Nauticam Product Care and Maintenance Tips

COMMON CAUSES OF UNDERWATER HOUSING FLOODS

- Closing the housing and having hair, sand or a desiccant pack caught in the O-ring.
- Misplaced or extruded O-ring.
- Salt/dirt building up in the O-ring grooves or on sealing surfaces over time.
- Failing to fully screw in electronic sync cords.
- Small floods have happened when people jump into the water from up high with their gear, and the gear slams into the water.
- Latches on the housing or port not being securely closed.

O-RING MAINTENANCE

✓ *How often should I maintain them?*

- If you are doing shore dives, or where you are most likely exposing your rig to sand, do it each time you open the housing.
- If you are boat diving or on a live-aboard, where you are diving in clean water, you should service your O-rings at least once each day.

✓ *Considerations for setting up:*

- Set up your housing ahead of time. Avoid rushing right before a dive.
- Try to set up your housing in a cool, dry and well-lit area (e.g. Camera Room).
- If you are on a boat, set it up in a calm, sheltered area with minimal people traffic.
- If you're a glasses wearer, use reading glasses to see best close-up.
- A head-lamp can come in very handy to see well as not all camera areas, hotel rooms, etc. are well-lit.

✓ *Types of O-ring seals on your Nauticam Housing:*

- Your Nauticam housing has two types of owner serviceable O-ring seals; axial or face seals and radial or piston seals.

- For Nauticam housings where the back comes completely off, such MIL and DLSR housings, the main housing O-ring seal is an axial seal. For all ports, and compact camera housings where the camera back hinges to open, a radial O-ring seal is used.
- With both types of seals the O-ring is captured in a groove. However, with axial seals the O-ring is only compressed when closed while with radial seals the O-ring is both compressed and must slide when closed.
- The maintenance of both types of seals is the same with the only difference that O-rings in radial seals requiring greasing with each maintenance.
- This is the meticulous part, don't get distracted.

✓ *To remove O-rings:*

- Use the O-ring remover (supplied) to gently pry it out.

- NEVER use a knife, tweezers or any sharp object to remove the O-ring.

✓ *To clean O-rings:*

- If the O-ring has sand or grit on it, wash the O-ring in fresh water to remove. Dry O-ring with a lint-free towel or cloth.
- Gently clean the O-ring by wrapping a microfiber cloth or lightly moistened paper towel around a portion of it and pulling the O-ring through it very gently with your fingers. Be careful not to stretch it. If you feel any nicks, cuts, or dents in the O-ring discard it and use your spare.

✓ *Housing or port preparation:*

- Clean the O-ring groove with a microfiber cloth, high quality paper towel slightly moistened with fresh water, foam swab, or a cotton swab with a piece of lens tissue wrapped around the tip.

- Clean the O-ring sealing surfaces. For an axial seal this will be the flat portion of the housing back that presses against the O-ring in its groove. For radial seals this will be the lip or edge of the housing or housing port opening against which the O-ring will press and slide. As with the O-ring groove, use a microfiber cloth, high quality paper towel slightly moistened with fresh water, foam swab, or a cotton swab with a piece of lens tissue wrapped around the tip.

✓ *O-ring lubrication:*

- Axial seal O-rings need only be lubricated at most once a day. Lightly coat the O-ring with the lubricant provided and wipe away the excess. A sheen on the O-ring is good enough, not globs of lubricant that will attract sand and grit!
- Radial seal O-rings need to have a sheen but also a thin layer of lubricant should be applied to the exposed O-ring surface after the O-ring has been placed in its groove to assure the O-ring slides properly.
- Do NOT use anything other than genuine Nauticam lubricant.

✓ *Assembly:*

- Carefully place the O-ring into the groove, ensuring that it lays flat and inside the entire groove.
- For radial seal O-rings, apply a thin layer of lubricant to the exposed portion of the O-ring as previously described.
- Inspect the O-ring again, make sure there is no lint or hair on the O-ring.
- Close the housing and/or attach the port. Make sure the housing latches and port locks (if equipped) are fully closed.
- Lift up the entire system and inspect where the housing back and port meet the housing. There should be a thin, uniform gap with no extruded O-ring.

VACUUM CHECK AND LEAK DETECTION (VCLD) SYSTEM

- This system allows the underwater photographer to confirm watertight integrity of the housing before entering the water.
- The system is comprised of two parts, a one way vacuum valve and an electronic monitoring circuit.
- Starting with the NA-70D for Canon 70D, all new Nauticam camera housing models will ship with the electronic monitoring circuit pre-installed. Retrofits for previous housings are available.
- It is required to reset the vacuum system when the vacuum level has dropped from target level to totally lost, i.e., when opening the housing or changing the port. Resetting can be done by using the on/off switch or pressing the re-set blue button on the camera tray for DSLR housings.

LED status identification:

On start up

LED indicator	*Status*
Flash “Blue” light once	Indicates a 2nd generation PCB
Steady "Blue" light	Battery is normal, goes into flashing "Blue" light standby mode after 5 seconds.
"Blue" and "Red" lights alternating	Battery low. Replace battery as soon as possible. Goes into standby mode after 5 seconds.
Steady "Red" light	Battery empty, replace battery.

After start up

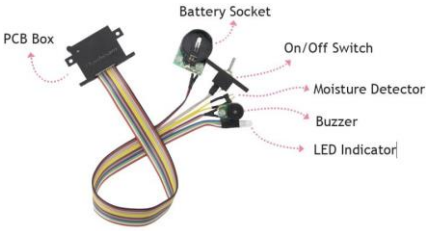
LED indicator	*Status*
Flashing "Blue" light	Standby mode. The moisture alarm is active, and the system is ready for vacuum indication whenever a vacuum is detected.
Flashing "Red" light with beeping sound	Moisture is detected.
Flashing "Yellow" light	Some vacuum is detected, target vacuum level is not reached.
Steady "Green" light	Target vacuum level is reached.
Rapidly flash "Yellow" light	Vacuum is dropping. (Will occur only after target vacuum level is reached)
Rapidly flashing "Red" light	Vacuum is totally lost. Circuit stalled until switched off. (Will occur only after target vacuum level is reached)

Please refer to the manual of the vacuum valve for details of the operation

Possible Causes for the VCLD System Malfunction

- ✓ Corroded moisture detector pins, battery socket, or other electronic parts, which caused by water droplets from:
  - opening the housing in a wet place
  - or from wet hands
  - or from wet hair
  - or from a wet suit
  - or from opening the vacuum valve whilst there is water still on the valve

✓ Using the wrong type of replacement batteries



Care of the Vacuum Check and Leak Detection System

- Setup your housing and close it in a cool, dry area to minimize the moisture inside the housing.
- After the dive, please only open the housing after drying it completely.
- Dry it out by blotting the housing first with an absorbent towel, and then use an air gun to gently blow off any trapped water.
- Ideally, leave the housing in an air conditioned room after resetting the vacuum system for at least a half hour.
- Reset the system when you are dry, avoid water droplets from your wet hands, hair or wetsuit.
- Use only the recommended battery.
- Leave the housing in an air conditioned room overnight if the alarm keeps activating even when it is dry.

What to Do if the Leak Detection System Activates During a Dive

- Orient the housing to keep the water as far away from the camera as possible. For some systems this will be with the port pointed down. For others it will be with the housing upright and level.
- End the dive if possible.
- Ascend in a safe manner.
- Remember, your safety is worth more than any camera.
- When the housing is removed from the water, maintain it in the preferred orientation.

ON THE BOAT OR DURING THE DIVE DAY

✓ *Entering and exiting the water:*

- Never jump in the water holding your housing. Always have your housing handed to you.
- Keep the port covered with a neoprene or dedicated cover as much of the time as possible to prevent the port becoming scratched.
- Add a lanyard for carrying your housing and easy handling.

✓ *In between dives:*

- Soak the housing in fresh water for a few minutes after every dive in salt water. While immersed, operate all buttons and controls for a few seconds if possible.
- Towel-dry the housing and do not leave it out of the sun between dives. Don't leave your housing unattended in the rinse tank!
- If you cannot rinse your housing after a dive do not allow the salt water to dry down on it. This will deposit salts and minerals that are difficult to re-dissolve. These deposits can abrade the double O-ring seals in the controls, compromising their seal. In this situation keep the housing wet with salt water by placing it in a tub or bin with a lid and a small amount of salt water. Or the housing can be placed in a plastic bag or wrapped in a towel soaked with salt water. Rinse the housing with fresh water as soon as it is available.

✓ *Changing lenses or batteries:*

- Rinse the housing in fresh water and dry it off with a towel if this has not already been done.
- Open the housing in a calm, sheltered area with minimal people traffic.

- After opening the housing, wipe off water on the O-ring with a microfiber towel or clean paper towel.
- Examine the O-ring and sealing surfaces carefully before closing the housing.
- Do a vacuum test 30~40 mins before the next dive to make sure the system is intact.
- Make sure the vacuum valve cap is on.

AFTER THE DIVE DAY

- Soak the housing system in fresh water, during which all buttons and controls should be operated a few times to avoid the accumulation of salt residue.
- It is advisable to clean and lubricate the main O-ring and port O-ring after each day of diving.
- Check that the O-rings retain their original circular shape; never stretch the O-ring excessively or remove it with a sharp object.
- It's also a good idea to remove the tray, break down strobe arms and dismount strobes and sync cords before storing them after the dive trip.

- When removing sync cords, be careful and dry out any water around the connectors. It’s easy for water to drip into the open bulkheads.
- Use a toothbrush to clean off the metal threads on the ends of the cords.
- Carefully remove and wipe off the sync cord O-rings, and lubricate them every time the cords are removed.

Electronic Sync Cords

- If you are ever on a dive, and your strobes fire on their own, you have a little moisture inside one of the bulkheads where your sync cords connect. Leave the water, carefully open the connector and check, and dry all connections.

- Electronic sync cords are good for fast moving action as they do not require recycling of the camera's flash.
- No pop-up flash recycling time, means faster shooting, less heat buildup, and longer camera battery life.
- Shoot as fast as your external strobes can recycle.

Optical Sync Cords

- When shooting with fiber optic cables, there are no sync cables to flood or corrode.
- Much higher reliability than with electronic sync cords.
- Less required maintenance with no O-ring seals.
- Strobes can even be removed from the rig while underwater, for off-board lighting opportunities.
- Strobe firing rate may be limited by camera flash recycle time.

TRANSPORTATION AND STORAGE

- Store the housing in a robust, shock-proof container during transportation; avoid transporting with the camera inside the housing.
- When travelling by air, it is important that the housing is not sealed. Either remove the O-rings, the port, or leave the back of the housing open.
- Do NOT travel with external 180/45 degree viewfinder installed, always pack it separately with the housing.
- Do not store the housing in an environment of high humidity, extreme temperatures, and direct sunlight.

- If you will not use the housing for an extended time, remove the O-rings for storage to avoid deforming them.
- Place the O-rings in a small zip-lock plastic bag and place it inside the housing.

REMOVING HOUSING STAINS

- Rinse the housing with fresh water after each dive.
- Apply rubbing alcohol with slightly diluted water to remove the stains.
- Use Pledge classic polish to protect the surface and enhance its natural shine.

REMOVING DOME PORT SCRATCHES

- Do not use alcohol or acetone to clean the dome port surface since the plastic material is PMMA acrylic, it causes stress cracks as per the images below:

- For minor acrylic scratches, the port can be polished by micro mesh acrylic optical liquid when properly used.
- Glass dome ports are heavier than acrylic dome ports, and they yield better image quality thanks to their superior optical properties.
- Very minor glass scratches can be polished by mild cleaner for car windows with a dedicated towel, such as: Eco Touch car glass cleaner. Please avoid using cleaners contain harsh solvents, ammonia and alcohol which can potentially damage the glass.
- For wide range of deep scratches/cuts on the dome surface, it is recommended to replace the optical element.

LENS, PORT & CAMERA CLEANING

- Clean your lens glass and port glass periodically. Always blow off dirt and dust first with a blower, then a soft brush, before wiping it with a lens cloth or lens paper. Otherwise you may scratch the glass.

- Always use a lens cloth or lens paper to wipe the glass. This is also good for ports and diopters.
- Always store lenses with the lens caps on when not in use to avoid scratches
- Try not to change lenses in dusty environments. Change your lens as quickly as possible to avoid getting dust on your sensor. When your camera does not have a lens on, either have the camera body cap in place or place the camera with the sensor pointing down.

ANTI-CORROSION PROTECTION

- There are two zinc anodes fastened to the bottom of each Nauticam housing that act as sacrificial anodes to prevent corrosion.
- Plastic washers are used as insulators between dissimilar metals to prevent galvanic corrosion from occurring.
- The zinc anodes may begin to look dull and pitted after some time. This indicates that the zinc is properly performing its duty protecting the housing. They will continue to shrink with time in the water. The anti-corrosion zinc anodes should be replaced when they become significantly smaller or when excessive corrosion is evident.

PRE-DIVE CHECKLIST

- ✓ Ensure the lens cap is off
- ✓ Make sure your memory card is installed and has enough space, always backup the photos after each dive or each dive day.
- ✓ Ensure flash trigger is installed when the camera doesn't have a pop up flash, and always prepare two spare batteries with you.
- ✓ Take a test shot, make sure the photo is properly exposed, and both strobes fired correctly.
- ✓ Verify your preferred camera settings, such as: file format, ISO, camera mode, WB setting, etc.
- ✓ Purchase the appropriate strobe buoyancy arms to make your housing neutrally buoyant. This will reduce fatigue and extend your dive time when you don't have to expend air to support the extra weight.

ANNUAL SERVICE

- It is recommended that you to ship the housing to our distributor for a complete overhaul every year or after every 200 dives.