

AX100 Underwater Housing

Setup, Use, and Care Guide

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

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

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1: Introducing the AX100

Congratulations on owning a new Gates product: the AX100 housing. You've selected a product that will provide years of value and reliable service. We designed the AX100 specifically for the Sony AX100 and CX900 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 AX100 so you can get started.

Features

The AX100 has several key features:

- **Small and Travel-friendly.** At just a few pounds, the AX100 packs easily into your luggage or dive gear.
- **'Bulletproof' construction.** Gates legendary reliability is inherent in the AX100: machined aluminum shell, stainless hardware and reliable mechanical controls.
- **Precision optics.** The AX100 allows the use of a variety of ports including Wide and Macro.
- **Professional Imaging.** The AX100 system includes many features for broadcast TV and other professional uses.

Warranty Disclaimer

The AX100 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 AX100. 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 AX100 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 AX100, contact Gates directly. Details are in section 5.

Unpacking the AX100

After you remove the AX100 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 AX100 comes with the following standard items:

- The AX100 Housing**
- Various assembly tools and spare parts for the AX100 including hex tools, mounting screws, o-rings and lubricant.**
- Port(s) of choice (Dome, Flat and Wide Angle)**
- Removable Handles (which may already be affixed to the housing)**
- 11 and 4 ounce weights**

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/Comms Input**
- Standard Definition Video Out**

2: Cautions

- ▶ **TRANSPORT.** NEVER ship or transport your AX100 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 AX100. 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 AX100 and may void your warranty.

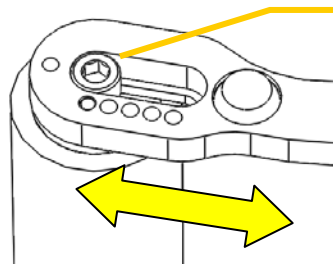
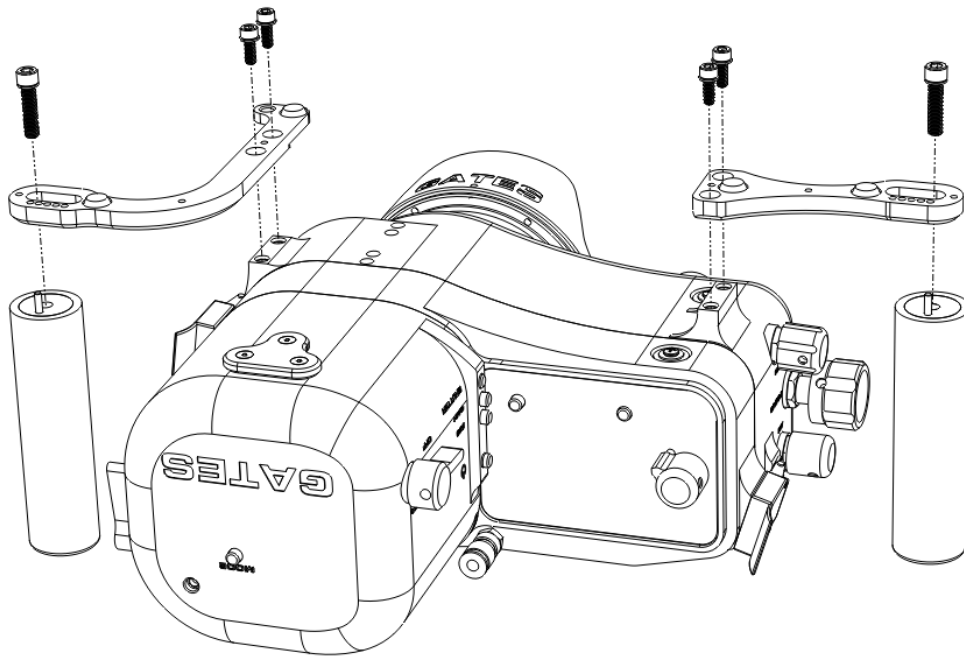
Contact Gates if you have questions about this manual or using the AX100.

3: The AX100 Setup

Handle Installation

If the handles are not already installed on the AX100 Housing, perform this step first.

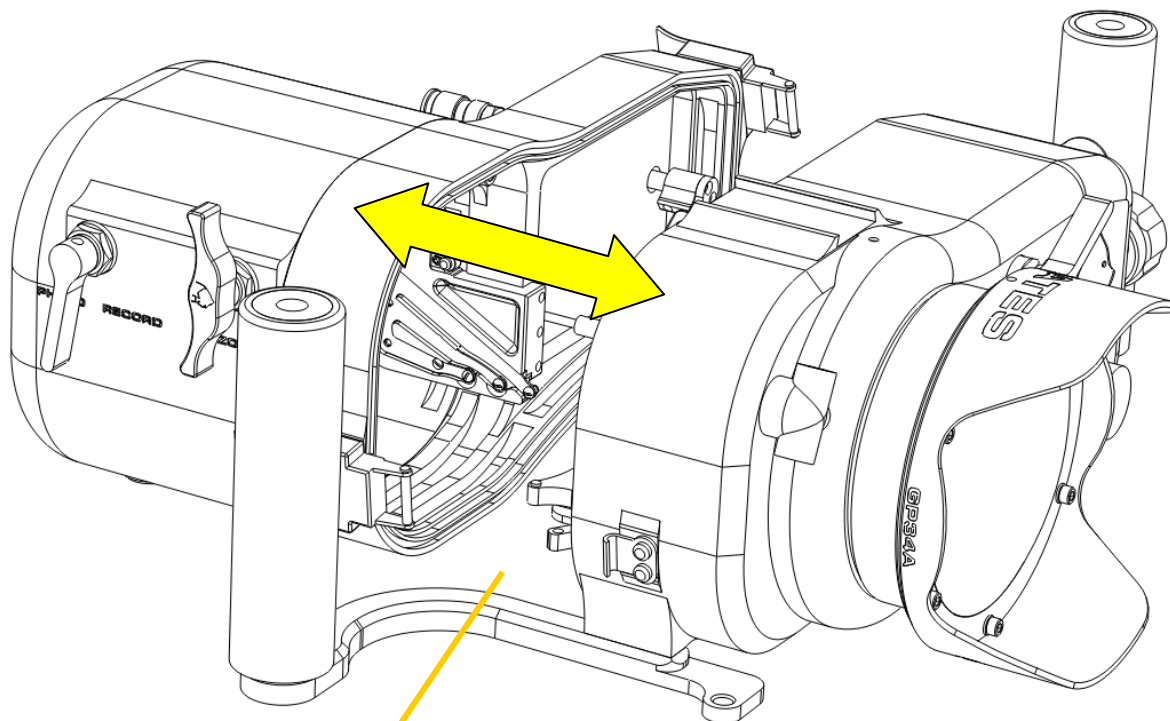
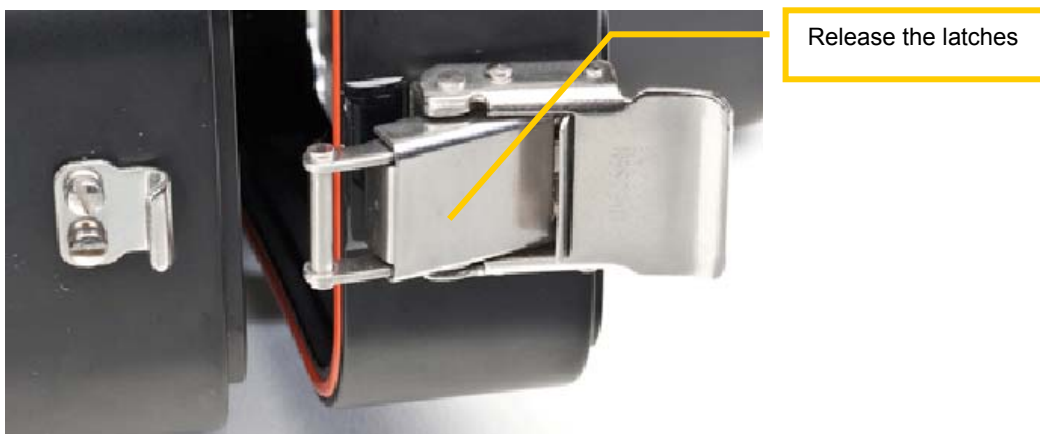
- **Secure the handle arms** to the housing using the 10-32 x 0.5”L socket cap screws. Tighten with the supplied 5/32 hex tool.
- **Secure the grips** to the handle arms using the 1/4-20 x 1” L socket cap screws. Tighten firmly with the supplied 3/16 hex tool.
- **NOTE the handle grips are adjustable.** 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.

AX100 Housing Preparation

- ❑ **Open the AX100 shell.** Two stainless steel safety latches secure the housing halves. They have a positive locking feature, so 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.



Separate housing shells

Camera Preparation

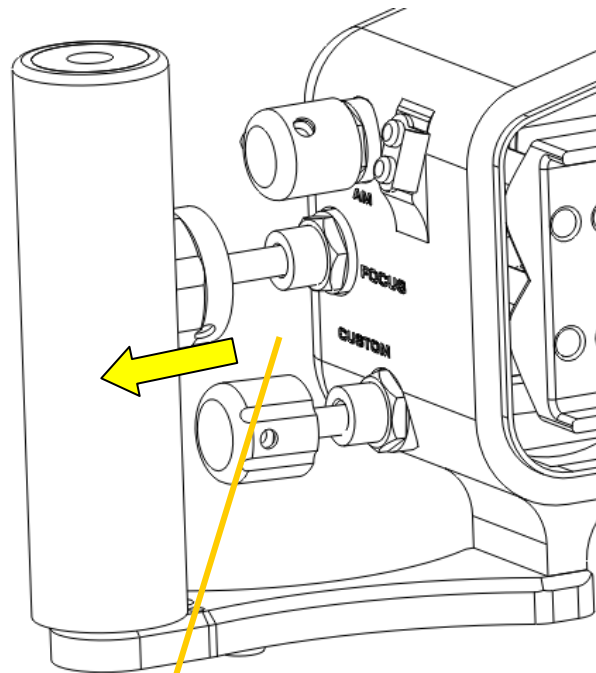
Your Sony camera will need some preparation before installing into the housing.

- **Remove any lens caps or external lenses** you may have added to the front of the camera. **Install** a charged battery and SD Cards.
- **Tighten the hand strap** to its shortest position and tuck the 'tail' back into the hand strap.
 - **CAUTION:** Failure to perform this step may result in the hand strap becoming caught in the housing seal and accidental flooding.
- **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 OFF position. This will aid in aligning the ND Filter control on the housing.
- **Install Camera** with mount screw.

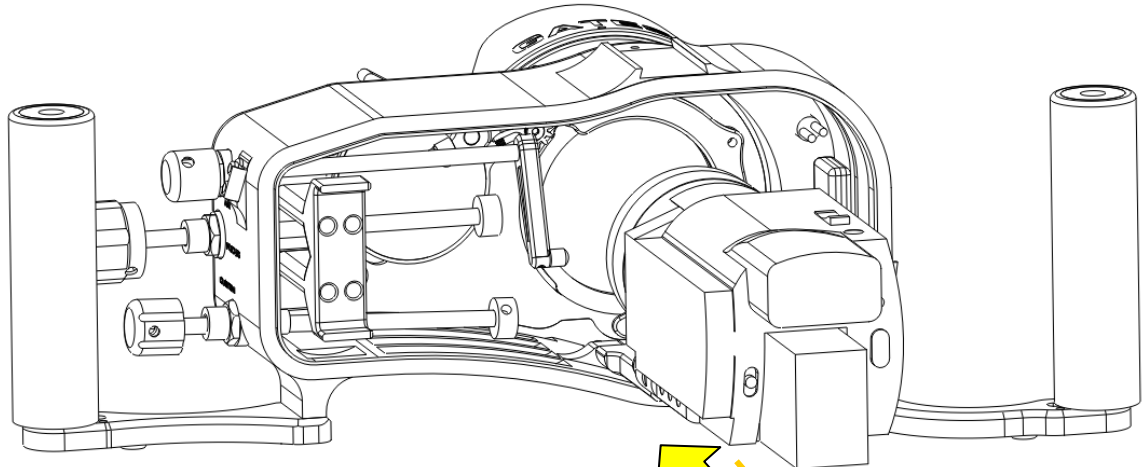


Installing the Camera into the Housing

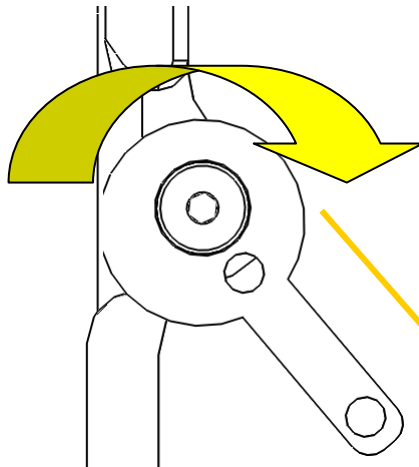
- **Pull out** Focus and Custom controls. The Focus and Custom control need only be retracted ~ 1in / 2.5cm.
- **Carefully slide camera** onto dovetail until it stops.
- **Secure the camera** by rotating the cam lock clockwise.
- **Open the LCD fully** as shown in the image on the next page. If necessary, gently press it into the receiver on the left side of the housing.
- **Press in** the Focus and Custom controls.
- **Check controls.** At this point it's a good idea to check all controls on the front shell for proper operation. (See section 4 for controls mentioned here.)



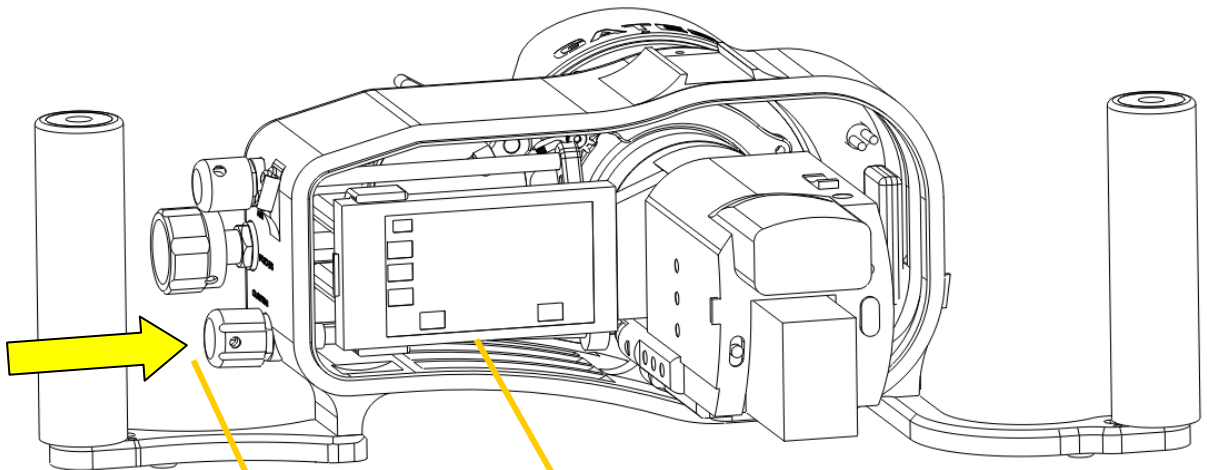
Pull out Focus and Custom controls.



Slide camera onto dovetail until it stops.



Rotate Cam Lock clockwise to secure.

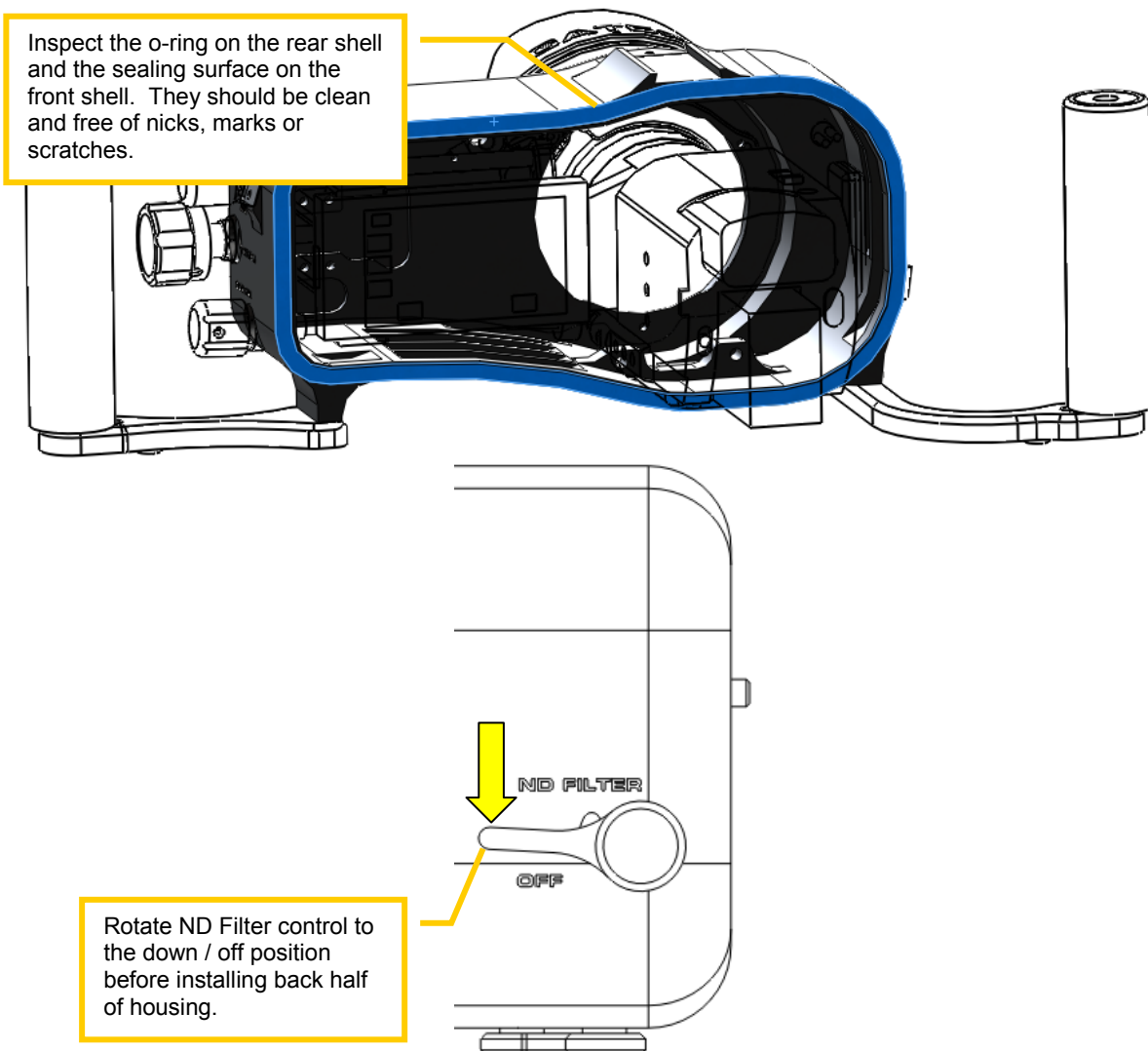


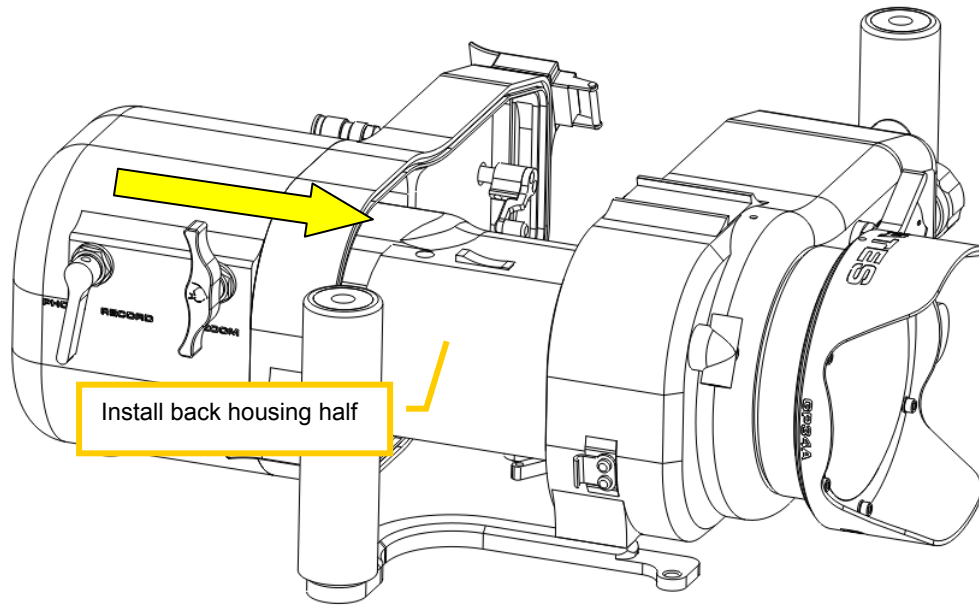
Slide in Focus and Custom controls.

Open the camera LCD and gently press it into the holder on the housing.

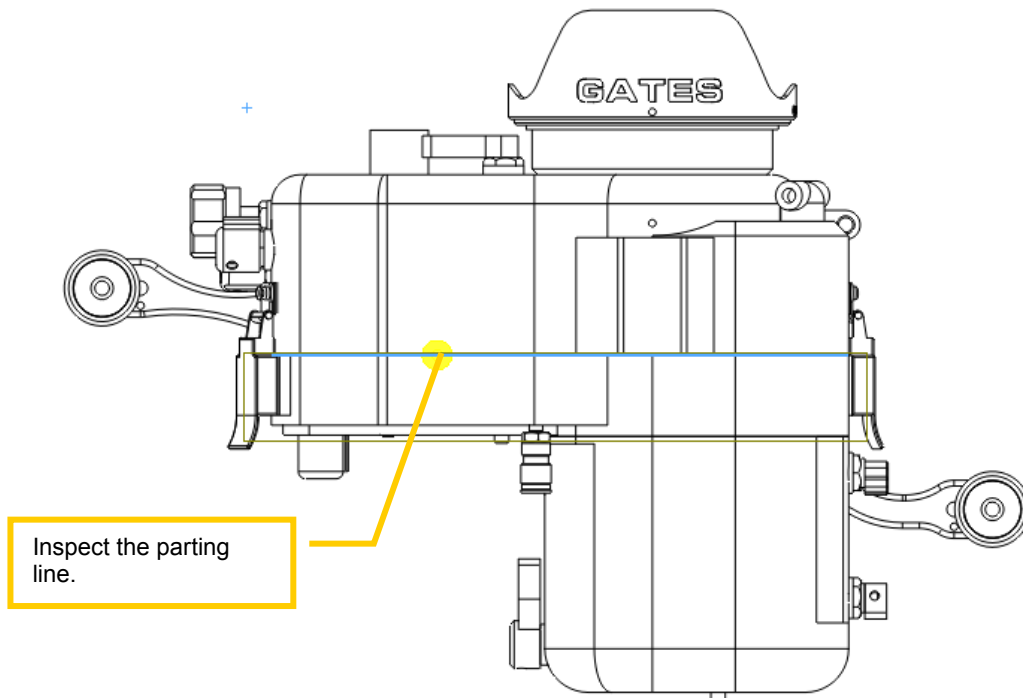
Closing the Housing

- **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 latches at the same time.
- ▶ **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.





- **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:

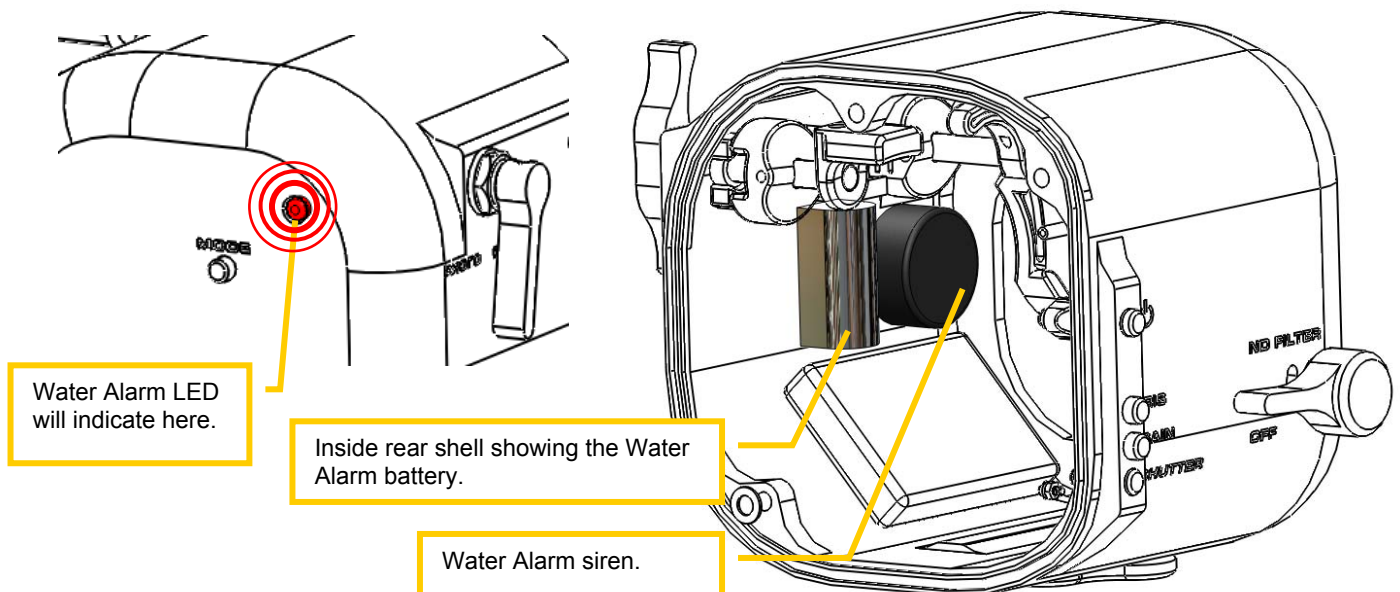
Condition	LED	Siren
New Battery (Insertion)	Bright Intense blink while siren plays	Ascending tones played 4 times
Water Intrusion	Bright Intense Blink	Warble sound. Alarm will sound for duration of detection.
Low Battery	Low Intensity fast blink	Descending tones played 8 times pausing approx. 20 seconds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

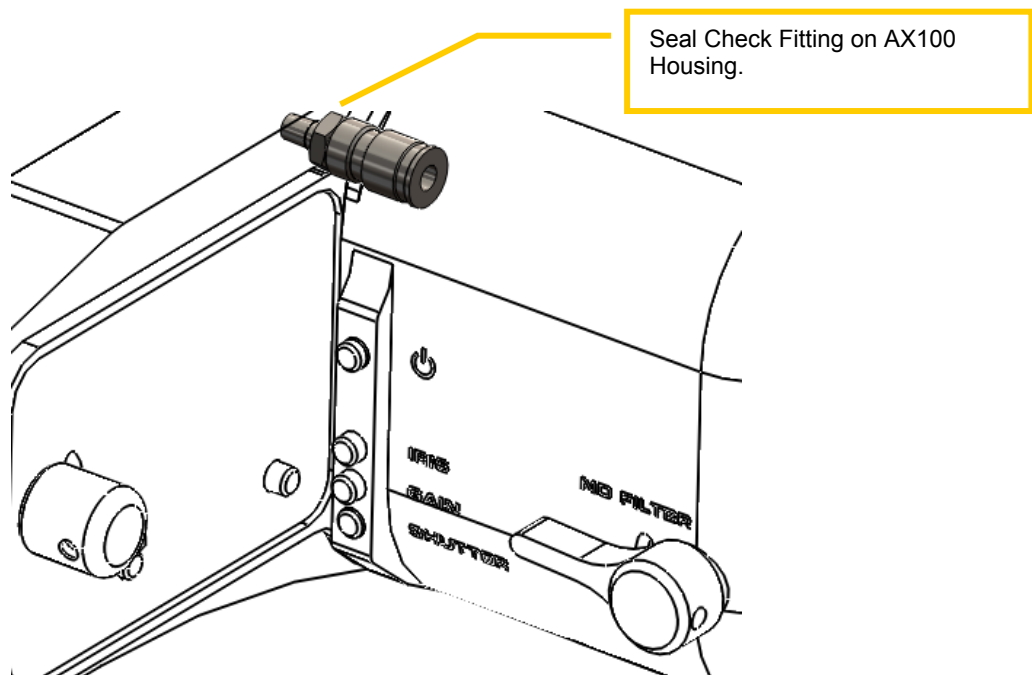
Your battery should be removed when stored (e.g. between dive trips). Check the battery prior to every dive to ensure proper operation. Change when indicated.

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



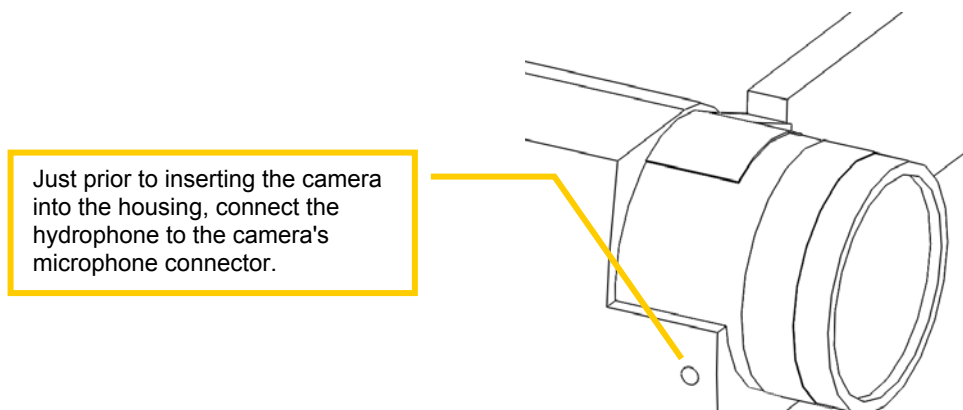
Seal Check (Optional)

- **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 AX100 will take only a few seconds. Be careful to avoid excessive vacuum greater than 8 in Hg.



Hydrophone (Optional)

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

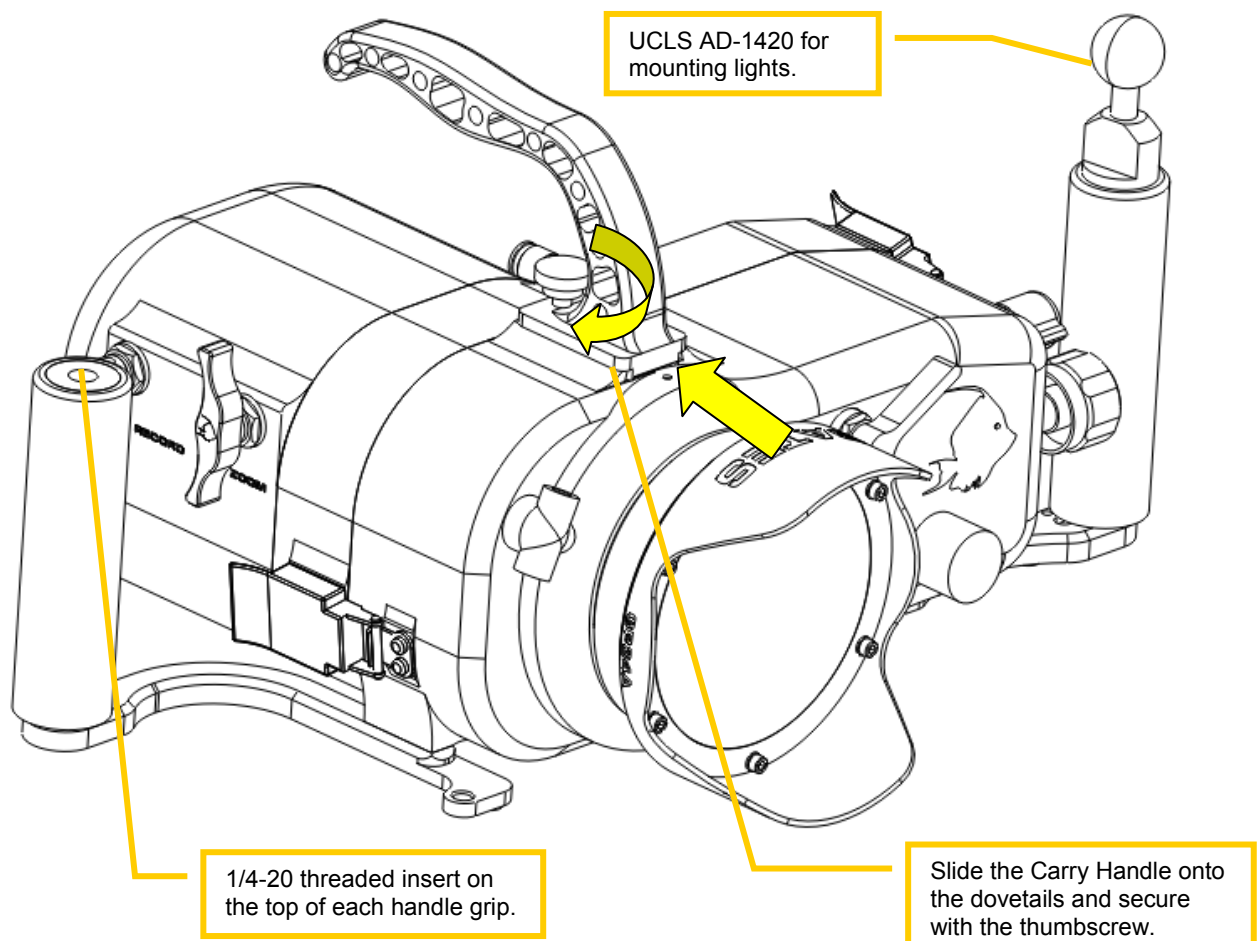


Carry Handle (Optional)

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

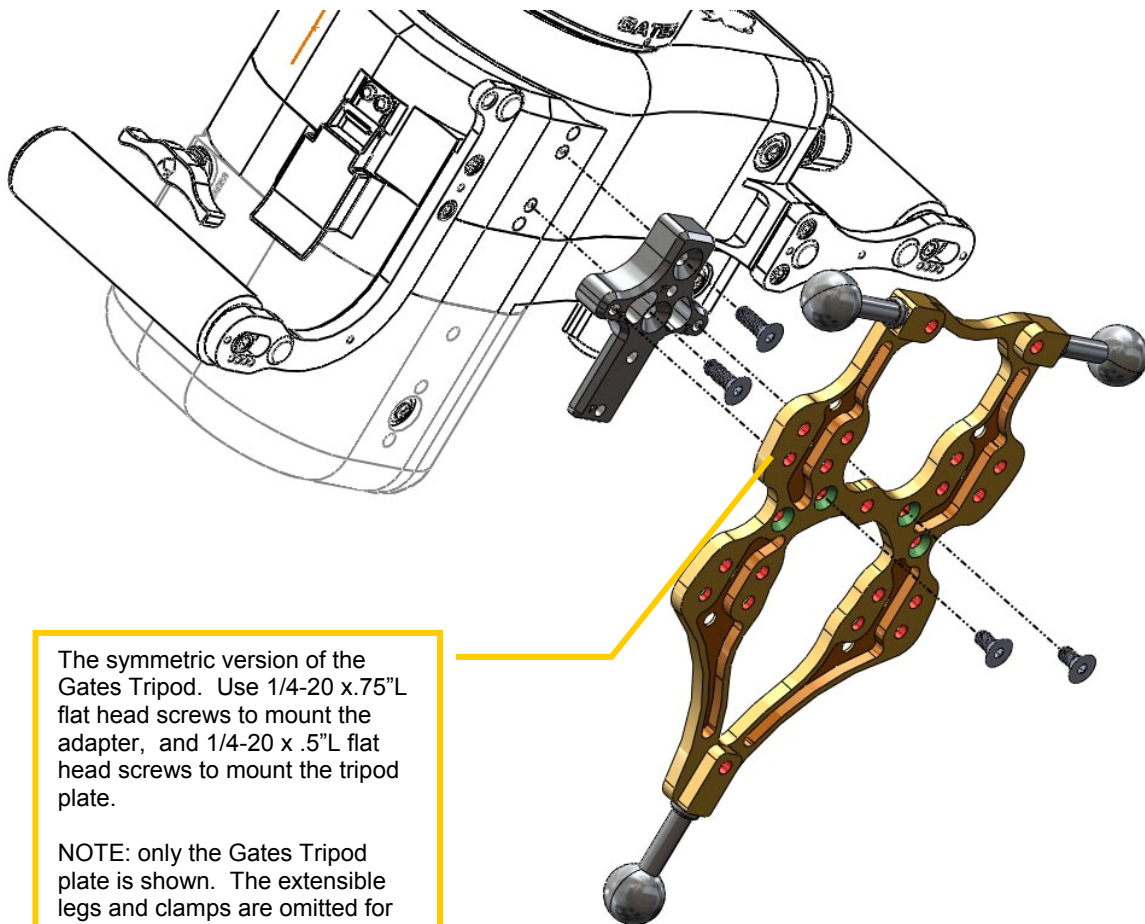
Light Mounts (Optional)

The top of each handle grip has a 1/4-20 threaded insert for mounting lights or other accessories. The Ultralight Control Systems (ULCS) AD-1420 ball mount threads directly into this location.



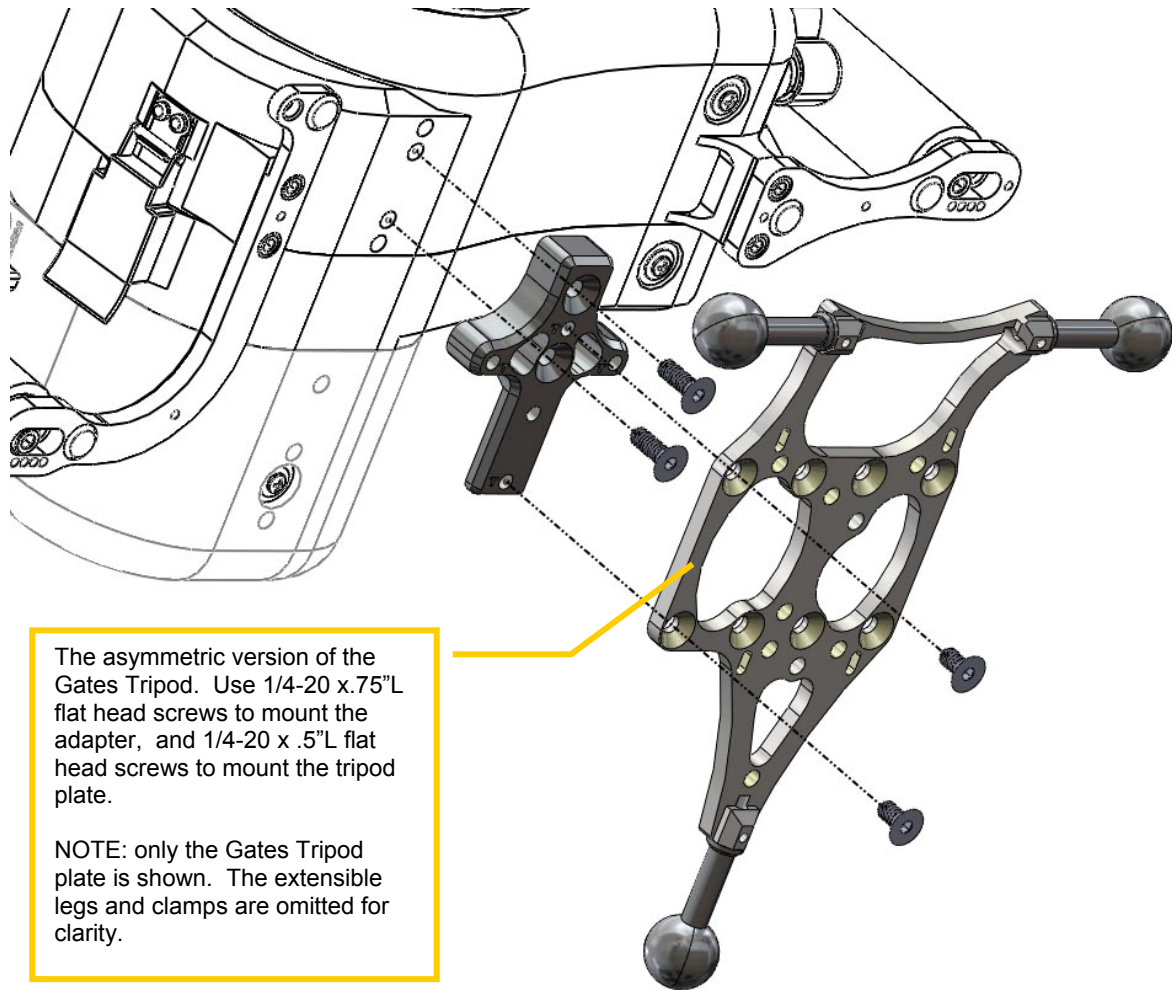
Tripod / Tripod Adapter (Optional)

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



The symmetric version of the Gates Tripod. Use 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 extensible 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: AX100 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.

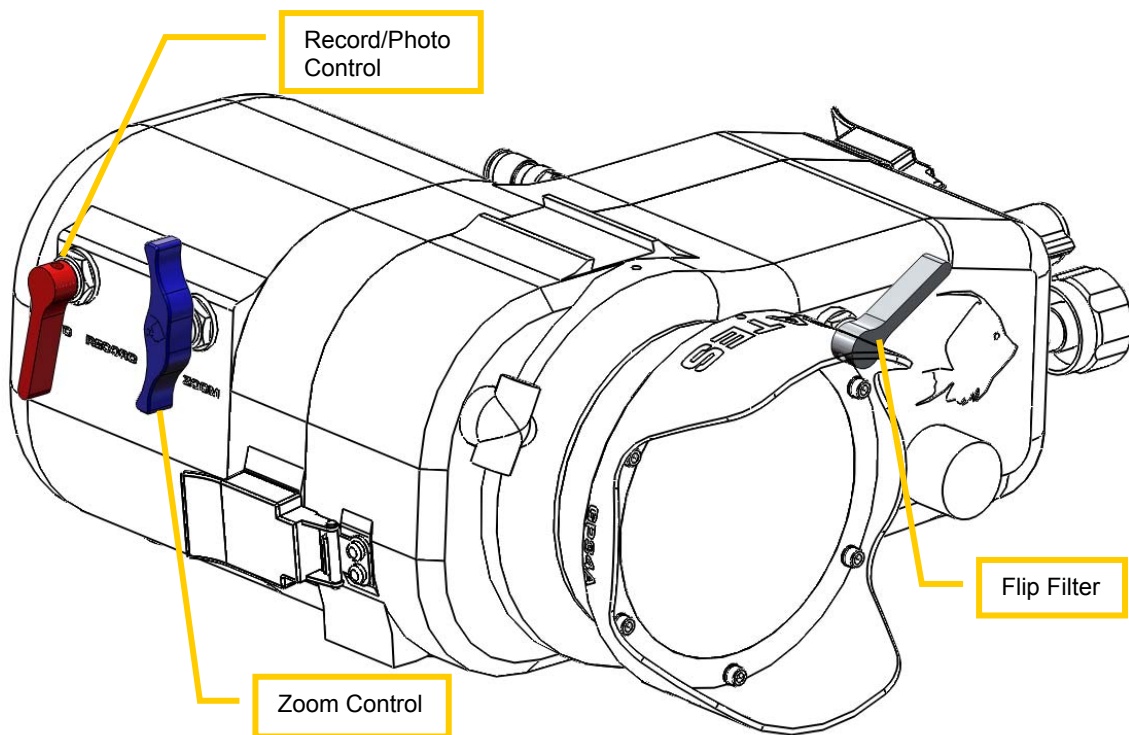
Right Side Controls

- **Record / Photo.** The Record/Photo control is **red** and operates with a momentary counter clockwise rotation for record and clockwise for photo.
- **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 silicone. Push the control back in and rotate in both directions until it operates freely.

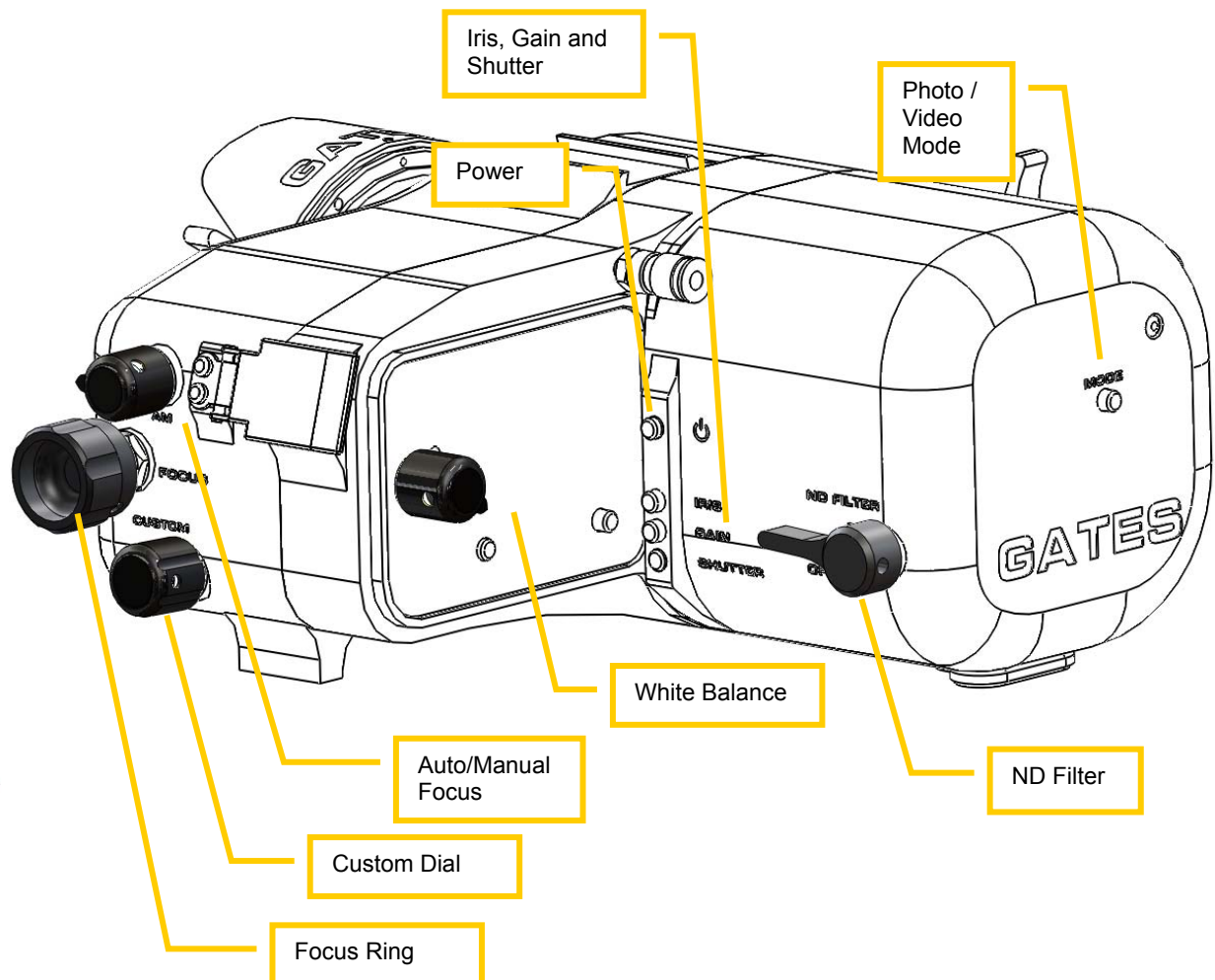
Front Controls

- **Flip Filter.** The Flip Filter moves the color correction filter in/out of position of the camera view.



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.
- **Photo / Video Mode** toggles between Photo and Video Mode.
- **ND Filter** toggles between ND1, ND2, ND3 and ND Off.
- **White Balance.** Refer to the next section about setting up your camera and using the White Balance Control.
- **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.



White Balance

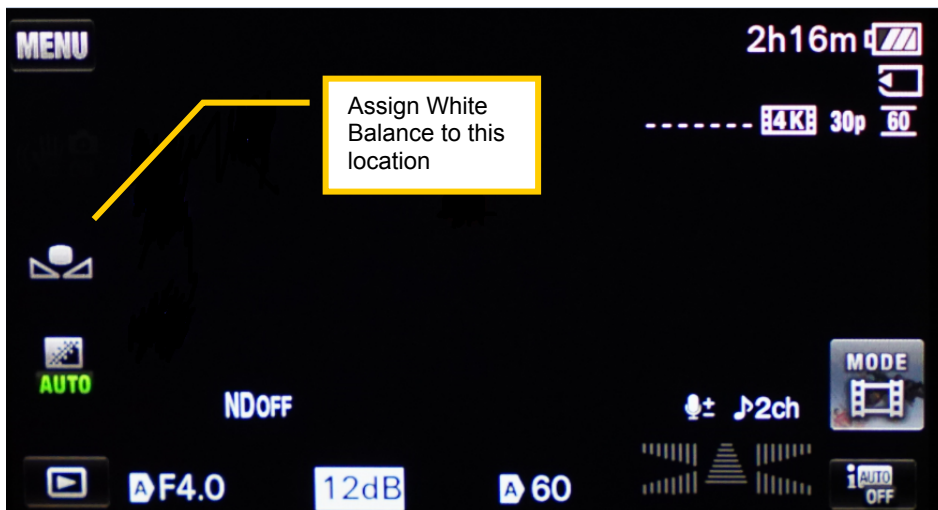
Setting white balance is a two step process but first requires specific setup of the Sony AX100 or C900 camera.

- **Disable** the touch screen zoom feature (W/T) by changing the Display Setting from Auto to On. This will make setting white balance easier as there will be no W / T (Wide / Telephoto) icons on the touch screen to obscure the White Balance icons.

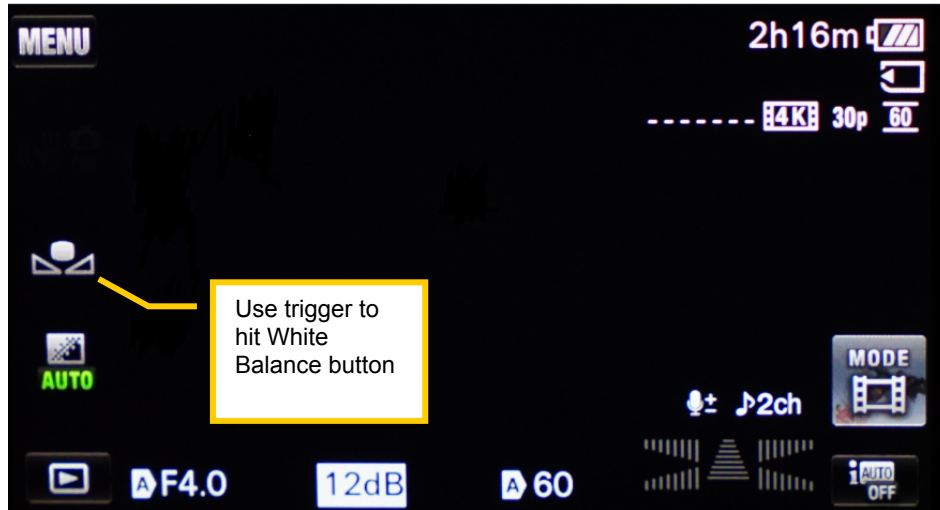
MENU--> SETUP--> DISPLAY SETTING--> ON.

- **Set assignable locations** to jump to the white balance menu. You can assign specific functions to icons on the left side of the touch screen for direct access, like White Balance. Here's how:

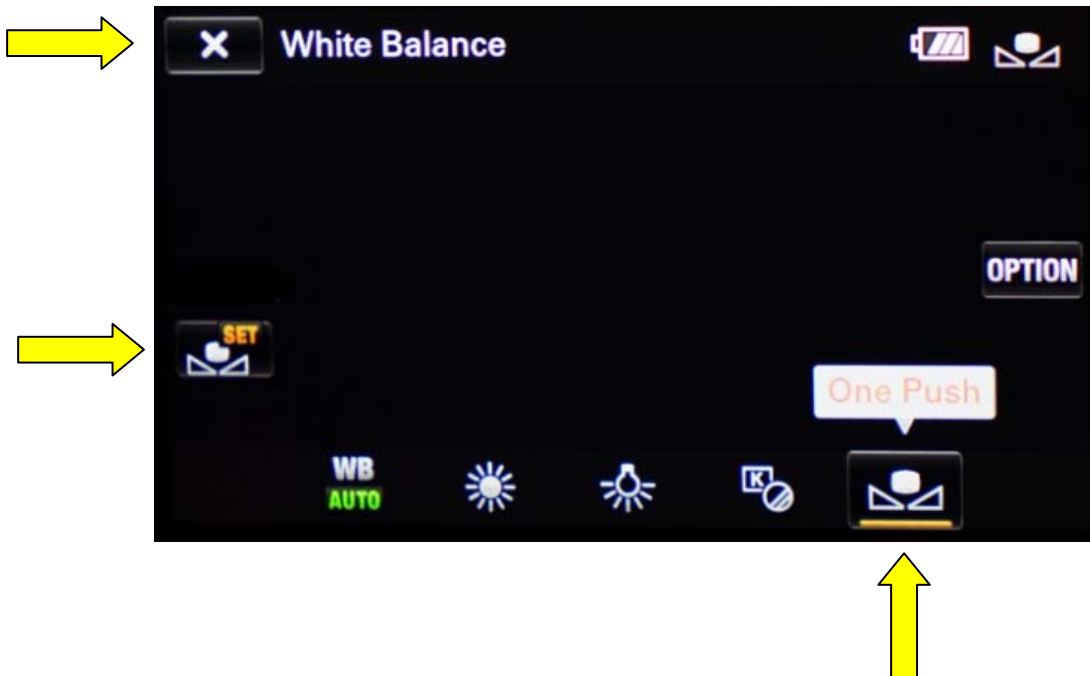
MENU-->CAMERA / MIC-->MY BUTTON-->WHITE BALANCE -->Assign to location on screen shown below.



- **Setting White Balance.** The steps to set white balance are as follows:
 - **Press White Balance** button.



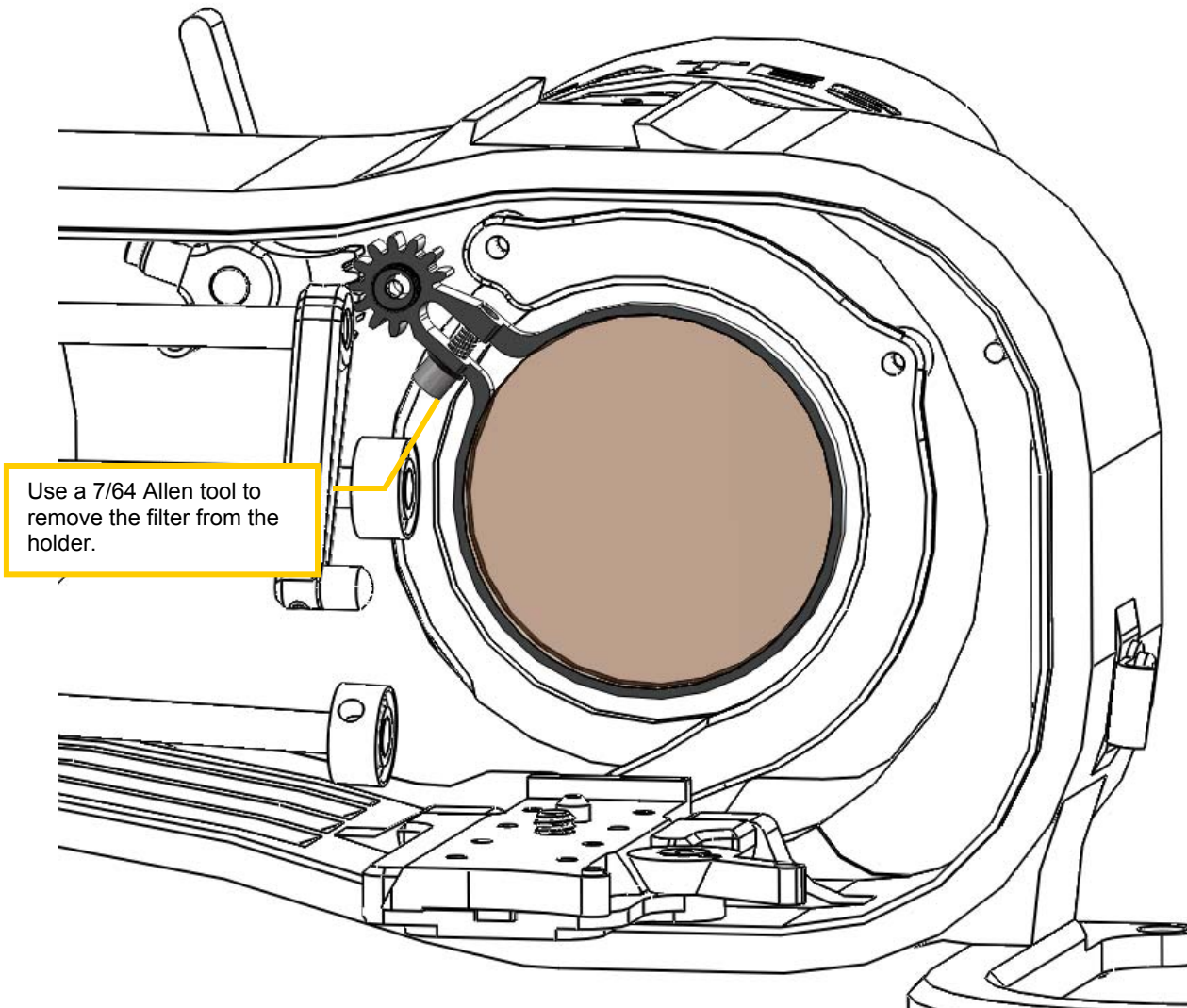
- **Press One Push White Balance**, then **Set** to white balance the camera.
- **Touching the X** will return you to the default screen.
- **Press Set White Balance** button.
- **Press OK** to return



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.

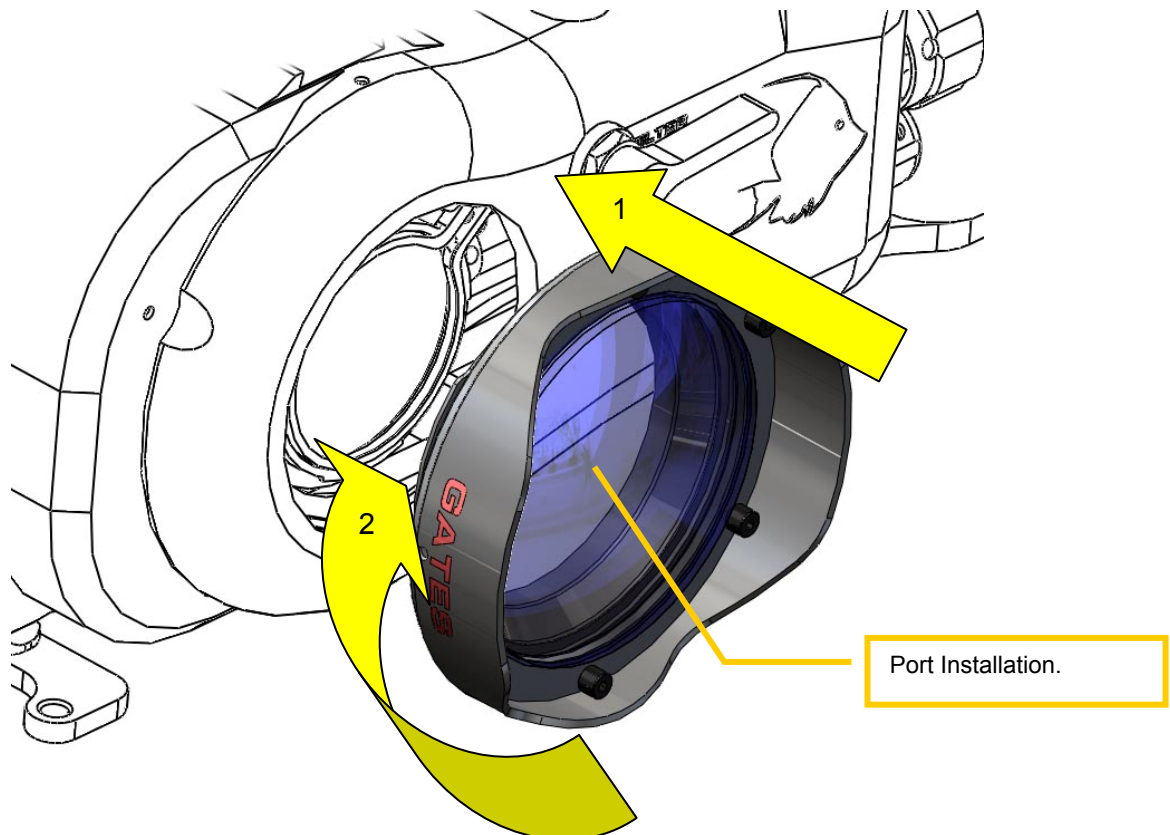
- **Removal.** The color filter is held in place by a tension screw in the filter holder. Loosen this screw with a 7/64 Allen tool.
- **Installation.** Rest the filter in the holder and tighten with a 7/64 Allen tool. **Tighten just enough to secure the filter. Do not over tighten.**
- **Cleaning.** 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.

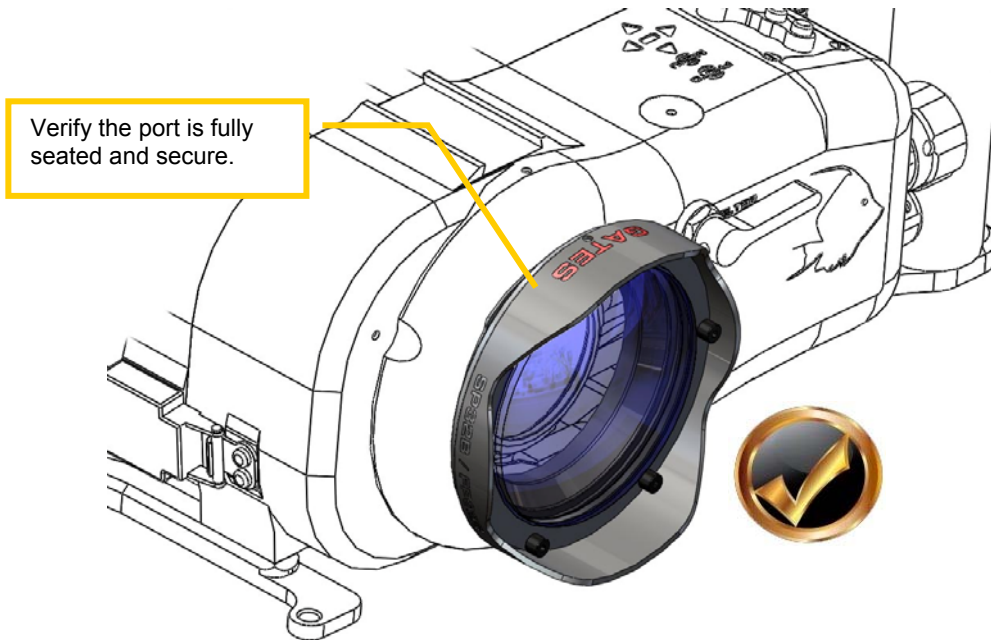


Changing Ports

Gates offers several ports for your AX100 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 AX100 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.

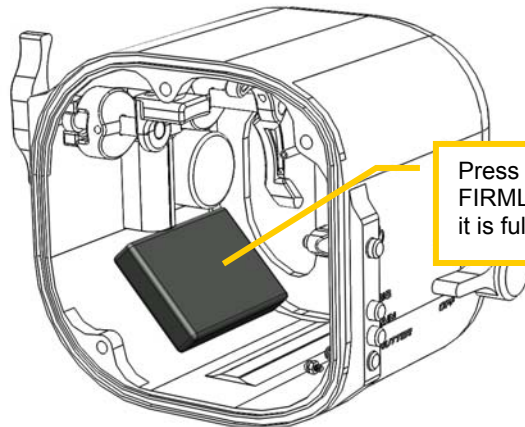
- ▶ **NOTE** the Filter cannot be used with diopters. When installing the camera with diopter ensure the filter is positioned as far as possible away from the port opening.



A diopter can be threaded onto the camera directly.

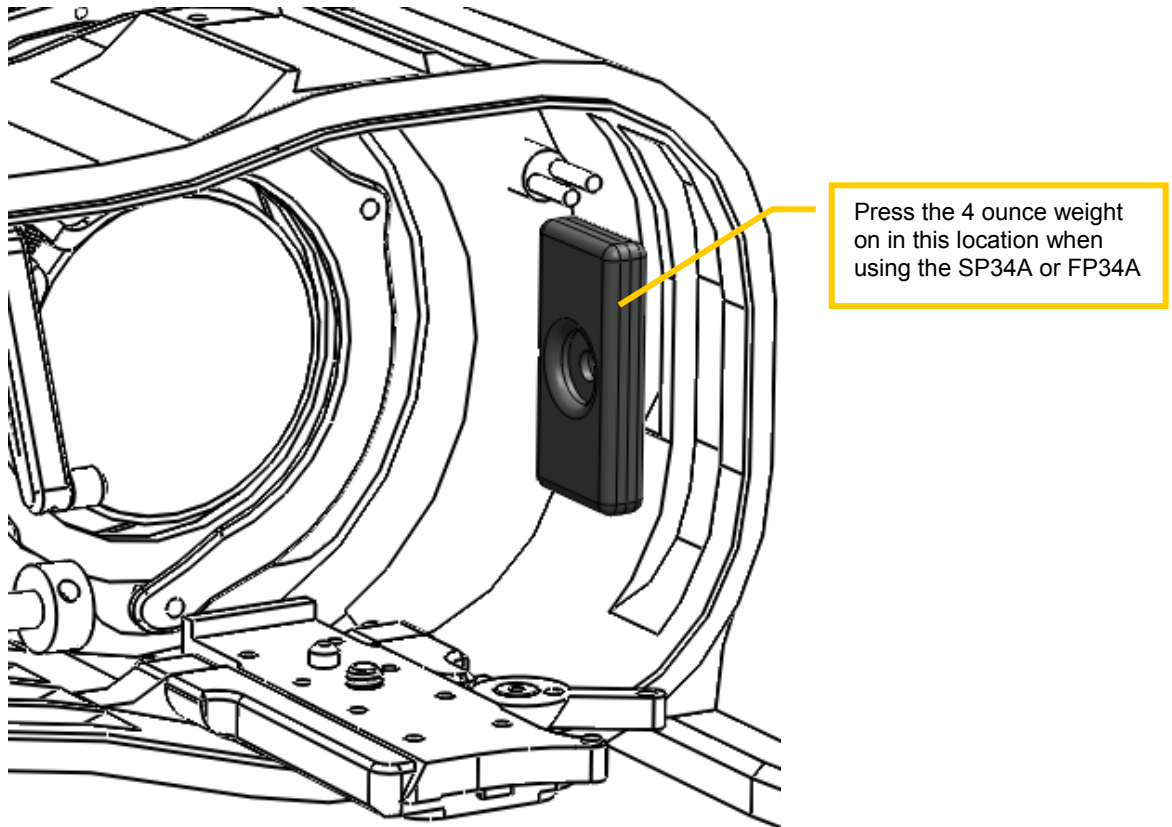
Buoyancy and Trim

- To achieve proper buoyancy add the 11 ounce weight included in your kit. This weight will be used for all configurations.



Press the 11 ounce weight down **FIRMLY** in this location. Check that it is fully seated and secured.

- When using the SP34A or FP34A ports you will need to add the included 4 ounce weight to the housing.
- **CAUTION: DO NOT TRAVEL WITH TRIM WEIGHTS INSTALLED IN HOUSING.**



Tips for Shooting Video with the AX100

- **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 AX100 and CX900 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 AX100 and CX900 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 AX100 and its operation, please contact Gates at the numbers below.

Email: Customer.srvc@GatesHousings.com

Web: www.GatesHousings.com

Phone: 858.391.0052

Fax: 858.391.0053