



Survival Laser SL-005PB 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.

SL-005PB Parts List:

1. Survival Laser 5 S4 host assembly (bezel/retaining ring, heat sink holder, extended and tapered copper heat sink w/set screw, battery compartment, tailcap w/switch & wrist strap, G-2 lens and blue anodized extended lens focusing ring assembly, lens cap, 0.050" Allen wrench, laser warning label)
2. Survival Laser 5 Diode & driver module (9mm high power 445nm diode, copper diode module, 2.8A driver board with controller chip heat sink, "pill")
3. Syringe of Céramique 2 high-performance thermal compound

Accessories Supplied with SL-005PBAR:

1. 3.6V battery charger
2. 3.6V RCR123A rechargeable batteries (2)
3. Eagle Pair® OD4+ laser safety goggles for 190-540nm
4. Laser holster

"With great power comes great responsibility."



Survival Laser SL-005PB Laser Parts Specifications

Survival Laser Part Numbers	SL-005PB/PBAR
Wavelength	445nm (indigo blue)
Power Output (w/fully charged batteries & 'G'-style lens)	4.5W (4,500mW) +/- 500mW @ 68 deg F
Beam Shape	Rectangular
Beam Width	5mm
Divergence (at best focus)	~3mrad est.
Operating mode	Continuous wave (CW)
Power Source (batteries)	2 X RCR123A (2 X 18650 w/extension tube)
Driver Current	2.8A
Lens	G-2 single element glass, focusable
Heat Sink	Extended and tapered copper
Duty Cycle	20 seconds on, 1 minute off
Working Temperature	0 Deg C - +30 Deg C
Storage Temperature	-10 Deg C - +40 Deg C
Maximum Diameter	1.02" (25.9mm)
Length	5.9" (150mm)
Weight (without batteries)	126 grams (4.4 oz.)
Weight (with RCR123A batteries)	158 grams (5.6 oz.)
Total Operating Time (per charge, max.)	Up to 15 minutes (30 minutes w/18650 batts)

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

Survival Laser parts specifications subject to change without notice.



Revised 5/29/14

SL-005PB 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 batteries are 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 and/or battery appearance may be different than 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:** (top) bezel/retaining ring, extended & tapered copper heat sink w/set screw, heat sink holder, battery compartment, tailcap w/switch and wrist strap, (middle) lens cap, G-2 lens and extended focusing ring assembly, lens spring, SL 5 diode & driver module, (bottom) laser warning label, Céramique 2 syringe, 0.050" Allen wrench.



3. **CAUTION:** Remove any static charge on your body by touching a grounded metal object. Place the battery compartment/diode and driver assembly on its side on a stable, flat surface for steps 3 through 8. Thread the diode & driver module into the battery compartment until fully seated. **CAUTION:** Be careful not to twist or bend the driver leads excessively.



4. Apply a bead of Céramique 2 thermal compound to the narrow annular surface of the driver pill as shown. **CAUTION:** Be careful not to twist or bend the driver leads excessively, and avoid getting the thermal compound on other surfaces. **Note:** The driver controller chip heat sink is not shown in this photo.



5. Carefully slide the heat sink holder over the diode and driver assembly and thread it onto the battery compartment until fully seated. **CAUTION:** Be careful not to twist or bend the driver leads excessively.



6. (Cont'd) **Note:** 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.



7. Carefully slip the heat sink over the diode module and continue to push it into the heat sink holder until the module protrudes beyond the heat sink and the setscrew hole is barely visible. Apply a thin layer of Céramique 2 thermal compound to the outer surface of the diode module before proceeding with step 8. **CAUTION: Do not allow the thermal compound to get in the threaded area inside the diode module.**



8. Continue to hold the heat sink in this position and push the diode module into the heat sink until the end of the module is flush with the end of the heat sink. Using the 0.050" Allen wrench, **tighten the setscrew securely against the diode module.** Wipe off any excess thermal compound from the module and heat sink. **CAUTION: If the setscrew is not tightened sufficiently, the module could rotate while focusing the lens and break the driver wires or pull them off the diode.**



9. Raise the laser assembly to a vertical position and continue to hold the heat sink fully seated in the heat sink holder. The Céramique 2 thermal compound will tend to hold the heat sink in this position against the driver pill due to its "tackiness".



10. Place the bezel/retaining ring over the exposed end of the heat sink. Hold 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 driver wires or pull them off the diode.**



11. Thread the G-2 lens and blue extended focusing ring assembly into the diode module until there is about a 1/16" gap between the bottom of the focusing ring and the diode module. Final focusing adjustment will be completed later. **Note:** If the G-2 lens is a snug fit inside the diode module threads, work the lens back and forth a few times in the module to loosen it up a bit.



12. **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.



13. Point your laser in a safe direction, away from people, animals and highly flammable or combustible 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.



14. Fill out and apply the laser warning label to the heat sink holder, slightly overlapping the battery compartment if necessary. "Max power" is 5,000mW, "Wavelength" is 445nm, "Voltage" is 5, "Class" is IV, and "Pattern" is Point. **Note:** The red arrowhead on the label points toward the lens. Your laser is now completely assembled and ready for use.



15. 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 will 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 batteries 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.

To focus your laser, point it at a non-flammable surface and turn the lens focusing ring clockwise or counterclockwise as required to adjust the beam diameter to the desired size. **CAUTION:** Be careful to keep your fingers out of the beam path.

For best burning performance, adjust the focusing ring to bring the laser beam to a narrow point about 4-6 inches from the lens.

Your laser will generate significant heat during use. For best results, observe the maximum recommended duty cycle of 20 seconds 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: All-weather fire starting, emergency signaling, pyrotechnic material ignition, remote target illumination, experimentation, etc. Solid rocket propellant grains for aiding fire starting are available for sale at www.valuerockets.com.

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.