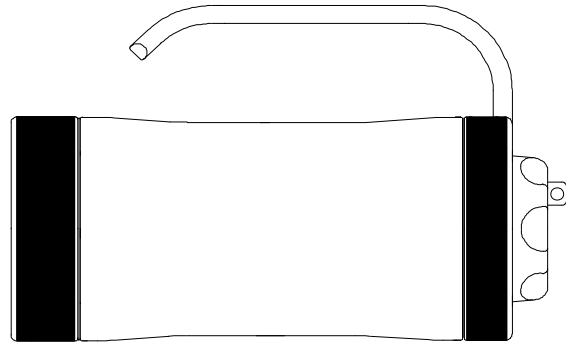


Instructions for use

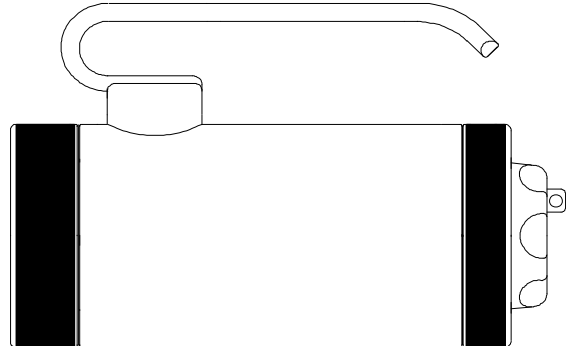
Hartenberger

Underwater Hand Lamp

compact



professional



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SAFETY WARNING

- **Before attempting to use the underwater lamp, carefully read and adhere to these instructions for use.**
- **Before the first time the lamp is used, the lamp must be charged.**
- **Do not operate the lamp immediately after charging.**
- **Always point the beam of the lamp away from yourself.**
- **Never point the lamp beam in the direction of another person.**

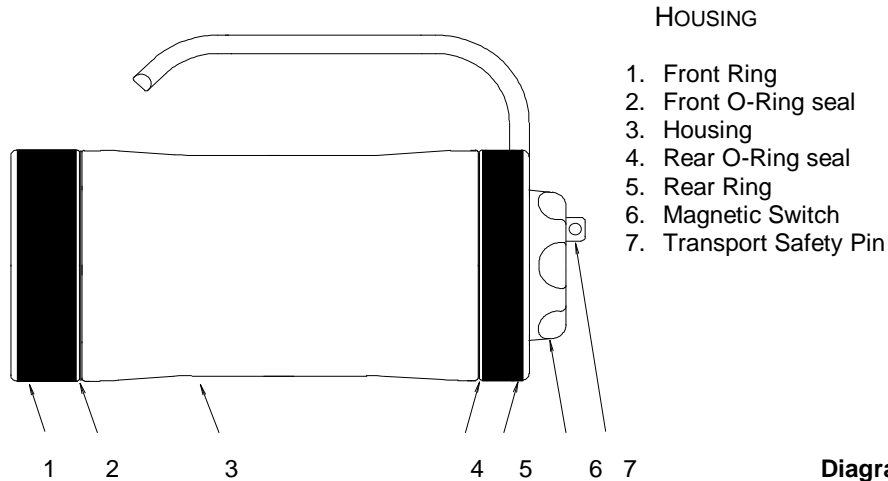
GUARANTEE

When these instructions for use and the care and maintenance guidelines are adhered to, we will guarantee all mechanical parts made from steel, aluminium, glass and plastic for a period of 5 years against manufacturers defects and material failure. All electronic parts are guaranteed for a period of 1 year. The rechargeable cells and the charger have a guarantee against manufacturers defects and material failure for 6 months. The Halogen bulbs and O-Ring seals are expendable items and are therefore not covered by the guarantee.

APPLICATIONS

The ***Hartenberger*** Underwater Lamps are for use in underwater lighting applications. Use of the lamp in an environment other than fully submerged in water may cause the rechargeable cells to overheat which may result in the expected life of the cells being shortened.

ARTICLE DESCRIPTION



FRONT RING

The front sealing ring must be removed to access the rechargeable cell pack for charging and/or to replace the halogen bulb.

HOUSING/FRONT AND REAR SEALS

The housing is made from aluminium and is sealed with threaded rings at the front and the rear, which are sealed with blue Viton O-Rings (dimensions 78 x 2.5. 50° Shore hardness).

REAR RING

The rear sealing ring is screwed onto the housing during the assembly by the manufacturer using a special tool. It cannot and should not be removed or replaced by hand.

MAGNETIC SWITCH

The magnetic switch controls all the electronic functions that each lamp has to offer.

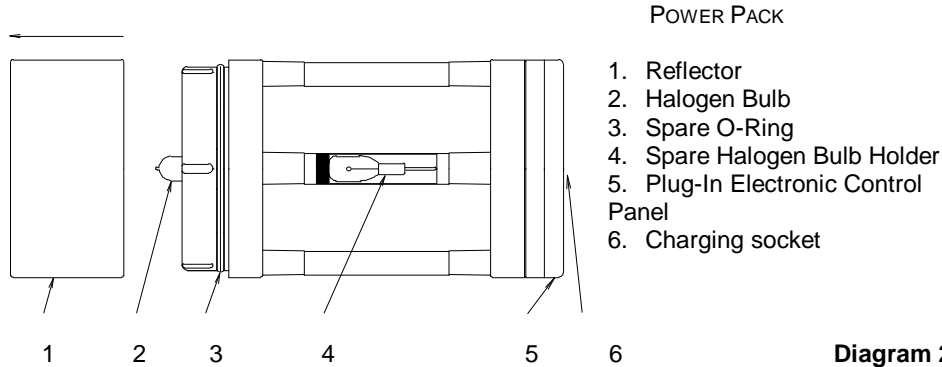
Compact version OFF-100%-100%-100%-100%-OFF

Professional version OFF-25%-50%-75%-100%-OFF

Each version also has a distress signal function according to the Morse alphabet; SOS (3 x dot, 3 x dash, 3 x dot).

TRANSPORT SAFETY PIN

The transport safety pin can only be fitted into position when the lamp is turned off. With the safety pin inserted, the switch is prevented from rotating and the lamp cannot be turned on accidentally.



REFLECTOR

The reflector is pressed on to the power pack and can be removed by simply pulling the reflector away from the power pack. To alter the beam of the lamp there are two reflectors available: (See accessories page 15).

Spot for standard lighting applications
Flood for Photo and Film use

HALOGEN BULB

The halogen bulb is pushed into a standard socket and can easily be replaced.

SPARE O-RING

The spare O-Ring for the housing sealing rings is stowed under the reflector. After removal of the reflector from the power pack, the spare O-Ring can be removed and used to replace the O-Ring sealing the front sealing ring.

SPARE HALOGEN BULB

One of the five support pillars separating the caps around the cells has a grey coloured holder for the spare halogen bulb. The grey cover can be rotated around the axis of the support pillar to expose the stowage of a spare bulb.

PLUG-IN ELECTRONIC CONTROL PANEL

The electronic is available in two versions:

- 1. compact** fixed power setting
- 2. professional** variable power settings (also as an option for the compact lamps)

CHARGING SOCKET

The plug from the charger is plugged into the charging socket for charging purposes.

Hartenberger Underwater Hand Lamp compact / professional Instructions for use

TECHNICAL SPECIFICATIONS

DURATION OF USE

The burn time of a lamp with Nickel Cadmium Cells is dependant upon water temperature, state of cell charge and the type of bulb. The water temperature greatly affects the burn time. For example, in water temperatures of between 4 and 6 °C, (40 - 45 °F) the burn time will be at best 90% of the stated capacity.

New Ni-Cad Cells only reach their full capacity after 2-3 charging cycles.

Type	Voltage/Capacity	35 watt	50 watt	100 watt
125	12v/5Ah	120 Min	70 Min	35 Min
128	12v/8Ah	180 Min	100 Min	50 Min

Die **Heavily printed** figures represent the burn times with the standard bulbs as delivered.

DIMENSIONS AND WEIGHT

Type	approx. Length & Diameter	approx. Weight on land	approx. Weight in water
125	205x100 (8 in x 4 in)	2.9 kg (6 lbs 6 oz)	1.0 kg (2 lbs 3 oz)
128	270x100 (11 in x 4 in)	3.9 kg (8 lbs 9 oz)	1.5 kg (3 lbs 4 oz)

RESISTANCE TO WATER PRESSURE

We guarantee that all Hartenberger lamps are pressure proof to a depth well in excess of 200 meters (650 feet).

FRONT GLASS PLATE

The professional lamps have a special borosilicate glass plate as standard. These glass plates have a temperature shock resistance of 300°C, (570°F). The compact version can be fitted with these glass plates upon request.

FRONT HOUSING RING

UNSCREWING THE FRONT HOUSING RING.

The front housing ring is removed by unscrewing the ring anti-clockwise, (thread length approx. 10 mm [3/8"]). Whilst unscrewing the front ring, the housing should be held in an upright position with the front ring facing up, thus preventing the power pack from inadvertently falling out of the housing.

REFITTING THE FRONT HOUSING RING

Before refitting the front ring on the housing, all threads, sealing surfaces and seals must be checked for integrity and cleanliness.

If the O-Ring is removed, care must be taken not to damage the groove in which the O-Ring sits. A soft blunt tool should

be used for the removal of the O-Ring, i.e. a wooden tooth pick.

Should the sealing surfaces and/or components be contaminated, then the O-Ring and its groove should be thoroughly cleaned and lubricated with a light coating of silicone grease. Should the sealing surfaces and/or components be damaged, then all damaged parts should be replaced. It is recommended that after such work has been carried out, that the seal/integrity of the housing is first checked underwater without the power pack fitted.

The front ring is screwed on clockwise and should be tightened only by hand. After the sealing surfaces have made contact, the ring will need to be tightened by hand approximately a further ¼ turn. The thread should be able to be opened again without undue force.

POWER PACK

REMOVAL OF THE POWER PACK

After removing the front sealing ring from the upright housing, the housing can then be tilted over and the power pack will slide out of the housing.

REFITTING THE POWER PACK

Hold the housing in a position where the opening is pointing slightly upwards, the power pack can now be slowly lowered into the housing. The locating pin should locate in the orifice in the rear of the power pack housing ensuring the correct position of the power pack.

PREPARATION FOR USE

BEFORE THE LAMP IS USED FOR THE FIRST TIME

Before the first use, the cells must be charged. (See Charging page 8)

Hartenberger underwater lamps are manufactured to a high degree of precision and each lamp is tested to a water pressure of 10 bars. The condition of the lamp and in particular the housing and sealing rings should however be checked before the first use.

We recommend that the first under water use be conducted without the power pack to check the seal of the housing.

BEFORE EACH USE.

The rechargeable cells will slowly discharge naturally when not in use, (depending on the ambient temperature up to 60% discharge in one month!). We recommend therefore that the cells are charged one day before each use.

Before each use, the front threads, sealing surfaces and O-Ring must be checked for integrity and cleanliness. (See Page 5).

If the bulb has been removed for transport, it should be refitted into the socket.

- **The transport safety pin should be removed from the magnetic switch immediately before the lamp is used.**

USING THE UNDERWATER LAMP

MAGNETIC SWITCH

The plug-in electronic is activated by turning the magnetic switch. The magnetic switch can be rotated into one of 5 positions. The orifice of the transport safety pin indicates the present setting of the switch as indicated on the decal located around the switch:

Below are the settings of the switch from 0 rotating to the right:

COMPACT VERSION	OFF - 100% - 100% - 100% - OFF
PROFESSIONAL VERSION	OFF - 25% - 50% - 75% - 100% - OFF.

The use of the lamp with reduced power settings saves power and will extend the burn time. The amount of light is represented approximately by the settings on the scale of the decal.

If the lamp is used constantly at a reduced setting (25% or 50%), the bulb may develop a grey shadow on the glass of the bulb. If a reduced power setting is constantly required, it is recommended that a bulb be fitted with less wattage.

SOS DISTRESS SIGNAL

The electronic control allows the lamp to generate an SOS distress signal in the form of Morse alphabet flashes. To activate the SOS distress signal, rotate the switch from the OFF position towards the right to the first setting, (25% and then immediately afterwards (within 1 second), back through the OFF position and on to the 100% setting. The distress signal mode can be exited by rotating the magnet switch to any other position.

The SOS distress signal will have a duration of approximately 3 times the duration of the lamp if it were to be operated at 100%. When the cells are virtually discharged, the flashes will reduce in intensity.

- **This feature should only be used in an emergency. Should you require the SOS distress signal in an emergency, we recommend that the signal is turned off when the intensity of the flashing reduces, and to turn the SOS signal back on should help be sighted.**

LOW LEVEL CAPACITY WARNING

When the lamp blinks 3 times, the user is warned of the immanent end of the burn time of the lamp. When the lamp is being used at 100% power, this will be approximately 3 - 5 minutes after the 3 blinks.

DISCHARGE PROTECTION

After the lamp warns of the imminent loss of power, (the lamp will blink continuously off and on), the lamp should be turned off as soon as possible. The dive should be terminated as soon as possible to avoid total loss of illumination. The blinking will last approximately 3 minutes when the lamp is set at 100%. If the professional version is being used, we recommend that the lamp be switched over to the 25% power setting as soon as possible. (Switch to the OFF position and then on to 25%). The lamp will burn for approximately 3 minutes longer, and then the blinking will resume. Should the lamp turn itself off, then turn the switch to the OFF position and do not use the lamp until it has been charged.

AFTER USE

Check the lamp immediately after the dive for evidence of a possible flooding of the housing. Should the housing have flooded then refer to the problem diagnosis on page 13. The cells should be charged as soon as possible after use.

TRANSPORT

MAGNETIC SWITCH

Before transporting the lamp, the magnetic switch must be secured in the OFF position. This is done simply by inserting the transport safety pin into the switch whilst it is in the OFF position. When the pin is removed, the switch can be rotated. As an additional precaution, we recommend that the halogen bulb is removed from the socket.

The Transport safety pin is held in the switch by an O-Ring. Should the O-Ring may affect the correct function of the pin, it should be replaced.

- **The screw securing the magnetic switch is glued into position and no attempt should be made to remove it.**

REMOVAL/REFITTING THE BULB

To replace the halogen bulb, first unscrew the front sealing ring and remove the power pack. Do not touch the glass of the halogen bulb with your fingers. This may result in the contamination of the bulb with residue from the fingers and will result in a reduction of the performance of the bulb. Use a clean dry lint free cloth to grasp the bulb and pull it out of its socket. The replacement bulb can be pushed into the socket until a resistance is felt. The bulb should be sitting centrally in its socket to ensure that an even beam of light is produced. After bulb replacement the lamp can be assembled, check the correct function of the lamp after assembling the lamp.

STORAGE

The lamp should be stored in a fully charged condition with the housing closed securely. An ideal storage temperature is between 15 and 25°C, (60 and 75°F). Under no circumstances should the lamp be subjected to temperatures above 45°C, (110°F).

The rechargeable cells will slowly discharge when not in use, (depending on the ambient temperature up to 60% discharge in one month!). We recommend therefore that the cells be charged approximately once a month when the lamp is not in use.

For extended periods of storage, the power pack should be removed from the housing and stored separately in a suitable cool dry place, (see preparation for charging page 10).

Regularly check the cells for signs of corrosion or gas leakage, (the protective skin showing signs of bubbling, flourey or white residue between the cells or in the housing, corrosion around the charging socket.) Should you discover signs of leakage or corrosion, return the lamp immediately to the manufacturer.

CHARGING

INTRODUCTION IN THE CHARGING OF NICKEL CADMIUM CELLS

Nickel Cadmium cells are generally described as being gas and acid sealed cells. The position of the cells during the charging process is therefore irrelevant as no electrolyte can escape. There is however no supplier of cells that will guarantee this feature for the entire life of the cells! During the charging or discharging process, the cells may produce an over pressure inside, opening the integrated over pressure relief valve. Should this occur, the electrolyte, or Hydrogen can escape from the cells. Because the electrolyte is a very aggressive acid, and additionally conducts electricity, this may lead to the galvanic corrosion of the cells, and a destruction as a result of the contact with the acid. The escaping hydrogen can combine with oxygen in the air and form a highly explosive gas. A single cell the size of a standard D cell battery can produce up to 25 litres, (1 cu ft) of gas! It is for this reason that nickel cadmium cells should always be removed from a housing before they are recharged. Only then is the safe use and longest possible life of the cells guaranteed.

MEMORY EFFECT

The so called Memory Effect is the common term for the reduction in the capacity of the cells as a result of charging the cells in a partially discharged condition. (e.g. A wireless telephone hand set has a battery life of 24 hours, but is replaced on the station and therefore charged after 3 hours). The common technique for overcoming this is to fully

discharge the cells before charging.

We regard this as being more harmful for underwater lamps with between 5 and 20 cells. The constant discharge down to the cut-off voltage limit can overload individual cells and disrupt the balance within the matched cell pack. This may result in an individual cell “dropping out“.

We recommend that for every 10 to 20 cycles where the cells are partially discharged, that the lamp is fully discharged until the built in discharge protection turns the lamp off. **The more often the cells are taken to their minimum capacity, the higher the strain on the individual cells.**

PREPARATION FOR CHARGING

For the charging procedure you will need a clean working area with be a mains socket nearby. Charge the cells in an environment which is as dry and clean as possible, with a resistant work surface. (Sealed cells can also leak under poor conditions). The ambient temperature should not exceed 45°C (110°F). The power pack must be removed for charging. (See Page 6).

Stand the power pack in an upright position with the reflector down. This will avoid the collection of dirt and/or dust on the reflector and halogen bulb. The charging socket is located at the rear of the power pack.

STANDARD CHARGER

Check the compatibility of the charger with the power pack, (see following table).

First insert the charging cable plug into the charging socket in the power pack. Do not use overdue force when fitting the plug into the socket. Avoid any chance of short circuiting the contacts of the plug or the power pack.

- **Before attempting to plug the charger into the mains, check the voltage selector located on the lower side of the charger for the correct mains voltage. (115 / 230v)**

The charger can be plugged into the mains. The charger will indicate a charging process by illuminating a red diode lamp.

MAXIMUM CHARGING TIMES USING A STANDARD CHARGER

Lamp Type	Voltage/ Capacity	Charger	Charging time
125	12v / 5Ah	LG 125	14 - 16 hrs
128	12v / 8Ah	LG 128	14 - 16 hrs

The above times are for fully discharged cells. Partly discharged cells will however not be damaged during the above charging times.

The charge is completed when the cells warm up. The excess energy will then be converted into heat and dissipated into the environment.

- **Do not operate the lamp immediately after the charging cycle is completed. Do not point the lamp at yourself or in the direction of other persons.**

OFF SHORE II CHARGER

This charger utilises the latest in electronic charger technology with a wide range input voltage (100v - 250v) with frequencies of between 45 - 65 Hz. (There is no need to manually select the input voltage).

All **Hartenberger** power packs with between 5 and 12 cells will be automatically recognised by the charger, and charged as fast as possible. The charging current can reach 2.0 amps.

The function of the charger is monitored via 2 light emitting diodes (LED's) with varying colours and flashes. The charger is activated by plugging it into the mains supply.

LED I

Green
Red

Input voltage is present, the charger is functioning properly.
Input voltage is present, the charger is overloaded or defective.

Out

No input voltage present.
The charger cable should now be plugged into the charging socket in the power pack. Do not use overdue force when fitting the plug into the socket. Avoid any chance of short circuiting the contacts of the plug or the power pack.

LED II

Red
Green blinking
Green
Out

No Cells are connected (interruption).

Rapid charge up to approx. 95% of capacity.

Trickle charge with a reduced current.

Maintenance charge, Cells are fully charged.

All the functions of the charger are monitored by a controller in the charger. This monitoring has a time lag when the function of the charger changes, and may lead to a slight delay in the LED's reacting, (approx. 5 seconds).

The charger has an integrated mechanism protecting it against overheating and large fluctuations in mains voltage. (LED I turns red), Should the protection cut in, the charging process will be interrupted. After the mains plug has been removed from the mains socket for a few minutes, the charger will then be ready for use again. Care must be taken to achieve adequate cooling in extreme environments.

- **Do not operate the lamp immediately after the charging cycle is completed. Do not point the lamp at yourself or in the direction of other persons.**

MAXIMUM CHARGING TIMES USING AN OFF-SHORE CHARGER FOR FULLY DISCHARGED CELLS

Lamp Type	Voltage/ Capacity	Charger	Charging time
125	12v / 5Ah	LG Off-Shore II	approx. 3 hrs
128	12v / 8Ah	LG Off-Shore II	approx. 5 hrs

- **Chargers other than that supplied with this lamp must be checked by a qualified electrician for compatibility before attempting to use them. The guarantee will be lost due to improper use.**

CARE AND MAINTENANCE

HOUSING

We recommend that from time to time the housing surface is impregnated with silicone. This is especially beneficial when the housing has an AHC (Aluminium Hard Coating), coating as is the case with the professional versions of the lamps. The chance of calcium depositing on the surface of the lamp is reduced and the scratch resistance properties of the housing surface are also improved.

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SERVICE

Action to be taken	Interval	By Owner	Workshop
Impregnate Housing surface	After repeated use	X	
Clean and lubricate Front O-Ring	After the housing is opened	X	
Replace Front O-Ring	1-2 years or after 200 dives	X	
Replace Front Glass O-Ring	4-5 years		X
Replace rear O-Ring	4-5 years		X
Replace Transport Safety Pin O-Ring	Annually or if the pin is defective	X	
Replace Halogen Bulb	Life expectancy approx. 100 hours	X	
Replace Cell Pack	Life expectancy up to approx. 1000 charging cycles	X	

FAULT DIAGNOSIS

Problem	Cause	Action to be taken
Water enters the housing:	Defective or contaminated O-Ring.	Abort the dive as soon as is safely possible. Open the lamp.
1. A few drops are present.		1. Dry the lamp and power pack with a clean cloth.
2. Housing is flooded with fresh water.		2. Dry the power pack and return it to the manufacturer
3. Housing is flooded with Saltwater.		3. Rinse the lamp and power pack with ample fresh water and return the lamp to the manufacturer..
Lamp does not illuminate.	1. Electronic circuits have automatically switched the lamp off. 2. Cells discharged. 3. Defective Bulb.	1. Conduct Reset procedure in accordance with the instructions on page 13. 2. Charge Cells. 3. Replace bulb in accordance with the instructions on page 8
Front sealing ring is difficult to screw on/off.	1. Front thread contaminated. 2. Threads damaged	1. Clean and lubricate front thread. 2. Return lamp to manufacturer/dealer.
LED I does not illuminate.	1. No Mains. 2. Charging cable not plugged in. 3. Bad contact on charging plug.	1. Check mains supply. 2. Plug in charging cable. 3. Check charging plug security.

Hartenberger Underwater Hand Lamp compact / professional Instructions for use

LED II illuminates red	Charger protection switch active.	Unplug the mains cable and allow 3 minutes to cool down. Reconnect the mains cable.
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CONDUCT RESET

If the lamp is not operated correctly or when the power pack is removed from the housing, the entire electronic circuitry will turn over to a self protection mode. The lamp cannot be inadvertently activated or operated in this condition. The reset can be carried out using the following procedure: The power pack is correctly located inside the housing. Turn the magnetic switch to the OFF position, (the lamp will blink twice). Wait 3 seconds, after 3 seconds, (the lamp will blink once more), the lamp returns from the protection mode to the normal mode. Should the lamp continue not to function correctly, remove the electronics from the power pack by pulling it out from the rear of the power pack. Care should be taken not to twist the panel and cause damage to the contact pins. Wait for at least 3 minutes and then refit the electronics and repeat the above reset procedure.

ACCESSORIES

NEOPRENE SLEEVES

Neoprene sleeves for the housing offer protection and a reduction in weight in the water and are available in the colours yellow and black.

CARABINER CLIPS

For securing the lamp to a suitable point on the diving equipment.

REFLECTORS

To change the beam of the lamp, there are two different reflectors available. The reflector unit is removed by pulling it away from the power pack.

Spot reflector for general illumination. The spot reflector gives a concentrated illumination in the centre of the beam, with a smooth transfer to a reduced illumination intensity around the periphery.

Flood reflector for film purposes. The flood reflector gives an even illumination over the entire beam.

MATTED GLASS PLATE

A chemically matted front glass plate manufactured from temperature resistant Borosilicate Glass can be used in conjunction with the flood reflector resulting in a soft and even illumination.

ADAPTER PLATE

The adapter plate is used for converting a hand lamp to a cell tank.

SPEAR PARTS

Seal	Dimensions	Elasticity	Material
Glass Outer	88 mm x 3.0 mm	70° Shore	Viton, Blue
Glass Inner	90 mm x 2.0 mm	70° Shore	Viton, Blue
Front Housing	78 mm x 2.5 mm	50° Shore	Viton, Blue
Rear Housing	78 mm x 2.5 mm	50° Shore	Viton, Blue
Transport Pin	7 mm x 1.8 mm	50° Shore	Viton, Blue

Halogen Bulb G6.35	12v / 30w	12v / 50w	12v / 100w
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