

AX700 Underwater Housing

Setup, Use, and Care Guide

Copyright 2018, Gates Underwater Products, Inc.

Last document revision: April , 2018

This manual and current revision is available in 8.5 x 11 size and full color at

<http://www.gateshousings.com/documentation.html>

Gates Underwater Products, Inc.

13685 Stowe Drive
Poway, California 92064 USA

Phone: 800.875.1052 toll-free in the U.S.
858.391.0052 outside the U.S.
Fax: 858.391.0053
Web: GatesHousings.com

Table of Contents

	Setup, Use, and Care Guide.....	1
1:	Introducing the AX700	4
	Features	4
	Warranty Disclaimer	4
	Unpacking the AX700.....	5
2:	Cautions	6
3:	The AX700 Setup	7
	Handle Installation	7
	AX700 Housing Preparation	8
	Camera Preparation	9
	Installing the Camera into the Housing	12
	Closing the Housing.....	15
	Water Alarm (Optional).....	18
	Hydrophone (Optional)	19
	Carry Handle (Optional).....	20
	Light Mounts (Optional)	20
	Final Checks.....	22
4:	AX700 Operation	23
	Right Side and Front Controls.....	24
	Left Side / Rear Controls	26
	Changing Filters	28
	Changing Ports.....	29
	Cleaning Ports and Filters	30
	Diopters.....	31
	Buoyancy and Trim.....	32
	Tips for Shooting Video with the AX700.....	33
	Housing Care and Maintenance	33
	O-Ring Care and Maintenance	33
5:	Customer Support	34

1: Introducing the AX700

Congratulations on owning a new Gates product: the AX700 housing. You've selected a product that will provide years of value and reliable service. We designed the AX700 specifically for the Sony AX700, PXW-Z90, and NX80 digital video cameras.

Please read through this entire guide to learn about the housing so you can get the most out of this imaging tool. In this section, we'll introduce you to the features of the AX700 so you can get started.

Features

The AX700 has several key features:

- **Small and Travel-friendly.** At just a few pounds, the AX700 packs easily into your luggage or dive gear.
- **'Bulletproof' construction.** Gates legendary reliability is inherent in the AX700: machined aluminum shell, stainless hardware and reliable mechanical controls.
- **Precision optics.** The AX700 allows the use of a variety of ports including Wide and Macro.
- **Professional Imaging.** The AX700 system includes many features for broadcast TV and other professional uses.

Warranty Disclaimer

The AX700 is a tool that, like any tool, requires knowledge and understanding to be effective.

Your responsibility is to learn the proper setup, use and care of the AX700. Because we can only provide you with the information necessary to do so, Gates does not warrant the contents of your housing (e.g. your camera and lenses) under any circumstance. For the same reasons, Gates does not warrant optical performance or image quality.

We warrant the AX700 as an image acquisition tool for a period of 2 years. The optional Seal Check unit is warranted for 1 year. Optics are warranted for a period of 1 year or 100 hours water contact, whichever comes first.

If you have any questions about the setup, use and care of the AX700, contact Gates directly. Details are in section 5.

Unpacking the AX700

After you remove the AX700 from its shipping container, carefully inspect it for missing parts or damage that may have occurred during shipment. If you discover any discrepancies, contact Gates or your dealer immediately for assistance.

Standard Parts

The AX700 comes with the following standard items:

- **The AX700 Housing**
- **Various assembly tools and spare parts for the AX700 including hex tools, mounting screws, o-rings and lubricant.**
- **Port(s) of choice (Dome, Flat or Wide Angle)**
- **Removable Handles (which may already be affixed to the housing)**
- **1 x 4 ounce weight**

Optional Parts

Your housing may also come with optional items:

- **Water Alarm**
- **Light System (user install)**
- **Seal Check**
- **Hydrophone**
- **Carry Handle**
- **Tripod / Tripod Adapter**
- **62mm Diopters**
- **Buddyphone / Comm. Input**
- **SDI Video Out**

2: Cautions

- ▶ **TRANSPORT.** NEVER ship or transport your AX700 camera inside the housing. The housing was not designed for this purpose and severe damage may result.

- ▶ **USER RESPONSIBILITY.** This Setup, Use and Care guide contains important detailed procedures for setup and use of the AX700. It is the user's responsibility to read, understand and employ these procedures. Failure to do so can result in poor or non-operation of the AX700 and may void your warranty.

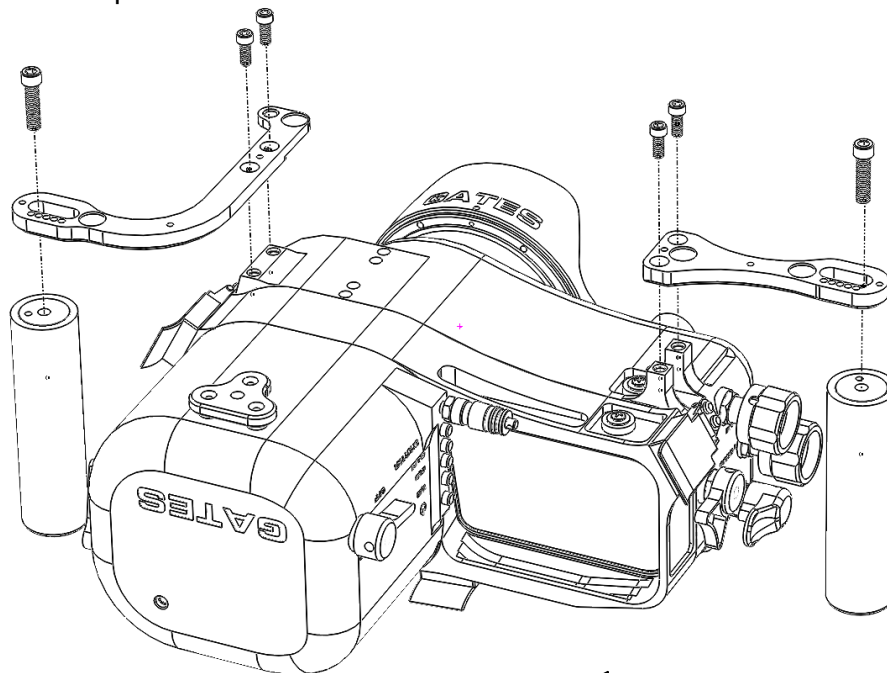
Contact Gates if you have questions about this manual or using the AX700.

3: The AX700 Setup

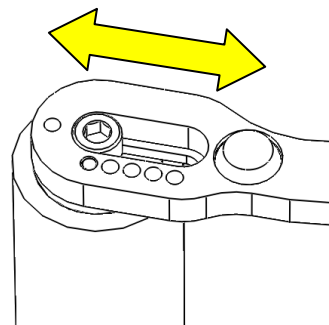
Handle Installation

If the handles are not already installed on the AX700 Housing, perform this step first.

- **Secure the handle arms** to the housing using the 10-32 x 0.5”L socket cap screws. Tighten with the supplied 5/32 hex tool.
- **Secure the grips** to the handle arms using the 1/4-20 x 1” L socket cap screws. Tighten firmly with the supplied 3/16 hex tool.
- **NOTE the handle grips are adjustable.** They can be closer or further away from the housing as shown in the image below. Remove the 1/4-20 x 1”L socket cap screw and reposition as desired.

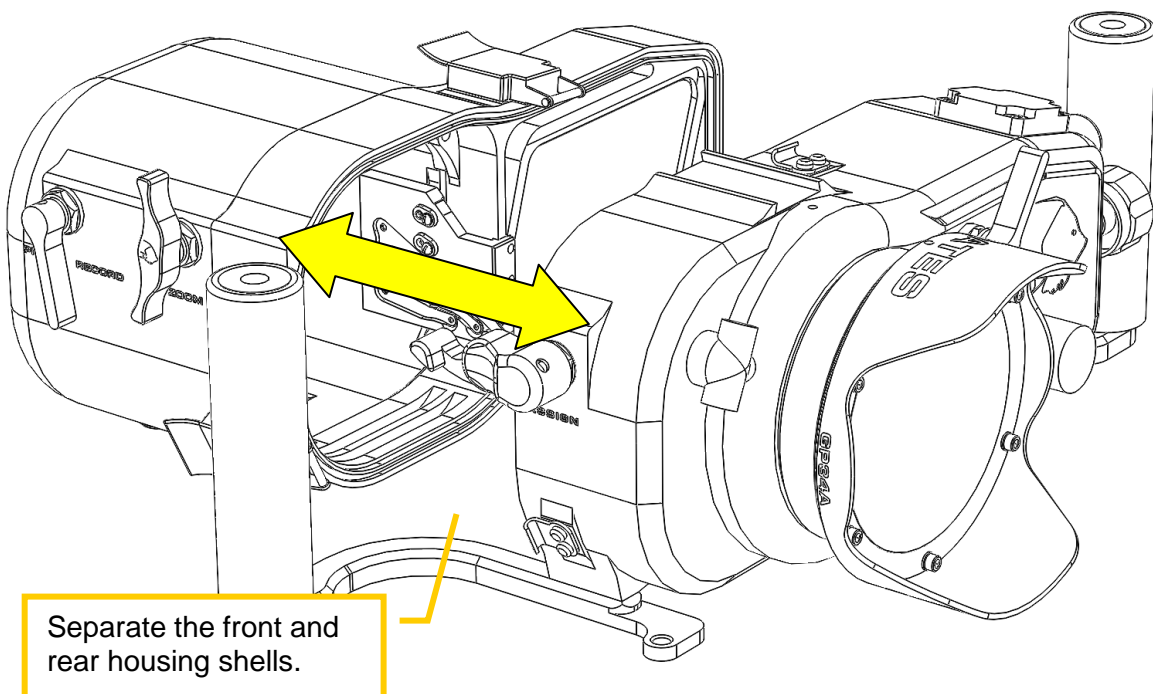


The grips can be adjusted to your preference.



AX700 Housing Preparation

- **Open the AX700 shell.** Three stainless steel safety latches secure the housing halves. They have a positive locking feature. To open them you must first depress the center bar release while lifting the rear lever.
- **Separate** the rear half of housing from the front.
- **Retract and Rotate controls.** Pull out the Focus and Custom Wheel control about one inch or until they stop.



Camera Preparation

Your Sony camera will need some preparation before installing into the housing.

- **Remove any lens caps, filters, external lenses, or lens hoods** you may have added to the front of the camera.



- **Remove the Hand Strap** from the camera.

CAUTION: Failure to perform this step may result in the hand strap becoming caught in the housing seal and accidental flooding.

- **Remove any other accessories.** All other accessories, such as the microphone holder for Z90, must be removed.



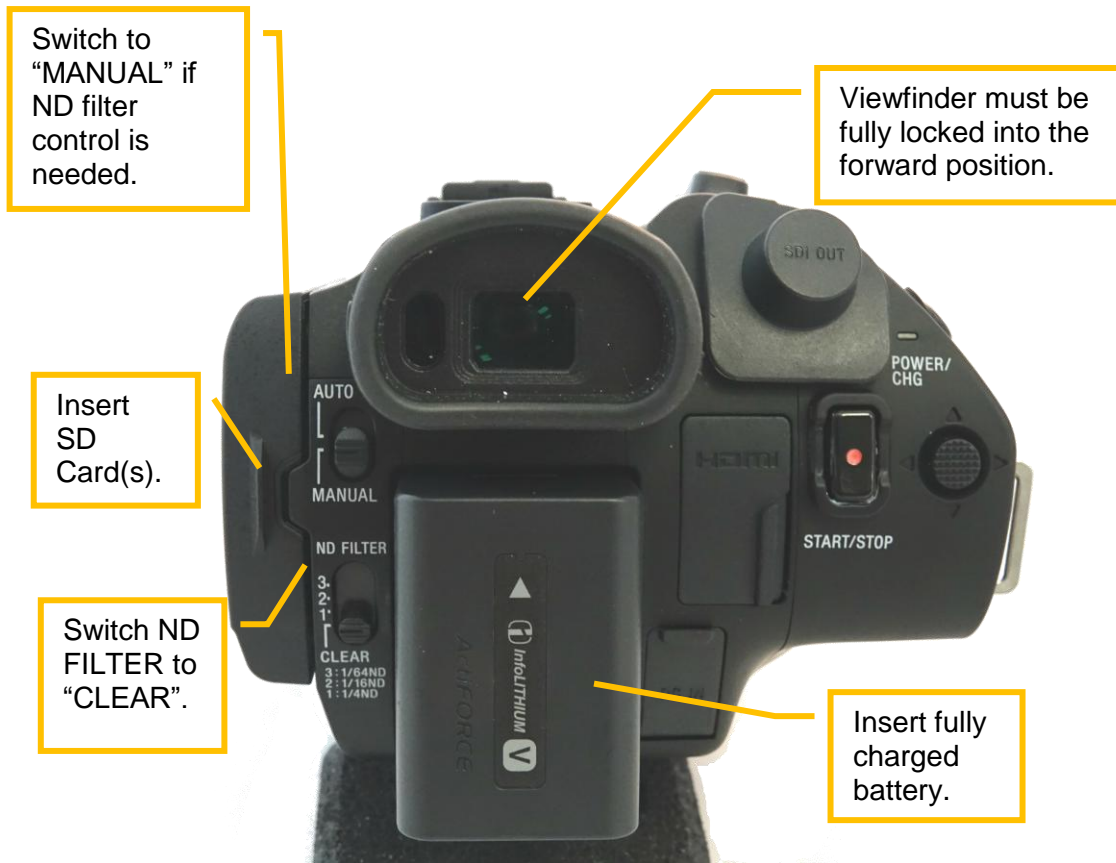
- **When using Z90 Camera Secure “SDI OUT” cap** onto the SDI out connector.

CAUTION: Failure to make sure this cap is attached may prevent the controls on the rear of the housing from functioning or prevent the housing from sealing.

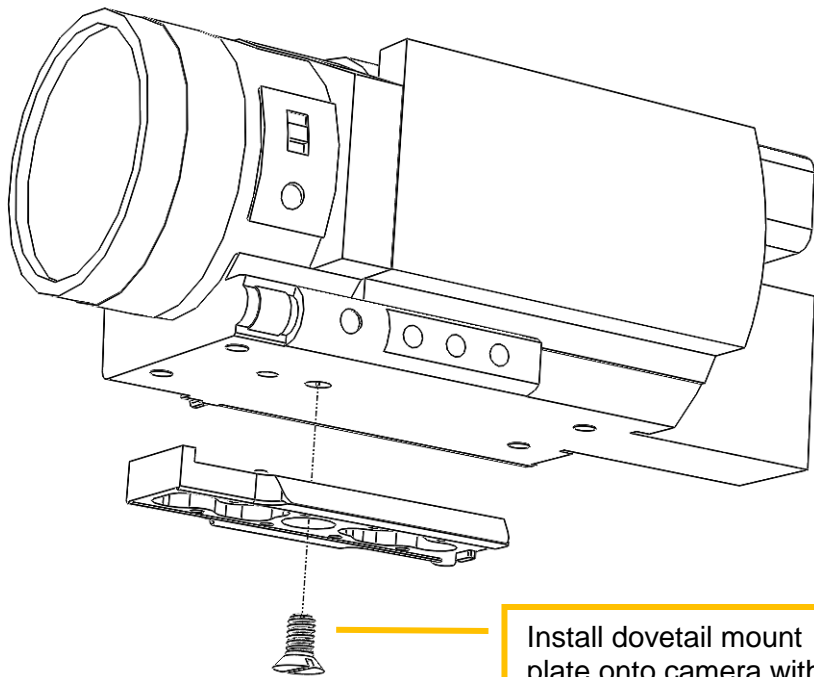
(**NOTE:** when using Optional SDI Surface Feed, the cap must be completely cut off.)



- **Switch the camera to ‘MANUAL’ if you plan to use the ND filters.**
 - This switch is just above the ND filter slider on the back of the camera. Otherwise, set the camera to ‘AUTO’, and the camera will automatically add ND Filters as needed.
- **Turn ND Filter control on camera to the CLEAR / OFF position.**
 - This will aid in aligning the ND Filter control on the housing.
 - **NOTE:** Switch to CLEAR even if you do not want to use manual ND filter control. The rear half of the housing may not mate properly if this step is skipped.
- **Install Fully Charged Battery and SD Cards.**



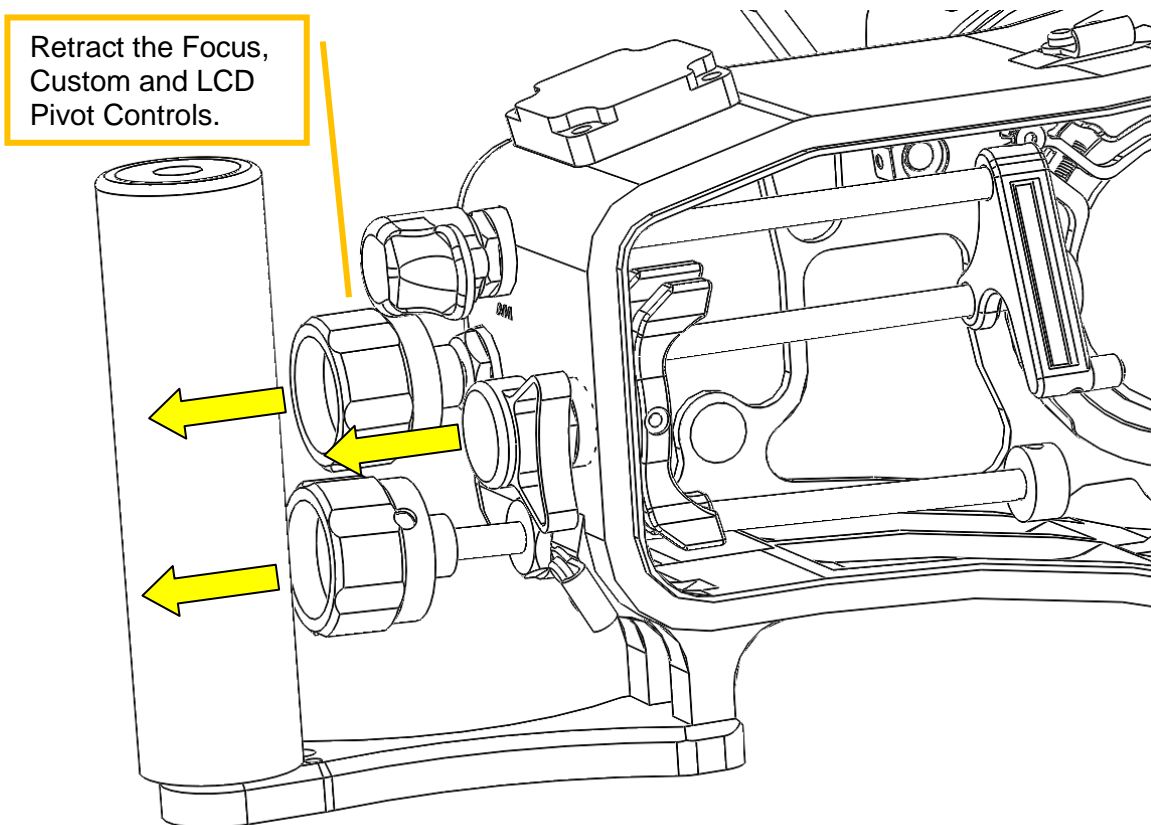
- **Install Dovetail Mount onto camera with ¼-20 screw.**

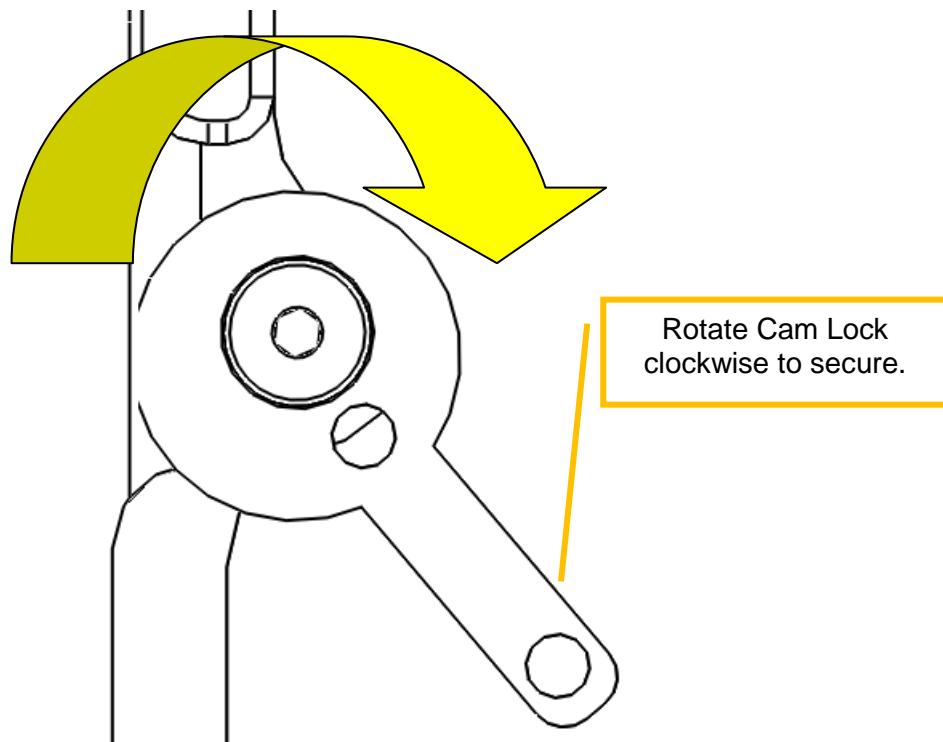
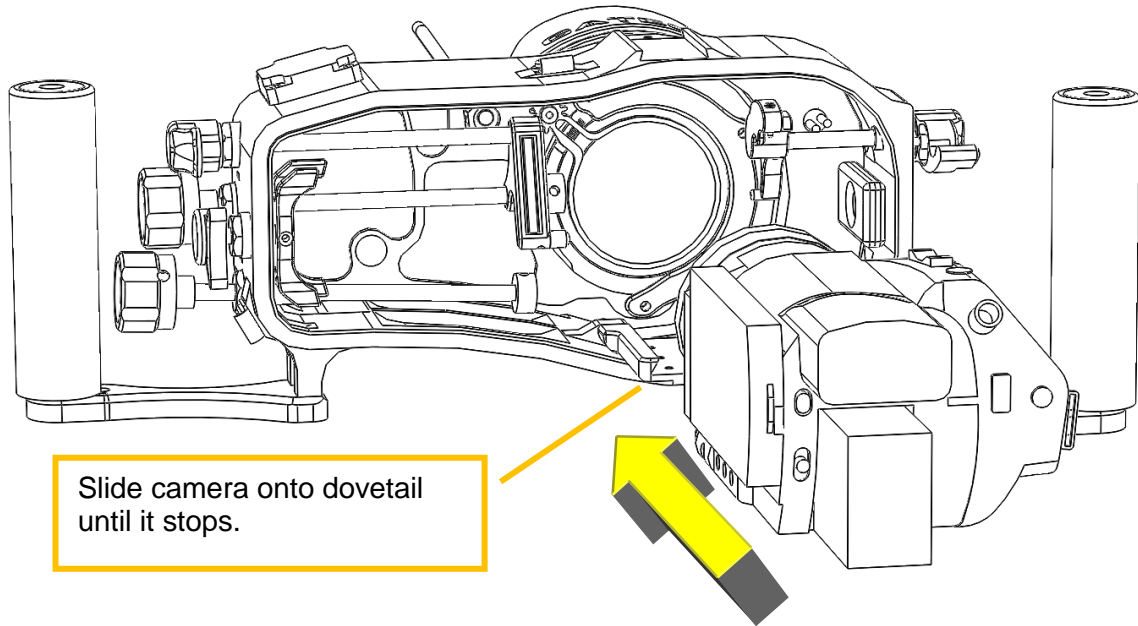


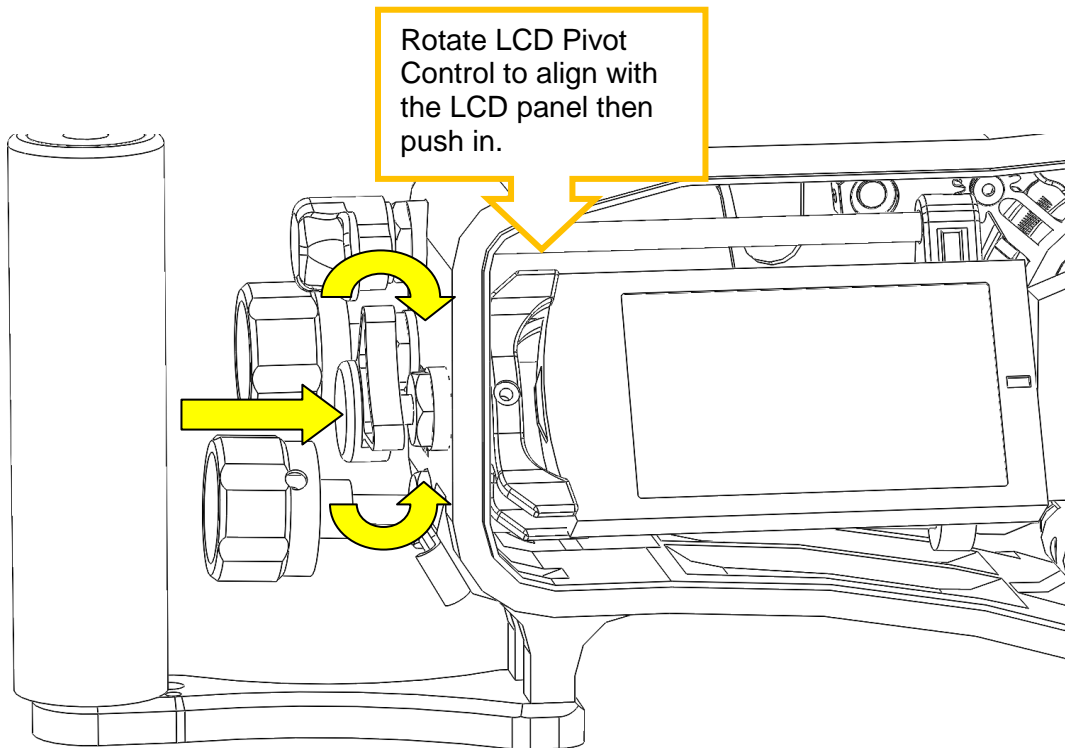
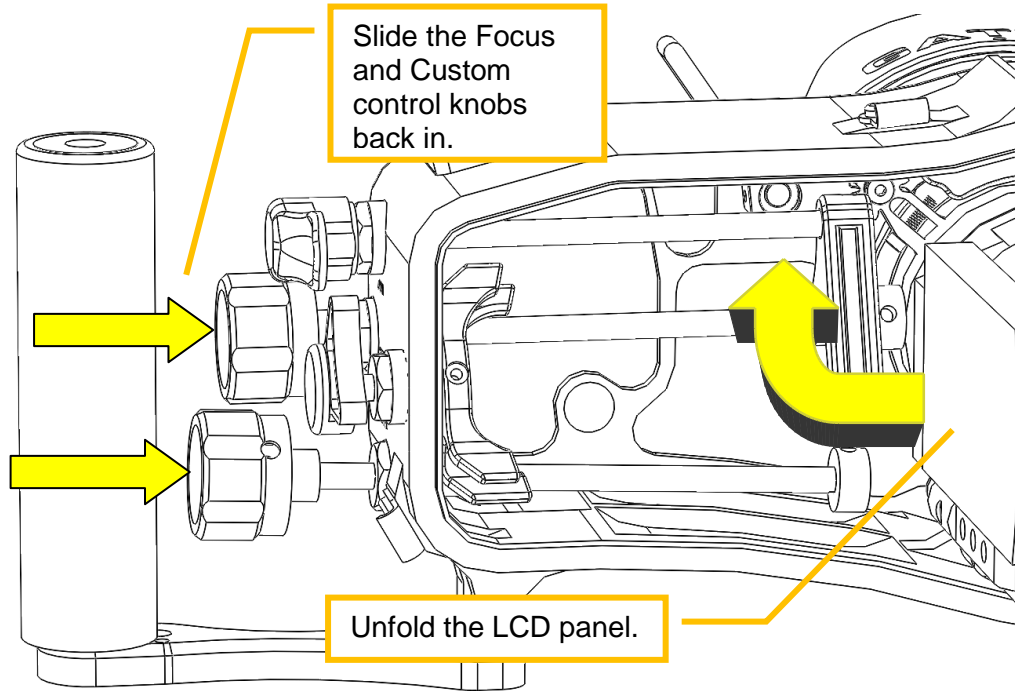
Install dovetail mount plate onto camera with ¼-20 slot head screw

Installing the Camera into the Housing

- **Pull out** Focus, Custom, and LCD pivot controls. The Focus and Custom control need only be retracted ~ 1in / 2.5cm. The LCD Pivot should be gently retracted until it stops.
- **Carefully slide camera** onto dovetail until it stops.
- **Secure the camera** by rotating the cam lock clockwise.
- **Open the LCD fully** as shown in the image on page 14.
- **Rotate and Guide the LCD Pivot** onto your camera's LCD display as shown on page 14.
- **Press in** the Focus and Custom controls.
- **Check controls.** Before closing the housing, it is a good idea to check all of the controls on the front shell for proper operation. (See section 4 for controls mentioned here.)

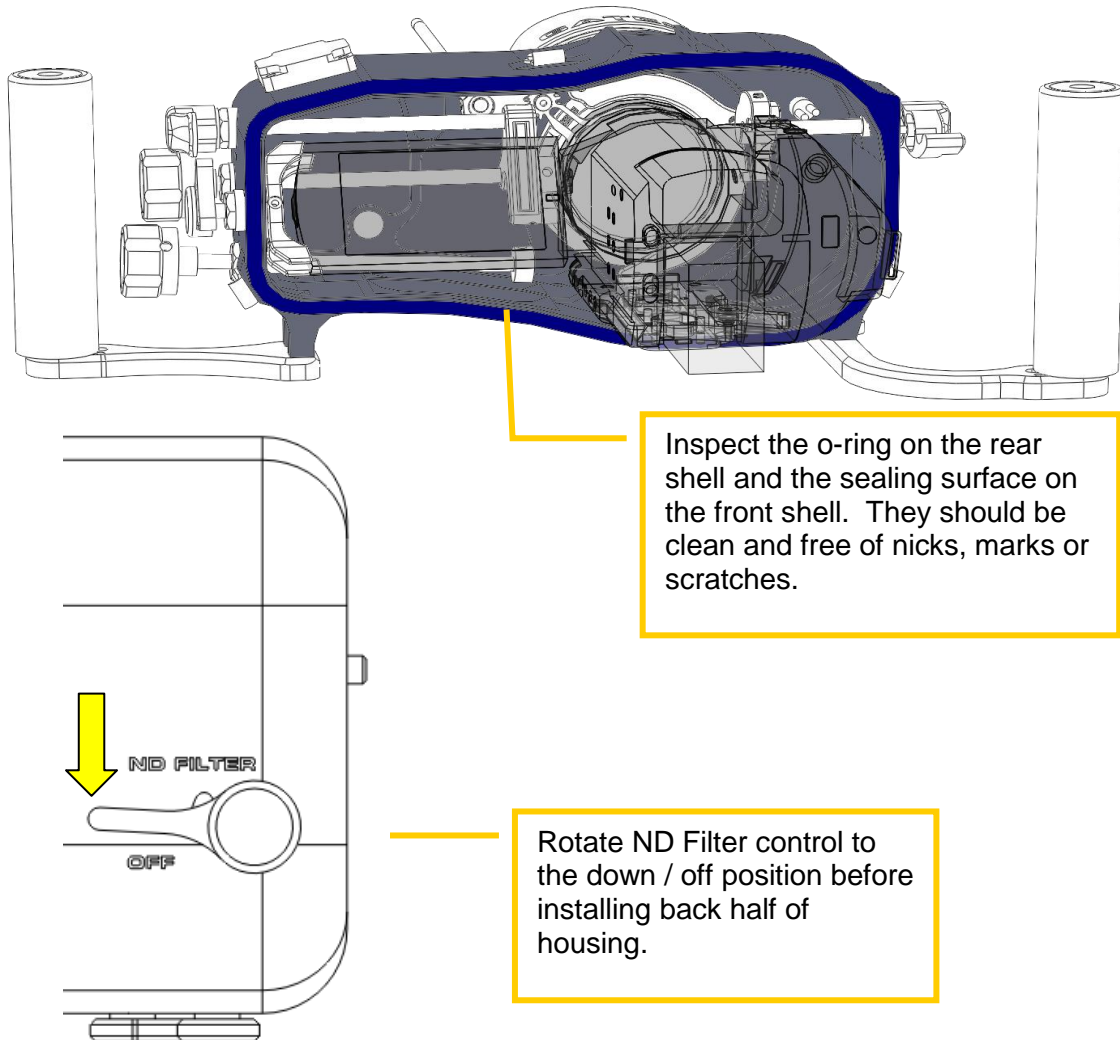






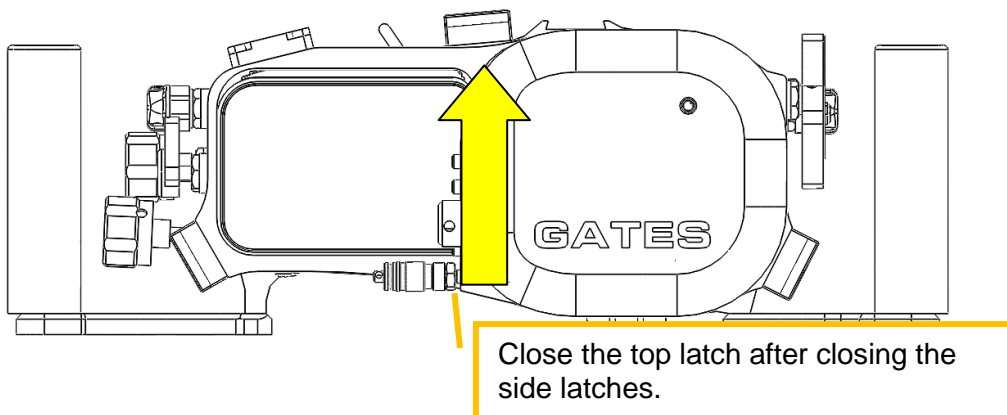
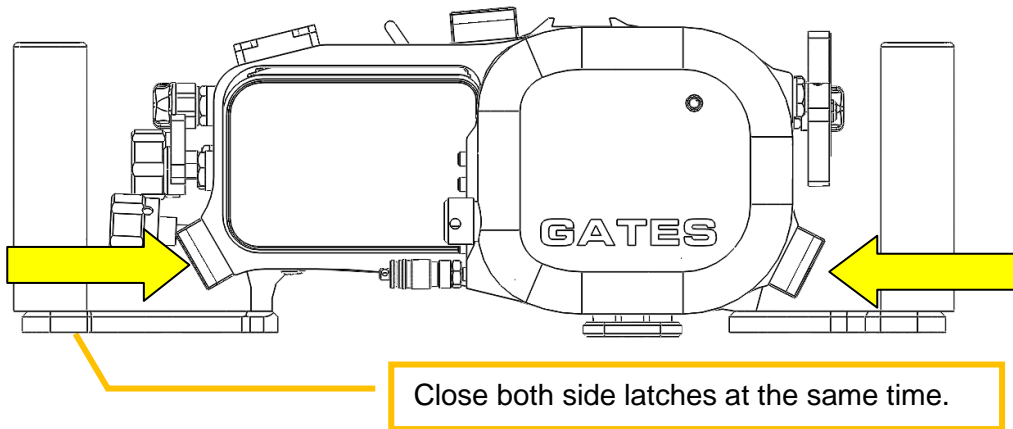
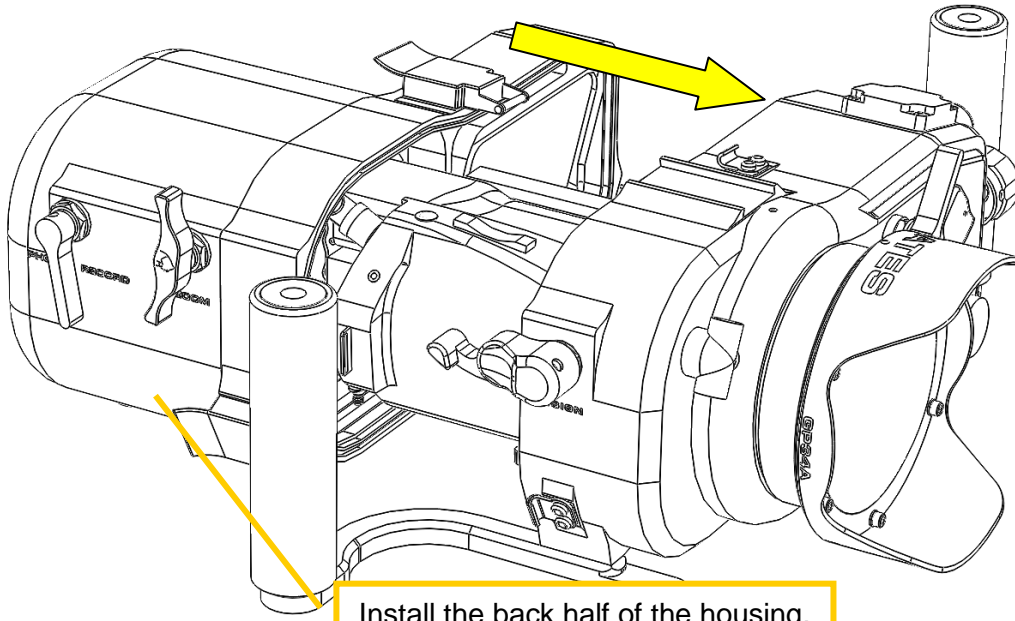
Closing the Housing

- **Carefully inspect** o-ring on back half and the sealing surface on front half. Make sure they are clean and in good condition.
 - **Turn ND Filter control** all the way down to the OFF position. This will help align the housing control to the camera when the back half of the housing is installed.
 - **Place back half onto the front housing half.** You will clearly see when the housing halves align and seat together properly.
 - **Locate and close** the two side latches at the same time. Then close the third latch on the top of the housing.
- ▶ **CAUTION:** The safety latches must be closed and locked prior to use to avoid opening underwater. It is your responsibility to make sure the latches are secure, locked, and in good condition. **DO NOT** enter the water with a faulty latch. Gates will replace a damaged or faulty latch free of charge.

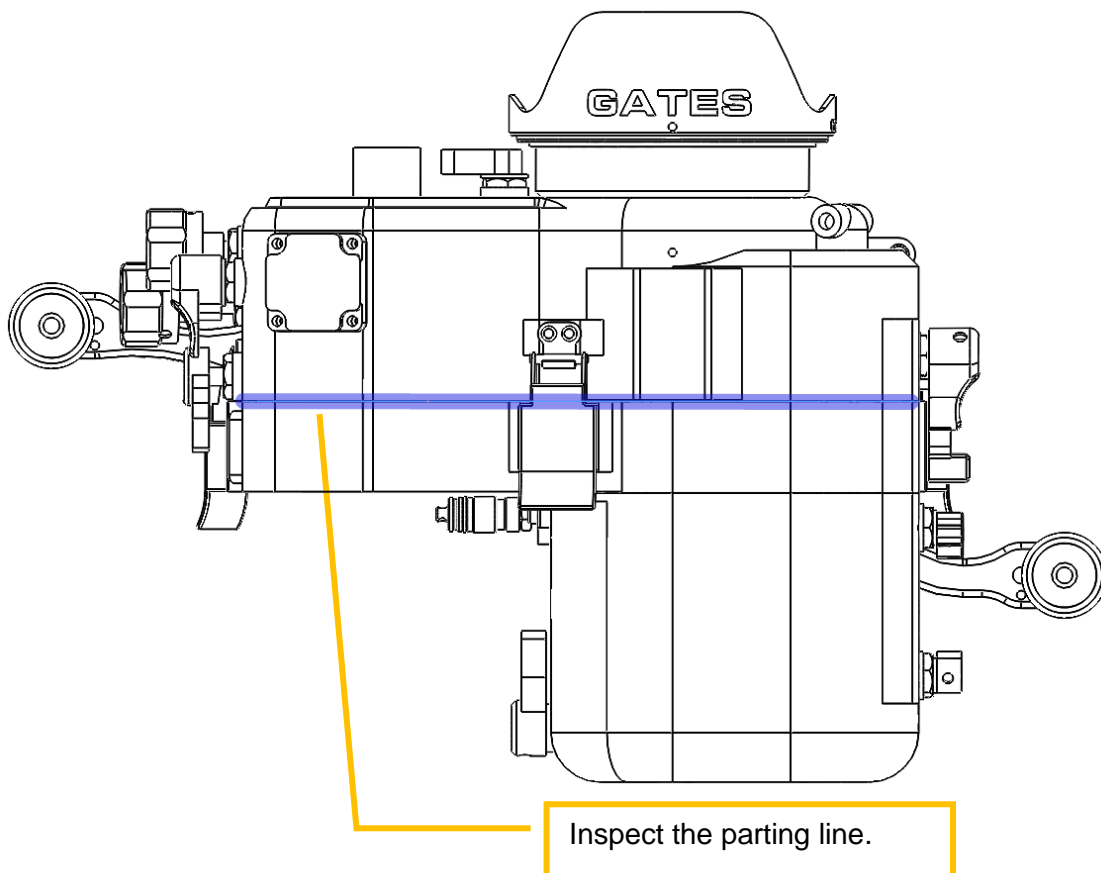


Inspect the o-ring on the rear shell and the sealing surface on the front shell. They should be clean and free of nicks, marks or scratches.

Rotate ND Filter control to the down / off position before installing back half of housing.



- **Carefully inspect the parting line** between front and rear housing. If this line is not even all the way around, remove the back and determine the reason. (O-ring out of place, hand strap interference, etc.) Failure To Do This May Result In A Wet Camera!
- **Power up the camera.** Check all controls for the proper operation before entering water. If ND Filter Control is not seated properly on the camera it can be pulled out, aligned over the camera control and pressed back in. (See section 4)
- **Install a port.** Visually align the bayonet mount on the port with the housing. Mate the port to the housing, and press. It should seat fully with no gaps around the base. **Rotate the port 90°** either direction to fully engage the port. For specific details, see the section Changing Ports on page 25.



Water Alarm (Optional)

If you have the optional water alarm installed there are three alarm conditions to know:

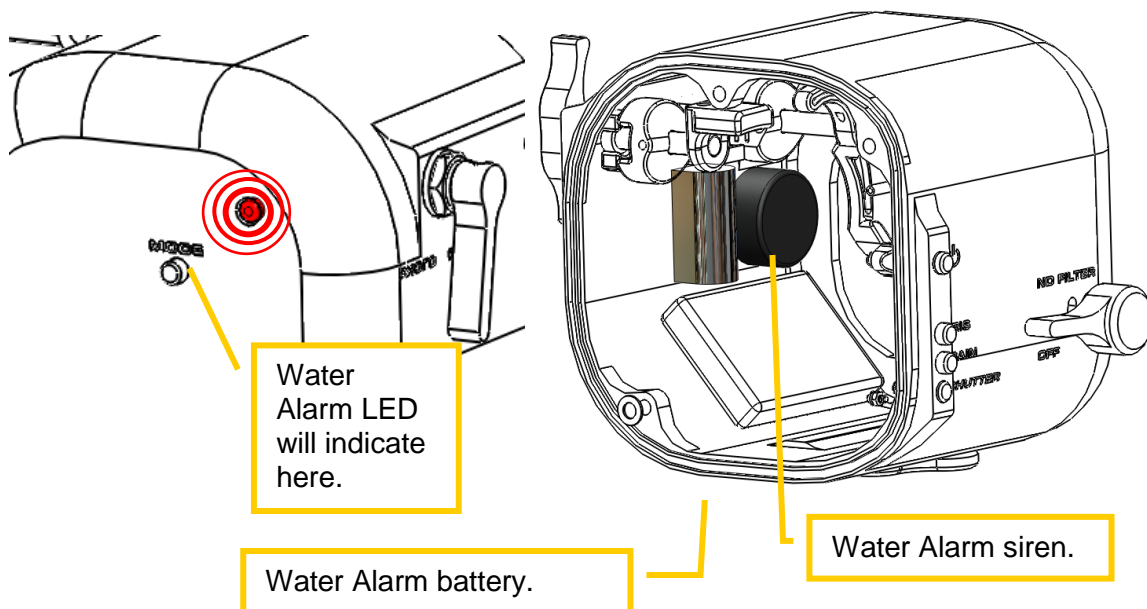
Condition	LED	Siren
New Battery (Insertion)	Bright Intense blink while siren plays	Ascending tones played 4 times
Water Intrusion	Bright Intense Blink	Warble sound. Alarm will sound for duration of detection.
Low Battery	Low Intensity fast blink	Descending tones played 8 times pausing approx. 20 seconds between plays after alarm test or water detection.

The alarm can be tested anytime by shorting the detection contacts that lead to the water alarm transducer. The water detection condition will activate for 6 seconds. If the battery is drained the low battery condition will sound.

The water alarm requires a single 6V battery like Radio Shack model 23-469 or A544.

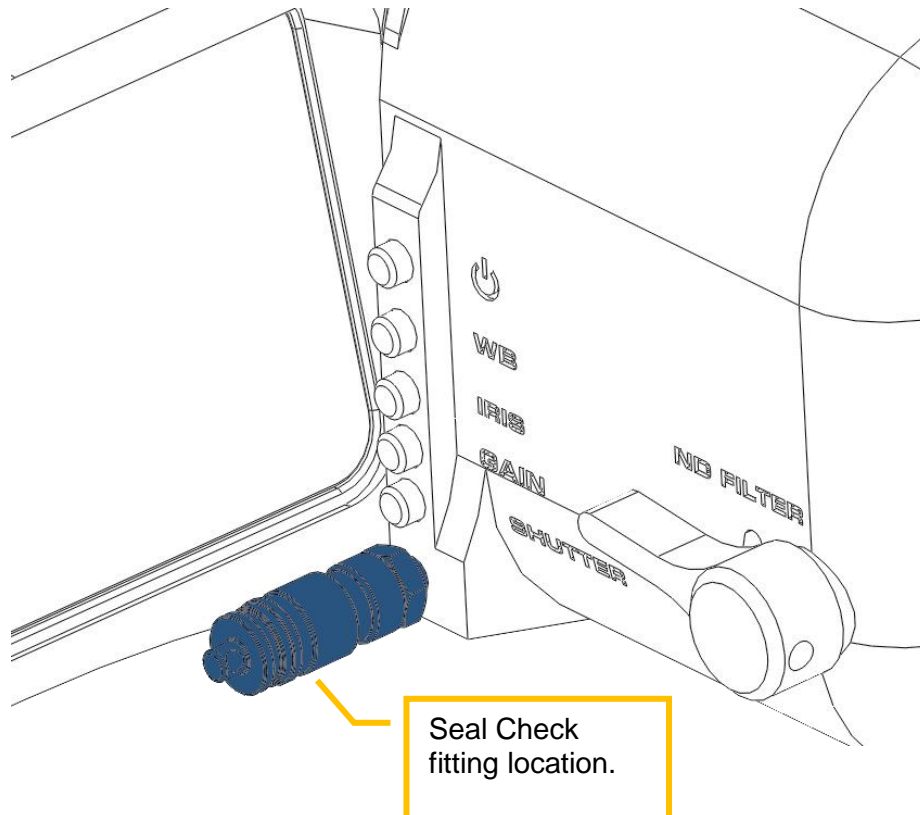
Your battery should be removed when stored (e.g. between dive trips). Check the battery prior to every dive to ensure proper operation. Change when indicated.

► **CAUTION:** You must wait a minimum of 30 seconds between battery insertions to allow the unit to fully discharge.



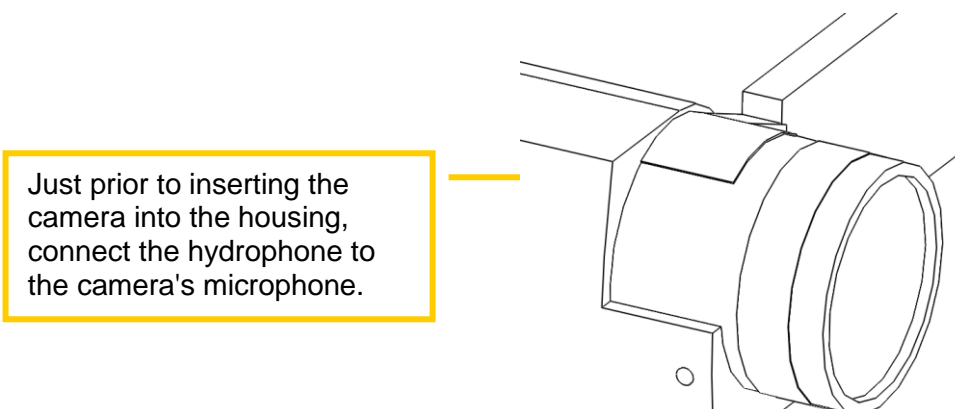
Seal Check (Optional)

- **Seal Check Manual.** Follow the procedures in the Seal Check manual for verifying integrity of the housing and monitor.
- ▶ **NOTE.** Pulling a vacuum on the AX700 will take only a few seconds. Be careful to avoid excessive vacuum greater than 100 mbar.



Hydrophone (Optional)

- **Camera connection.** If you have the hydrophone installed, plug the connector into the camera after before inserting the camera into the housing.

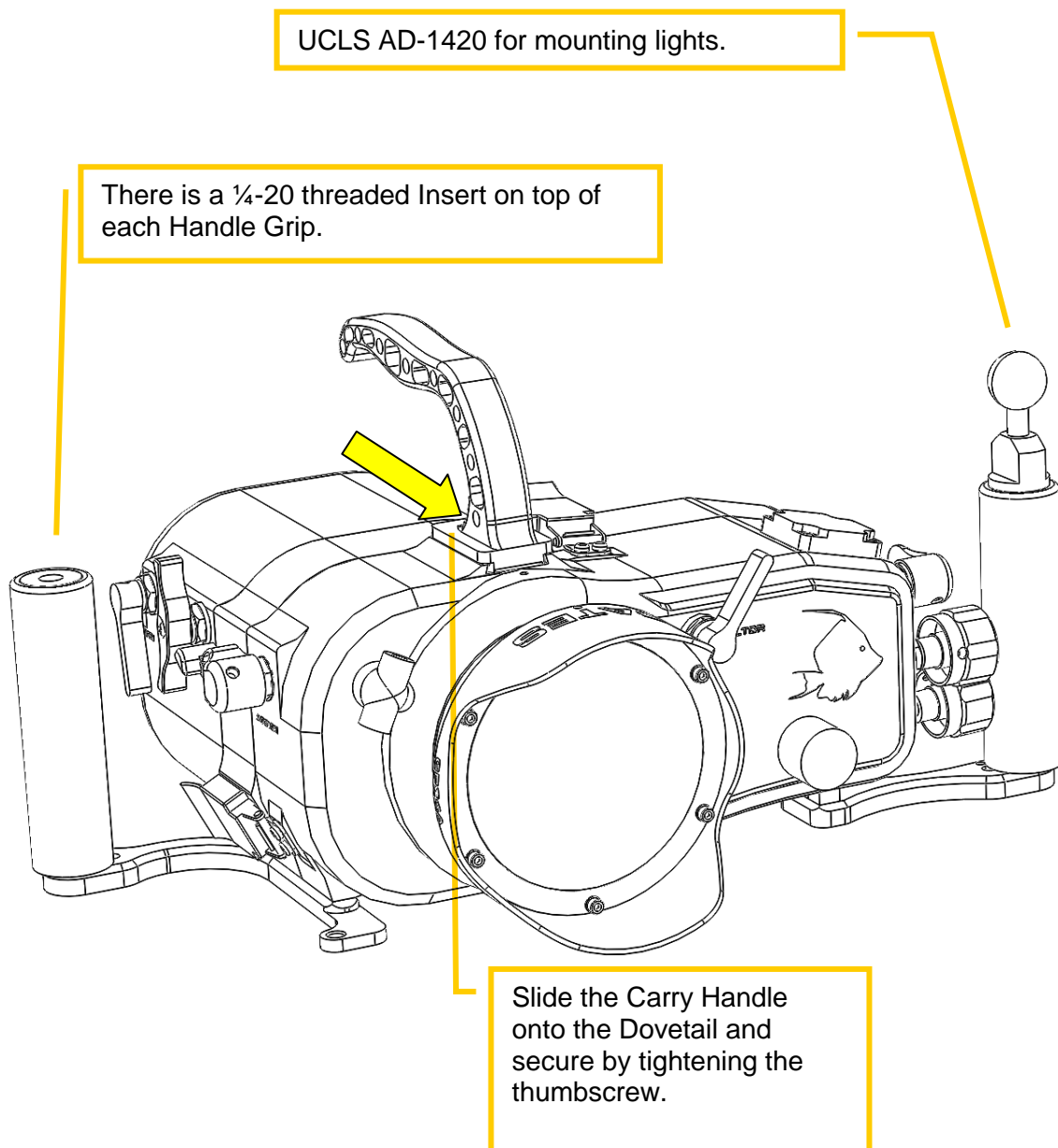


Carry Handle (Optional)

- **Position the Carry Handle** on the top dovetail, then secure by finger tightening the thumbscrew.

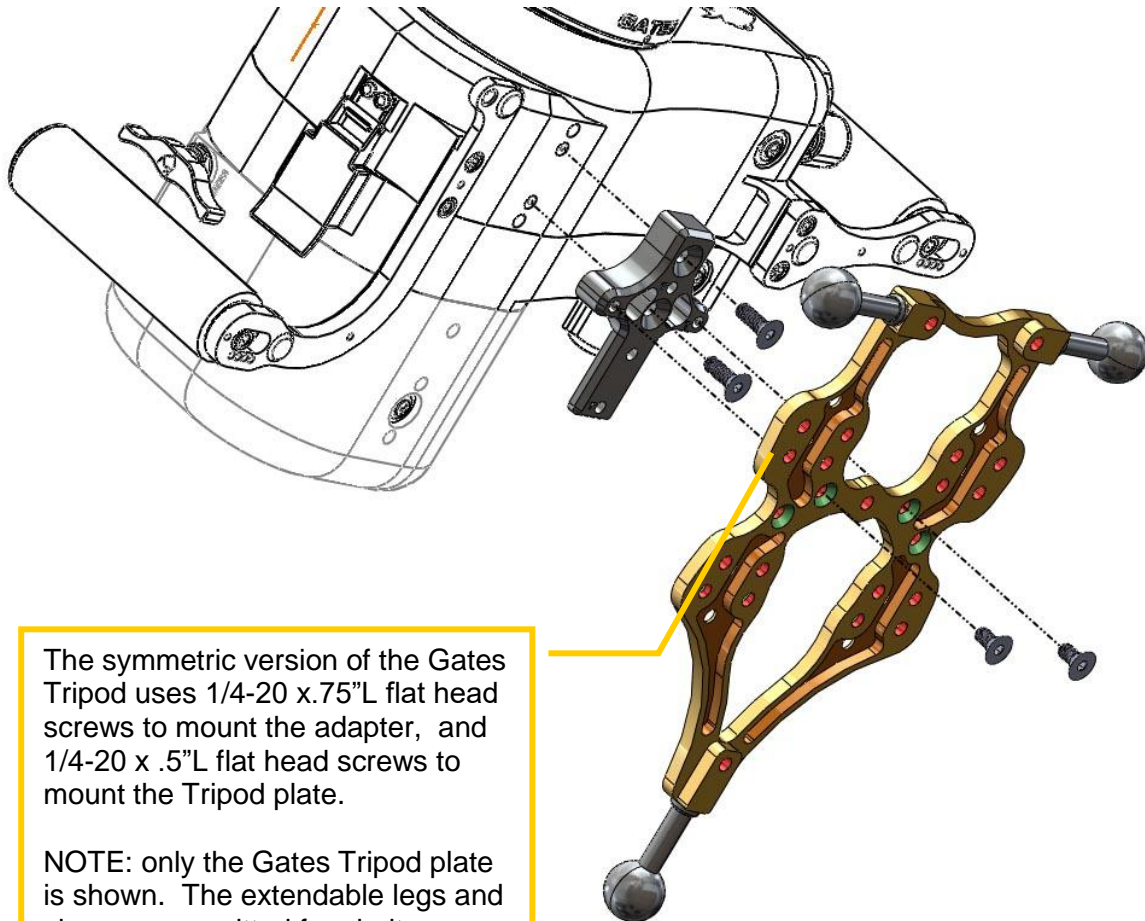
Light Mounts (Optional)

The top of the handle grips each have a 1/4-20 threaded insert for mounting lights, such as the Gates GT14. The Ultralight Control Systems (ULCS) AD-1420 ball mounts thread directly into this location.



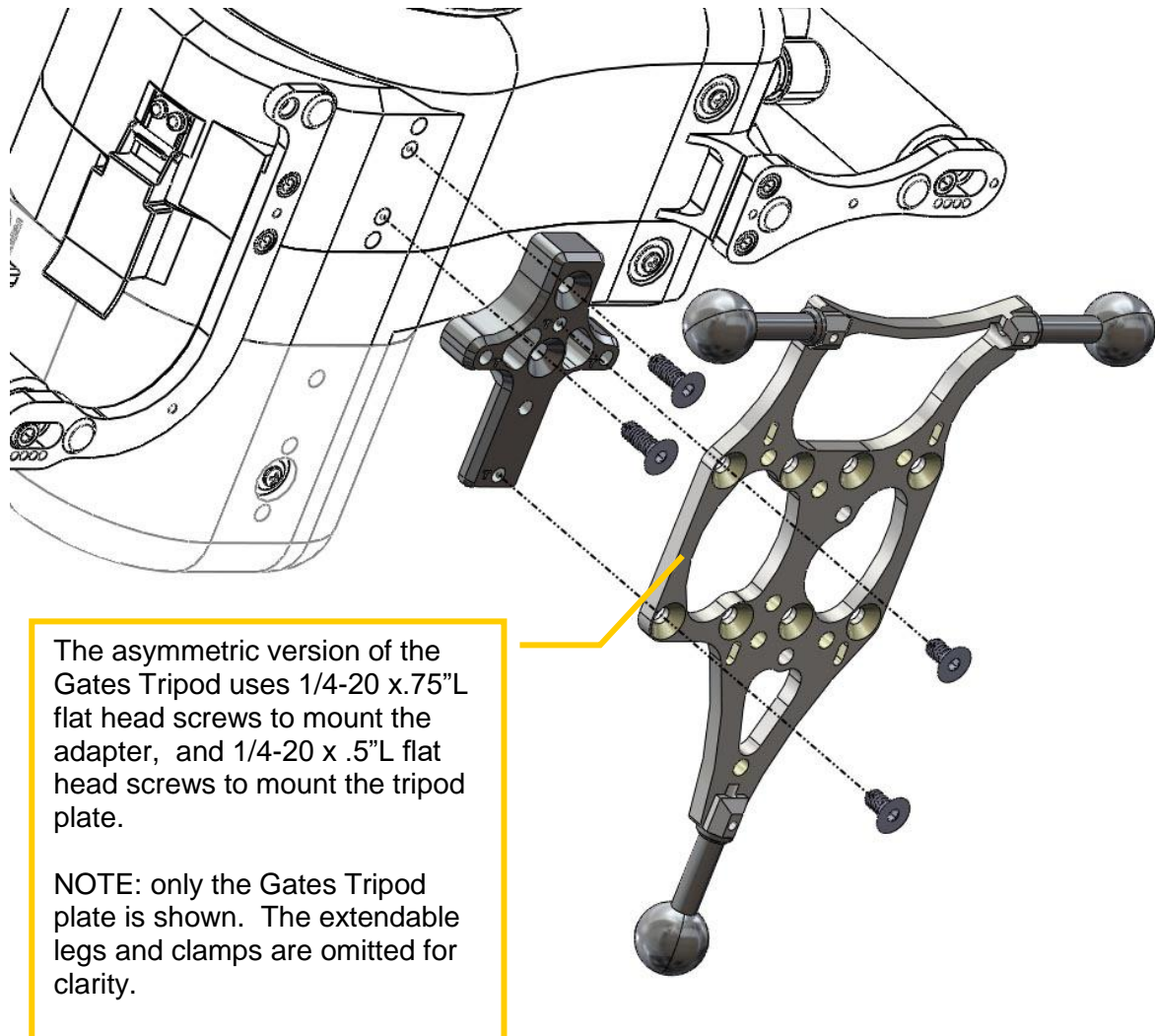
Tripod / Tripod Adapter (Optional)

The Gates Tripod is a useful accessory for steady, locked down shots, particularly for macro imaging. The Gates Tripod has extendable arms up to 18in/ 45cm long that collapse close to the housing when not in use.



The symmetric version of the Gates Tripod uses 1/4-20 x .75" L flat head screws to mount the adapter, and 1/4-20 x .5" L flat head screws to mount the Tripod plate.

NOTE: only the Gates Tripod plate is shown. The extendable legs and clamps are omitted for clarity.



Final Checks

- ❑ **Visual Inspection.** Look closely at all seal mates – Port and Main Housing seal – for gaps. Look over the housing one final time.
- ❑ **Verify operation.** As a final check, power on the camera and verify all controls are functioning normally.

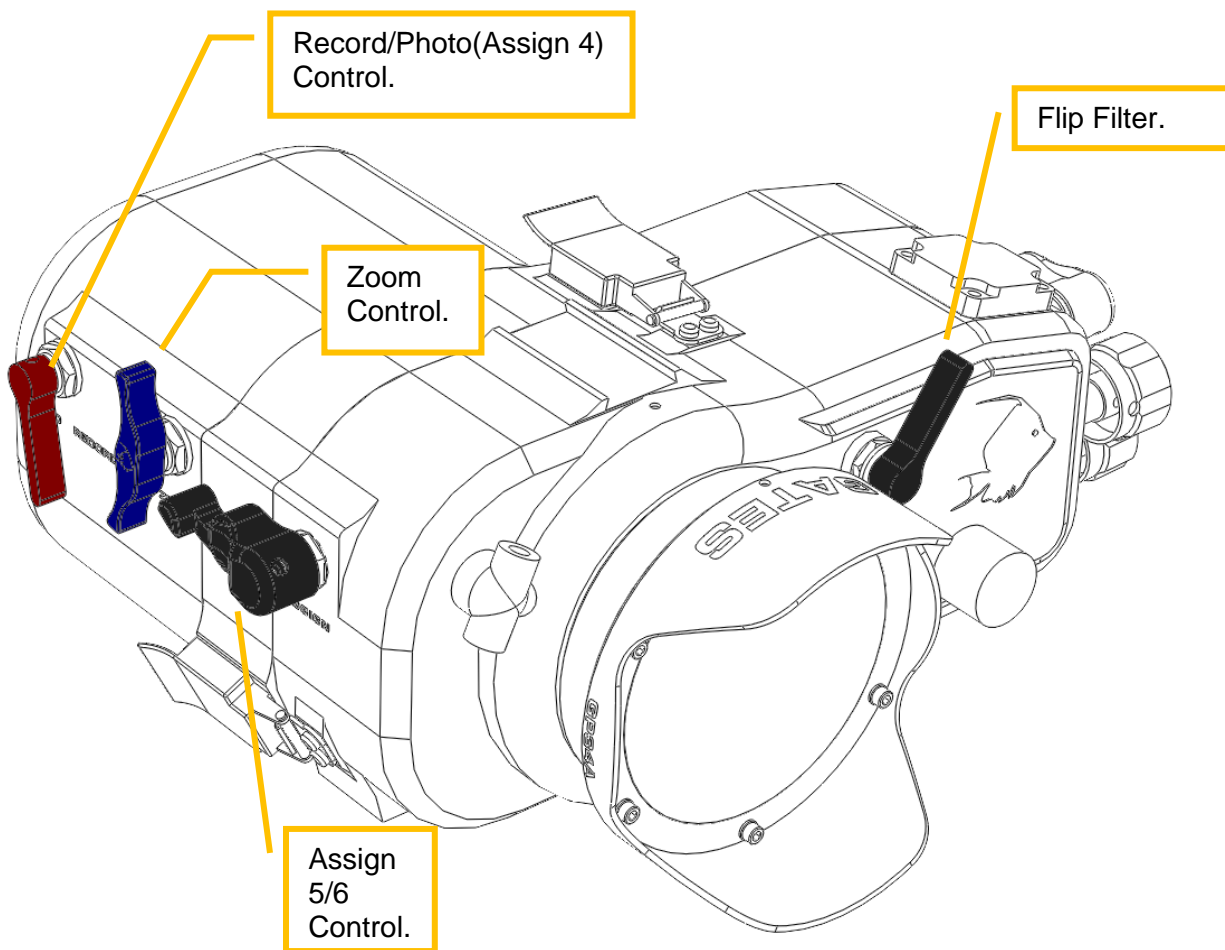
4: AX700 Operation

Your Gates housing utilizes 100% mechanical controls to provide you with the most reliable operation possible. They either rotate and/or depress to provide smooth and consistent operation. (see 'Housing Care and Maintenance' section).

The housing controls are designed by Gates engineers, to the extent possible, to feel and behave like the camera controls. With time and use, the housing controls will become quite familiar and easy to use.

To help familiarize you with the housing controls, Gates recommends reviewing each control individually, how it actuates the corresponding camera control, and operating it to get a 'feel' for the control. You can view all front housing controls with the housing open. After reviewing all controls, perform a 'simulated' dive by operating the controls as you would in the water.

One final note about controls: when operating any control out of water, you may need to press the control against the housing, into the position it would naturally find while under water pressure. The controls are designed to operate properly in this position.



Right Side and Front Controls

- **Record / Photo.** The Record/Photo control is **red**. A momentary counter clockwise motion will trigger record START/STOP. Clockwise rotation activates assignable button 4.
 - **AX700 users:**
 - The AX700 can take a still photo using assignable button 4. **The camera must be switched to photo mode to take a picture.**
 - SHOOTING MODE must be mapped to assignable button 5 or 6 in order to switch between photo and video modes.
 - Set the menu as follows:
 - MENU > OTHERS > ASSIGN BUTTON > ASSIGN5 or ASSIGN6 > SHOOTING MODE
 - **Z90/NX80 users:**
 - Although the Z90 and NX80 cameras do not have a still photo mode, the control is still usable. Clockwise rotation of the

Record/Photo control activates assignable button 4, marked FOCUS MAGNIFIER.

- **Zoom.** The Zoom control is blue and operates with a momentary rotation.
 - **TIP:** The Zoom control operates free and smooth when well lubricated. This should be done after storage and often during heavy use (as much as every 2 or 3 dives).

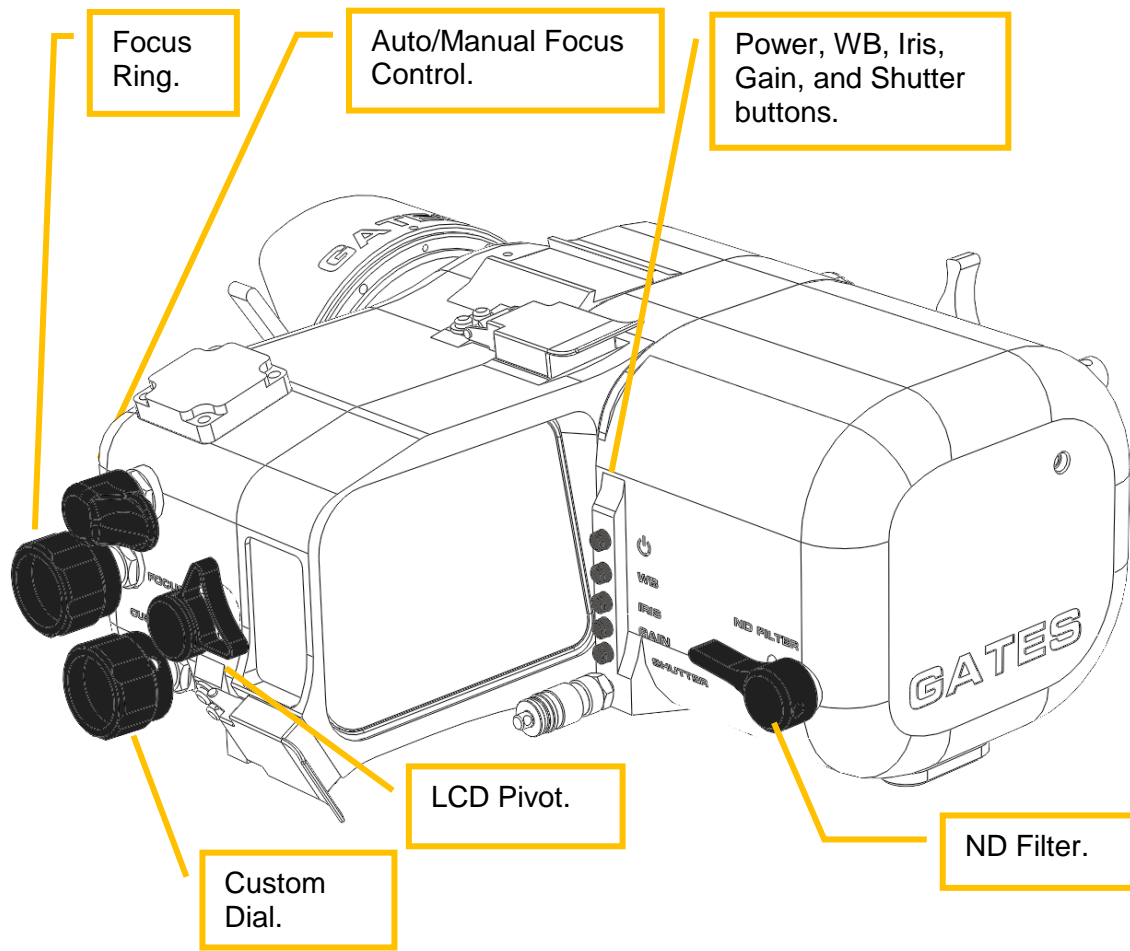
To lubricate, pull out the control to expose a portion of the control shaft, and lightly apply the grease supplied with your housing, Push the control back in and rotate it in both directions until it operates freely.

- **Assign 5/6 Control.** The assign control is black and operates with both a momentary push and rotation to activate the controls.
 - Pushing on the control activates Assignable button 6.
 - Rotating the control counterclockwise activates assignable button 5, labeled IRIS PUSH AUTO.
 - To change assignable 5 or 6 set the menu as follows:
 - MENU > OTHERS > ASSIGN BUTTON > ASSIGN5 or ASSIGN6 > choose option desired.

- **Flip Filter.** The Flip Filter moves the color correction filter in/out of position of the camera view. Refer to Page 27 for instructions on changing the filter.

Left Side / Rear Controls

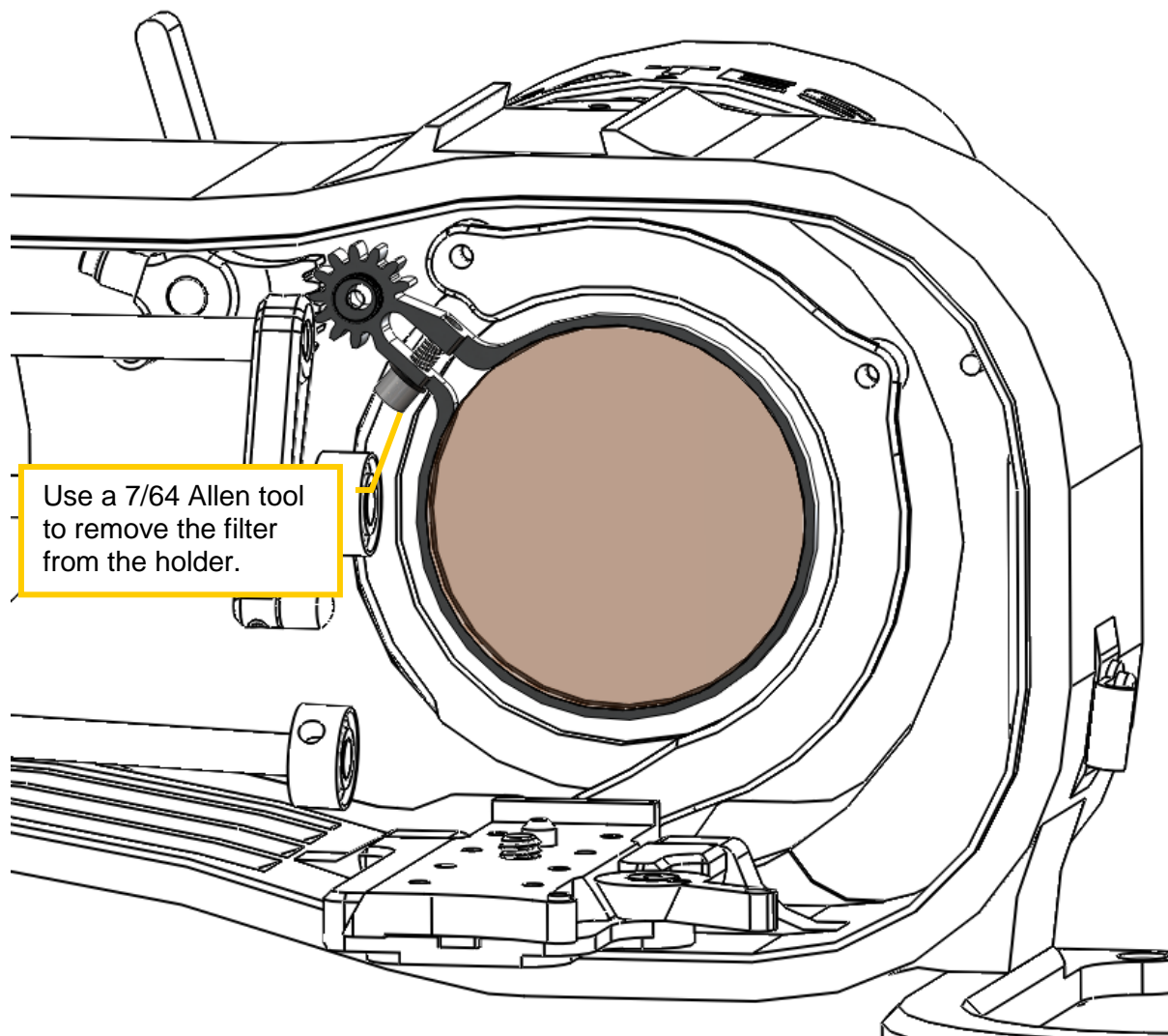
- **Iris, Gain and Shutter buttons** activate Iris, Gain or Shutter. Once selected they are controlled with the Custom Dial.
- **Power Control** switches camera on and off.
- **ND Filter** toggles between ND3, ND2, ND1 and ND Off.
- **White Balance** button toggles white balance select mode on/off. When white balance adjust mode is active the Custom Dial knob can be used to switch between user preset A, user preset B, and a Kelvin Preset.
 - In order to use auto WB SET it must to be assigned to the ASSIGN 5 or ASSIGN 6 buttons.
 - To change assignable 5 or 6 set the menu as follows:
 - MENU > OTHERS > ASSIGN BUTTON > ASSIGN5 or ASSIGN6 > WB SET
 - NOTE: auto WB SET has no effect unless user preset A or B is active. The Kelvin Preset can only be accessed in the camera menu.
- **Auto / Manual Focus** switches between Auto and Manual Focus.
- **Custom Dial** rotates the custom dial on the camera. It is used to manipulate Iris, Gain and Shutter.
- **Focus Ring** is used to manually adjust focus.
- **LCD Pivot** allows a limited rotation of the LCD screen's viewing angle.



Changing Filters

The color correction filter in your housing may be changed to accommodate different gradient filters. “Blue water” and “green water” are the two most common, recognizable by their orange and purple color, respectively.

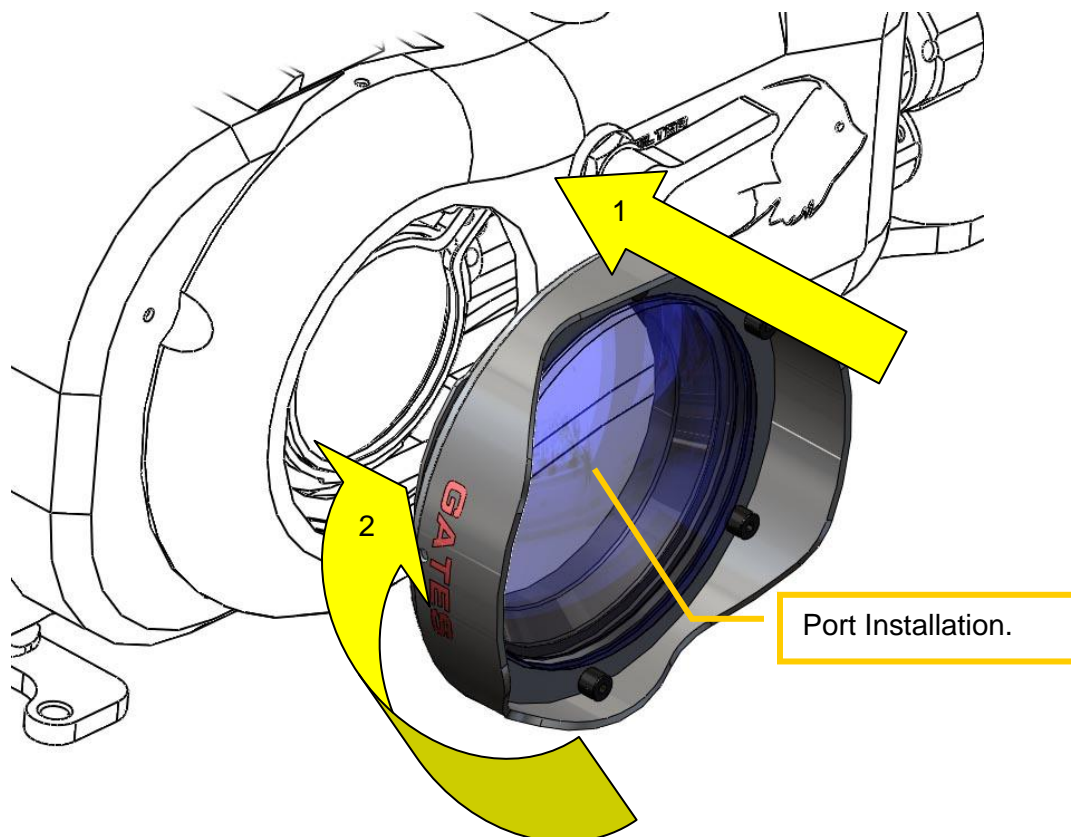
- **Removal.** The color filter is held in place by a tension screw in the filter holder. Loosen this screw with a 7/64 Allen tool.
- **Installation.** Rest the filter in the holder and tighten with a 7/64 Allen tool. **Tighten just enough to secure the filter. Do not over tighten.**
- **Cleaning.** You will likely have fingerprints on the filter after installing, so clean the filter according to the directions in the “Cleaning Ports and Filters” section.

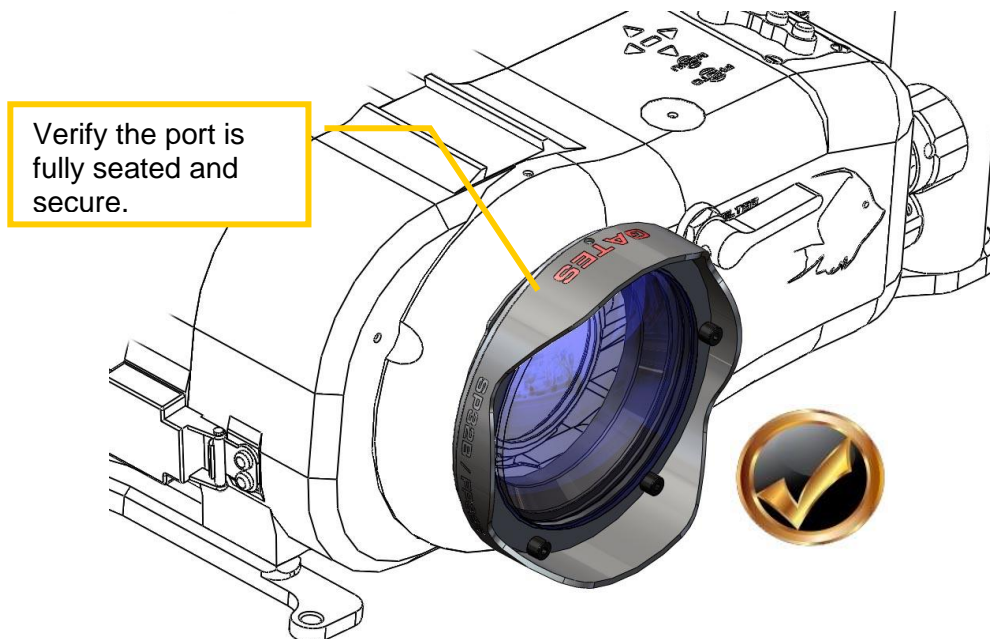


Changing Ports

Gates offers several ports for your AX700 housing, which attach with a bayonet-style mount. Port changes are easy and straightforward:

- **Removal.** You will see alignment dots on the housing and on the port. When aligned, the port is fully engaged and ready for underwater use. Turning the port 90 degrees, or $\frac{1}{4}$ turn in either direction to face the dot left or right allows the port to release from the front of the housing. Gently pull the port directly away from the housing to do so.
 - **Inspect the o-ring** -- Before installing a new port, perform an inspection and lubrication of the sealing o-ring. See “O-ring Care and Maintenance” in this Use and Care Guide for specific details.
 - **Installation.** Mounting a different port is directly the opposite: Insert the port into the front bulkhead of the housing with the alignment dot on the port facing left or right, or $\frac{1}{4}$ turn away from the dot on the top of the housing. You may need to gently push the port into the bulkhead to fully seat the port. Then turn the port until the dot on the port aligns with the dot on the housing. Be sure the port is fully seated and flush with the housing. You should see no gaps between the port and the housing.
- ▶ **CAUTION:** The Port must be fully seated and flush with the housing to avoid flooding.





Cleaning Ports and Filters

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

- **Dust or Lint** can be blown with compressed air, preferably from a can. Do not clean the surfaces if it is unnecessary.
- **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.
- **Rinse fresh water over the outside of the port, if necessary,** 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 the GP34A wide angle port in water when separated from the housing! This port is not sealed from the backside and damage will result if submerged.
- Only if necessary, **clean the port using a mild 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.

Diopters

Hoya 62mm diopters may be used with the AX700 housing and the FP34A Flat Port for close up/macro imaging. There is sufficient space between the camera and port to utilize one diopter on the camera.

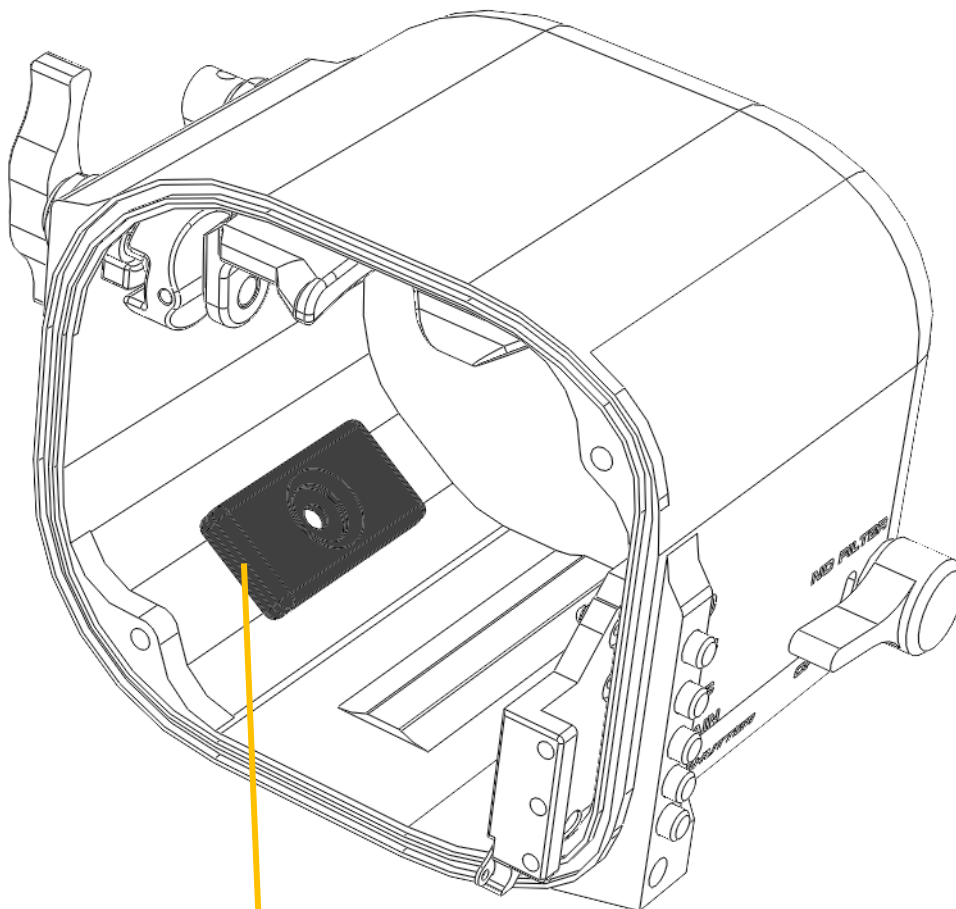
- ▶ **NOTE** the Filter cannot be used with diopters. When installing the camera with diopter ensure the filter is positioned as far as possible away from the port opening.



Buoyancy and Trim

- To achieve proper trim balance please install the 4 ounce weight included in your kit using the hook and loop fastener,

CAUTION: DO NOT TRAVEL WITH TRIM WEIGHTS INSTALLED IN HOUSING.



Press the 4 ounce weight down **FIRMLY** in this location. Check that it is fully seated and secured.

Tips for Shooting Video with the AX700

- **Manual Focus.** A common technique is allowing the camera to auto focus on your subject (or on something about the same distance from you as your subject), then switch to manual focus. This ‘freezes’ the focus at that distance – no hunting or seeking. The GP34A wide angle port further provides a large depth of field (DOF), so most everything in front of your camera will be in focus, too.

Note however, that the auto focus capability of the AX700 and Z90 cameras is remarkably good. If your subject has detail and contrast, the camera will accurately track focus. You may find auto focus in such situations can be of benefit to your video.

- **Image Stabilization.** The Sony AX700 and Z90 cameras have built-in image stabilization functions. These are useful above water for steady, even shots.

Housing Care and Maintenance

Proper care of your Gates housing is important to provide you reliable operation and long life. You’ll find all the guidelines in the “Housing Care and Maintenance” document included with your Gates housing. You can also find it on Gates web site at www.GatesHousings.com.

O-Ring Care and Maintenance

Your Gates housing has 2 serviceable o-rings. One is located between the mating halves of the housing (the large orange one), and one is located on the Port.

Servicing the o-rings is easy and covered in the “Housing Care and Maintenance” document in this package. It can also be found on the Gates website at www.gateshousings.com.

- ▶ **CAUTION: Do not lubricate the large orange o-ring! It is a special silicone o-ring and can be damaged by petroleum-based lubricants.**
- ▶ **CAUTION: Never use metal tools or objects for removing o-rings!**

5: Customer Support

Should you have any questions about the AX700 and its operation, please contact Gates at the numbers below.

Email: Customer.srv@GatesHousings.com

Web: www.GatesHousings.com

Phone: 858.391.0052

Fax: 858.391.0053