





# Gates Underwater Housing Care & Maintenance Guide

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-  Housing Care and Maintenance
-  O-Ring Care and Maintenance

**Gates Underwater Products, Inc**

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## ***Housing Care and Maintenance***

**Congratulations** on your new ownership of a Gates housing, the worlds most reliable underwater housing! It is manufactured from “bulletproof” machined aluminum, given a type III “hard” anodized coating for durability, and then finished with a dichromate or clear sealing process to lock out corrosion. Reliable mechanical controls, preferred by the pros, are standard. Positive locking safety latches hold the mating halves securely in place, too, so your equipment stays protected and dry. You can get virtually a lifetime of memories from your Gates housing.

It is important to understand that while your housing is very durable, designed to withstand the rigors of diving operations and the harsh salt-water environment, *it is your responsibility* to care and maintain your Gates housing and protect your investment. A few easy, common sense steps are outlined here to guide you in appropriate care. Regular attention will assure continued proper operation of your Gates housing, and indeed is *required by the warranty agreement*. Failure to take proper care of a Gates housing voids this agreement, so be sure to read through this entire section prior to operating your new Gates housing.

### **First Time Use**

Every Gates housing is pressure tested before leaving the factory to assure a watertight seal. As a precaution, however, it’s a good idea to first use the housing ***without*** your camera inside. Rough or abusive handling during shipment could have caused unnoticed damage after leaving the factory. In addition, you can get a good feel for the use of an underwater housing without worrying about getting a good shot. You can simply concentrate on the technique of holding a camera in position while fine tuning your buoyancy.

***Follow all the guidelines*** as described below to prepare, execute and finish a dive. Then, dry the outside of the housing; open it up, and then look for any leakage. Water that has seeped in is usually quite visible. Also feel the inside for any moisture by running you finger across interior surfaces near the port openings, windows and housing mating surfaces. If you feel or observe any water that has penetrated, contact your Gates reseller or Gates directly.

### **Preparing to Dive**

Each time you prepare to enter the water with your Gates housing there are several important checks to make.

- ***Install the camcorder/camera*** inside the housing per the instructions you received with the housing. Make sure it is secured firmly to the housing and will not move around during use.
- ***Check all the o-rings***. Follow the guide called “O-Ring Care and Maintenance” from Gates that was included with your housing.

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- **Move all the controls.** They should rotate freely without binding or roughness. Lubricate the controls as needed to keep them operating easy and freely. Depending on conditions, this can be as frequently as every 1 or 2 dives.
- Close the housing. See that the halves are **mated and aligned** properly. Close the safety latches into their locked position.
- **Check the port** for proper installation (if it has been removed). The port should be *flush to the housing* and secured with the bayonet tabs on the inside (it should not pull off when secured properly).
- **Gland Check.** At the base of each control is a bolt-shaped part called a *gland*. Lightly attempt to turn them by hand. They should be tight and secure. If not, tighten them gently with a 7/8in wrench until secure.
- **One final check** should be made to look for anything unusual. This could be a pinched o-ring, damage from impact or drop, cracked window, etc.

## During the Dive

When you enter the water and during the dive, some important tips to remember:

- **Detecting a leak** -- Contrary to popular belief, a leaking housing will likely *NOT* spew a stream of bubbles to flag a leak. Look inside the housing from any viewport as you carefully submerge the housing. A good way to do this is hold the camera lens down as you look inside. If there is any water whatsoever, it will pool at the lens, telling you to exit the water post haste.
- **Optional Audio Moisture Detector Alarms** are available for most Gates housing models. If you hear the loud, annoying buzz it creates during your dive, immediately exit the water and examine your housing.
- **Severe impacts** to rocks, coral or anything solid should naturally be avoided. Your Gates housing is designed to withstand these incidents, but rough or abusive handling could compromise the integrity of the seals. Should you encounter a heavy impact or other extreme conditions, look immediately for leaks. It is highly recommended you exit the water and thoroughly inspect your equipment after such an event.

## After the Dive

As you may know, salt water is highly corrosive when left in contact with metal. It can quickly turn iron into rust, and aluminum into aluminum oxide. Even though your Gates housing comes anodized and sealed for protection against salt water, even the best protection can be compromised when left exposed to salt water for extended periods of time. Indeed a deep scratch or dent can expose aluminum, making it susceptible to salt water corrosion. *This is bad.*

Once again, some easy steps can prevent any problems due to corrosion.

- When you are finished diving, completely **submerge or rinse your sealed housing immediately in fresh water**. If you cannot do so directly, then as soon as possible after the dive. Soaking your housing in fresh water is not necessary – a thorough rinse will suffice.

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- If you submerge your housing in a dip tank, take care that other cameras and equipment do not adversely contact the housing. Many floods have occurred due to carelessness in the rinse tank.
- If you open the housing to change batteries, tapes, film, etc. between dives, **thoroughly dry the housing before opening**. Use compressed air whenever possible to blow away water from around the mating surfaces and avoid any drips inside when the housing is opened. Do the same around the port if you intend to remove or change it.
- When you are ready to close the housing again for another dive, start with “Before you Dive” guidelines above.

## ‘Wet’ Connectors

Your housing may come equipped with one or more ‘wet’ style connectors for video out, strobe, or other electrical signals. While Gates selects only the most robust connectors designed to provide years of service, the contacts may degrade from salt water corrosion over time.

If you suspect the contacts of a connector may require service, simply soak them in a solution of vinegar and a small amount of salt until they are once again bright and shiny. This is a simple yet time proven method of restoring electrical contacts.

If necessary, also apply silicone lubricant on the connector rubber (not the contacts) to help them mate smoothly and easily.

## Air Travel Considerations

It is increasingly difficult to travel the world with underwater imaging equipment. Gates customers are reporting damage to their housings / cameras from security inspections such as performed by TSA. Any damage is unfortunately discovered at destination – and often too late to remedy problems. A trip without images – or worse, a wet camera – is no fun on any expedition.

Gates remains committed to your success and so provides these important steps to ensure you return home with brilliant underwater images.

- **Operational check.** Be sure your equipment is operational prior to departure. Perform a thorough inspection. Take photos and document the condition. This establishes a solid baseline for comparison later.
- **Pack the housing** in a way that accommodates air pressure changes. Either insert a slip of paper over the main housing seal, or remove the port and pack separately.
- **Lock your cases.** Use TSA locks so only TSA can open your case. Some locks will reveal if they have been opened by TSA via small indicator.
- **Help the inspectors.** Include a note inside your case to TSA specifically listing the contents. This will give them some idea what they are inspecting. Ask them to handle with “great care.”

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- **Confirm inspection.** On arrival check for opened locks and if so take a photo. Check for a TSA leaflet inside. Take a photo of the opened case with the leaflet on top. Note on the leaflet the date of arrival and when you examined your equipment for damage.
- **Operational check.** Perform a thorough inspection on arrival and verify operation. This is the only way to be absolutely certain your equipment is OK. Document anything you find missing or broken, and take photos.
- **Seal test.** As outlined in the Gates manual, perform an in-water check of your housing without the camera to verify everything is watertight. If you have problems contact Gates for assistance.
- **Recourse.** If you find damage as a result of inspection you can file a claim with TSA at <http://www.tsa.gov/travelers/customer/claims/index.shtm> Keep your boarding pass stubs, luggage claim tickets, TSA leaflet, photos, etc. You may need all this to recover damages from TSA.

## Corrosion Protection

Every Gates housing contains several layers of anti-corrosion protection. The “hard” black anodize and nickel acetate seal act as the primary protection from corrosion, then by a small zinc anti-corrosion washer found on the underside of the housing.

The anti-corrosion zinc washer may begin to look dull and pitted after just a few dives. ***This is normal*** and indicates that the zinc is properly performing its duty protecting your housing. It will continue to disappear with time in the water.

The anti-corrosion zinc must be replaced when either

- it becomes the same size as the small stainless steel washer holding it in place; or
- excessive corrosion is evident, particularly around the latches.

Contact your Gates dealer or Gates directly for replacement zinc washers.

## Storing a Gates Housing

When the dives are over and it's time to store your Gates housing, there are several significant actions to take.

- ***Dry the housing completely*** with a towel. Remove ports, handles, and accessible o-rings. Then use compressed air to blow out water around seals, mating parts, ports, etc. ***Remove every visible trace of water.*** Do the same with the accessories and other parts you used underwater or were exposed to salt water, or even salt air during your diving adventures.
- ***Remove the main o-ring.*** This will keep the o-ring free of permanent deformations during long-term storage. Pack the o-ring in a plastic bag, and be sure to inspect it again prior to re-installation.

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- **DO NOT store your housing in the travel case.** Water that may have absorbed into the foam will return to attack the housing over extended periods of time. Rather, put your housing on a shelf, preferably in a cool, dry place where it is exposed to the air. Leave your travel case cracked open to allow air circulation.
- Be sure to **leave the housing open when stored** to allow air to circulate inside as well. Do the same with any battery cases, video monitor cases, etc.
- If the housing will be stored for some time, **remove batteries** from the water alarm and external monitor, if you have either.

## **Lead Warning**

This product (Lead Buoyancy Weights) contains a chemical known by the state of California to cause cancer/birth defects or other reproductive harm.


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## Cleaning Ports


Gates ports can be cleaned readily by following these simple guidelines.

- ✓ **Do not clean port lens surfaces if it is unnecessary.** Water spots, for example, will disappear when you return to the water.
- ✓ **Dust or Lint** can be blown with compressed air, preferably from a can.
- ✓ **Salt deposits or sand** may also be removed with compressed air. Use a soft lens brush if necessary to brush away foreign material that remains.
- ✓ **If necessary, rinse fresh water** over the outside of the port to loosen any residual salt or sand that may remain. Do this with the **port sealed** on your housing to keep water away from the rear of the port.

 **Caution:** Do not submerge port models GP25 or GP35 wide angle ports in water when separated from the housing! These ports are not sealed from the backside and damage will result if submerged.

- ✓ **Only if necessary, clean the port** using a mild glass cleaning solution and a non-abrasive, lint free cloth. **Use light circular strokes** when wiping away cleaning solution and any foreign material. Excessive pressure used when cleaning dirty lenses (*e.g.*, rubbing sand into the lens surfaces) may damage coatings. *Use a light touch.*

 **Caution:** Not all cloths are lint free and non-abrasive! Use of an abrasive material (such as cotton balls and cotton fabric) may scratch the glass and/or coating of Gates ports, and will void the warranty.

 **Tip:** Gates offers approved cleaning solutions and lint free cloths as accessory items. Use of these materials will not void your warranty.

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## O-Ring Care and Maintenance

If you're like many owners of underwater video or camera equipment, you may wonder: just how does one provide proper care to the o-ring seals that keep water safely away from my expensive electronics? This is an excellent question. The answer seems to pervade the world of SCUBA, passing from mouth to mouth, but there seems lacking a consolidation that brings all that useful advice together. This brief guide will help demystify o-rings, provide instructions for their proper care, and provide good useful summary information.

### What is an O-Ring?

An o-ring is really quite simple, resembling a thick rubber band. They are almost always round or "O"-shaped, but can be rectangular, oval, trapezoidal, or any shape required to establish a watertight seal. In all cases, O-rings are manufactured to precision tolerances required to hold a pressure seal on your housing. O-Rings are made of an elastomeric material, which is a fancy way of saying they can stretch and deform. They can be made of natural rubber, latex, silicone, viton, buna, or many other stretchy materials. This is an important feature of o-rings as it provides the means by which a watertight seal is formed.

### How Do I Care for O-Rings?

As you may have reasoned, o-rings must be free of dirt and debris to work. Any foreign material that compromises the o-ring will allow water to enter. *This is bad.* Fortunately, it's very easy to maintain the integrity of this seal by simply inspecting, cleaning and lubricating the o-rings when required.

✦ **Caution:** Your Gates housing contains *three types* of o-rings:

- **Orange** o-rings commonly found at the main housing seal and on port extenders;
- **Yellow**, low friction o-rings on SP80 and FP80 ports, port rings and controls; and
- **Black** o-rings for controls

The following instructions apply to all three types of o-rings except for lubrication—**Do Not Lubricate the orange o-ring!** It is a special silicone o-ring and can be damaged by petroleum based lubricants.

The Yellow and Black o-rings **can and should be lubricated** for free movement of controls and mating of ports / port rings.

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## Inspection

Begin by ***carefully inspecting the o-rings***. As a matter of habit you should inspect your equipment o-rings *before every use*. Once you gain experience, this step will be quick and easy.

⚡ **Caution:** **Never** use metal tools or objects for removing o-rings! These devices can easily damage the surface of the o-ring, the groove, or both.

- ✓ ***Only if necessary, remove the o-rings*** from the recessed groove where they may be stretched or secured. Your kit includes a Gates o-ring removal tool. Insert the pointed edge of the tool between o-ring and housing. The o-ring will lift from the groove far enough to grab with your fingers.
- ✓ One at a time, ***run each o-ring between your fingers and feel for any dirt or foreign material***. You should also feel a thin film of silicone lubrication on the o-ring surface of the ***black o-rings only***. This helps keep the o-ring flexible and readily able to seal the o-ring groove of the mating surfaces. If you feel dirt or grittiness, clean the o-ring.
- ✓ Next, under good lighting, ***closely examine the o-ring surface***, especially if you felt imperfections on the surface during the previous step. There should be no nicks, scratches, tears, or scars. Pull slightly on the o-ring as you rotate it through your hands to illuminate any cracks. The surface should be smooth and clean. If not, replace it with a new o-ring.
- ✓ ***Carefully inspect the recessed groove as well***. There should be no foreign material here, either. Dirt, hair, sand or any “gritty” feeling stuff means you’ll need to clean ***both*** the o-ring and groove.

## Cleaning

For o-ring cleaning you’ll need a lint-free cloth and Q-Tips.

- ✓ Holding the cloth in your hand, grab the o-ring and gently pull it through the cloth. Pull the entire loop through several times until all the foreign material has been removed and the silicone lubricant is gone. Once again inspect the o-ring under good lighting as described above, since imperfections may be seen more easily without the silicone lubricant coating.
- ✓ Using a Q-Tip or the lint-free cloth, thoroughly clean the recessed groove. Press the Q-Tip deeply into the groove to access corners and remove residual silicone.
- ✓ After the groove has been cleaned, inspect for and remove any cotton fibers that may have been shed from the Q-Tip.

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## Lubrication

Now you're ready to lubricate the **black and yellow** o-rings. For this you'll need pure silicone lubricant or silicone grease (available at dive shops).

- ✓ Put a generous amount of silicone between your thumb and forefinger, then run the entire loop of the black o-ring between your fingers several times. You need to coat the entire surface of the o-ring with a film of lubricant. ***The lubricant film should be thin, uniform and completely cover the o-ring, and have a 'wet' feel.***
- ✓ ***Place or stretch the o-ring back into its recessed groove*** and be sure it's well seated. Give the o-ring one last look for hair or other dirt that may have fallen on your work.

**⚡ Caution:** The **large orange o-ring** on your Gates housing requires no lubricant. It is a special silicone o-ring and can be damaged by petroleum based lubricants. ***Do not lubricate!***

The orange o-ring on the main housing seal requires a slightly different technique to install.

- ✓ Start on a side or corner, and place the o-ring over the recessed groove. Do not stretch the o-ring during this process.
- ✓ Press the o-ring down into the groove in several spots around the entire perimeter of the groove. Be sure the o-ring is evenly distributed around the perimeter.
- ✓ Finally, press the remaining parts of the o-ring into the groove. Run your finger over the entire o-ring while pressing down to ensure the entire o-ring is fully seated.

**⚡ Caution:** After cleaning or replacement of the main seal o-ring perform a pressure test by diving with the housing without a camera. This simple test will ensure the o-ring was installed properly and your Gates housing is leak-free.

## A Few Final Tips

- ✓ If you don't need to service an o-ring, *don't*. A sealed o-ring will remain so unless disturbed, such as cleaning. A good example is a port: there is no need to service a port o-ring between dives if it is not removed or changed.
- ✓ Some o-rings are inaccessible, such as those inside the shaft of a mechanical control (called a gland). These o-rings require little maintenance. You need only lightly lubricate the shaft of the control (inside and outside) with silicone lubricant periodically, about every 20<sup>th</sup> use. After applying, move the control in and out several times to distribute the lubricant.
- ✓ Every two years Gates recommends a complete overhaul of o-rings regardless of the amount your equipment gets used. And your 2-year warranty is renewed with a factory overhaul!



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