

Thru-Hull SeaCam®

Installation, Operation, Maintenance and Safety Instructions

P/N 740-078-601



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Congratulations on the purchase of your Thru-Hull SeaCam®! The Thru-Hull SeaCam® is part of the family of Thru-Hull products that includes the 150W HID THSL, 50W Xenon THSL and 65W Halogen THSL. DeepSea Power & Light takes great pride in supplying these high quality underwater camera and lighting systems. Your Thru-Hull SeaCam® has been rigorously tested. The quality and performance of your product comes with the full confidence and backing of DeepSea Power & Light. As a measure of that confidence, your Thru-Hull SeaCam® comes with a full one-year warranty that the unit remains free of defects in workmanship and materials. A complete copy of the warranty statement can be found on page 11.

Before the Thru-Hull SeaCam® is packaged for shipment it is rigorously tested and inspected. The product is then carefully packaged to withstand the rough handling that can be anticipated during shipment. Upon arrival, carefully check the camera for damage. If the product is damaged in any way, immediately file a damage claim with the carrier. In addition, mail or fax a copy of the claim to DeepSea Power & Light, and notify your sales representative. We will do everything in our power to expedite processing of the claim. DeepSea Power & Light engages only reputable shipping companies to handle our merchandise. It is rare that a product is damaged in shipment.

Thru-Hull SeaCam®	
Record the Serial Number of your unit below and retain for your records.	
Serial No.	

Introduction

General Description

DeepSea Power & Light has been supplying underwater cameras for industrial and research applications for over 20 years and our line of SeaCam® products set a standard for durability and performance in every industry where they are used.

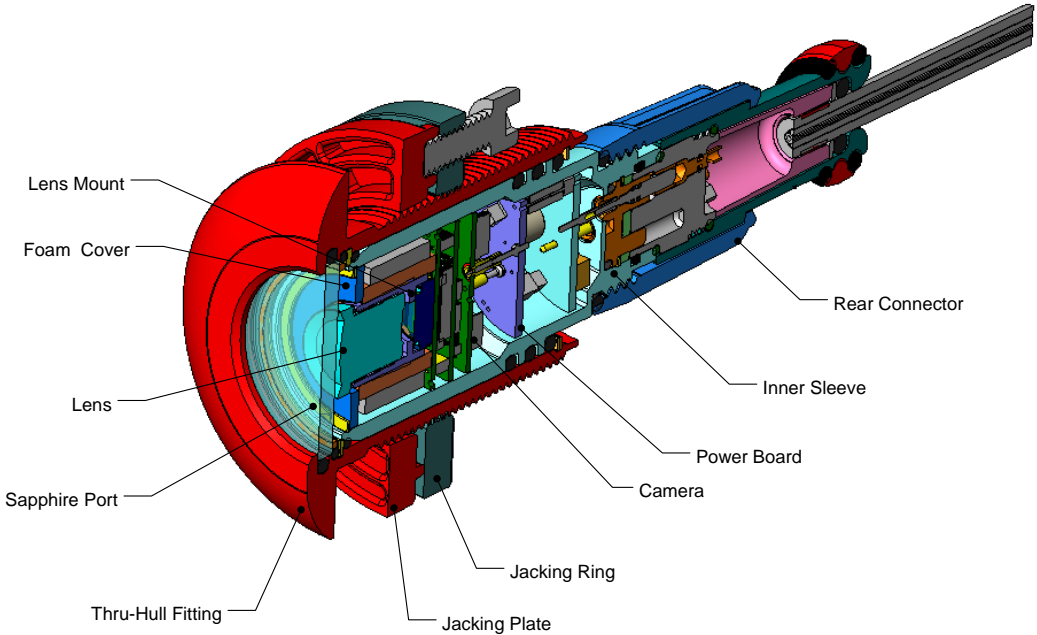
The Thru-Hull SeaCam® is the latest addition to this SeaCam® family of underwater cameras. It incorporates the same tradition of providing engineered design solutions to an underwater video camera requirement so that the end product will provide the best value to the customer.

For example, the sapphire crystal window is one of the strongest and most abrasion resistant transparent materials available. It will withstand accidental impact better than glass, and is less likely to be damaged by hull cleaning equipment.

Main Features

- **Sapphire Port** - One of the strongest and most abrasion resistant transparent materials available. More efficient heat transfer than glass, allows the light to run much cooler.
- **Nickel-Aluminum-Bronze or Grade 2 Titanium**
- **High resolution color camera**
- **Wide field of view**
- **Excellent low light imaging**
- **Factory sealed camera assembly**

Thru-Hull SeaCam® Main Components



Specifications

Camera Specifications

MECHANICAL

Housing Material:	Nickel-Aluminum-Bronze or Grade 2 Titanium
Size:	
Length:	3.370"
Diameter:	
Thru-Hull Fitting:	1.530"
Outer Flange (1/4 in. thick):	2.450"
Lens:	Single crystal synthetic sapphire
Cable Length	50' standard (longer available on request)

VIDEO

Image Sensor:	1/3-inch CCD image sensor
Depth of Field:	10 cm (4 in.) to infinity
Focus:	Fixed focus, factory set
Resolution:	400+ TV lines horizontal
Number of Pixels:	537 (H) x 505 (V) (NTSC); 537 (H) x 597 (V) (PAL)
Scene Illumination:	0.2 Lux
Lens:	3.0 mm, f2.0
Shutter:	Electronic, automatic
Angle of View in Water:	75deg. (H) x 60 deg. (V) x 85 deg. (D)
Video Output:	1.0 volt peak-to-peak at 75 ohm
Video Format:	Color, NTSC or PAL

ELECTRICAL

Input Voltage:	11-30 volts DC
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OPERATING

Operating Temperature:	-30 deg. C to +40 deg. C
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General Safety Information



WARNING! READ AND UNDERSTAND ALL INSTRUCTIONS. FAILURE TO FOLLOW ALL INSTRUCTIONS LISTED BELOW MAY RESULT IN ELECTRIC SHOCK, FIRE, AND/OR SERIOUS PERSONAL INJURY.

1. Thru-Hull SeaCam® should never be installed on a vessel while it is in the water.
 2. The wall thickness surrounding any part of this fixture should not be less than 0.25" (6.35 mm).
 3. Thru-Hull SeaCam® should only be installed by qualified technicians who have experience with the installation of through-hull fixtures. Failure to install this fixture correctly may lead to injury, damage or loss of property and loss of life.
 4. The Thru-Hull SeaCam® (Nickel Aluminum Bronze) should be electrically joined to the vessel's grounding and cathodic protection system. Failure to properly ground this fixture may result in catastrophic failure due to CORROSION, which in turn may lead to injury, damage or loss of property and loss of life.
- WARNING**
- The Titanium housed Thru-Hull SeaCam®, on the other hand, should NOT be attached to the vessel's grounding and cathodic protection system. Failure to follow the previously mentioned instructions may result in catastrophic failure due to corrosion, which in turn, may lead to injury, damage or loss of property, and loss of life.
5. Once the fixture has been installed on the vessel it should be inspected every 6 months for:
 1. Corrosion and damage. Any fixture showing signs of corrosion or other physical damage should be removed from service immediately.
 2. Signs of leakage and water entry. Any fixture showing signs of leakage or water entry should be removed from service immediately.

Installation and Operation

Assembly Instructions for the Thru Hull SeaCam®

Installation for fiberglass and wooden hulled boats*

1. The Thru-Hull SeaCam® should be mounted on a flat part of the hull. The fixture requires a 1.625" diameter hole to be mounted through.

2. The Thru-Hull SeaCam® flange should be mounted parallel to a flat surface. The flange should not extend beyond the flat surface that it will be mounted on.

3. To ensure no damage has occurred during shipping, power up the unit BEFORE drilling any holes in the boat. Before cutting the hole, ensure that there will be a minimum clearance of 7" on the inside of the hull, inboard of the hole. This clearance is necessary to access the camera's output/input connector.

4. Locate and mark an outlined hole.

5. If the fixture is being installed in a cored hull*, the exposed surfaces of the internal core must be protected. Use a fiberglass resin or an epoxy compatible with the hull material to form a solid, sealed surface from the outside to the inside of the hull. This material must be rated to no less than 176°F (80°C). Consult a professional boat builder or your boat dealer if you are installing this fixture on a boat with a Divinycell or cored hull.

6. Once a hole has been cut in the hull, remove the jacking ring assembly from the

fixture and test fit the hole by sliding the fixture in from the outside.

7. Using the circle drawn on the hull in step 4 as a guide, coat the area around the hole with 3M™ 4200 sealant. Coat the flange and the portion of the body of the fixture that will extend thru the hull with 3M™ 4200 sealant also and slide the fixture into the hole.

8. On the inside of the hull, thread the jacking ring and jacking plate assembly onto the thru-hull fitting until it bottoms out against the hull. Hand-tighten (approximately 5in.lbs) the 5-x ¼ "-20 bolts into place. DO NOT OVER TIGHTEN.

9. Allow the sealant to dry and remove any excess. Then tighten the 5-x ¼ "-20 socket head bolts to 36in.lbs (4Nm).

10. Use one or both of the ground terminals on the jacking ring to connect the fixture to the ship's ground (Nickel Aluminum Bronze version only).

11. Use a ¾" wrench on the rear flats to orient the camera for the appropriate application. The small divot on one of the flats signifies up.

12. Install the connector assembly onto the fixture and tighten securely.

13. Plug the yellow RCA jack into an appropriate monitor. Plug the AC power adapter into an appropriate power source. For DC power supply situations, cut off the AC power adapter and hard wire the two leads to a switch connected to the vessel's batteries.

14. DSP&L recommends that the flanges be painted with anti-fouling paint after installation. In addition, spraying the fitting tube with WD-40 every two months will help inhibit corrosion.

* NOTE for hulls constructed with Divinycell™ or similar foam cores; please consult the boat manufacturer for specific directions on the recommended procedure for installing hull-penetrating fixtures.

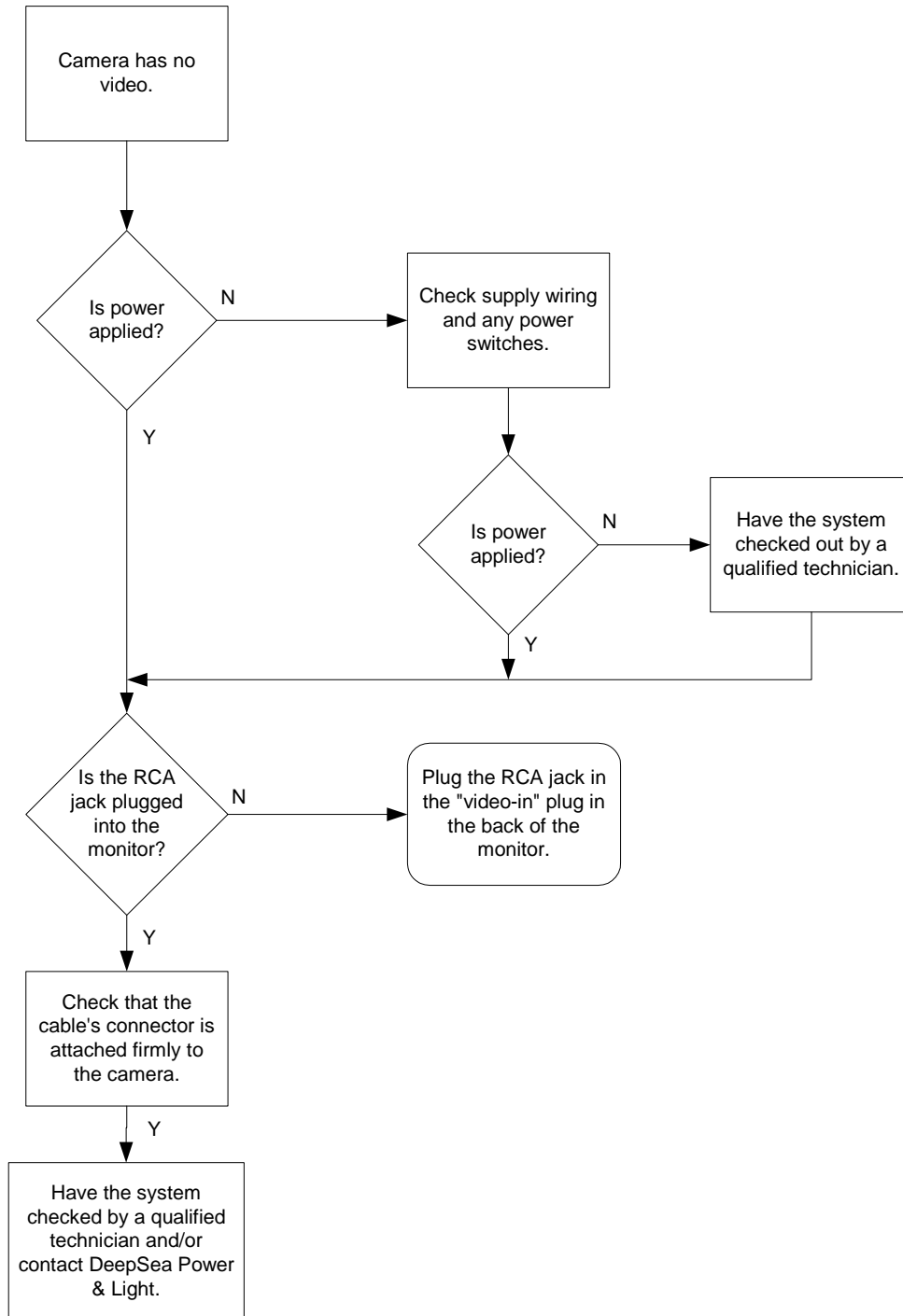
Important Notes

- Always ensure that the power is disconnected and locked out before performing any installation or service work on the Thru-Hull SeaCam®.
- The original cable provided by DeepSea Power & Light, Inc. with this fixture has been specifically chosen for the purpose. Substituting another cable for this purpose may result in fire, injury, damage or loss of property and even death. Longer cable assemblies are available from DeepSea Power & Light, Inc. (1-800-ITS-DSPL ask for part # 706-000-043)
- The Thru-Hull SeaCam® comes factory sealed to ensure a crisp, clear image. Do not attempt to open the camera.

General Operating Instructions

1. Plug the yellow RCA jack into an appropriate monitor for viewing through the camera.
2. Plug the AC power adapter into an appropriate plug. For DC power situations, remove the AC power adapter and wire into the vessel's battery power using a switch.

Repair and Maintenance Troubleshooting Guide



How to Arrange for Repairs

Warranty Repairs

Warranty repairs are to be shipped to DeepSea Power & Light freight prepaid. DeepSea will pay outgoing ground transportation. All parts and labor will be at no charge if still under warranty. See limited warranty for exceptions.

Non-Warranty Repairs

Minimum labor charge is one hour with additional time billed in half-hour increments. All repairs will be pressure tested by DSPL. Component parts prices do not include labor charges. A diagnostic charge will be assessed for all repair estimates. This fee will be applied against any repair charges incurred.

Please be sure to contact DeepSea and secure an RMA number for your incoming item to be repaired. Mark the outside of the shipping container with the RMA number. This allows us to process your package as quickly as possible, and insures that the repair department is alerted of its arrival.

Limited Warranty

DeepSea Power & Light warrants all of its products, unless otherwise noted, to be free from defects in workmanship and materials for a period of one year from the date of original purchase.

DeepSea is not responsible for warranty service should the product fail to be properly maintained or fail to function properly as a result of misuse, abuse, improper installation, neglect, improper shipping, damage caused by disasters such as fire, flood, and lightning, or unauthorized repair or modifications.

In particular, it should be noted that all metal parts will corrode in salt water. Corrosion of any metal will be especially aggressive if installation is improper, if bonding is improper or if stray currents are active in the vicinity of the boat. Thru-Hull SeaCams® are warranted to be free from defects in material and workmanship but this does not extend to being completely free from corrosion since the primary factors affecting corrosion are outside of the scope of material and workmanship of the light itself.

Should your DeepSea product prove defective during the warranty period, promptly notify DeepSea, and return product, freight prepaid. DeepSea will, at its option, repair or replace the product or defective portion without charge for parts or labor, or, at DeepSea's option, refund purchase price. DeepSea will pay for return ground transportation on warranty repairs. Products repaired or replaced under this warranty shall be warranted for the unexpired portion of the warranty applying to the original product(s).

No warranty or affirmation of fact, express or implied, other than as set forth in the limited warranty statement above is made or authorized by DeepSea. DeepSea disclaims any liability for product defect claims that are due to product misuse, improper product selection, or misapplication. Any liability for consequential and incidental damages is expressly disclaimed. DeepSea's liability in all events is limited to, and shall not exceed, the purchase price paid.

Appendix A –Parts List

See assembly drawings in Appendix B for detailed information.

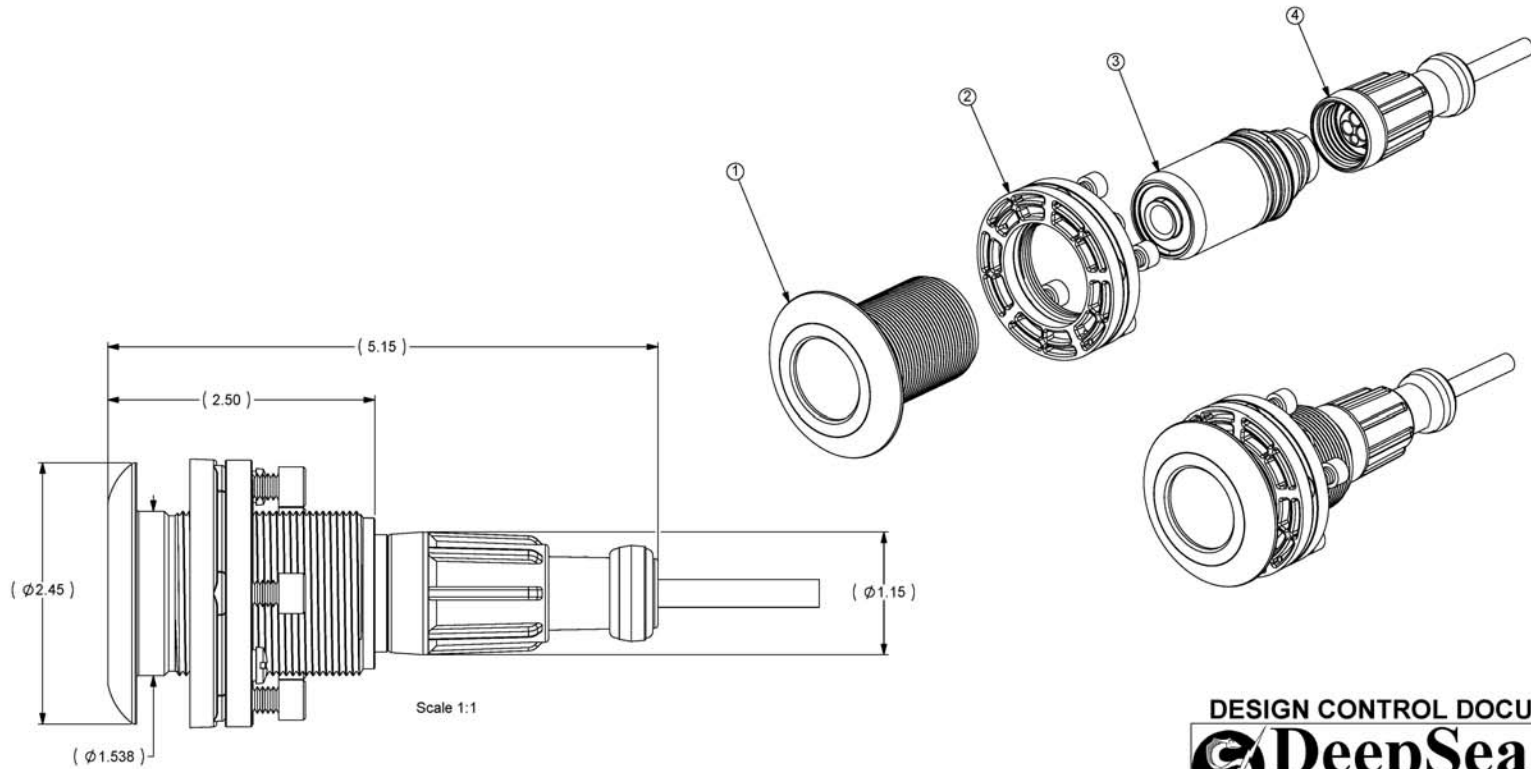
Item	Model Number	Part Number	Description
1.	THSC-Ti-NTSC	740-078-101-05	Thru-Hull SeaCam, Titanium, NTSC
2.	THSC-Ti-PAL	740-078-101-06	Thru-Hull SeaCam, Titanium, PAL
3.	THSC-Br-NTSC	740-078-101-03	Thru-Hull SeaCam, Nickel Aluminum Bronze, NTSC
4.	THSC-Br-PAL	740-078-101-04	Thru-Hull SeaCam, Nickel Aluminum Bronze, PAL
5.	THSC-Cable-NTSC	706-000-043-01	Thru-Hull SeaCam Cable, NTSC
6.	THSC-Cable-PAL	706-000-043-02	Thru-Hull SeaCam Cable, PAL

Appendix B – Drawings

Thru-Hull SeaCam®

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ITEM NO.	QTY.	PART NO.	DESCRIPTION	REV	CHANGE DESCRIPTION	APPROVED	DATE
1	1	N/A	FITTING ASSY	A	RELEASED PER DCR# 3286		
2	1	N/A	JACKING RING ASSY				
3	1	N/A	CARTRIDGE ASSY				
4	1	N/A	REAR CONNECTOR/CABLE ASSY				



DESIGN CONTROL DOCUMENT



APPROVALS		DATE	TITLE
ORIG ENG	Z. Simmons	072104	THRU-HULL SEACAM FINAL ASSY
ORIG DWG	D. Anderson	091104	PROJECT Thru-Hull SeaCam
CHECK			REV B
PROD RELEASE		082504	DWG NO. 740-078-101-DCD
LAST UPDATE	D. Anderson	091504	SCALE 2:3