

SS Series

- Minature Video and Lighting System
- 400 Meter Depth Rated
- Scratch-Resistant Sapphire Port
- Extremely Durable
- Crisp, Wide-Angle Image



DEEPSEA
POWER & LIGHT®

SS Series Specifications

SPEC REV 12/06/10

GENERAL NOTES AND WARNINGS

- You may run your SS Series camera in air. As the light heats up you will notice that the output will diminish. This is normal, and the light will return to full brightness once it is submerged and allowed to cool.
- **!DANGER!** When the SS Series camera is operated in air the body may reach temperatures in excess of 65° C. These temperatures may be enough to cause burns if the light is handled without protective clothing.
- Do not tamper with the split retaining ring that holds the front window.

The front window requires a press to install the split retaining ring, and it is very hard to reinstall. Tampering with the lighthouse in any way may damage the light and void your warranty.

- **!DANGER!** Do not operate any high voltage electrical equipment in or around water without using a Ground Fault Interrupt circuit (GFI) and an isolation transformer, especially when divers are in the water.

PRE & POST DIVE INSPECTION

- Rinse your LED Multi-SeaLite® in fresh water after use in saltwater.
- Always check to make sure that the rear bulkhead connector assembly is secure before deployment.
- Before and after each deployment, check the following areas for damage, wear or corrosion: Rear bulkhead connector assembly, power cable, front window, retaining cowl.
- **!DANGER!** After each deployment, carefully check to make sure the light has not flooded. It is possible for the light to partially flood and then reseal itself while underwater. Upon surfacing, the light can be-

come internally pressurized, which may be potentially dangerous. Additionally, if the power remains on when the light has partially flooded, it is possible for electrolytic generation of an explosive mixture of hydrogen and oxygen gases. If a light appears flooded upon removal from the water, it should be treated as potentially dangerous. Point the light away from persons and valuable equipment and make sure that the power is disconnected. See the Flooded Light Repair procedure for more information.

WARRANTY INFORMATION

Full warranty information can be found at www.deepsea.com. For warranty and non-warranty repairs please contact DeepSea Power & Light for a RMA number prior to returning your item. Please have your light model number, serial number and any other pertinent information along with a description of the problem, at hand when you call, or include them in a fax or email. When shipping your item, be sure that the freight is pre-paid (CODs will not be accepted) and that the RMA number is clearly printed on the outside of the box.

RMA contact information:
Phone: 858-576-1261 ext. 324
Fax: 858-576-0219
Email: RMA@deepsea.com

All shipments should be sent to the address below marked:
Attn: RMA #####



DEEPSEA
Power & Light®

4033 Ruffin Road
San Diego, CA 92123
ph: (858) 576-1261

www.deepsea.com
info@deepsea.com
fax: (858)576-0219

DISASSEMBLY, INSPECTION, ASSEMBLY PROCEDURE

Disassembly

1. Before working on your SS Series camera, be sure that you have a clean, dry, flat work area available.
2. Unscrew the connector/socket assembly from the back of the light body using your hand or a 1 3/8" wrench. Gently pull the connector/socket assembly away from the light body and unscrew the lamp base (the thing with wires running to it) from the socket in the connector/socket assembly. Remove the o-ring (2-213 NO674-70) from the connector/socket assembly. Place all items in a clean, dry place.
3. Unscrew the retaining cowl using a large size spanner wrench to hold the cowl and a small size spanner wrench to hold the light body.
4. **Optional:** If you wish to remove the retaining cowl and locking ring, do so before separating the lighthouse from the body. Once the retaining cowl is loosened, retighten it so that it is just hand tight. This gives the locking ring some resistance to hold it out of the way during removal of the retaining cowl. Using a small allen wrench or screwdriver, press in on the locking ring through the small sight holes in the retaining cowl. Work your way around the cowl until the locking ring has bottomed out in the groove in the lighthouse. Pull the lighthouse directly away from the body and cowl to separate it. This process may need to be repeated several times before the lighthouse releases. This process takes some practice, and care should be taken not to damage or force any of the parts.
5. Carefully separate the lighthouse from the body making sure that the lamp base passes through the connector/socket assembly hole. The retaining cowl will remain connected to the lighthouse, if you have not removed it already.
6. Remove the o-ring (2-037-NO674-70) from the back side of the lighthouse. Place in a clean dry place.
7. **IMPORTANT! Do not attempt to open up the lighthouse or remove the split retaining ring on the front window of the lighthouse. The front window requires a press to install the split retaining ring and it is very difficult to reinstall. Tampering with the lighthouse in any way may damage the light and void your warranty.**
8. **Optional:** If you wish to replace the driver board, remove it by unscrewing the four screws that hold it to the light engine. Carefully unplug the green connector that attaches the lighthouse to the driver board. Place all parts in a clean dry place.
9. **Optional:** If you wish to remove the mounting collar, unscrew the allen head screw at the top of the collar. With your thumbs on the rear of the light body and your fingers on the collar, pull back on the collar while you push on the light body. It may take considerable force to remove the collar. Once the collar has been removed, remove the rubber mounting ring.

Inspection

1. Inspect all o-rings to make sure that there are no nicks or cuts present, and that they are still supple and flexible. Clean with a lint free wipe and reagent grade alcohol.
2. **!WARNING! Do not clean any part of the lighthouse with any type of alcohol.** The front window of the lighthouse is made of acrylic plastic and will cloud and craze if exposed to the alcohol.
3. Clean the o-ring groove on the back of the lighthouse with a lint free wipe. Check the wires that connect the lamp base to the driver board for nicks or

wear.

4. Inspect the light body to make sure that it is clean, and that the sealing surfaces on the front and back are smooth and free of scratches or rough spots. Check the entire body for evidence of corrosion.
5. Inspect the retaining cowl for cracks or chips.
6. Inspect the connector/socket assembly for wear. Clean the o-ring groove with a lint free wipe and reagent grade alcohol. This is also a good time to check the continuity of the connector/socket assembly.
7. If any of the above parts show signs of wear or damage they should be replaced. If there appears to be anything wrong with the lighthouse, it should be returned to DSPL for evaluation and repair using the [RMA procedure](#).

Assembly

1. If you removed the mounting collar from the light body, reinstall the rubber mounting ring first, making sure that the rounded corner of the ring is on the outside and facing the rear of the body. Place the light body face down on a flat surface. Loosen or remove the allen head screw in the collar. Place the collar over the light body making sure that the ridge on the inside edge of the collar is on top. Press firmly on the collar until it is seated over the rubber mounting ring. Tighten the allen head screw.
2. Place the lighthouse/driver assembly face down on the flat surface.
3. If you separated the driver board from the lighthouse, reinstall the driver board by plugging the green connector back into the driver board. Make sure that the thermal pad is sitting on top of the FET (black, D shaped component on the driver board) and that it contacts the lighthouse body when the driver board is seated. Reinstall the 4 screws, shoulder washers and spacers that hold the board to the light engine.
4. If you removed the retaining cowl and locking ring, reinstall them by compressing the locking ring in the groove in the lighthouse with your hand while lowering the retaining cowl onto the lighthouse.
5. Lubricate the o-ring (2-037-NO674-70) with Dow 111 and place it into the groove in the back of the lighthouse.
6. Lower the body onto the lighthouse and fish the lamp base through the hole where the connector/socket assembly will go using tweezers or needle-nose pliers.
7. Tighten the retaining cowl, first by hand, and then using the spanner wrenches until it feels snug and no threads remain visible. **Be careful not to cross thread the cowl.** Look through the larger sight holes in the retaining cowl to make sure that the lighthouse and body are in contact all the way around.
8. Lubricate and reinstall the o-ring (2-213-NO674-70) into the groove in the connector/socket assembly.
9. Screw the lamp base into the socket in the connector/socket assembly. Rotate the connector/socket assembly three full revolutions in a counterclockwise direction to preload the wires that connect the lamp base to the driver board. Screw the connector/socket assembly into the back of the light body until hand tight.
10. It is recommended that the light be pressure tested once reassembled. If pressure testing facilities are not available, soak the light in clean, fresh water for several hours to insure that the light is sealed.

TROUBLESHOOTING

Flooded Light Repair

If the light stops working while underwater, you should assume that it has been flooded. When working on a potentially flooded light, it is important to use appropriate personal protective equipment to include, at a minimum, eye and hand protection.

1. Place the light face down on a table making sure that the connector side is facing up.
2. Slowly unscrew the connector/socket assembly to allow any internal pressure to be equalized.
3. Once it is determined that the light is not internally pressurized, it is recommended that the light be returned to DeepSea Power & Light (DSPL) for evaluation and repair using the [RMA Procedure](#).
4. In case of emergency, you may attempt to repair the flooded light by following the steps listed in the [Disassembly](#), [Inspection](#) and [Assembly](#) procedures. Any parts that were exposed to saltwater should be cleaned with de-ionized water to remove any salt residue before reassembly. Make sure that all parts are completely dry before reassembly by baking them in an oven at 140°F for 30 minutes.

IMPORTANT! DeepSea Power & Light cannot be responsible for any damage incurred during emergency field repairs. Such repairs should be undertaken only as a last resort and by qualified personnel.

Troubleshooting

1. If the light stops working while underwater assume that it has been flooded. See [Flooded Light Repair](#) procedure.
2. Once it has been determined that the light is not flooded, or if it does not turn on during pre-deployment checks, troubleshoot in the following sequence:
 - a. Check the power cable/inline connector to make sure that correct voltage and current are being supplied, and that the correct sockets are being used. See the back of this manual for electrical specs and connector pinouts.
 - b. Remove the connector/socket assembly (see step 1 in the [Disassembly](#) procedure). Inspect the assembly for visual signs of wear. Using a multi-meter check for continuity or shorts in the connector. Try a spare connector/socket assembly if available.
 - c. Disassemble the rest of the light using the [Disassembly](#) procedure (steps 2 through 7).
 - d. Check the wires that go from the driver board to the lamp base for wear. If they appear worn, replace the driver board.
 - e. Check to make sure that the driver board is securely attached to the lighthouse. If it is loose, check for damage on the board. If there appears to be no damage, reattach the driver to the lighthouse (see step 3 in the [Assembly](#) procedure). Try using a spare driver board if available.
 - f. If the light still does not work, return it to DSPL using the [RMA Procedure](#).

PARTS LIST

SS Series Specifications

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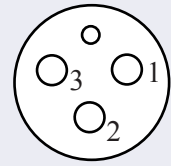
The SS Series camera line is designed to withstand the rigors of day-to-day inspection in tight areas where environmental and mechanical shock are unavoidable. The cameras have applications in pipe and borehole inspection, fixed-mount monitoring, tank and void inspection, in fisheries and aquaculture, or just about any confined space. They are also ideal for inspection of machinery and engineering spaces both on land and aboard ship.

The SS-30C is the smallest of the three SS Series cameras at 3.00 cm (1.18 in) in diameter and contains six white LED's. The SS-35B is the Black & White SS Series camera with three built in red LED's and has a diameter of 3.47 cm (1.37 in). The SS-35C color video camera contains six ultra bright LED's and has the same dimensions as the SS-35B. The LED lighting provides powerful illumination with thousands of hours of use. The SS Series housing is constructed from Stainless Steel for maximum durability and will not wear in contact with tough materials such as cast iron. Along with the tough housing each SS Series camera lens is fitted with a scratch resistant Sapphire Crystal port. Each SS Series camera is factory pressured-tested and rated to 400 meters.

	SS-30C	SS-35B/BT	SS-35C
MECHANICAL	Low light color	Black and White	Low light color
Housing:	17-4 Stainless Steel*	17-4 Stainless Steel*, Titanium 6-4	17-4 Stainless Steel*
Port:	Sapphire	Sapphire	Sapphire
Outer Diameter:	3.00 cm (1.18 in)	3.47 cm (1.365 in.)	3.47 cm (1.365 in.)
Overall Length:	4.70 cm (1.87 in)	4.80 cm (1.88 in.)	4.80 cm (1.88 in.)
Weight in Air	96.39 g (3.4 oz.)	17-4 SS: 119.07 g (4.35 oz.), Ti 6-4: 86.4g (3.05 oz.)	119.07 g (4.35 oz.)
ENVIRONMENTAL			
Rated Depth	400 Meters (1312 feet)	400 Meters (1312 feet)	400 Meters (1312 feet)
Operating Temperature:	-10 deg. C to +80 deg. C (14 deg F to 180 deg F)	-10 deg. C to +80 deg. C (14 deg F to 180 deg F)	-10 deg. C to +80 deg. C (14 deg F to 180 deg F)
Storage Temperature:	-10 deg. C to +80 deg. C (14 deg F to 180 deg F)	-10 deg. C to +80 deg. C (14 deg F to 180 deg F)	-10 deg. C to +80 deg. C (14 deg F to 180 deg F)
OPTICAL			
Lens:	2 mm, f3.5	2 mm, f3.5	2 mm, f3.5
Focus:	Fixed focus, Factory Set	Fixed focus, Factory Set	Fixed focus, Factory Set
Depth of Field:	1/2-inch	1/2-inch	1/2-inch
Field of View in Air:	83 deg. (H) x 60 deg. (V) x 95 deg. (D)	83 deg. (H) x 60 deg. (V) x 95 deg. (D)	83 deg. (H) x 60 deg. (V) x 95 deg. (D)
Field of View in Water:	59 deg. (H) x 44 deg. (V) x 68 deg. (D)	59 deg. (H) x 44 deg. (V) x 68 deg. (D)	59 deg. (H) x 44 deg. (V) x 68 deg. (D)
VIDEO			
Image Sensor:	1/3-inch interline transfer CCD	1/3-inch interline transfer CCD	1/3-inch interline transfer CCD
Number of Pixels:	NTSC: 768 (H) x 494 (V) PAL: 795 (H) x 596 (V)	768 (H) x 494 (V)	NTSC: 768 (H) x 494 (V) PAL: 795 (H) x 596 (V)
Resolution:	400 (H) x 350 (V)	400 (H) x 350 (V)	400 (H) x 350 (V)
Scene Illumination:	0.5 Lux	0.5 Lux	0.5 Lux
Shutter:	Electronic, automatic	Electronic, automatic	Electronic, automatic
Video Output:	1.0 volt peak-to-peak into 75 ohm	1.3 volt peak-to-peak into 75 ohm	1.0 volt peak-to-peak into 75 ohm
Video Format:	NTSC or PAL	EIA or CCIR	NTSC or PAL
Lighting:	6 Luxeon white LED's	3 red LED's	6 Luxeon white LED's
ELECTRICAL			
Power:	8-13 Volts DC	8-13 Volts DC	8-13 Volts DC
Current:	160 mA (camera), ~500mA with LED's	160 mA (camera), ~500mA with LED's	160 mA (camera), ~500mA with LED's

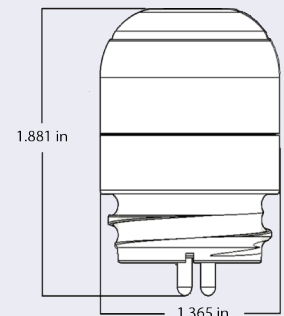
Specifications subject to change without notice.

* Note: 17-4 Stainless Steel not recommended for long term immersion in sea water.

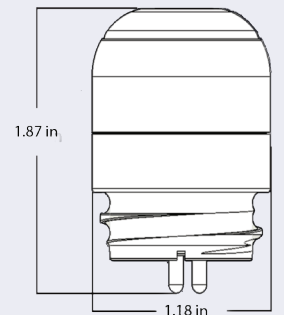


BHSS3MP
1 = Ground
2 = Power
3 = Video

SS-35



SS-30



DSPL ENG 740-077



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4033 Ruffin Road
San Diego, CA 92123
ph: (858) 576-1261

www.deepsea.com
info@deepsea.com
fax: (858)576-0219