is connected to on the PC board. Remove the pressure gauge port plug to assure that there is no pressure to generate fuel spray during the test. Set a multi-meter to the 200VAC level and connect the leads to the terminals on the board. Plug the heater into a 120VAC source and observe the multi-meter. Almost immediately, the multi-meter should register either 85VAC or 110VAC and maintain the voltage for approximately seven seconds. Which reading should appear will depend on which type of glowbar is in the heater. (See the glowbar paragraph for the descriptions.) Power should then cut off to zero, showing no voltage being sent to the glowbar. If the test performs as stated, then the glowbar should be tested for defects. Next, remove the leads running to the motor and perform the same test as above. This time, there will not be any voltage at the motor terminals for the first five seconds. After five seconds, there should be a constant supply of 120VAC to the multi-meter. The meter will eventually drop to zero volts because there is not a flame present in the combustion chamber for the photocell to send the signal to the PC board. If the test is performed as stated and the motor still will not come on, the motor should be bench tested and replaced if necessary. If the board fails any part of this test, the PC board should be replaced.

Fuse Part#  
113752-01



PC Board/H.S.I.