LED Portable Light Source (PLS)

Storz Fitting
(Fitting Style A)

Wolf Fitting
(Fitting Style B)

ACMI Fitting
(Fitting Style B)

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WARNING: This equipment is not suitable for use in the presence of flammable mixtures.

IPX7 This equipment is rated IPX7.

US #7,798,692 and other US and foreign patents pending.

1. Introduction

Indications

The Optim Portable Light Source (PLS) is intended to be used for illumination purposes with all compatible flexible and rigid borescopes.

Please be sure to handle this optical instrument with care at all times. The electrical and optical components can be damaged by physical trauma, extreme temperatures, or fluid invasion into the light source.

WARNING: Avoid direct viewing of the high intensity light at the front of the Portable Light Source. Always connect and disconnect the light source with the light turned off.

This manual describes the proper procedures for using the light source. The manual also contains pertinent information on the proper care and handling of the light source during use and storage.

Please read this entire manual carefully before using the light source. If you have any questions concerning the material contained in this manual or the operation or safety of the equipment, please contact our customer service department.

Precautions

- Damage may occur to the light source if used improperly. Read this Owner's Manual thoroughly before attempting to use the light source.
- Check all items upon receipt to assure damage has not occurred during shipment.
- Verify compatibility of all components and accessories used with the light source.
- Avoid storing or using the light source in areas of heavy traffic where the light source may sustain physical damage.
- Avoid immersing the light source for prolonged periods of time.
- Do not attempt to disassemble the light source in any way. There are no user-serviceable parts and disassembly will void all warranties.
- Avoid looking directly into the light source when it is on.

2. Light Source Description, Specifications & Accessories

Light Source Control Body Diagram and Descriptions

Figure 1. Portable Light Source Diagram; Fitting Style A & B

Fitting Style A: The adapter nut allows the portable light source to attach to the user's borescope. Rotate the nut clockwise to attach the light source to a borescope and counterclockwise to remove the light source. The standard configuration of the Optim PLS is with an Adapter Nut that threads onto the standard universal light guide post's Storz adapter thread.

Fitting Style B: The Wolf / ACMI connector style allows the portable light source to be attached to the users Wolf / ACMI post style borescope. To attach to an borescope, press the spring loaded plunger and slide over the light guide post until it snaps into the groove, release the plunger to complete attachment. To remove from borescope press the spring loaded plunger and slide down the light guide post.

Light Intensity Switch: The light intensity switch controls the on/off and intensity functions of the portable light source. Moving the lever towards the wider end of the intensity indicator will turn the light source on and increases the light intensity; moving the lever towards the narrower end of the intensity indicator decreases the light intensity and turns the light source off.

Battery Cap: The battery cap seals the battery and electronics within the control body.

Specifications

Parameter	Specification
Body Diameter	27mm [1.06 in]
Overall Length	89mm [3.51in]
Weight (with battery)	90g [3.2 oz]
Battery Life at Full LED Power	45 minutes
Battery Charge Time	2 hours
Battery Type	Lithium Ion NP-700 3.6V, 700mAh minimum
Power Source	Internally Powered
Mode of Operation	Continuous
Safe Operating Ambient Temperature Range	15 – 33ºC [59 - 91°F]
Safe Storage and Transport Temperature Range	-25 – 50ºC [-13 - 122°F]
Safe Operating, Storage, and Transport Relative Humidity Range	0 – 95% RH
Battery Recharge Cycles	500 recharges

Accessories

Light Sources & Accessories Listing	Part Number
Portable Light Source Kit (Storz Adapter Thread)	006650
Portable Light Source (Storz Adapter Thread)	0064193
Portable Light Source (ACMI Fitting)	014521
Portable Light Source (Wolf Fitting)	014522
Battery Charger Cradle	006177
Battery Charger AC/DC Adapter (US Plug)	007002
Battery Charger AC/DC Adapter (European Plug)	007003
Battery Charger AC/DC Adapter (UK Plug)	014387
Battery Cap O-Ring (pack of 3)	014148
Operator’s Manual	006647
Shipping Box	006414

3. Light Source Function and Operation

Light Source Operation

Figure 2. Attaching the Portable Light Source to a scope

- Hold the light source so that the main body fits comfortably in one hand, allowing easy manipulation of the adapter nut with the thumb and forefinger.
- Tighten the adapter nut onto the borescope light post by turning clockwise. Do not thread the light source by turning the light source body – only rotate the adapter nut.

Figure 3. Intensity Control Switch

- Turn on the light source by rotating the light intensity switch towards the wider end of the intensity indicator. Adjust the brightness to the desired level by rotating the intensity switch further.

- At the completion of use, turn the light source off by rotating the light intensity switch towards the narrower end of the intensity indicator.
- Remove the light source from the borescope by rotating the adapter nut counterclockwise
- Avoid leaving the light source on for extended periods of time when not in use, as this will drain the battery unnecessarily.

Battery and Charger

Figure 4. Removing the battery cap and inserting and removing the Li-Ion Battery

The Portable Light Source's internal LED light source operates on a single, Lithium-ion battery and provides approximately 45 minutes of continuous operation when a new battery is fully charged. To insert a new battery, align the battery with the cutout in the battery compartment, making sure the end of the battery with the two gold electrical contacts is inserted into the battery compartment first. Once a charged battery is inserted into the light source body, replace the batter cap by carefully screwing the cap clockwise, being careful not to cross the threads, until a tight seal is made. To remove the battery, simply unscrew the battery cap and turn the light source upright until the battery falls out. Please take care not to let the battery fall to the floor or onto a hard object, which could damage the battery.

CAUTION:

- Do not incinerate the battery
- Do not expose the battery to high temperatures above 122ºF/50ºC
- Do not disassemble the battery
- Do not short circuit the battery

WARNING: The battery should be removed if the equipment is not likely to be used for some time.

Figure 5. Battery Charger and End Views of Battery

To charge a battery:

- First plug the AC adapter into a wall outlet.
- Connect the AC power adapter to the DC IN jack located at the back of the charger. The “STATUS” indicator will be solid RED when the charger is ready and the “CHARGE” indicator will be flashing GREEN when the charger is waiting for a battery to charge.
- Slide the battery into the charger, making sure the end of the battery with the two gold electrical contacts is inserted into the charger first. The “CHARGE” indicator will turn RED when the battery is charging.
- The “CHARGE” indicator will alternately flash RED and GREEN when the battery has been charged to over 90%.
- When the battery is fully charged, the “CHARGE” indicator will turn solid green.
- After the battery has been fully charged, slide the battery out of the charger and unplug the AC adapter for the charger.

CAUTION:

- Do not expose the charger to fire, water or moisture
- To avoid electrical shock, do not disassemble the charger
- No user-serviceable parts inside the charger
- Follow local regulations for disposal of electrical components or batteries.

4. Care and Maintenance

I - Light Source Cleaning

WARNING: Failure to comply with the following may result in damage to the light source and will void the product warranty.

The Portable Light Source is rated IPX7 for protection against ingress of water. The entire light source is submersible in water and mild detergent cleaning solutions. However, the light source should not remain immersed in water or cleaning solutions for prolonged periods of time. After cleaning, remove the light source from the cleaning solution, dry the light source, and store the device in a clean and dry environment.

Use caution when cleaning your light source; some methods may be harmful to the light source and could result in extensive damage. Manual cleaning is the recommended method for cleaning your precision light source. Certain cleaning agents may damage the device's materials. Only use water with a mild detergent such as a nonabrasive hand or dishwashing soap. Do not clean the device in an ultrasonic cleaner.

WARNING: Ensure that the battery cap is fully tightened on the o-ring seal to prevent liquid intrusion into the battery compartment.

WARNING: Never use any organic solvents to clean the light source, other than isopropyl alcohol.

II- Drying the Light Source:

If the Optim PLS becomes wet, thoroughly dry the exterior immediately. Rinsing with isopropyl alcohol, followed by drying with a compressed gas, such as compressed air or commercial compressed gas canisters, is highly recommended to reduce contamination of the glass light guide and reduce the possibility of oxidation of the materials used in the construction of the light source.

WARNING: Do not permit the light source to remain in cleaning solution longer than necessary. Do not permit the light source to remain in any liquids for prolonged periods of time.

In addition, if the PLS becomes wet, thoroughly dry the battery cap seal around the o-ring, with compressed gas or by thoroughly wiping any excess liquid from this area, prior to removing the battery cap. This will prevent any trapped fluid from inadvertently entering the battery compartment and exposing the electronics to fluids.

WARNING: Ensure there is no trapped liquid between the battery cap and light source body prior to removing the battery cap.

5. Troubleshooting

PROBLEM	POSSIBLE CAUSE	ACTION
Loss of Illumination	Battery power is low.	Replace battery with a freshly charged battery.
	Battery cannot supply sufficient current at this power setting.	Change battery for a freshly charged battery. Reduce the light intensity and continue using the current battery. Recharge the battery as soon as possible.
Light Guide does not attach properly to the borescope	The borescope has an adapter on it's light post	Refer to the guide below and remove the adapter
	The borescope and light source do not have a compatible coupling system	Use an adapter sleeve or switch to portable light source with a different type of adapter nut
Light intensity is low	Foreign material or film on LED output taper	Clean the taper with a cotton swab wet with isopropyl alcohol until the debris or film is cleared off. Dry with compressed air or gas.
Light source becomes hot after prolonged use at full power.	Light source has been left on for more than 30 minutes at full power.	Turn the light source to a lower intensity setting if the examination must continue past 30 minutes. Or, turn the light source off for a few minutes to permit adequate cool down of the light source body.

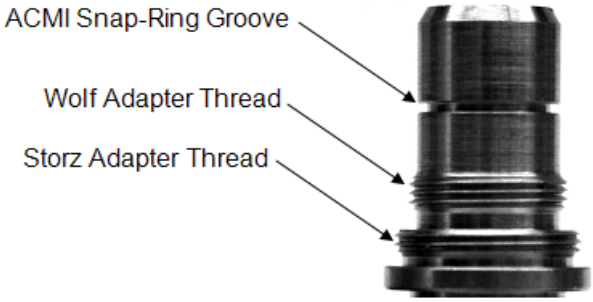

Figure 6. Standard Universal Light Guide Post

The standard light guide post consists of a snap-ring groove for an ACMI fitting connection, a Wolf adapter thread, and a Storz adapter thread. The Optim PLS attaches to the Storz / Wolf / ACMI, providing a secure connection between the light source and light guide within the scope. If an adapter sleeve (see Figure 7 below) is on the light guide post, it must be removed prior to connecting the PLS to the Storz adapter thread.

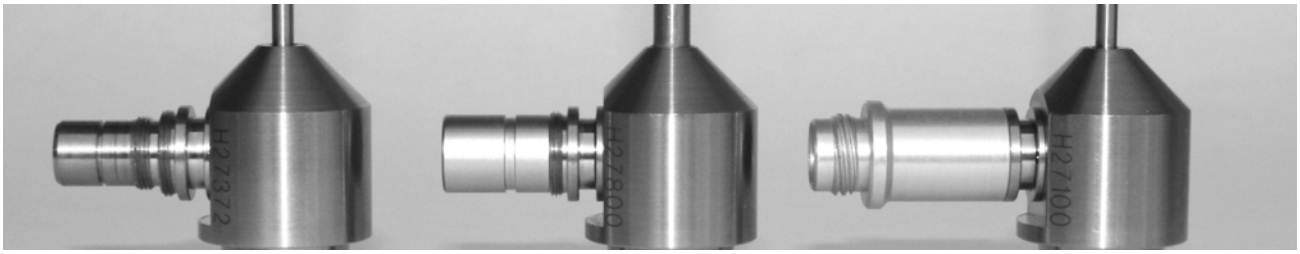

Figure 7 Standard Universal Light Guide Post (left), Post with Wolf Adapter (center), and Post with Storz Adapter (right)

6. Repair Service

Customer Service

The Optim Portable Light Source is serviced at Optim LLC's manufacturing facilities in Sturbridge, MA, USA. Use the following procedure to expedite returned goods for evaluation, repair or replacement.

1. Telephone Optim LLC at 1.800.225.7486 or 1.508.347.5100.
2. Provide a detailed description of the problem.
3. If the light source needs to be sent to Optim, a Returned Material Authorization number will be issued.
4. A Service Request Form will be provided and should be completed and returned with the light source.
5. The light source should then be returned to the address below for repair or replacement.

Returning Goods to Optim LLC

Ship the light source in the carrying case and within a corrugated box to prevent damage during shipment.

Ship to: Optim LLC
64 Technology Park Road
Sturbridge, MA 01566-1253 USA
Attention: Customer Service / RMA#_____

The paperwork accompanying the shipment should include:

1. Account Name and Address
2. Contact Person and Phone Number
3. Product Number(s)/Serial Number(s)
4. Description of Problem
5. RMA Number (must also appear on the outside of the shipping carton)
6. Service Request Form

Upon evaluation, the customer will be contacted and advised of the findings and estimated repair cost. Repairs will not begin until authorization or a purchase order is issued indicating the approval of charges.

7. Warranty

The Optim LLC Portable Light Source is warranted to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase.

All non-warranty repairs will be warranted to be free from defects in materials and workmanship for a period of ninety (90) days from the date of the invoice.

Accidental damage and damage resulting from misuse, abuse, excessive sterilization, disinfection and sterilization methods not approved by Optim LLC, as well as fluid invasion and normal wear and tear, will be subject to prevailing repair charges. Disassembly, alteration, or repair performed by any person not authorized by Optim LLC will result in immediate loss of warranty.

THE ABOVE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES EITHER EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Suitability for use of the device for any procedure shall be determined by the user. Optim LLC shall not be liable for incidental or consequential damages of any kind.

All shipping charges to and from Optim's facility is the responsibility of the customer.

8. Symbol Descriptions

Attention: Read Operating Manual for Warnings, Cautions, and Instructions for Use.

IPX7 This equipment is rated IPX7 and is protected against the effect of immersion between 15cm and 1m.

S/N This symbol indicates the product's Serial Number.

This symbol indicates that this product is a Type BF applied part.

Light intensity indicator.

Light intensity switch.

9. Regulatory

The PLS has been tested to, and found in conformance with, the following standards:

IEC 60601-1
IEC 60601-1-1
IEC 60601-2-18
CSA C22.2#601.1.1