

SEALITE SL-125 LED LANTERN

The Sealite SL-125 LED lantern is a stand-alone replacement for 155mm and 250mm lanterns used on buoys and structures. The original SL-125's were purchased to replace 250mm lanterns used on structures equipped with 12-volt, 0.25 amp lamps. The capabilities of the lantern greatly exceed this application therefore use has been authorized on buoys and structures requiring higher intensities where a self contained LED lantern is not viable or a replacement lantern is needed at an economical price (the SL-125 is cheaper than a complete 250mm). The SL-125 requires a legacy solar power system for proper operation.



Sealite SL-125

Selection Criteria

Intensity selection should be based on the operational requirements of the aid. To determine the intensity requirements for any aid, Districts shall use the standard procedures for selecting an AtoN light signal as prescribed in the AtoN Technical Manual (Chapter 6, Section 6.B, page 6-1) and the Visual Signal Design Manual (Chapter 3). These references describe how operational range, luminous range, light color, light characteristic, background lighting, and meteorological visibility are used to calculate intensity needs.

Sealite SL-125 Effective Intensity Data (candelas)

Rhythm	1 Tier		2 Tiers		3 Tiers		4 Tiers	
	White	Red & Green	White	Red & Green	White	Red & Green	White	Red & Green
Fixed	136	86	264	168	387	249	519	329
Iso6, Oc 4	128	81	248	158	363	234	487	309
Iso 2, FL2.5(1)	113	72	220	140	322	207	432	274
FL6(.6)	102	65	198	126	290	187	389	247
FL4(.4), MoA	91	57	176	112	258	166	346	219
FL2.5(.3), Q	82	52	158	101	232	149	311	197

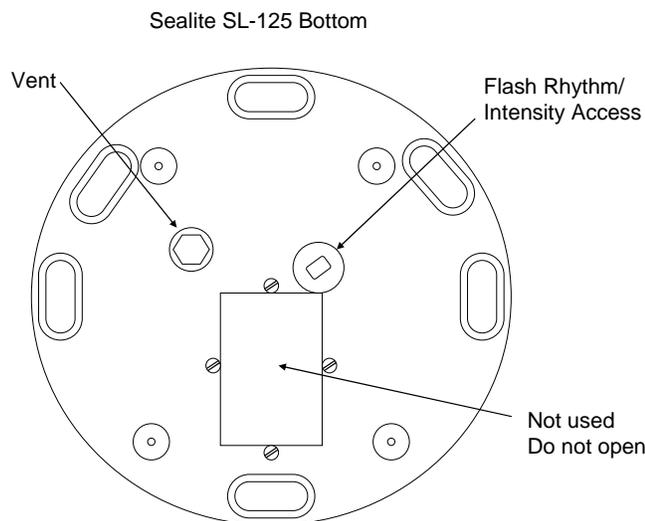
Yellow lanterns are available. Contact the Waterways Operations Product Line for effective intensities.

Purchase

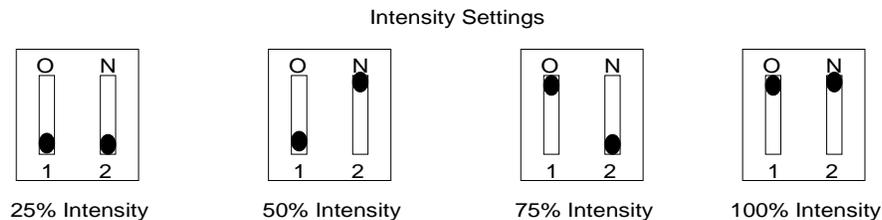
The SL-125 lantern is available from Sealite USA, 61 Business Park Dr., Tilton, New Hampshire 03276. Contact them at (603) 737-1311 or m.novo@sealiteusa.com or info@sealite.com for ordering instructions. Note: we are only using the SL-125-1T, 2T, 3T and 4T lanterns (#T refers to the number of tiers). This lantern is on GSA schedule/contract.

Programming

The flash rhythm and intensity settings are programmed by removing the access plug in the base of the lantern:

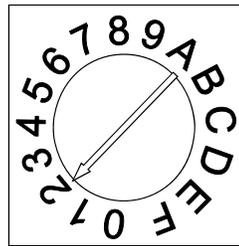


This lantern has variable intensity settings of 25%, 50%, 75% and 100%. The values on page 1 are the 100% intensity values. For values other than 100%, multiply the intensities by 0.25, 0.50 or 0.75. The intensity settings are programmed via dip switches located near two rotary switches used to program the flash rhythm. Use a ballpoint pen to change the dip switch settings.



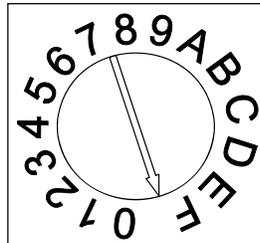
The flash rhythm is set using the two rotary switches accessible through the access plug. Each switch has a selector with a pointer on it to indicate position. Use a small screwdriver to turn the rotary dial to align the arrow with the proper letter/number. Switches are labeled “A” and “B” on the circuit board, as shown on the next page:

Programming (cont'd)



B

Example shown:
A = F
B = 2
Oc4



A	B	Rhythm
Buoys/Structures		
8	0	FL2.5(.3)
E	0	FL4(.4)
9	1	FL6(.6)
2	B	FL(2+1)6
7	B	Mo(A)
Ranges		
D	6	FL2.5(1)
1	2	Iso2
5	2	Iso6
F	2	Oc4
0	0	Fixed

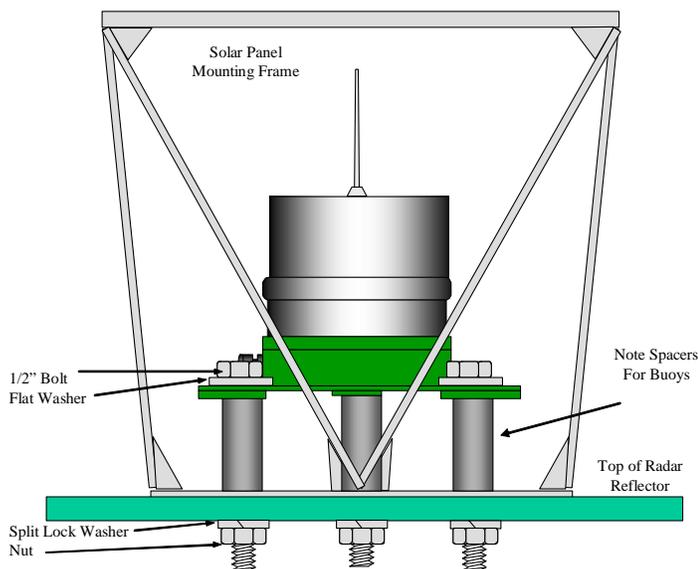
A

Additional flash rhythms are available. Contact the Waterways Operations Product Line for details.

Bench Test

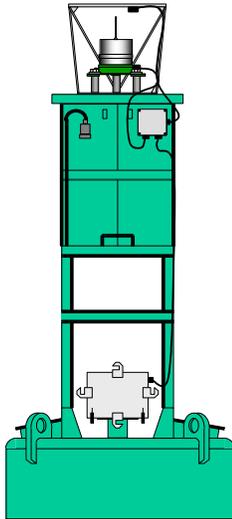
Connect a 12 VDC power source to the positive and negative leads from the lantern. Black is positive and white is negative (note: a few lanterns may have the European color coding where **brown** is positive and **light blue** is negative). Cover the lantern with a jacket to simulate nighttime and check to see if the lantern flashes on-characteristic. The recommended interval is 24 hours.

Installation - Buoys



Installation – Buoys (cont'd)

Sandwich the panel stand between the lantern and buoy and attach with ½” threaded stainless steel bolts, flat washers, split lock washer and nuts, as shown above.

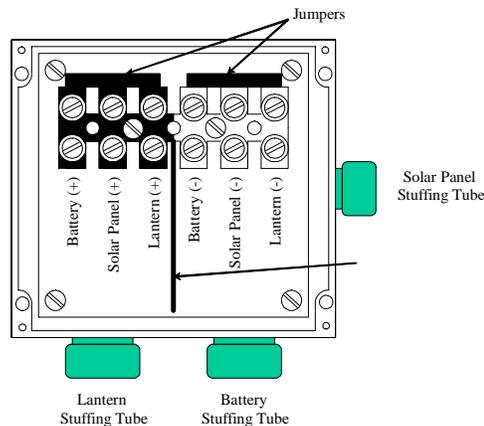


Install the solar panel using the solar panel installation kit and the appropriate number of batteries, and connect as outlined in the Short Range Aids to Navigation Servicing Guide.

The LED Lantern Junction Box should be mounted to one of the radar reflectors (preferably one of the closed sections) to protect it from rain and guano, as shown above. Install using the template provided in the LED Lantern Junction Box; mark the four holes to be drilled on the radar reflector with a center punch. Be sure the area behind the radar reflector has room to install hardware (no cross ribs, vertical reflectors, etc.). Drill four 9/32” diameter holes through the reflector. Install the junction box using the provided hardware. Route the wires through the stuffing tubes. Tie the cables to

adjacent support structures and cut off the excess in the box (keep the cable as short as possible). Strip the ends of the wire and insert into the Euro type terminal strips and secure with a 3/16” flat blade screwdriver. The terminals are labeled and color coded black for positive and white for negative. The box is gray and may be painted to match the buoy, if desired.

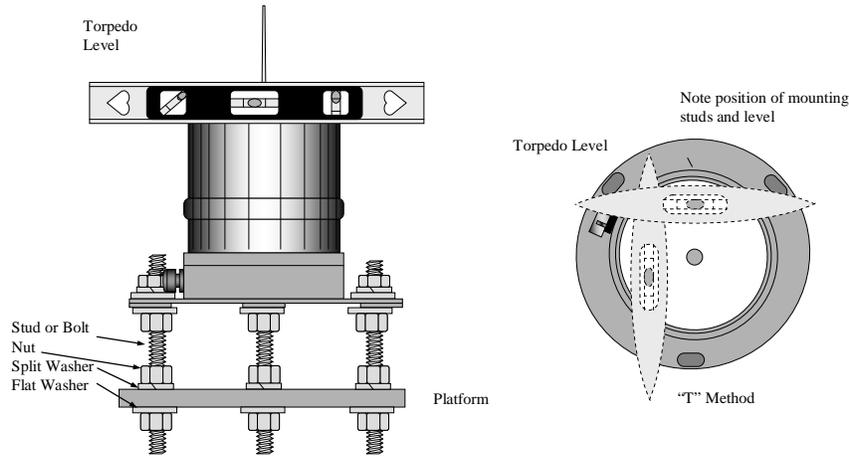
Note:
Cable size for the SL-125 is
0.345” diameter. Order a
2C packing via MILSTRIP,
NSN5330-00-202-2588



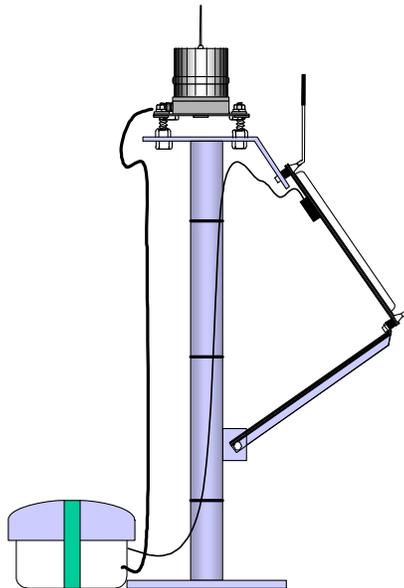
Cover the lantern to simulate nighttime and check for proper operation.

Installation - Structures

Mount and level the lantern using three ½” stainless steel studs or bolts. Place a torpedo level on the top of the lens (if not flat, use the base). Use the “T” method as shown below and adjust the nuts beneath the base until level. After tightening, recheck using the level in both directions.



The power cable is a fixed length, but can be replaced. Procedures for replacing the cable are in the Cable Replacement Section. It is strongly suggested that if the cable is replaced that it be done at the base and not at the aid. If the cable can not be extended, use a LED Junction Box available from the Waterways Operations Product Line.



The leads from the lantern and solar panel should be terminated in the battery box. Route the wire and zip tie it along structural members then coil the excess inside the battery box. Crimp the proper ring lug onto each wire, and attach the black leads to the positive terminal on the battery and the white leads to the negative terminal on the battery. Apply No-ox grease or a suitable anticorrosion coating to the battery terminals.

Cover the lantern to simulate nighttime and check for proper operation.

Solar Design

To design a solar power system to operate the SL-125 lantern, use either the Buoy Solar Sizing Program or the Minor Fixed Aid Solar Program on our website (<http://www.uscg.mil/hq/cg4/cg432/>) under Pubs/Software. The number of tiers and power level are available from the pull down menus in the spreadsheets.

Service Life

Lanterns may be kept in service as long as they provide an acceptable signal to the mariner. Signs of crazing of the lens, deterioration of the housing or evidence of failed LEDs are grounds for replacement.

Servicing

- The service interval for the lantern is three years.
- Ensure that the lens is clean, not discolored or crazing. Wipe with a cloth dampened with mild soap and water, if necessary. Replace if not clear or cracks could compromise its strength or light transmission.
- Inspect the wiring and power system in accordance with the Short Range Aids to Navigation Servicing Guide. Load test the battery.
- Cover the lens to ensure that the lantern flashes on rhythm. Observe the LEDs around the lantern. Noticeable dark spots indicate that one or more LEDs are out. If one or more LEDs are out the lantern should be replaced at the earliest convenience after posting a local notice to mariners. An easy way to check LED lanterns is to wrap white paper around the lens and observe the light pattern. Dark sectors on the paper indicate failed LEDs (note: failed LEDs are very rare).
- If the lantern fails for any reason, replace it with another LED lantern or a 155mm lantern, conventional programmable flasher, lampchanger, DLC and lamps.

Cable Replacement

The cable can be replaced, but it should be done at a facility that has soldering equipment.

1. Remove the packing nut from the stuffing tube on the lantern.
2. Carefully pull the wires out of the lantern until the jacket clears the stuffing tube, as shown below. Note that black/brown/red are positive, white/blue/green are negative.



Cable Replacement (cont'd)

3. Unscrew the stuffing tube from the lantern but try not to twist the cable as the tube is removed.
4. Carefully pull the wires out of the lantern. You should see two splices in the cable.
5. Cut the old cable off just inside the splices. Slide the stuffing tube off the old cable.
6. The new cable must not exceed 11/32" diameter (0.345"). Suggested sources are: 18/2 AWG Neoprene Rubber Jacket, 600 VAC Type SOOW McMaster Carr 7081K11 or equivalent. 18AWG wire is sufficient for these lanterns.
7. Enlarge the "fingers" on the stuffing tube with a blunt object as shown below.



8. Slide the packing nut, packing and stuffing tube down the new cable to within 6" of the end of the cable.



9. Strip 3" of the outer jacket from the cable.
10. Use solderless butt connectors (OK) or solder leads with heat-shrink tubing on wires (Preferred).
11. Carefully push wire back into lantern and coat the threads with a thin layer of silicone.
12. Tighten the stuffing tube, but do not twist the cable as the tube is turned.
13. Carefully spread the "fingers" of the stuffing tube and push the packing into the stuffing tube.
14. Slide the cable jacket into the packing inside the stuffing tube. Lubricant may be necessary.
15. Tighten the packing nut on the stuffing tube, as shown below.



Troubleshooting

No light.

- Check battery voltage. Minimum voltage is 10 volts for the LED lanterns to operate. No reduction in LED intensity will occur at this voltage. Replace wire or battery, if necessary.
- Disconnect one lead from the battery, wait 10 seconds, then reconnect.
- Replace the LED lantern assembly if the power system checks out and the lantern fails to light.

Improper rhythm

- Check the position of the code selection switch.
- Disconnect one lead from the battery, wait 10 seconds, then reconnect.
- Replace the LED assembly lantern does not display the proper rhythm.

Various LEDs out (dark sectors)

- The Sealite SL125 lantern has 36 equally spaced LEDs. If the light pattern is not consistent, as projected on a sheet of white paper, replace the lantern.

Reporting Requirements

Units and Cutters shall enter the following information into IATONIS so that your district and CG Headquarters can monitor these lanterns. Enter the following data in the fields listed below for these lantern combinations:

<u>LANTERN TYPE</u>	<u>LAMP TYPE</u>
LED SEALITE SL125-1TIER	LED
LED SEALITE SL125-2TIER	LED
LED SEALITE SL125-3TIER	LED
LED SEALITE SL125-4TIER	LED

Enter the power level (25%, 50%, 75%, 100%) in the Remarks field.

Contact Info

Sealite USA
 61 Business Park Dr.
 Tilton, NH 03276
 Phone: 603-737-1311
 Fax: 603-737-1320
 E-Mail: info@sealite.com or m.novo@sealiteusa.com
 Website: www.sealite.com

In addition, specific problems, concerns, observations and questions may be directed to anyone on the Waterways Operations Product Line staff via the website (<http://www.uscg.mil/hq/cg4/cg432/>).