REPLACEMENT INSTRUCTIONS

Rev. 1.01 (20080618)

Xenon Arc Bulb
Replacement Instructions
for
Lambda LS
and
Lambda DG-4/DG-5

SUTTER INSTRUMENT COMPANY
One Digital Drive
Novato, CA 94949

voice: 415-883-0128 web: www.sutter.com
fax: 415-883-0572 email: info@sutter.com

SAFETY WARNINGS

- Ozone: The UV-enhanced ("full spectrum") version of the xenon arc bulbs generates significant amounts of ozone, which is toxic. The instruments (Lambda-LS and Lambda-DG4/DG5) used with full spectrum bulbs have to be connected to a ventilation or ozone removing system (also known as a "ozone eater") for the evacuation of the ozone produced during operation. Please contact Sutter Instruments (+1-415-883-0128 or **info@sutter.com**) for further information. There are no ventilation requirements for the ozone-free bulb.

For further safety issues, please refer to the safety information on the following page, provided by the original manufacturer of the xenon arc bulb and power supply used in the Lambda LS, Lambda DG-4, and Lambda DG-5.

PerkinElmer Optoelectronics
44370 Christy Street
Fremont CA 94538
Phone: 510-979-6500
FAX: 510-687-1152

OPERATING HAZARDS

CERMAX® Lamps

Read the following instructions and take all necessary precautions

SHORT ARC XENON LAMPS AND SYSTEMS

Proper use and safe operating practices are the responsibility of equipment manufacturers who incorporate the lamp into equipment and users of such lamps and equipment. The supplier of this lamp provides information on its products and associated hazards, but it assumes no responsibility for after-sale operating and safety practices. All lamps are under pressure and must be handled with care. Take appropriate action through baffles, light shields, interlock switches or other safeguards to protect personnel from harm due to operation and/or failure of the lamp.

SAFE OPERATING INSTRUCTIONS

Do not operate this lamp except in accordance with proper operating instructions and within recommended operating specifications. Direct questions regarding lamp operation or safety to your lamp supplier.

LAMP DISPOSAL

CERMAX lamps do not have reclaimable parts. Before disposal, it is recommended to relieve a lamp's gas pressure by squeezing the tip-off with pliers until the gas escapes. If gas pressure is not relieved, care should be taken to discard the lamp in a landfill and not an incinerator.

SAFETY HAZARDS

The operation of lamps involves one or more of the following hazards. In the absence of safe operating practices and precautions, any one of these hazards could result in injury.

I. EXPLOSION - The lamps are filled with xenon gas at very high pressure. Lamps must be handled with the same care and caution given any vessel containing these levels of pressure. A hazard exists if the window or ceramic fractures and may cause explosive mechanical failure. Face shields or proper safety glasses are recommended during all handling operations.

II. HIGH VOLTAGE - Ignition voltage of some lamp models is very high and can be deadly. If portions of the circuit are exposed, caution must be used in setup and operation of the system. The input power must be disconnected from the power source before attempting any service to the lamp.

III. INFRARED AND ULTRAVIOLET RADIATION - Do not look directly at operating lamps orb reflected light. Infrared and ultra violet radiation generated by the lamp can cause skin burns and permanent eye damage.

IV. OZONE - Some UV type lamps generate ozone, a toxic gas, by virtue of the ultraviolet radiation. A lamp which gives off ozone must be operated in a well ventilated area..

V. HOT SURFACES - Portions of the lamp can reach temperatures of several hundred degrees centigrade and cause serious burns if touched even after the lamp is turned off.

CHANGING THE XENON ARC BULB

I. Bulb Assembly

The bulb assembly has the following components:

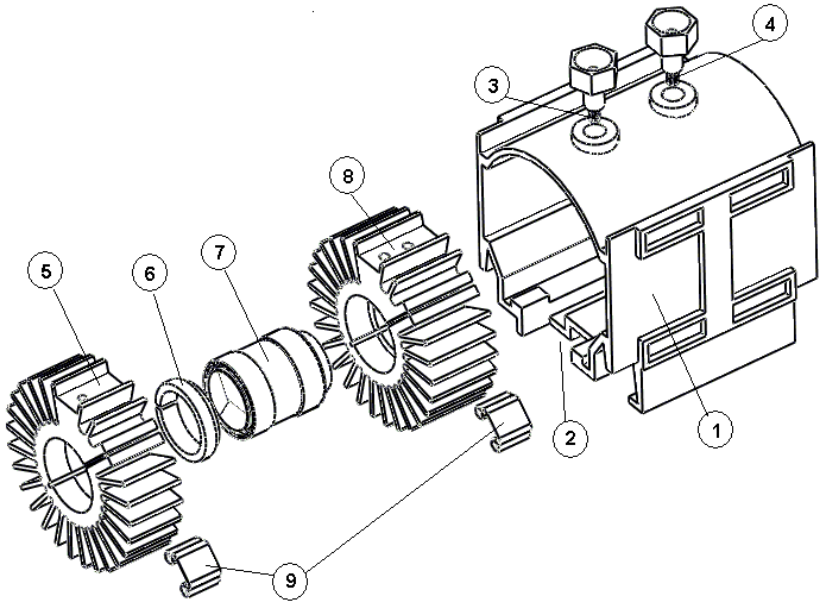

Figure 1. Bulb assembly components.

1. **Blue lamp housing**
2. **Notch indicating the front (light output) side**
3. **Front terminal (smaller threads)**
4. **Rear terminal (larger threads)**
5. **Front (thinner) heat sink**
6. **Bulb mounting ring**
7. **Xenon Bulb**
8. **Rear (thicker) heat sink**
9. **Heat sink retaining clips**

II. Removing the lamp assembly from the system

<u>NOTE</u>: Disconnect the power cord from the source and wait for a couple of minutes for the power supply electronics to discharge. Allow the bulb to cool for at least half an hour before proceeding further.

<u>Lambda LS</u>

1. **Locate the four thumb screws which secure the lamp housing cover to the top of the lamp cabinet. This is the cover on which is affixed a warning label.**
2. **Unscrew the four screws and remove the cover panel to expose the blue plastic lamp housing assembly.**
3. **Grasp the sides of the housing and carefully pull it straight up and out of the cabinet.**

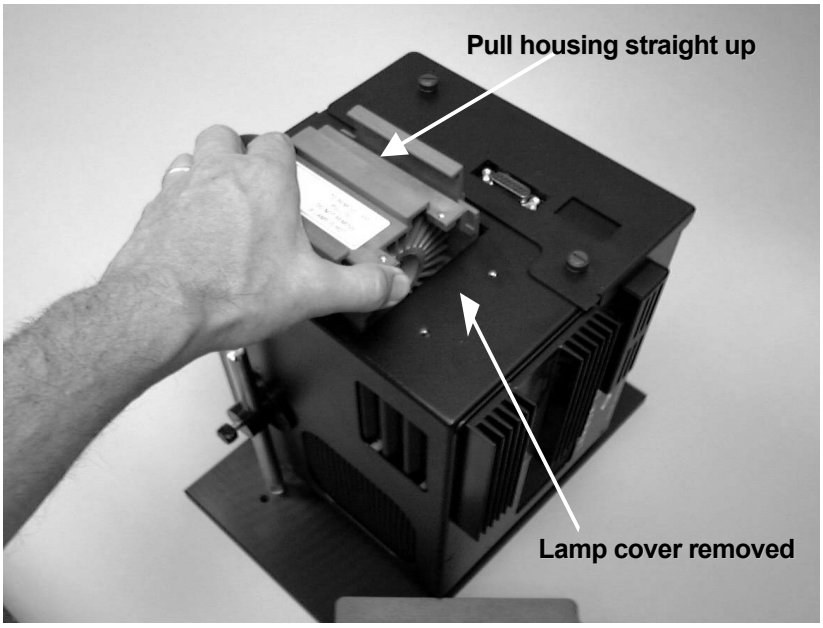

Figure 2. Removing the bulb assembly from the Lambda-LS.

Lambda DG-4 or Lambda DG-5

1. **Remove the five screws at the lower left corner of the left side panel (indicated by the arrows in Figure 3) and remove the lamp access door. This will expose a black cover panel with four knurled screws.**
2. **Unscrew the four knurled screws and remove the black cover panel. This will expose the blue plastic lamp housing assembly.**
3. **Grasp the top and bottom handles of the blue plastic housing assembly and, carefully, pull the assembly straight out of the cabinet.**

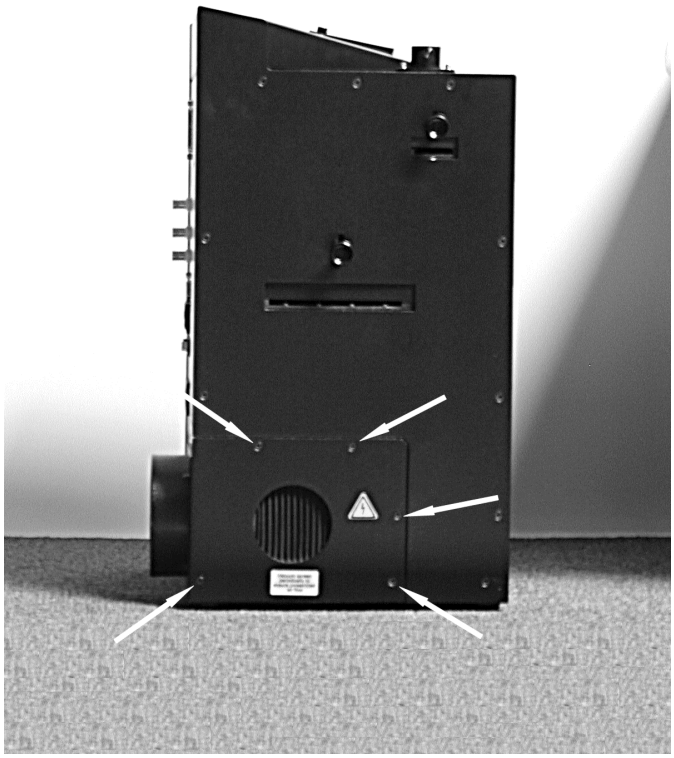

Figure 3. Left side panel of the Lambda DG4/DG5.

III. Bulb Replacement

1. **Remove both terminals (see Figure 1) from the blue housing.**
2. **Slide the bulb/heat sink assembly out from the blue housing.**
3. **Pry one of the retaining clips off one of the heat sinks and remove the heat sink. If the heat sink does not come off the bulb, insert a flat screw drive in the side slit of the heat sink and widen the gap (Figure 4) to remove the bulb. Repeat with the second heat sink.**

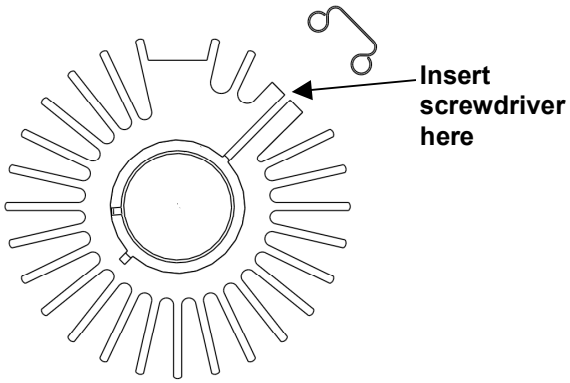

Figure 4. Heat sink.

4. **Wipe off the white thermal compound from inside the heat sinks.**
5. **The mounting ring (see Figure 1) might still be inside the front heat sink. Remove it and set it aside. You will need it if the new bulb does not have one.**
6. **Without removing the protective cap from the new bulb, apply a thin, even layer of thermal compound to the side surfaces of the anode shell as shown in Figure 5.**
7. **Slide the rear heat sink on the anode shell and press on or lightly tap the retaining clip, positioning it flush with the inside edge of the heat sink.**
8. **Remove the protective cap from the new bulb. If there is no mounting ring attached, use the ring from the old bulb. Apply a**

thin, even layer of thermal compound on the cathode shell on the surface shown in Figure 5. Slide on the front heat sink, align it with the rear heat sink (Figure 6) and press on the retaining clip positioning it flush with the inside edge of the heat sink.

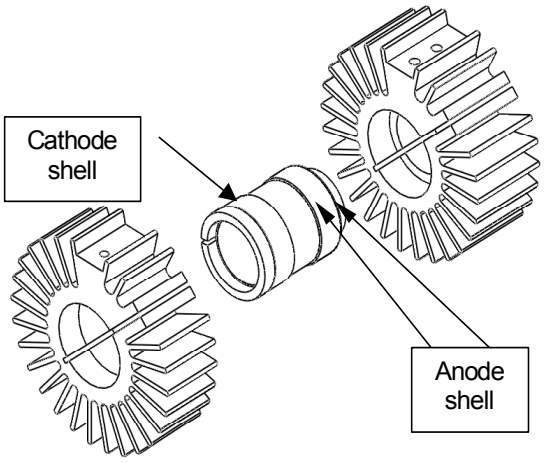

Figure 5. Bulb surfaces requiring they be covered with thermal compound.

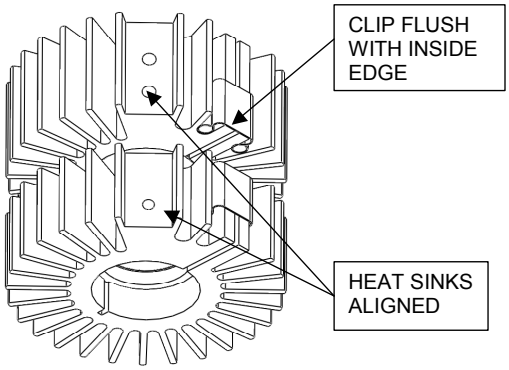

Figure 6. Heat sink alignment and positioning of the retaining clips.

NOTES:

- Avoid touching the sapphire window. If heat transfer compound is smeared on the window, it can be removed

by gently wiping it off with a dry, lint-free tissue (lens paper or lens cloth).

- Once the retaining clips are in place, the heat sinks should be tight enough not to slide around the bulb. If they still slide, remove the retaining rings, tighten them using a vice or adjustable pliers, and then reaffix them on to the heat sinks.

9. Insert the heat sink/bulb assembly into the blue housing. Make sure the SAPPHIRE WINDOW side (output) is the same side as the notch in the blue housing (Figure 7). Screw in the terminals (the one located closer to the sapphire window has smaller threads than the other) slightly more than hand tight to complete the bulb installation in the blue housing.

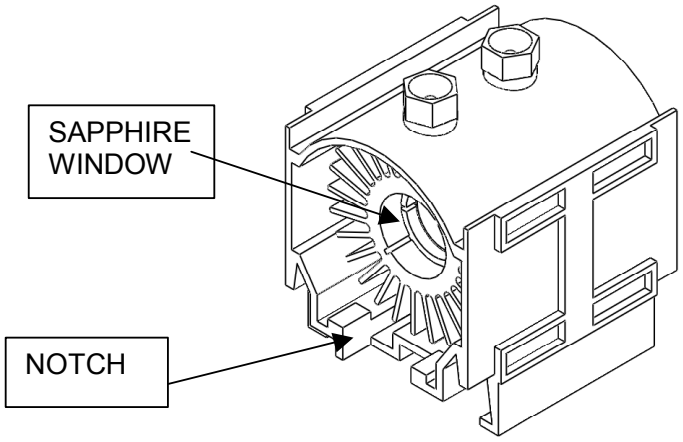

Figure 7. Position of the bulb/heat sink assembly in the blue housing.

IV. Returning the lamp/housing assembly to the system.

Lambda LS

1. **Grasp the sides of the housing and carefully lower it, terminals forward, into the cabinet. The sapphire window should point away from the lamp fan (Figure 8).**
2. **Reaffix the cover panel and screw it down with the four thumb screws previously removed.**

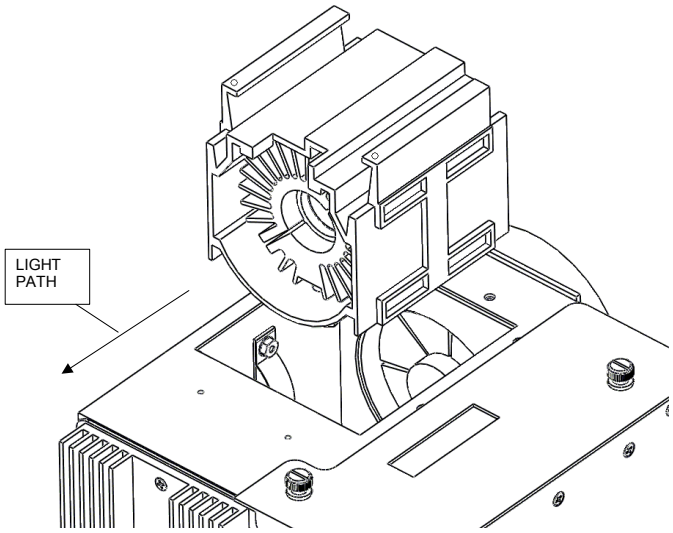

Figure 8. Returning the bulb assembly to the Lambda-LS.

Lambda DG-4 or Lambda DG-5

1. **Grasp the top and bottom handles of the blue plastic housing assembly and carefully reinsert the assembly into the cabinet (Figure 9) with the bulb window facing away from the lamp fan.**

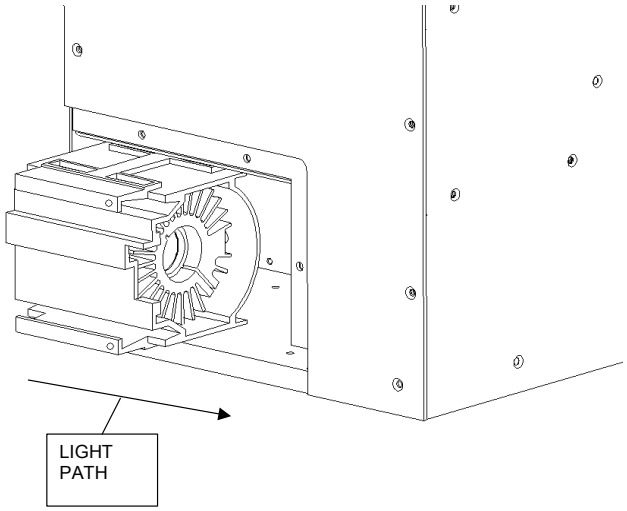

Figure 9. Returning the light bulb assembly to the Lambda-DG4/DG5 system.

2. **Reaffix the black cover panel and screw it in place with the four knurled screws.**
3. **Screw in the five screws at the lower left corner of the left side panel where the lamp access door is located.**