



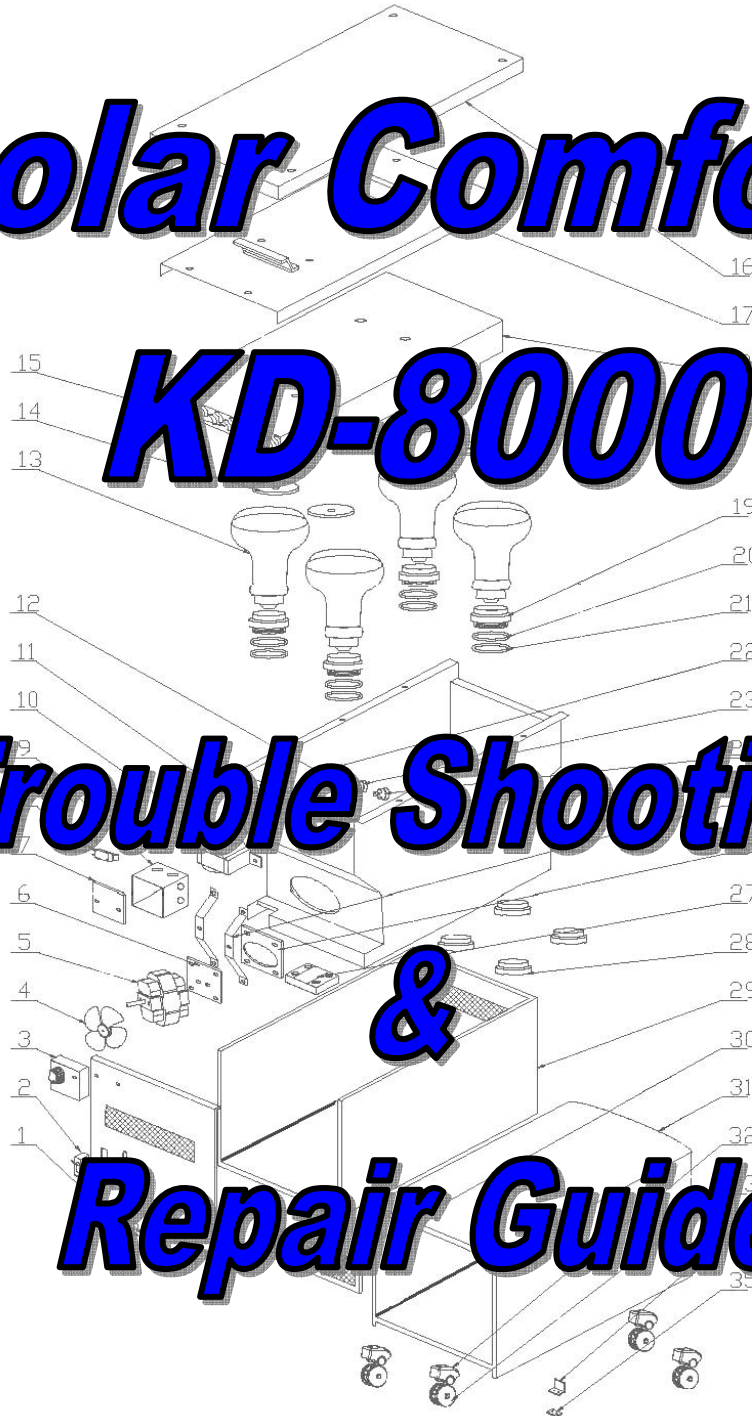
Solar Comfort

KD-8000

Trouble Shooting

&

Repair Guide



THIS GUIDE IS INTENDED FOR DEALERS AND SOLAR COMFORT TECHNICIANS ONLY AND IS NOT MEANT OR INTENDED TO BE REPRODUCED OR DISTRIBUTED TO THE CONSUMER

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A). Tools Needed:

Phillips screwdriver

Slotted Screwdriver

Wire cutters/strippers

Insulated Pliers

Insulated Needle Nose pliers

Circuit Tester with indicator light (Included) or Volt Meter

Cordless screw gun (optional)

B). Parts List:



375 Watt Infrared Lamp (4)



Lamp Socket (4)



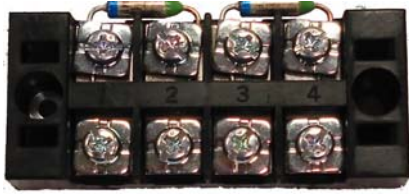
High Limit Switch (1)



Fan Limit Switch (1)



Main Power Switch (1)



Thermal Fuse Block (1)



Thermal Fuse (2)



Thermostat (1)



Relay (1)



Fan Motor (1)



Power Supply Cord (1)

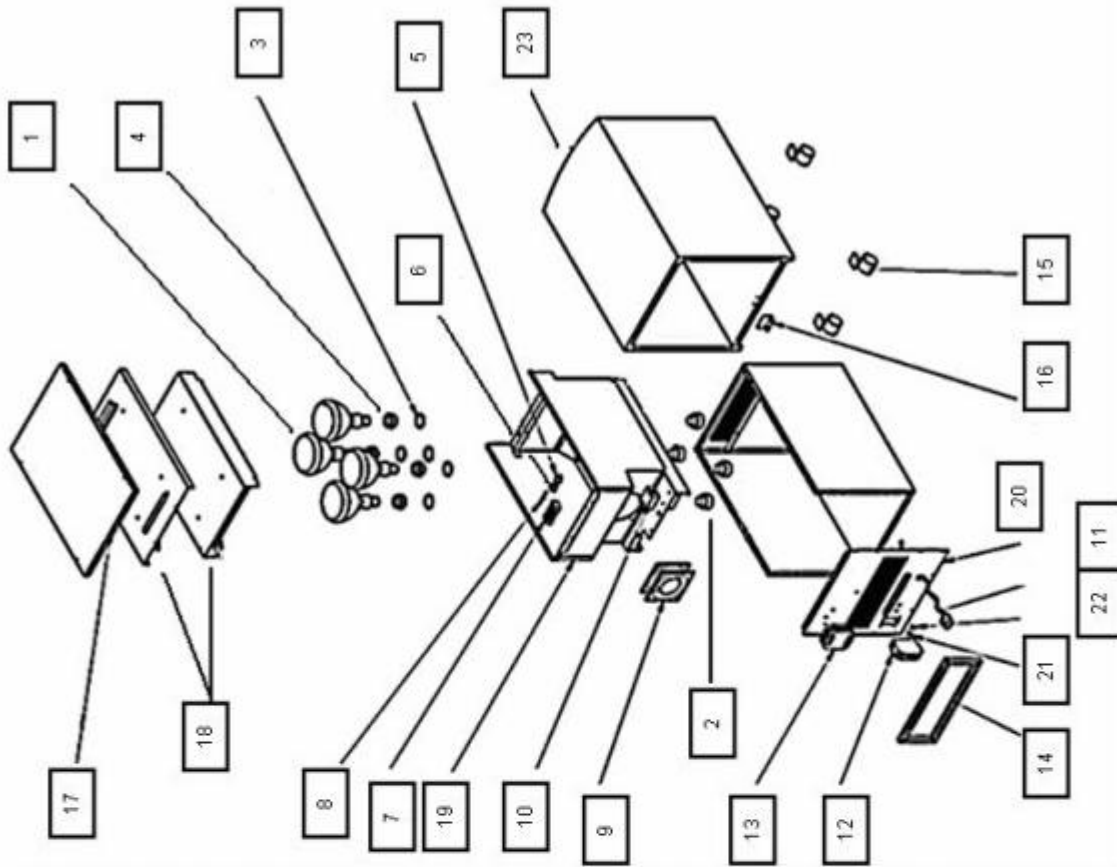


Caster (4)



Filter (1)

C). Part Numbers and Exploded View:



Map Number	Part Number	Part Description
1	100	375 Watt Infrared Lamp
2	120	Lamp Socket Base
3	121	Lamp Socket Washer
4	122	Lamp Socket Ring
5	130	Fan Limit Switch
6	131	High Limit Switch
xx	132	Female Spade Clip
xx	133	Screw - Washer - Nut for 130 & 131
7	140	Thermal Fuse Block
8	141	Thermal Fuse
xx	143	Screw - Washer - Nut for 140
9	150	Axial Fan
xx	151	Mounting Screw for 150
10	160	Relay
xx	161	Mounting Screw for 160
xx	162	U - Shaped Clip for 160
11	170	Power Supply Cord
xx	171	Power Supply Cord Gromet
12	180	Power On/Off Switch
xx	181	Screw for 180
13	190	Thermostat
xx	191	Screw - Washer - Nut for 190
14	200	Filter
15	210	Caster
xx	211	Mounting Screw for 210
16	220	L - Bracket (Retainer Clip)
xx	221	Mounting Screw for 220
17	230	Chassis Cover
18	240	Heat Exchanger
19	250	Lamp Chamber (Chassis)
20	260	Rear Panel
xx	261	Screw for 230, 240, 250, and 260
21	270	Red Indicator Light
22	280	Green Indicator Light
23	290	Cabinet

SECTION ONE

Infrared Heat Lamps




Lamps may be hot Use Caution when removing * Burning can occur
DO NOT repair in an area near combustibles. While working with high voltage, electrical shock is possible take every precaution and do not stand in water.

The four 375 watt infrared heat lamps are located inside of the lamp chamber. It is not necessary to disassemble the unit to check and see if the lamps are on. With the heater plugged in, turn the main power switch to the on position and adjust the thermostat lever to the highest setting. Remove the filter, on the back of the heater and you can view the lamps by looking through the opening where the fan motor is. You should see that there are four lamps that are illuminated. If not, replace the lamp or lamps that are not illuminated. You can do so by following this simple procedure. (It is possible but unlikely that all four lamps are burned out at the same time.)

1. REMOVE THE UNIT FROM THE CABINET:

2. REMOVE THE LID:

Once you have removed the chassis from the cabinet, look down from the top of the chassis and locate the four Phillips head screws in each corner of the lid indicated by the  . Green highlights as shown on the following page. Remove the four screws and lift straight up on the lid to remove it from the chassis.

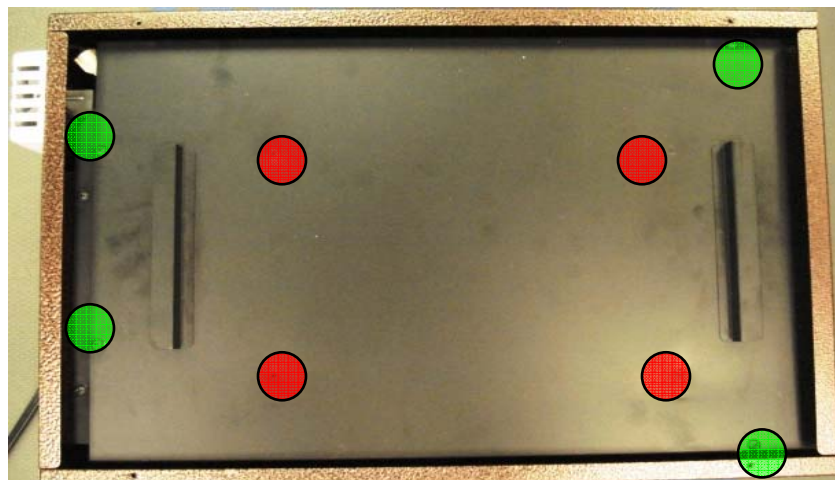


3. REMOVE THE HEAT EXCHANGER:

Remove the four Phillips head screws referenced in the diagram below with an  .

DO NOT REMOVE THE SCREWS REFERENCED WITH A

The heat exchanger will have one handle located towards each end. Lift up first the handle closest to the thermostat. Now you can remove the heat exchanger by lifting up on the second handle.



4. REMOVE THE LAMPS

Look down inside of the lamp chamber and determine which of the four lamps need to be removed. You may have to plug the power supply cord in, turn the main power switch to the on position, and adjust the thermostat to the highest temperature setting to turn on the lamps and determine which lamp or lamps need to be replaced. Once you have determined this, remove the lamp by turning it counter clock wise until it is fully released from the lamp socket and discard. Screw in a new lamp by turning it clock wise in the lamp socket. Turn the lamp until it is firmly in place.

SECTION TWO

Lamp Sockets

1. REMOVE THE UNIT FROM THE CABINET:

REFER TO “Section One” AND “Section Two”

2. INSPECTING THE LAMP SOCKETS:



*** ELECTRICAL SHOCK AND SPARKS ARE POSSIBLE ****
Sparkling can occur when working on or testing the relay. DO NOT repair in an area near combustibles. While working with high voltage, electrical shock is possible take every precaution and do not stand in water.

After you have removed the heat lamps, inspect the inside of the lamp socket. Check for cracked ceramic and discoloring of the contacts in the center of the socket. The actual socket is three pieces. The first is the ceramic ring that screws to the socket. This ring enables the socket to be attached to the lamp chamber. The second piece is the socket itself. (Fig 3-1) The third piece is the socket washer.

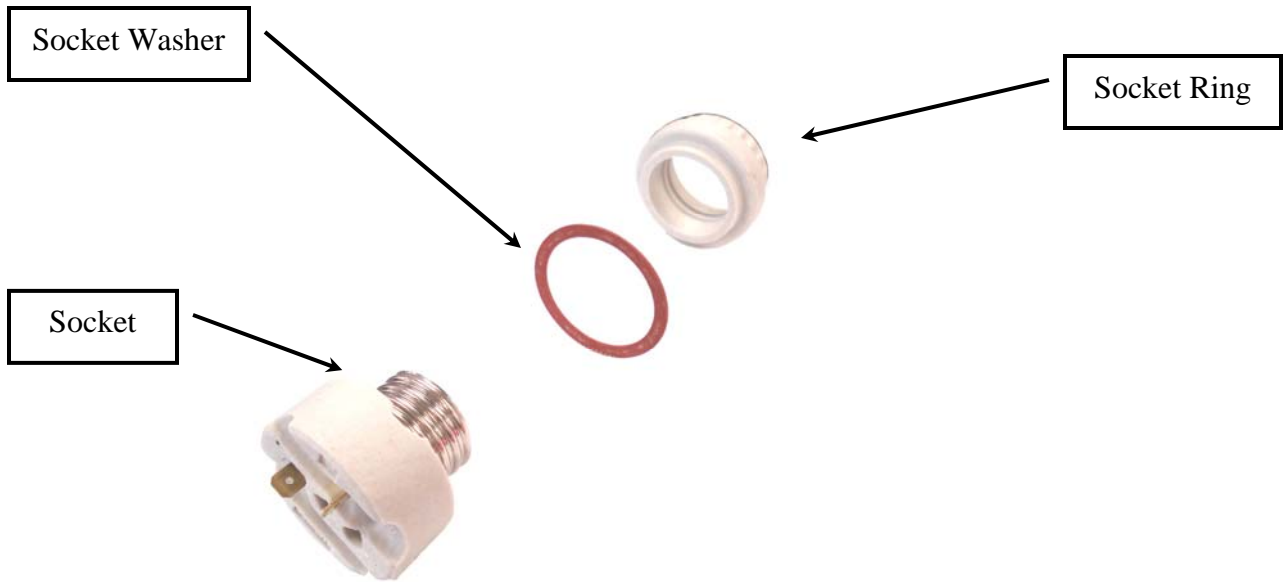


Fig 3-1

3. REMOVAL\REPLACEMENT OF THE LAMP SOCKET:

The first thing you need to do is remove the lamp chamber from the metal chassis. The lamp chamber is held into place by the 4 remaining Phillips head screws inside the chamber (see fig 3-2) and 10 Phillips head screws around the outer perimeter of the rear panel (see fig 3-3).

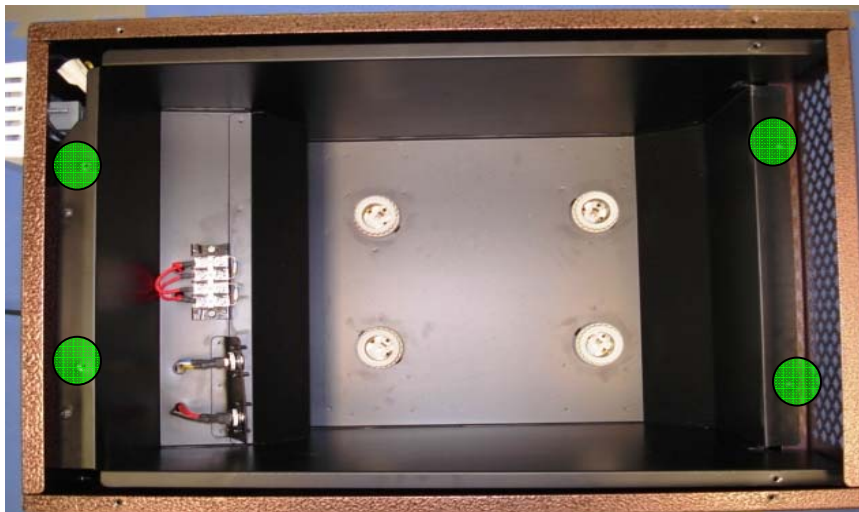


Fig 3-2



Fig 3-3

After you have removed the screws, carefully lift the lamp chamber and rear panel away from the metal chassis and lay on its side. The bottom of the lamp chamber is now exposed so that you can see the lamp sockets. There are two wires connected to each socket. You **do not** have to be concerned with right or left, positive or negative.

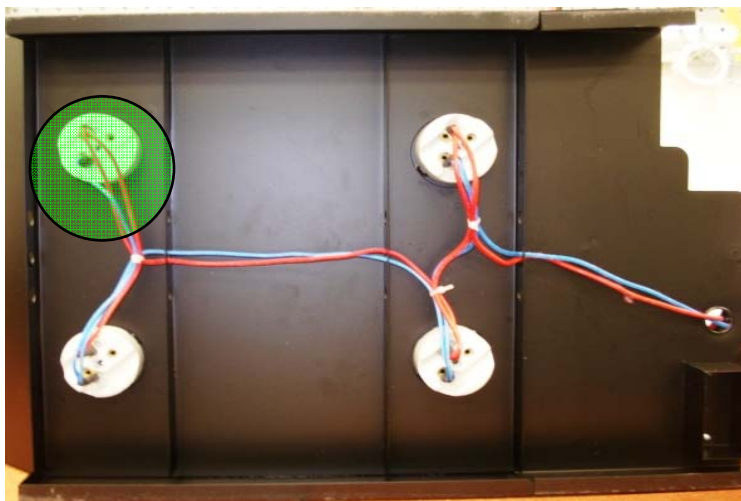


Fig 3-4

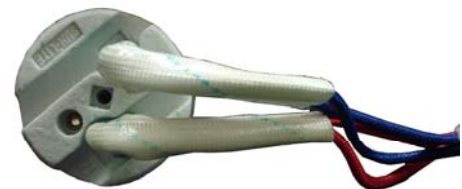
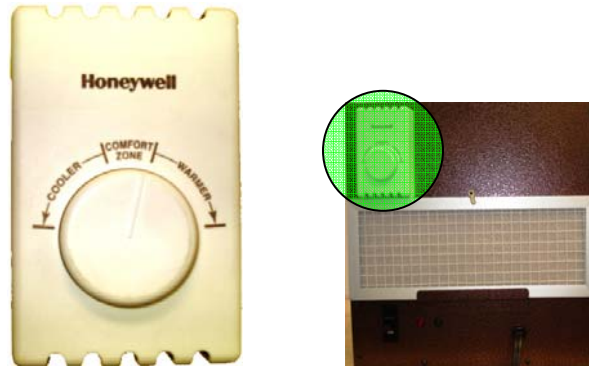


Fig 3-5

Detach the wires from the sockets by pulling on the connectors towards you. Once the wires are detached, unscrew the ring from the socket and pull the socket away from the chamber. Reverse these steps to install new socket.

SECTION THREE

Thermostat



The thermostat is located on the outside of the rear panel of the heater in the upper left hand side. See picture above.

1. TROUBLE SHOOTING THE THERMOSTAT:

Remove the cover of the thermostat by pulling it straight towards you. Plug the power supply cord into an electrical outlet and set the main power switch to the on position. With an **insulated pair of needle nose pliers or circuit tester** touch the two terminal connections simultaneously. If the lamps illuminate, then the thermostat is in need of replacement. (See fig 4-1)

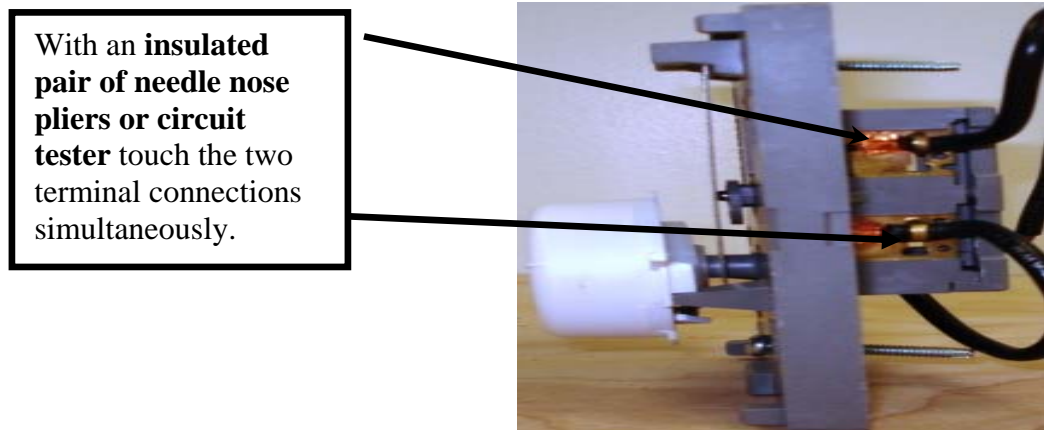
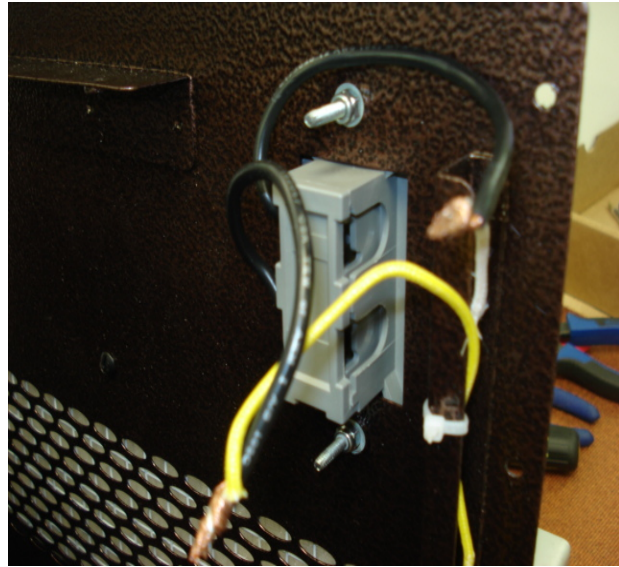
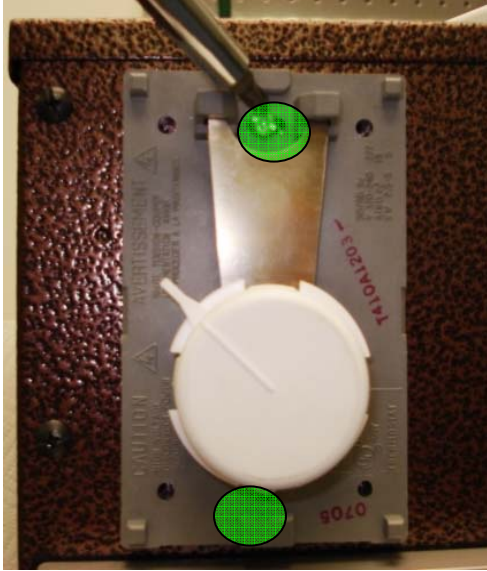


Fig 4-1

2. REPLACING THE THERMOSTAT:

Remove the lid and heat exchanger by following the steps in section number three. Proceed by removing the screws located around the perimeter of the rear panel and let the rear panel fall away. Next, locate the terminal wires of the thermostat and take off the wire caps that secure them to the wiring of the heater.



Next, remove the two mounting screws and nuts that attach the base of the thermostat to the rear panel. The thermostat should be free from the rear panel. Mount the replacement thermostat and reattach the lead wires by following the preceding steps in reverse order.

SECTION FOUR

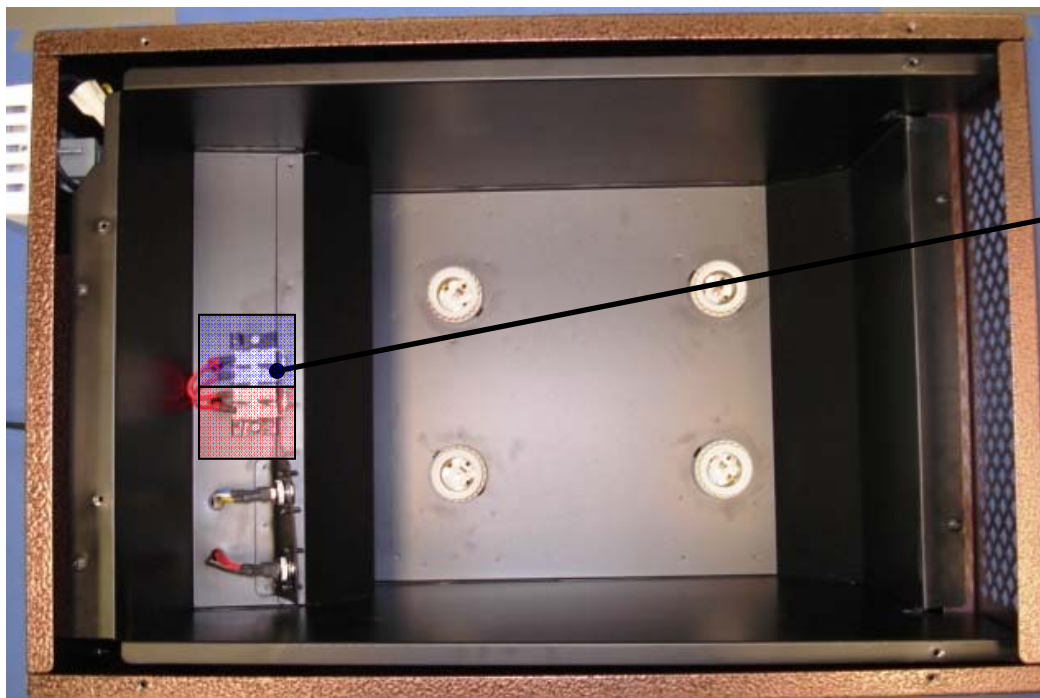
Thermal Fuse Block and Thermal Fuses

The **thermal fuse block** is located inside of the lamp chamber at the rear center of the chamber. It has the two thermal fuses attached to it.

Refer to “REMOVAL OF THE CABINET” and “INFRARED HEAT LAMPS – REMOVE THE HEAT EXCHANGER”.

**** ELECTRICAL SHOCK AND SPARKS ARE POSSIBLE ****

Sparking can occur when working on or testing. **DO NOT** repair in an area near combustibles. While working with high voltage, electrical shock is possible take every precaution and do not stand in water.



The
Thermal
Fuse Block

1. TROUBLE SHOOTING THE THERMAL FUSES:

Remove the cover cap from the thermal fuse block. This can be done by taking a small slotted screw driver and prying up at the ridge of the cover cap.

There are two rows of four terminal screws on the thermal fuse block. Each thermal fuse has a square block of four terminal screws that work in conjunction with each fuse (see fig 5-1).



Fig 5-1

You will need to have the heater plugged into electricity and the main power switch set to the on position. With a lighted circuit tester, touch two screws next to one of the thermal fuses simultaneously that are directly diagonal from each other (as shown below in fig 5-2). Do the same for all four terminal screws in each block of four. If the tester light comes on when you do this, that means that the thermal fuse is defective and in need of replacement. If the tester light comes on when testing both fuses then you should replace the thermal fuse block as well.

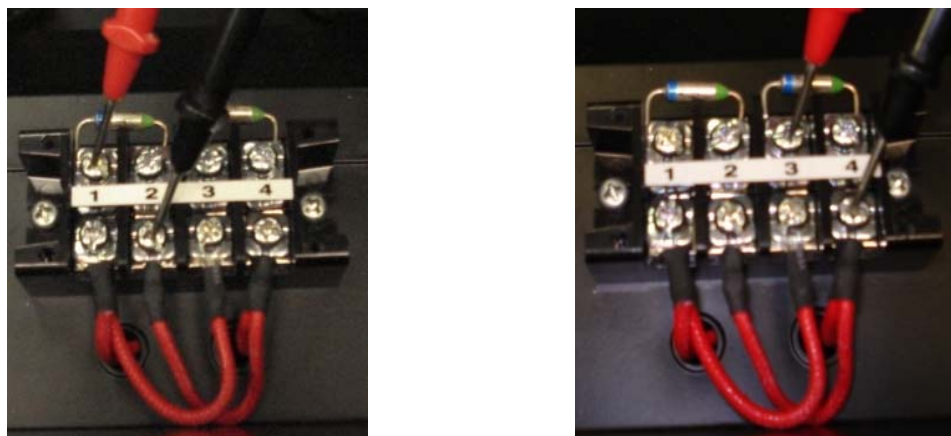


Fig 5-2

2. PREPARATION OF REPLACEMENT FUSE:

Each thermal fuse has two solid contact wires that need to be bent so the fuse can be attached to the thermal fuse block.



With a pair of needle nose pliers, go 1/8" away from the round fuse and bend the contact wires (fig 5-3) inward at a 90° angle. Be cautious that you do not bend it with too much torque. Doing so will cause a breakage of the small wire inside of the thermal fuse.

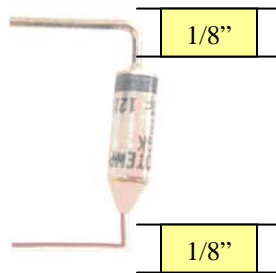


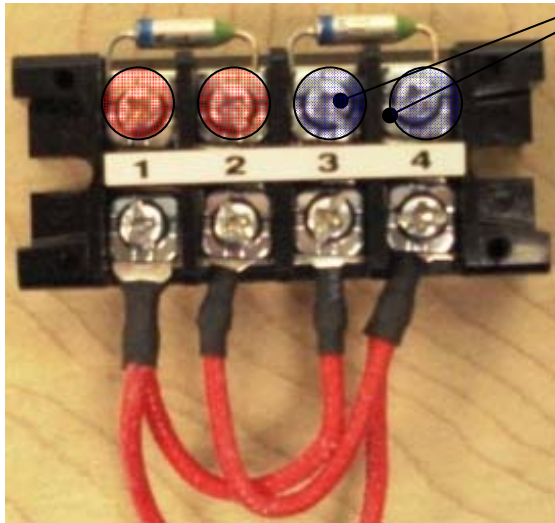
Fig 5-3

Next bend each wire out at a 45° angle and clip off any excess contact wire. You only need about 1/4 to 1/2 inch of contact wire.



3. REPLACEMENT OF THE THERMAL FUSES:

Determine which of the thermal fuses are in need of replacement. In the block of four terminal screws there are two terminal screws directly across from each thermal fuse that hold it in its place on the thermal fuse block. With a small slotted screwdriver, loosen each terminal screw. It is not necessary to remove the terminal screw totally. Pull the defective thermal fuse out of its position and replace with a new one (see fig 5-3).



**With a small
slotted
screwdriver,
loosen each
terminal
screw.**

Fig 5-3

3. REPLACEMENT OF THE THERMAL BLOCK:

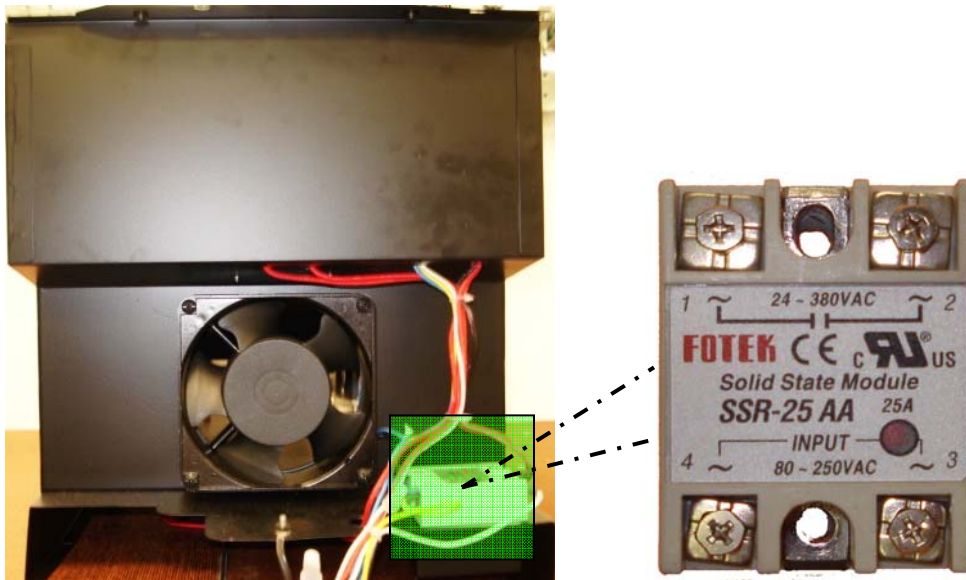
The thermal fuse block has two thermal fuses attached to the front side of it. Position number one has a lead wire along with a jumper wire that is connected to position number three. Position number two has a lead wire along with a jumper wire that is connected to position number four. Loosen all four screws of the lead wires and pull them away. **DO NOT LET THEM GET SWITCHED AROUND!** Next, remove the two screws that hold the thermal fuse block to the lamp chamber. You might have to remove the rear panel for better access. After you have removed the thermal fuse block, replace it with a new one and install it by reversing the preceding steps.



SECTION FIVE

Solid State Relay

The relay is located at the rear of the heater, behind the rear panel, mounted to the base of the outside of the lamp chamber, on the lower right hand side. See picture below for more detail.



**** ELECTRICAL SHOCK AND SPARKS ARE POSSIBLE ****

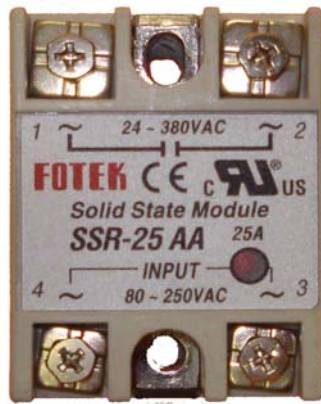
Sparking can occur when working on or testing the relay. **DO NOT** repair in an area near combustibles. While working with high voltage, electrical shock is possible take every precaution and do not stand in water.

You will need to remove the chassis from the cabinet, remove the lid, and remove the ten Phillips head screws around the outside perimeter of the rear panel. Allow the rear panel to fall away. See picture on next page for more detail.



The relay has four terminal connections. Two low voltage and two high voltage connections. The relay itself is marked where the low voltage and high voltage connections are.
PAY CLOSE ATTENTION TO THESE MARKINGS. See picture below for more details.

High Side - LOAD



Low Side - INPUT

1. TROUBLE SHOOTING THE RELAY.

With the heater plugged into electricity, the main power switch set to the on position, and the thermostats set to the highest setting, use a lighted circuit tester and touch the two high voltage terminal connections simultaneously. If, the tester light comes on, then the relay is defective and is in need of replacement.



1. REPLACING THE RELAY. Loosen the four terminal connection screws located in each of the four corners of the relay. You do not need to remove the screws totally. Slightly pull away the four terminal wires. It is important that you keep track of which terminal wires are high voltage and which wires are low voltage. Remove the two Phillips head screws that hold the relay to the heater and pull the relay out of place. Install new relay by following this step in reverse.

SECTION SIX

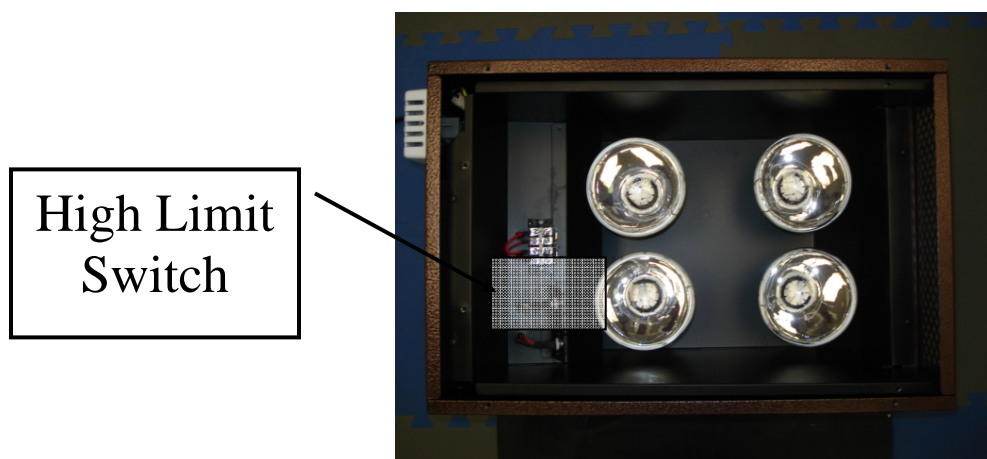
High Limit Switch

The high limit switch is located inside of the lamp chamber. It has two terminals connected to it.

Refer to “REMOVAL OF THE CABINET” and “INFRARED HEAT LAMPS – REMOVE THE HEAT EXCHANGER”.

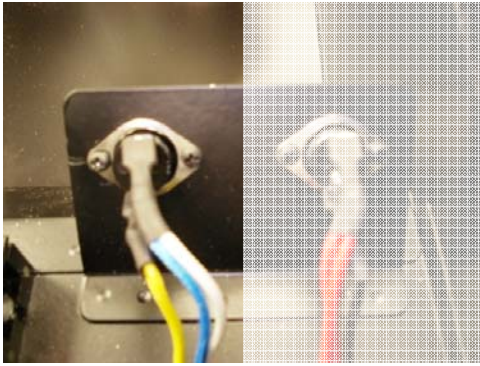
**** ELECTRICAL SHOCK AND SPARKS ARE POSSIBLE ****

Sparkling can occur when working on or testing the high limit switch. **DO NOT** repair in an area near combustibles. While working with high voltage, electrical shock is possible take every precaution and do not stand in water.



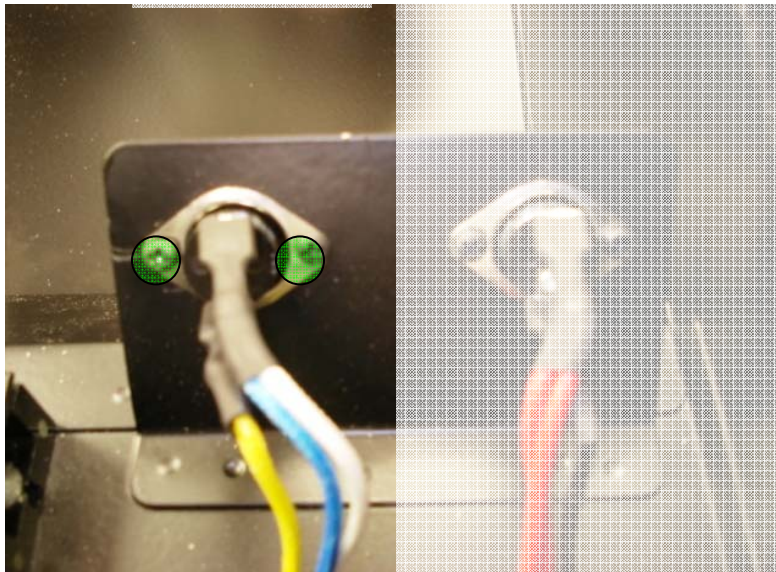
1. TROUBLE SHOOTING THE HIGH LIMIT SWITCH:

Pull back the insulation of each terminal wire to expose the thermal connector. With the heater plugged into electricity, set the main power switch to the on position and set the lever on the thermostat to the highest temperature setting. If the lamps fail to illuminate, touch the two exposed terminals of the high limit switch with a lighted circuit tester. If the light in the circuit tester does not come on, then the high limit switch is defective and is in need of replacement. See picture on following page.



2. REPLACEMENT OF THE HIGH LIMIT SWITCH:

Disconnect the terminals from the high limit switch by pulling them off. There are a set of small Phillips head screws on each side of the high limit switch. Remove the screws and slip the high limit switch out of its position. Install a new high limit switch by following this step in reverse order. See picture below for more detail.



SECTION SEVEN

Fan Limit Switch

**** ELECTRICAL SHOCK AND SPARKS ARE POSSIBLE ****

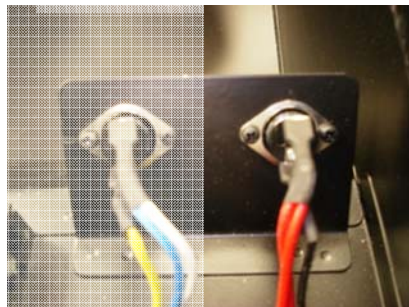
Sparking can occur when working on or testing the fan limit switch. **DO NOT** repair in an area near combustibles. While working with high voltage, electrical shock is possible take every precaution and do not stand in water.

The fan limit switch is located inside of the lamp chamber next to the high limit switch at the rear end of the heater. It has two terminals connected to it. Refer to “REMOVAL OF THE CABINET” and “INFRARED HEAT LAMPS - REMOVAL OF THE HEAT EXCHANGER”.



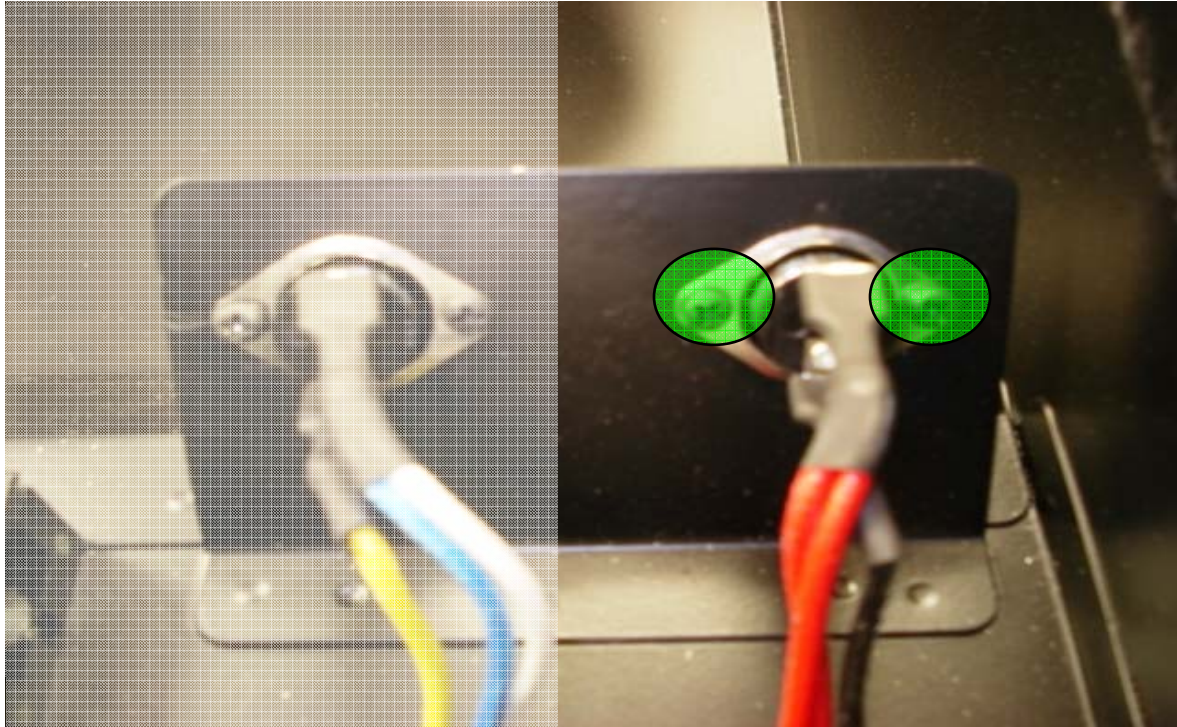
1. TROUBLE SHOOTING THE FAN LIMIT SWITCH:

Pull back the insulation of each terminal wire to expose the terminal connector. With the heater plugged into electricity, set the main power switch to the on position and set the lever on the thermostat to the highest temperature setting. Touch the two exposed terminals of the fan limit switch with a pair of insulated needle nosed pliers. If the fan does not start then the fan limit switch is defective and is in need of replacement.



2. REPLACEMENT OF THE FAN LIMIT SWITCH:

Make sure that the electricity is disconnected from the heater. Disconnect the terminals from the fan limit switch by pulling them off. There are a set of small Phillips head screws on each side of the fan limit switch. Remove the screws and slip the fan limit switch out of its position. Install a new fan limit switch by reversing this step. See picture below for more details. After retesting by following STEP 1 and the fan still does not start then the fan motor itself is defective and is in need of replacement. Refer to “AXIAL FAN”.



SECTION EIGHT

Axial Fan Motor

**** ELECTRICAL SHOCK AND SPARKS ARE POSSIBLE ****
DO NOT repair in an area near combustibles. While working with high voltage, electrical shock is possible take every precaution and do not stand in water.

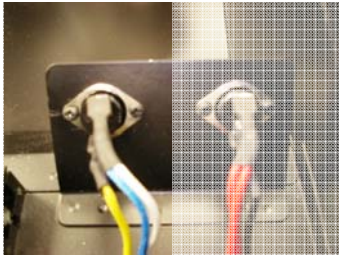
The axial fan is located at the rear of the heater, behind the rear panel, mounted outside the lamp chamber, in the lower center. See picture below for more detail.



You will need to remove the chassis from the cabinet, remove the lid, and remove the ten Phillips head screws around the outside perimeter of the rear panel. Allow the rear panel to fall away. See picture above for more details.

1. TROUBLE SHOOTING THE FAN.

There are two black lead wires attached to the fan. One lead wire attaches to the fan limit switch and the other attaches to a set of wires connected inside the rear of the heater. This set of wires contains one thick black wire from the power supply cord. You will need to plug the heater into electricity and set the main power switch to the on position. At the fan limit switch, pull back the insulation on both wires connected to it.

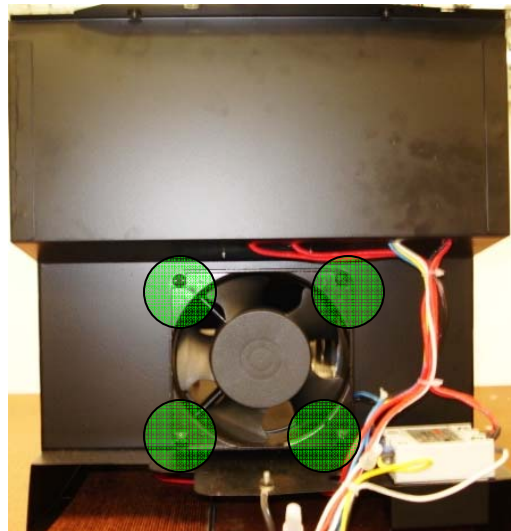


With a pair of needle nose pliers or a long insulated screwdriver, touch the two connection terminals of the fan limit switch simultaneously. After troubleshooting the fan limit switch and the fan still does not turn then the fan is defective and in need of replacement. See pictures below for more detail.

2. REPLACING THE FAN.

Locate the four long Philips head screws that hold the fan to the lamp chamber. Remove the screws and let the fan become free of the lamp chamber. Next, locate the terminal wires connected to the fan. You will need to cut the wires as close to the fan as possible. After doing this, strip back the lead wires about ¼” and crimp small female spade clips to each wire. Slide one female spade clip onto each of the two terminals of the fan.

Before remounting the fan look for the directional arrows on the replacement fan and follow accordingly. The arrows are located on one of the four sides of the fan. You want to install the fan so that the arrows are pointing up and in. Up means the fan blade will spin clockwise and in means the direction of the air flow.



SECTION NINE

Main Power Switch

**** ELECTRICAL SHOCK AND SPARKS ARE POSSIBLE ****

Sparkling can occur when working on or testing the main power switch and power cord. **DO NOT** repair in an area near combustibles. While working with high voltage, electrical shock is possible take every precaution and do not stand in water.

The Main Power Switch is located at the bottom of the rear panel on the left hand side. It is attached to the rear panel from the inside and held into place by four Phillips head screws. See picture for more detail.



1. REMOVAL OF MAIN POWER SWITCH.

Very rarely would you need to replace the Main Power Switch. Only in cases where the lever on the switch is damaged i.e..... shipping..... or if the lever on the switch will not move or moves too loosely. Refer to “REMOVAL OF UNIT FROM CABINET” and “REMOVAL OF LAMP CHAMBER FROM CHASSIS”. See pictures for more detail.



Once you have the rear panel removed, locate the four Phillips head screws around the perimeter of the switch and take them out one at a time. There are two lead wires, one at the top and one at the bottom, attached to the switch. Loosen the screws on each, and then pull the lead wire away from the switch. Install a new Power Supply Switch by following this step in reverse. See picture for more detail.

SECTION TEN

Power Supply Cord

The power supply cord is located on the back panel of the heater, at the bottom center. About the only time in which you would need to replace the power supply cord is if it has become frayed or worn at the plug.



1. REPLACING THE POWER SUPPLY CORD.

You will need to remove the chassis from the cabinet, and remove the lamp chamber from the chassis.

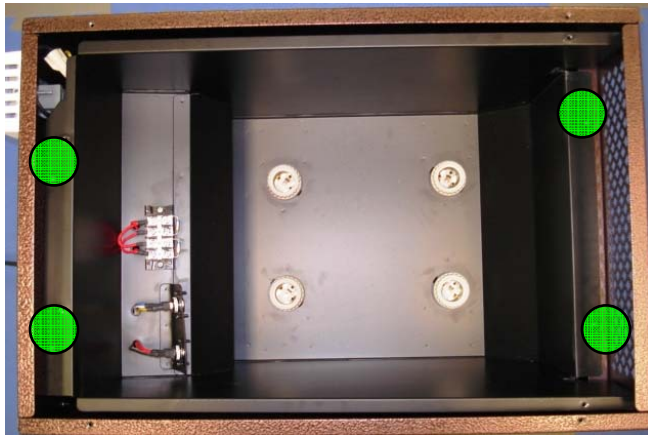


Fig 12- 1



Fig 12 - 2

The power supply cord is made up of two thick black wires that are the same, and one ground wire that is green. Take a pair of pliers and remove the grommet that attaches the power cord at the rear panel. Next, locate the power supply wires that are attached by wire caps with other wires and remove the wire caps. **It is extremely important to keep track of the two black wires of the power supply cord. Do not get them mixed up and do not cross them!** After you have done this, locate the green ground wire and remove the screw that attaches the ground wire to the unit itself.

Pull the defective power supply cord out and install and replacement power supply cord by following the preceding steps in reverse order.

If you have further questions regarding the trouble shooting and repair of your Solar Comfort heater please call us at 1-800-631-5402 or send an e-mail to jzupon@suncloud.com

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Reach Us At:

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