



## Survival Laser SL-RHPB Laser Parts Bundle Assembly & Operation Instructions



**WARNING:** READ ALL INSTRUCTIONS AND THE ENCLOSED SAFETY PRECAUTIONS BEFORE ASSEMBLY AND USE! Assemble and use these parts **ONLY** in accordance with instructions and all safety precautions.

### Parts List:

1. Survival Laser RH host assembly (bezel/retaining ring, heat sink holder, red anodized heat sink w/set screw, battery compartment, tailcap w/switch & wrist strap, AR coated acrylic lens assembly, lens focusing ring, lens cap, 0.050" Allen wrench, laser warning label)
2. 635nm diode & driver module (diode, diode module, driver board, "pill")

### Accessories:

1. 3.7V RCR123A battery charger (SL-RHPBAR)
2. 3.7V RCR123A rechargeable batteries (2, SL-RHPBAR)
3. Eagle Pair® laser safety goggles for 190-400nm & 580-760nm (SL-RHPBAR)
4. Holster (SL-RHPBAR)

**"With great power comes great responsibility."**



## Survival Laser SL-RHPB Laser Parts Specifications

Survival Laser Part Numbers	SL-RHPB/PBAR
Wavelength	635nm (red)
Optical Power Output	450 +/- 50mW
Beam Shape	Rectangle or line
Beam Width	5mm
Divergence (at best focus)	~3mrad est.
Operating mode	Continuous wave (CW)
Power Source	2 X RCR123A batteries
Driver Current	750mA +/- 10mA
Lens	AR coated acrylic
Heat Sink	Aluminum
Duty Cycle	1 minute on, 1 minute off
Working Temperature	0 Deg C - +30 Deg C
Storage Temperature	-10 Deg C - +40 Deg C
Diameter	1.02" (25.9mm)
Length	4.79" (121.6mm)
Weight (without batteries)	74 grams (2.6 oz)
Weight (with typical batteries)	107 grams (3.8 oz)
Total Operating Time (per charge)	Up to 2 hours
Shipping method	First Class or Priority Mail (domestic)

Each Survival Laser diode & driver module is tested using a LaserBee II laser power meter and is certified to meet or exceed advertised output power level with specified battery once assembled as a complete functional laser device.

**Survival Laser parts specifications subject to change without notice.**



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## SL-RHPB Laser Parts Bundle Assembly



1. Plug in the charger and insert the batteries into the charger in the correct orientation shown in the battery compartments. The light on the charger will glow red until the battery is fully charged, at which time the light will glow a steady green. Once charged, remove the batteries from the charger. **WARNING: Do not** attempt to charge disposable batteries in the charger! **Note:** Charger appearance will be different that that shown.



2. Remove and unpack all parts from the laser parts bundle and **completely disassemble the laser host into the five major components shown**. Verify that all parts are included in the bundle. **L-R:** diode & driver module, lens cap, lens focusing ring, laser warning label, 0.050" Allen wrench, AR coated acrylic lens assembly, bezel/retaining ring, heat sink w/set screw, heat sink holder, battery compartment, tailcap w/switch and wrist strap.



3. **CAUTION:** Remove any static charge on your body by touching a grounded metal object. Thread the diode & driver module into the battery compartment until fully seated. **Be careful not to twist or bend the driver leads excessively.**



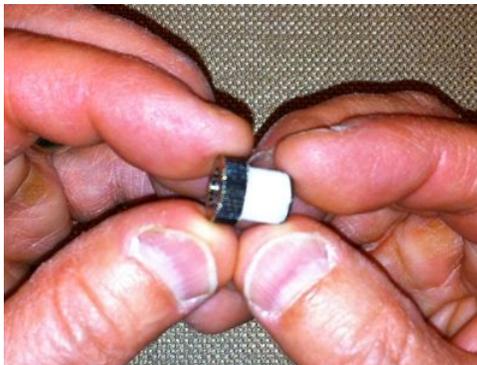
4. Carefully slide the heat sink holder over the driver assembly and thread it onto the battery compartment until fully seated. **Be careful not to twist or bend the driver leads excessively.** There will be some resistance to threading as the battery compartment o-ring is engaged into the heat sink holder during the last two threads.



5. Slide the smaller diameter end of the heat sink over the exposed diode module on the diode & driver module assembly until the open end of the module is flush with the larger diameter end of the heat sink, then tighten the set screw **securely** against the module with the supplied Allen wrench. **Note:** If the set screw is not tightened sufficiently, the module could rotate while focusing the lens and break the driver wires or pull them off the diode.



6. Place the bezel/retaining ring over the exposed end of the heat sink. Press the heat sink down with your finger and thread the retaining ring onto the heat sink holder until fully seated. **CAUTION:** Do not touch the diode inside the module with your fingers, and do not let the heat sink rotate as you tighten the bezel/retaining ring. If the heat sink rotates during tightening it could break the wires or pull them off the diode.



7. Thread the **solid slotted end** of the lens assembly into the lens focusing ring, finger tight. **Note:** for a more snug fit when installing the lens assembly into the diode module, wrap the lens body with a layer or two of Teflon tape as shown. The end of lens assembly with the retaining ring (which may also be slotted) faces the diode. **CAUTION:** Do not allow the tape to protrude beyond the end of the lens body.



8. Thread the focusing ring/lens assembly about halfway into the diode module. Final focusing adjustment will be completed later. **Reminder:** The **solid slotted end** of the lens assembly faces **away** from the diode. If the lens is installed backwards, the laser dot will have a "bowtie" shape.



9. **WARNING:** Beginning at this step **put on your protective laser safety goggles** and ensure that anyone in the vicinity of your laser is wearing appropriate laser safety goggles. You must assume that your laser will begin functioning as soon as you screw on the tailcap. Install the charged batteries, **positive end first**, into the battery compartment.



10. Point your laser in a safe direction, away from people, animals and highly flammable materials. Thread the tailcap w/switch onto the battery compartment until seated. If your laser begins functioning, press the tailcap switch to turn it off. **Important Note: Read the section about focusing on the "Laser Operation" page BEFORE using your laser.**



11. Fill out and apply the laser warning label to the heat sink holder, slightly overlapping the battery compartment if necessary. "Max power" is 500mW, "Wavelength" is 635nm, "Voltage" is 2.6, "Class" is 3B, "Pattern" is Point. **Note:** The red arrowhead on the label points toward the lens. Your laser is now completely assembled and ready for use.



12. Place the lens cap over the lens when your laser is not in use. **CAUTION: Never** operate the laser with the lens cap in place. The cap may burn and combustion residue may be deposited onto the lens surface that can be extremely difficult to remove. **IMPORTANT: DO NOT** disassemble the laser once it is assembled. Doing so may break the wires connecting the driver to the diode and will invalidate your warranty.

After you are finished using your laser, **remove the batteries. ALWAYS** store your laser separate from the battery and in a different location, and **ONLY** install the batteries in your laser when you are ready to use it. **ALWAYS** wear appropriate laser safety goggles when the laser beam, its reflection or scattered light from the beam against a surface could strike your eyes.



## Laser Operation & Safety

**WARNING:** Before switching on your laser, make sure that it is pointed in a safe direction and away from flammable materials. **Make sure that you and all in the vicinity of the laser wear appropriate laser safety goggles.**

**NEVER** look directly into the laser beam or its reflection, even while wearing laser safety goggles. **Do not** look at the spot created by the beam on any nearby object without wearing laser safety goggles.

**IMPORTANT FOCUSING NOTE:** With the 635nm high power diodes, because of the wide beam profile and higher divergence, it is strongly recommended that you only focus the laser to infinity (the smallest possible spot at a distance), as the lens housing can melt from the beam if the lens is moved farther from the diode than the point where the lens is focused to infinity. To make the beam wider, you can move the lens slightly closer to the diode, but not further away. **CAUTION:** Be careful to keep your fingers out of the beam path when adjusting the focus.

Your laser will generate significant heat during use. For best results, observe the duty cycle of one minute on, one minute off.

Fully charged batteries will provide best performance.

**Do not** drop your laser. **Note:** It is recommended that you attach your laser to a neck lanyard that will keep the laser oriented in a safe direction if it is dropped.

**Do not** allow the lens end of your laser to get wet.

Store your laser in a cool, dry location **out of the reach of children.**

Suggested uses: Emergency signaling, research, remote target illumination etc.

For additional safety, regulatory and operational information, refer to the other literature supplied with the parts bundle and visit our website at [www.survivallaser.com](http://www.survivallaser.com).