# AQUATICA™

## Digital

# AD500



# INSTRUCTION MANUAL

## Product #20080

# AQUATICA™ Digital

🍁 Thank you for purchasing your Aquatica AD500 housing. Before you start to use your new housing, please read these instructions carefully. Keep this manual in a safe place for future reference.

🍁 This instruction manual assumes that the camera user is already familiar with the Nikon D500 camera. If not, please read your camera instruction manual before attempting to use the housing.

🍁 Please visit the Aquatica Digital website for further information.

## AQUATICA PRODUCT NUMBERS

| | |
|---|---|
| **20080-NK** | Aquatica housing for Nikon D500 *with double Nikonos connector* |
| **20080-OPT** | Aquatica housing for Nikon D500 *Including dual optical connectors* |
| **20080-KT** | Aquatica housing for Nikon D500 *Including a single Ikelite connector + vacuum pump* |
| **20080-NK -VC** | Aquatica housing for Nikon D500 *Including a single Nikonos connector + vacuum pump* |
| **20080-OPT -VC** | Aquatica housing for Nikon D500 *Including dual optical connectors + vacuum pump* |
| **20080-KT-VC** | Aquatica housing for Nikon D500 *Including a single Ikelite connector + vacuum pump* |

*NOTE:     Shown housing illustrations may differ from your actual housing depending on the ordered version.*

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# Safety precautions

Please carefully read and follow the following precautions and recommendations:

- ❦ Improper transportation, handling or use of this housing might cause a flood or a malfunction. Follow all recommendations stated in the next sections of this manual.

- ❦ Never remove, change a port or open the housing in a location where sand or similar foreign material might come in contact with an O-ring. Be wary of strong winds as they could potentially be carrying sand or other harmful particulate matter.

- ❦ Always perform a simple preventive seal test without the camera inside after doing maintenance on the housing.

- ❦ Non-authorized use of third party accessories, as well as modifications and/or alterations not specifically authorized by Aquatica may affect performance, cause poor functioning of the controls or impair the sealing integrity of the housing.

- ❦ Always handle the ports carefully. Protect them when not in use to avoid scratching the acrylic or glass surface of ports and windows.

- ❦ Always confirm that the ports remain properly attached before rinsing the housing. When rinsing without a wired strobe, confirm that the bulkhead strobes connectors are sealed with their plug.

- ❦ Never jump into the water with the housing. Have the system handed to you after you have made your entry or have it lowered to you on a rope.

- ❦ Never handle the housing by grabbing the port, or if using one, the Aqua View finder.

- ❦ Make sure that boat staff are familiar with these procedures and advise them to manipulate the housing by using the grips provided with the housing.

# Product specifications

| Construction | Housing body | 6061-T6 Aluminium |
|---|---|---|
| | Surface treatment | Anodized + powder coated |
| | Windows | Optical acrylic |
| | Grip handles | Black PVC |
| Physical | Dimensions WxHxD (w/o grips) | 256mm x 173mm x 145mm<br>10.10'' x 6.83'' x 5.72'' |
| | Weight (w/o camera) | 2.8 kg – 6.1 lb |
| | Buoyancy | Slightly negative |
| | Depth rating | 100 msw - 330 fsw |
| Features | Ergonomic control placement | Easy access to following controls:<br>♦ Shutter<br>♦ Front dial wheel<br>♦ Rear dial wheel<br>♦ REC<br>♦ Fn1 & White balance<br>♦ ISO<br>♦ Exposure compensation<br>♦ Zoom-focus wheel |
| | Aqua View finder compatibility | Aqua View finder 45°<br>Aqua View finder 180° |
| | Moisture/vacuum alarm | Supplied with the Surveyor moisture and vacuum sensor alarm. |
| | Flash capability[1] | Compatible with the following depending on flash option:<br>♦ Optical triggering<br>♦ *Nikonos*-style bulkhead<br>♦ *Ikelite*-style bulkhead |

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[1] Note that all of the AE-M1II flash triggering options **are not** TTL compatible.

# AQUATICA™
## Digital

## Package contents

- AD500 housing

- Handle grips (2) with screws (2)

- AD500 instruction manual

- Lens chart

- Spare housing seal O-ring

- CR 2032 coin cell battery

- Aquatica O-ring lubricant container

- Set of Allen keys

- Optical Flash trigger with optical bulkheads
  or double Nikonos connector
  or single Ikelite connector

- Vacuum pump
  (for 20080-NK-VC, 20080-OPT-VC and 20080-KT-VC kits)

# Housing schematics

## Housing components & functions
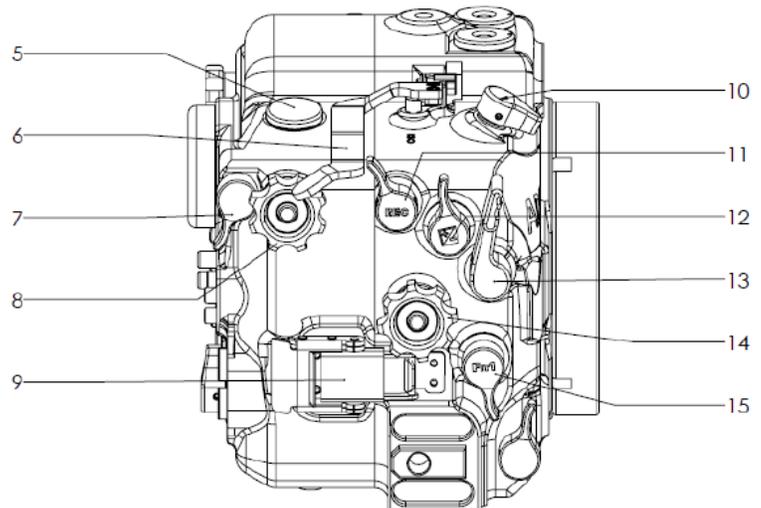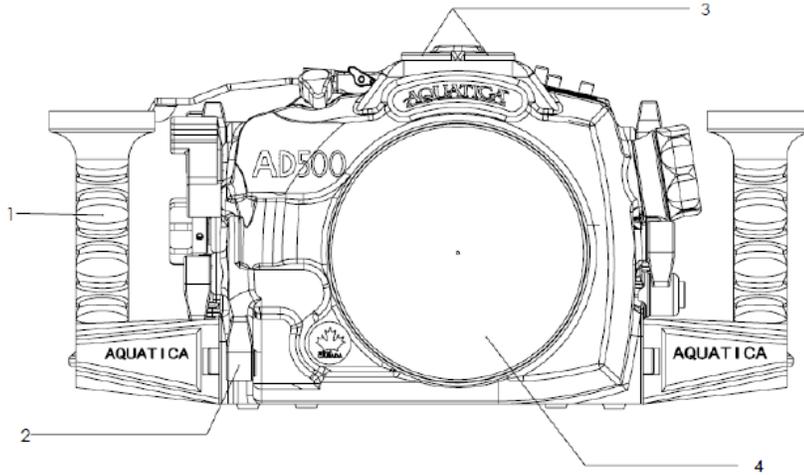


| | |
|---|---|
| **1** | Aquatica Grips X2 |
| **2** | Port Lock Lever Control |
| **3** | Aquatica OPT |
| **4** | Aquatica Port Cover |
| **5** | 16mm Accessory Port |
| **6** | ISO External Lever Control |
| **7** | AF-ON Lever Control |
| **8** | Rear Dial Control |
| **9** | Aquatica Stainless Steel Latch |
| **10** | On/Off Control Knob |
| **11** | Record Control Lever |
| **12** | Exposure Compensation Control Leaver |
| **13** | Shutter Release Lever |
| **14** | Front Dial Control |
| **15** | FN1 Control Lever |

# AQUATICA™ Digital

## Housing functions
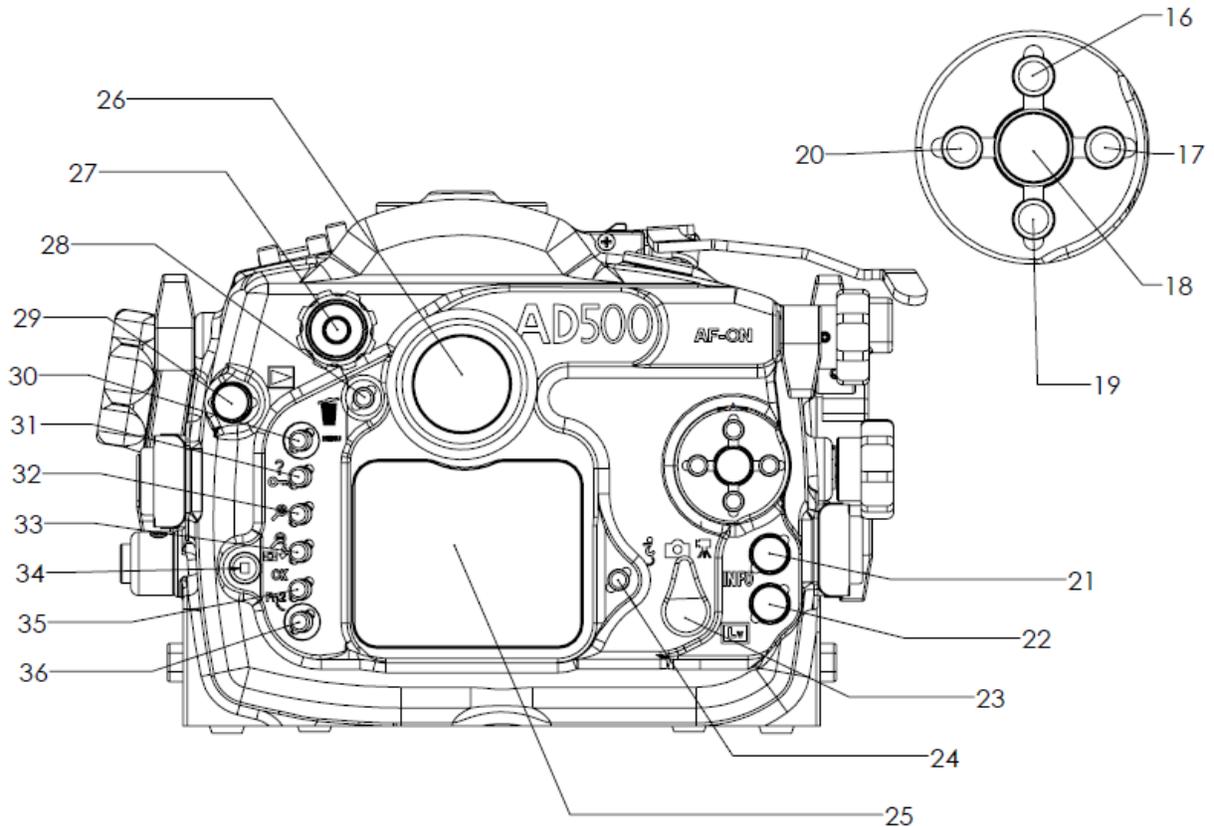


| | | | |
|---|---|---|---|
| **16** | **Up Selection Button** | **29** | **Playback Button** |
| **17** | Right Selection Button | **30** | Menu Button |
| **18** | Center Selection Button | **31** | Protect Button |
| **19** | Down Selection Button | **32** | Playback Zoom In Button |
| **20** | Left Selection Button | **33** | Thumbnail/ Playback Zoom Out Button |
| **21** | INFO Button | **34** | Wet Alarm LED Light |
| **22** | LV Button | **35** | OK Button |
| **23** | Live View Switch Selector Knob | **36** | FN2 Button |
| **24** | Help Button | | |
| **25** | LCD Monitor Window Port | | |
| **26** | Removable Viewfinder Eye Piece | | |
| **27** | Mode Dial Knob | | |
| **28** | Trash Button | | |

| 37 | **AF Point Selection Button** |
|----|-------------------------------|
| 38 | MODE Button |
| 39 | QUAL Button |
| 40 | 16mm/.5 Inch Accessory Port |
| 41 | White Balance Control Lever |
| 42 | Zoom/ Focus Knob |
| 43 | Lens Release Control Lever |
| 44 | AF/M Selector Knob |
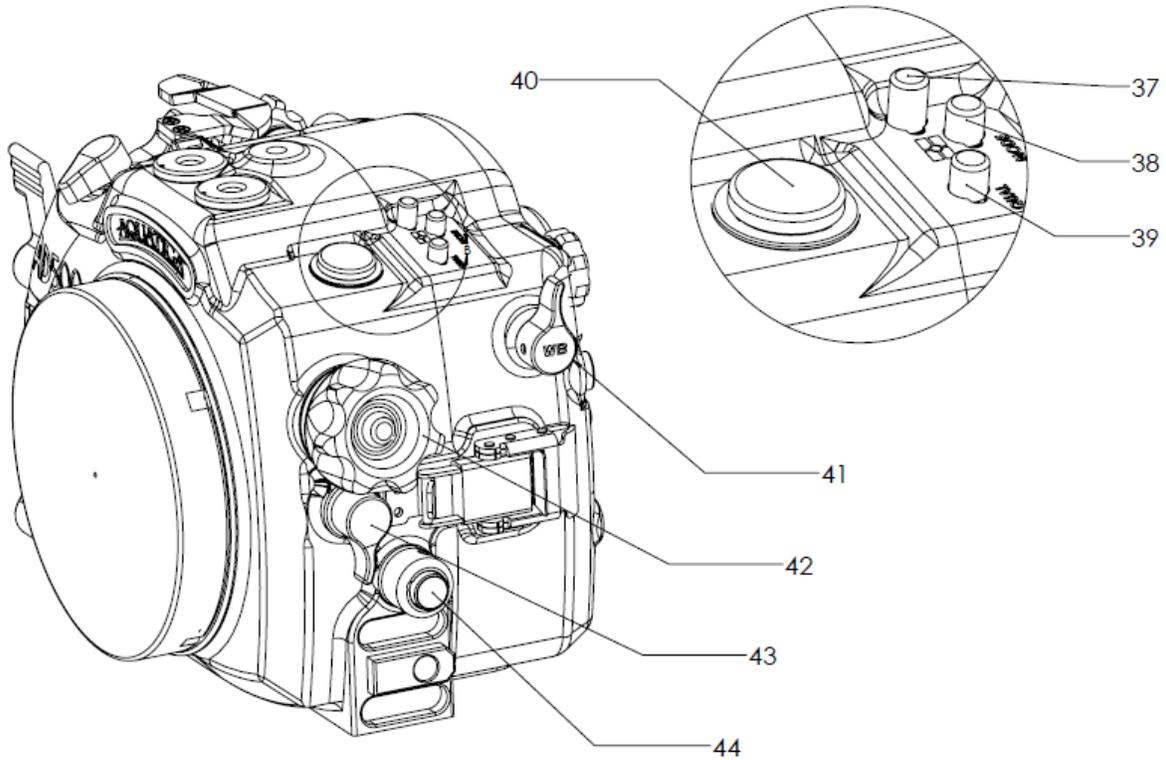
# Housing preparation

Follow these steps to prepare your AD500 housing for use:

**STEP 1:** Assemble your handle grips onto your housing using the provided screws and Allen keys.
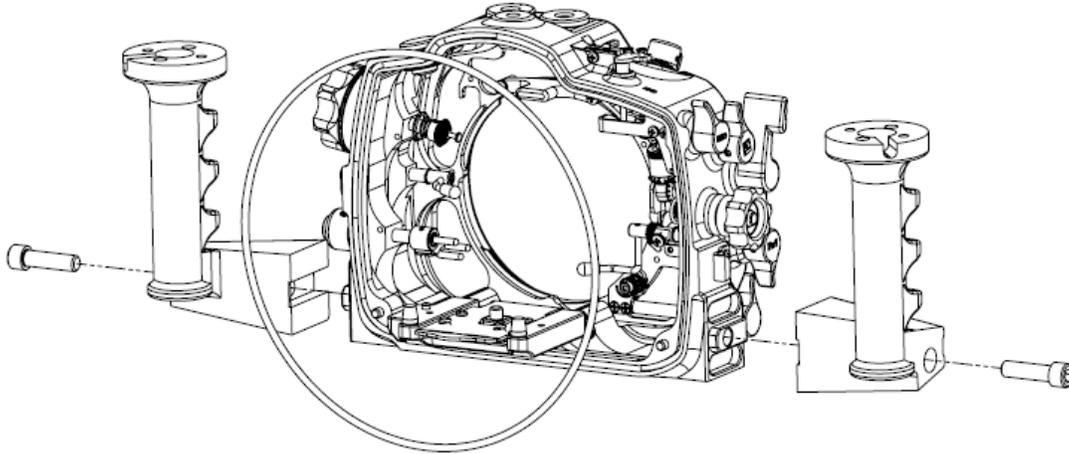


**STEP 2:** If you are adding any shoes, brackets or ball mounts onto your housing, mount them using the intended ¼-20 UNC threaded holes. You can use the threaded holes on the handle grips, the top one or the bottom ones for your tripod.

**STEP 3:** Mount your strobes and their arms onto the housing. For details about optical flash triggering and wired bulkheads, refer to the *Accessories, Flash triggering* section (page 20). Follow your strobe manufacturer manual and its recommendations.

**STEP 4:** Before use, remove the main O-ring seal from its groove and carefully verify that the O-ring and its groove are free from scratches or foreign matter. Lubricate the O-ring with a light coat of silicone grease.

**WARNING:** For proper handling of O-rings, follow the detailed instructions outlined in the

**STEP 5:**     Insert the provided CR 2032 coin cell battery in the Surveyor alarm. Read *Accessories, Surveyor sensor* (page 16) for more details on sensor operation.

# Camera preparation and installation

Follow these steps to prepare your Nikon D500 camera for use with your housing. It is also advisable before inserting the camera into the housing, in order to save valuable time underwater, to set your camera shooting preferences beforehand.

**STEP 1:**     Remove the quick release tray from the housing by pressing down on the lever and then pulling the tray out.

**STEP 2:**     Lift the camera's LCD screen out of the way and carefully place the camera on the tray. Make sure that the camera is properly aligned with the pin and the stoppers on the tray then tighten the mounting screw. Finally lower the LCD screen so that it rests on the two rear stoppers at an angle.
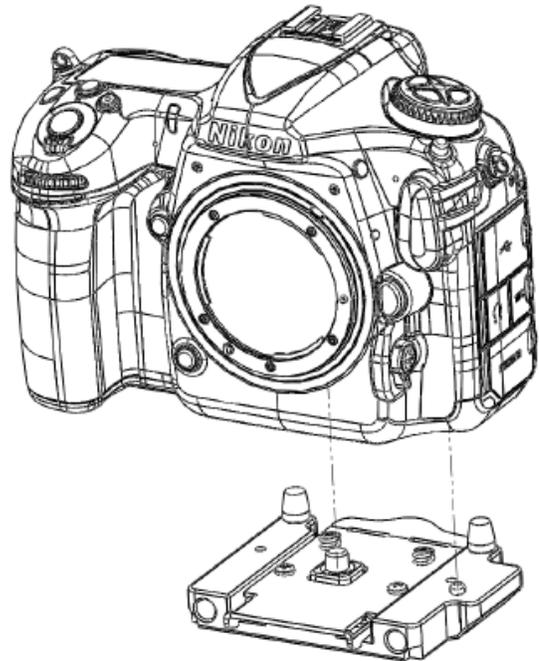
**STEP 3:**     [IMPORTANT] To avoid any interference while inserting the camera in the housing, pull out the Lens Release (43), AF/M (44) and Zoom/ Focus Knob (42) located on the left of the housing as well as the FN 1 Control lever (15) located on the Right.

Before inserting the camera, position the *ON/OFF* switch of both the camera and the housing (10) to the *OFF* position (rotating the *ON/OFF* switch of the housing counter-clockwise to a stop).
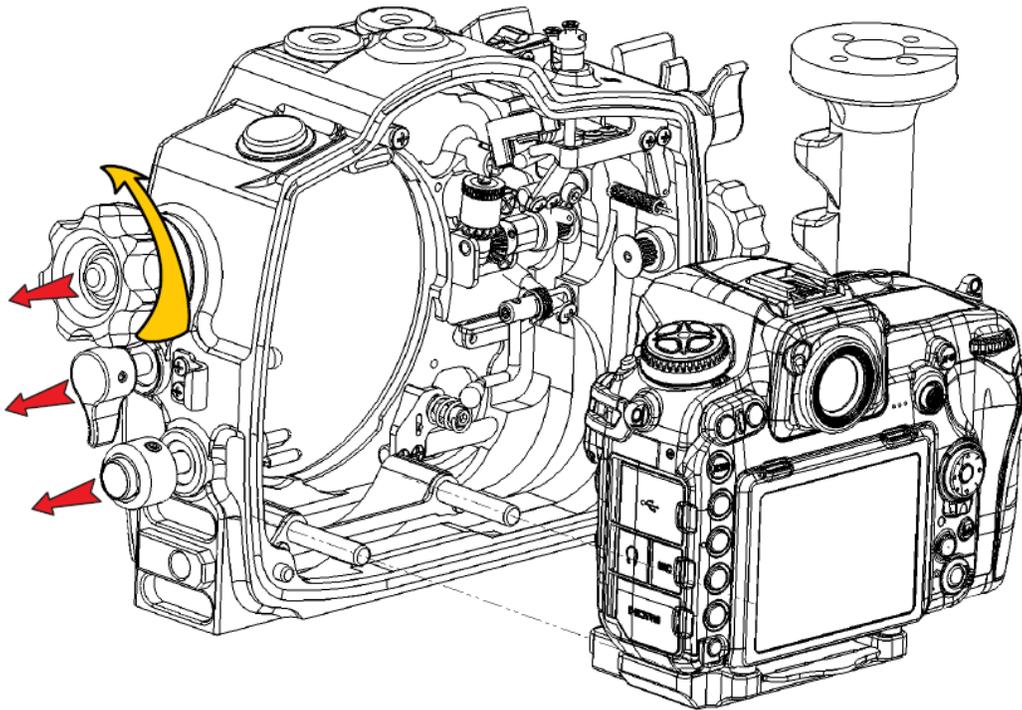


**STEP 4:**    Slide the quick release tray and the camera into the housing; it will lock itself into place.

**STEP 5:**    Before closing the housing align the AF/F (44), Lens Release (43) and FN1 (15) controls with the ones on the camera switch positions. And make sure that the *ON/OFF* lever (10) is working properly.

**STEP 5:**    Hold the latch on each side (9), align the pins on the front shell and rear shell and bring them together. Engage each latch on its strike tab then press both latches simultaneously. Finally, verify that the safety tabs on each latch are engaged by trying to lift the latch up, and visually check that the O-ring remained properly seated and no obstruction is present
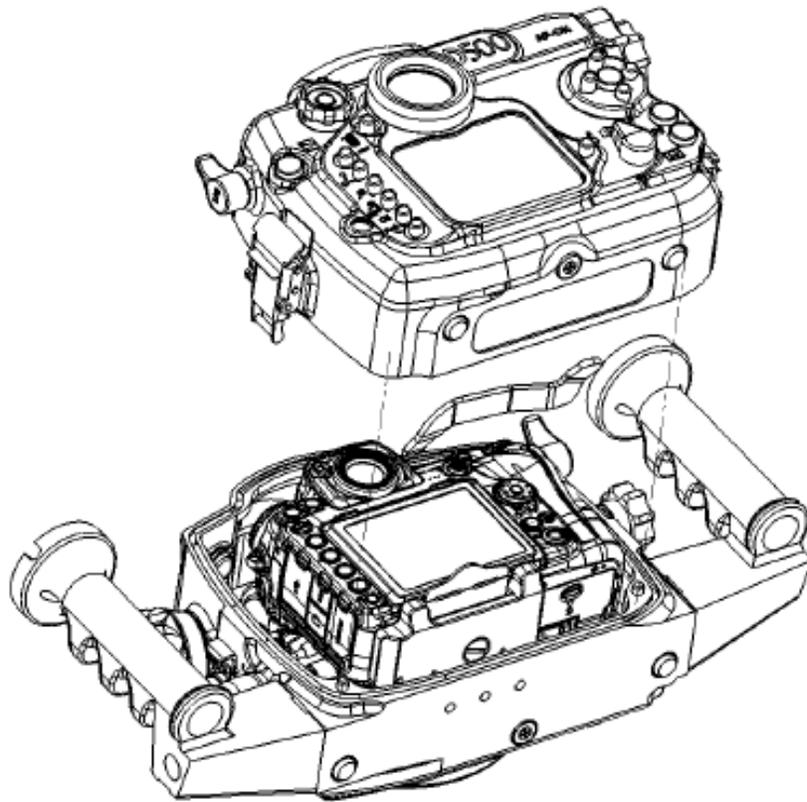


[IMPORTANT] In the event that you feel any unusual resistance when attempting to close the rear door, do not force the closure. Reopen, inspect carefully for any potential obstruction such as *ON/OFF* switch position and try again.

# Port mounting

The AD500 housing is equipped with a bayonet locking system that firmly attaches compatible ports and extensions.

**STEP 1:**   Before mounting the port, remove the O-ring seal from its groove and carefully verify that the O-ring and its groove are free from scratches or foreign matter. Lubricate the O-ring with a light coat of silicone grease. Also check that the O-ring mating surface on the housing is clean and free of any physical damage.

**WARNING:**   For proper handling of O-rings, follow the detailed instructions outlined in the, *O-rings* section.

**STEP 2:**   Place the housing on its back on a soft and steady surface.

**STEP 3:**   Place the port or extension ring inside the housing bayonet. Align the bayonet using the four alignment notches in the housing.
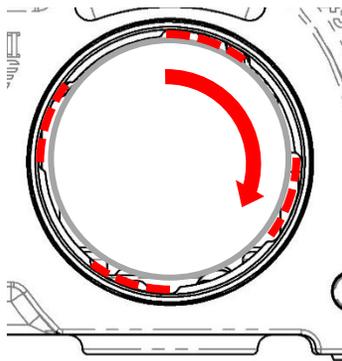


**STEP 4:**   Push with even force on both sides of the port or extension ring until you feel it snap into place. Make sure the bayonet is completely inside the housing.

**STEP 5:** Rotate the port clockwise until it stops. **Do not force it**. If there is too much resistance, take the port off, check the O-ring and see that the port or extension ring is properly seated before attempting to rotate it again.

**STEP 6:** Confirm that the port or extension ring is safely locked in the housing by gently trying to rotate it counter-clockwise. The bayonet lock should prevent any counter-clockwise rotation.

**WARNING:** Never attempt to manually focus the camera if it is set to autofocus mode with a mounted focus gear engaged. This will strain the focus mechanism motor and might damage your lens.

## Port removal

**STEP 1:** Press the port release lever (2) and rotate the port or extension counter clockwise.

**STEP 2:** Carefully pull the port or extension off the bayonet.

# Accessories

## Surveyor sensor

Your AD500 housing comes standard with the Surveyor moisture alarm. This sensor device has two distinct purposes, a moisture detection circuitry and an ambient pressure sensor circuitry; both are integrated on the same circuit board. A CR 2032 coin cell battery is provided to power your moisture alarm.

> *NOTE:*   *Once a battery is installed, the moisture detector function of the Surveyor alarm will remain on standby and does not need to be activated. If not being used for a prolonged period of time, it is recommended to remove the battery from the sensor circuit to avoid unnecessary drain.*
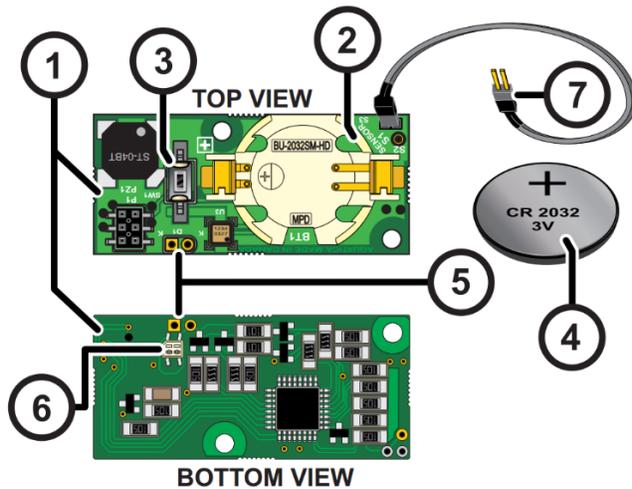


| | |
|---|---|
| 1 | Sensor circuit |
| 2 | Battery holder |
| 3 | Vacuum power switch |
| 4 | CR 2032 3V battery |
| 5 | External LED point |
| 6 | Integrated warning LED |
| 7 | Probe wire harness |

> **WARNING:**   If you are only using the moisture alarm function without the vacuum, it is recommended to perform a quick test of the circuit before every dive. To do so, simply moisten the tip of your finger and establish contact between the board probes (#7). This should trigger the water alarm. If it fails to activate, check that the battery is correctly inserted and replace it with a fresh one if required.

| Standby mode | LED is off<br>*System is on standby* | |
|---|---|---|
| Water detected | Red LED flashing with audible alarm<br>*Water is making contact with probe* | |

**Moisture alarm mode LED code:**

If you want to benefit from the full capabilities of your Surveyor sensor, you can order the optional vacuum pump system (#19228). The vacuum function of the Surveyor offers the user an efficient monitoring tool to check its housing sealing integrity before and during his dive.

The next table shows the vacuum sensor mode LED code. See *Accessories,* **Error! eference source not found.** section (page **Error! Bookmark not defined.**) for the required procedure to obtain a vacuum using the pump.

**Vacuum sensor mode LED code:**

| Standby mode | LED is off<br>*System is on standby* | |
|---|---|---|
| Vacuum ready | Green LED flashing<br>*System is ready to be depressurized* | |
| 40-100% Vacuum | Yellow LED flashing<br>*Building vacuum inside housing* | |
| 100% Vacuum | Green LED solid<br>*Required level of vacuum is achieved* | |
| Over-depressurization[2] | Green LED flashing<br>*System is getting over depressurized* | |
| Vacuum standby | Green LED flashing every 4 sec<br>*Housing system is holding vacuum* | |
| Loosing vacuum[3] 40-60% | Yellow LED flashing<br>*Housing is losing vacuum over time* | |
| Lost vacuum 0-40% | Red LED flashing with audible alarm[4]<br>*Housing has lost vacuum* | |
| Water detected | Red LED flashing with audible alarm<br>*Water is making contact with probe* | |

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[2] Everything is OK, just stop pumping vacuum.
[3] Indication of a slow leak behavior.
[4] Alarm will stay on during 30 seconds before going back to standby mode.

# Vacuum pump

A vacuum pump will allow you to fully benefit from the capabilities of your Surveyor sensor. Your pump kit (either #19228 or #19233) includes the following parts:
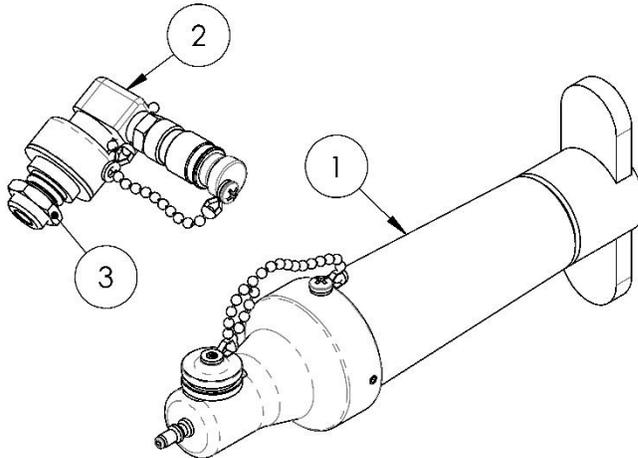


| | |
|---|---|
| **1** | Vacuum pump |
| **2** | Pressure valve |
| **3** | Retaining nut |
| **\*** | Aquatica lubricant |

If your pump was not factory installed or bought separately, you will need to install the pressure valve bulkhead on your housing. The AD500 is compatible with pump kit #19228 and pump kit #19233. Using the proer adapters, both can be installed in the 16mm/.5" accessory Port (40)

**To install your valve:**

**STEP 1:**    Remove the existing plug by unscrewing the hexagonal nut inside.

**STEP 2:**    Lubricate the valve bulkhead O-ring using provided Aquatica O-ring lubricant (see, *O-rings section* for more information).

**STEP 3:**    Carefully insert the valve bulkhead into the selected port, slightly rotating the valve while pushing will facilitate the insertion.

**STEP 4:**    Tighten the retaining nut.

**To use your vacuum monitoring system:**

**STEP 1:** Prior to closing your housing, put your Surveyor sensor in vacuum mode by pressing the activation switch on the board. The Surveyor green LED should be flashing rapidly upon activation.

**STEP 2:** Close your housing using procedure outlined in the **Error! Reference ource not found.** section.
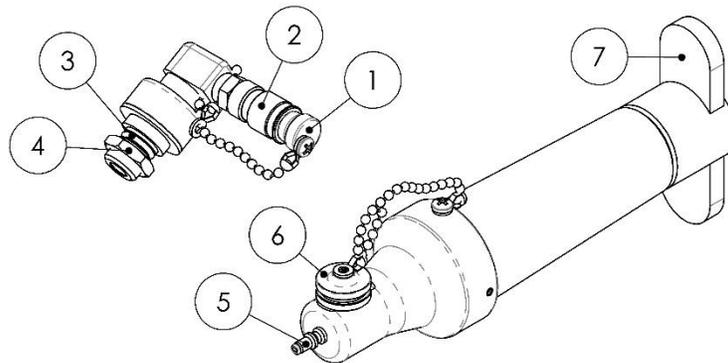


**STEP 3:** Remove the valve plug (#1) by sliding the quick-disconnect collar (#2).

**STEP 4:** Insert the pump stem (#5) in the pressure valve and release the quick disconnect collar (#2).

**STEP 5:** Make sure the pressure release plug (#6) is screwed all the way in (clockwise).

**STEP 6:** Build vacuum inside your housing by pumping the handle (#7). The amount of pumping required will vary according to the housing dimensions and the port configuration being used. However, the proper amount of vacuum should always be attainable within a reasonable delay. Refer to vacuum LED code table in *Accessories, Surveyor sensor* section.

**WARNING:** Be careful **not to over-depressurize** the housing. This will trigger the alarm and require the sensor to be reset.

**STEP 7:** Remove the pump by sliding the quick-disconnect collar (#2) and put back the plug (#1) in the pressure valve.

If your housing fails to maintain a constant vacuum, proceed a thorough inspection of the user serviceable O-rings of the housing. If unsuccessful in determining the source of the leak, refrain from immersing the housing and return it to your authorized service center for inspection.

**NOTE:**   *Once your housing is under vacuum, it is important to pressurize it back to ambient pressure before attempting to remove your port or open the housing. To pressurize it back, insert the pump back into the valve (STEP 4) and remove pressure release plug (#6). Once the hissing sound stops, you can remove the pump (STEP 7). The housing is now back at ambient pressure.*

# Flash triggering

There are three flash options compatible with the AD500 housing:

🍁 Optical triggering (#20080-OPT and #20080-OPT-VC)
   Optical bulkheads
   LED flash trigger
🍁 Double *Nikonos*-style bulkhead (#20080-NK and #20080-NK-VC)

🍁 *Ikelite*-style bulkhead (#20080-KT and #20080-IKT-VC)

For *Nikonos* and *Ikelite* style bulkheads, simply insert the velcroed board inside your camera hot-shoe. Both options come already wired with the required flash circuit board. All switches must be in the OFF (lower) position on the switchboard.
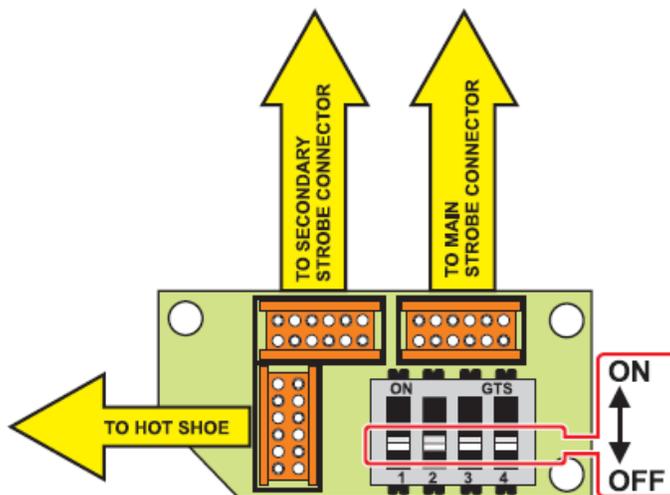


**NOTE:**   *Note that none of the offered flash triggering options on the AD500 housing are TTL compatible.*

# Aqua View finder

The AD500 housing is compatible with both the 180° Aqua View finder (#20054) and the 45° Aqua View finder (#20059). To install your Aqua View finder, you will have to remove the standard eyepiece.

**To remove your standard eyepiece:**

**STEP 1:**    Using an O-ring removal tool, remove the eyepiece retaining O-ring.

**STEP 2:**    Carefully pull the eyepiece body out of the housing.

**To install your Aqua View finder:**

**STEP 1:**    Carefully verify that the O-ring and its groove are free from scratches or foreign matter. Lubricate the O-ring with a light coat of silicone grease. Also check that the O-ring mating surface on the housing is clean and free of any physical damage.

**WARNING:**    For proper handling of O-rings, follow the detailed instructions outlined in the*, O-rings* section.

**STEP 2:**    Insert your Aqua View finder inside your housing. Be sure to align the Aqua View finder with the aligning pin on the housing.

**STEP 3:**    Install your Aqua View finder retaining O-ring

**WARNING:**    It is highly recommended to perform a simple seal test without the camera after performing the installation. View following section for details.

# Care and maintenance

With basic care and a regular maintenance schedule, your Aquatica housing will provide years of enjoyment and satisfaction in producing spectacular underwater images. Please follow all undermentioned care and maintenance instructions.

## Housing components

After every salt water dive, soak and/or rinse your housing system in fresh water. It should soak for a minimum of 30 minutes. Operate all the controls several times, while soaking, to dislodge any trapped salt water residues.

Periodically remove the hand grips for storage and transportation to avoid having the thread of the attachment bolts fuse on to the housing. Unscrew, clean and lubricate the bolts with a small amount of WD-40 or Zinc-based lubricant.

> **WARNING:** Use WD-40 or any lubricant carefully, sparingly and only on metal to metal surfaces. WD-40 or other petroleum-based lubricants can damage the acrylic on the ports, the optical surfaces of a lens or O-rings.

## Sacrificial anodes

Two anodes are attached to the bottom parts of the housing to prevent galvanic corrosion due to electrolysis. As time goes and depending on use, they will deteriorate and need replacement. Contact your dealer to order replacement anodes (#19220).

## O-rings

When replacing the main seal O-ring, place the entire O-ring over the O-ring groove and start by pushing the O-ring in the corners. Work your way around the O-ring making sure it is snugly sitting in the groove. Avoid going solely in one direction as doing so will stretch the O-ring material and possibly prevent it from properly seating.

**When working your housing or port O-rings, please follow these instructions:**

* Never use a sharp instrument when removing an O-ring as this may damage the sealing surface of the groove or the O-ring itself. A dedicated O-ring tool, a dull pointed object or the edge of a credit card usually works well.

- Once removed, the O-ring should be inspected for damage. Carefully check that it is free of nicks or cuts and that it retains its original round profile. O-rings that appear to be damaged should be immediately replaced with new ones.
- Rinse the O-ring with fresh water and dry it with a clean lint free cloth.
- Clean the O-ring groove (the channel where the O-ring sits) with a cotton swab. Make sure to remove any lint the cotton swab may leave behind.
- Wipe the matching sealing surface part of the housing with a clean lint-free cloth.
- Lubricate the O-ring with a thin layer of Aquatica O-ring lubricant (# 19213) until it appears to be smooth and shiny. **Do not over lubricate**. Use just enough lubricant so the O-ring will pull smoothly through your fingers. Excessive amounts of grease will only attract and trap dirt onto the O-ring.
- Confirm that the Port and extension ring O-rings are properly and evenly seated in their O-ring groove.
- To reinstall the clean and lubricated main O-ring of the housing:
  - Place the entire O-ring over the groove and start by pushing the O-ring in at each corner.
  - Push the O-ring at each side to distribute it evenly across the surface before finally working in the rest of the O-ring.
  - Never start at one end and work your way around the O-ring. This creates uneven tension on the O-ring which may cause the O-ring to stretch.

> **WARNING:** When changing ports or O-rings, a simple seal test without the camera inside should be performed. Strapping a weight to the housing and lowering the unit to a depth of 30 to 50 feet of water for at least 10 minutes will assure you that you have a proper seat of the new port or O-ring. This test, **though time consuming and often considered unnecessary, may save your camera equipment from irreparable water damage.**

The internal O-rings of the housing are not user replaceable. While these O-rings are not as susceptible to damage as the main seal, rinsing the housing properly with fresh water to flush out salt crystals and sand residues will assure trouble free operation. Aquatica recommends yearly maintenance of the internal O-rings. Authorized service centers are offering this service with factory-approved procedures and replacement parts. You can check the closest service center to you on the Aquatica website.

> **WARNING:** Only use **petroleum free O-ring lubricants** such as our Aquatica O-ring lubricant (#19213). Petroleum-based lubricants, used by some manufacturers to lubricate their Silicone-made O-rings will cause the O-ring material to swell. This will cause difficult installation and will likely result in O-ring being damaged or pinched.

## Storage and transportation

Store and transport the housing in a sturdy, shock proof container and avoid travelling with the camera mounted inside the housing. In the event of an impact, especially on the external push buttons, the impact could potentially be transferred to the camera controls and damage them.



When travelling by air or in situation where atmospheric pressure changes are foreseen, leave the housing opened, or alternatively, remove the port and the eye piece. Doing so allows equalization of the air pressure inside the housing with ambient pressure. Failure to follow this recommendation may cause an internal pressure build up which could potentially force ports or acrylic windows to pop out or potentially unseat their O-ring seal.

# Warranty

## PLEASE READ CAREFULLY

**One year limited warranty**

All Aquatica products are guaranteed against defects in material or workmanship for one (1) full year from the date of purchase for consumer use. these same products when used commercially will carry a 90-day warranty. No statutory warranty applies. Camera housed in Aquatica housings are **not covered** under this warranty and **any water damage sustained due to installation error or any other reason is not the responsibility of Aquatica**. Therefore, the appropriate insurance should be maintained by the user.

Warranty does not apply to replaceable seals or damages to impacts or abrasive surfaces. Warranty applies only to products purchased from authorized Aquatica dealers and does not extend beyond the original retail purchaser. Unauthorized modifications or repairs will automatically void this warranty. This applies to removal of serial numbers and Aquatica identification labels.

To obtain service during or after the warranty period you must notify Aquatica at +1 (514) 737-9481 and ship **by registered mail (insured) only**, enclosing your proof of purchase to:

*Aquatica Digital*
*3025 De Baene*
*Montreal (Quebec)*
*H4S 1K8*

Mark clearly on your package "Canadian goods returned for repair".

Do not ship by any other means.
Unauthorized packages will be refused.

YOUR SERIAL NUMBER    _____