



Setup, Use and Care Guide

XL H1 Housing

Dear Gates Customer,

Welcome to the Gates family! You now own one of the finest underwater housings available, and we thank you for choosing Gates. For over 33 years Gates has crafted the most **reliable**, **durable** and **dependable** housings to suit many needs, from recreational diving to treasure hunting, marine research and Hollywood productions to U.S. Navy programs.

You see, at Gates, your selection of our product is only the beginning. We are here to service you, the customer, for as long as you own our product. Our Customer Service is second to none. We'll make every reasonable effort to support you wherever your adventures land you, including remote corners of the globe. Anytime you need advice, parts, overhaul, or repair, Gates will take care of you promptly and to your satisfaction.

Please read through all the documentation contained in this package to become familiar with your Gates housing **before** diving. It contains important and valuable information to make using your new housing easy to learn and use. Soon you'll be capturing images and showing your friends and colleagues the splendor of the undersea realm.

Complete and return the warranty card enclosed in this package to activate your *2-year renewable warranty*. You'll receive 2 years of warranty coverage for your investment and unprecedented peace of mind, only from Gates.

Gates wishes you the greatest success in your diving adventures. May you capture the memories of a lifetime and the envy of your friends. And remember.....
Don't take a chance...Take a **Gates!**

Sincerely,

John Ellerbrock
President

Congratulations on owning a new **Gates housing!** You've selected a product that will provide years of value and reliable service. This housing was custom designed for the Canon XL H1 video camera for the underwater imaging professional. Please read through this entire guide to become familiar with the Gates XL H1 housing. The following setup guidelines will explain how to prepare and use your camera and housing so you'll get the best results from your video endeavors.

Before You Begin

Every Gates housing is pressure tested before leaving the factory to assure a watertight seal. As a precaution, however, ***it's a good idea to first setup and dive the housing without your Canon camera inside.*** Rough or abusive handling during shipment could have caused unnoticed damage after leaving the factory. You can be assured that everything was setup properly, and get a good feel for use of the housing and technique of holding a camera in position while fine tuning your buoyancy.

Camera and Housing Setup

After removing the housing from its shipping container or Gates Pak, carefully inspect for any damage that may have occurred during shipment. If you discover any, contact Gates or your dealer immediately for assistance.

Preparing the Canon XL H1 Camera

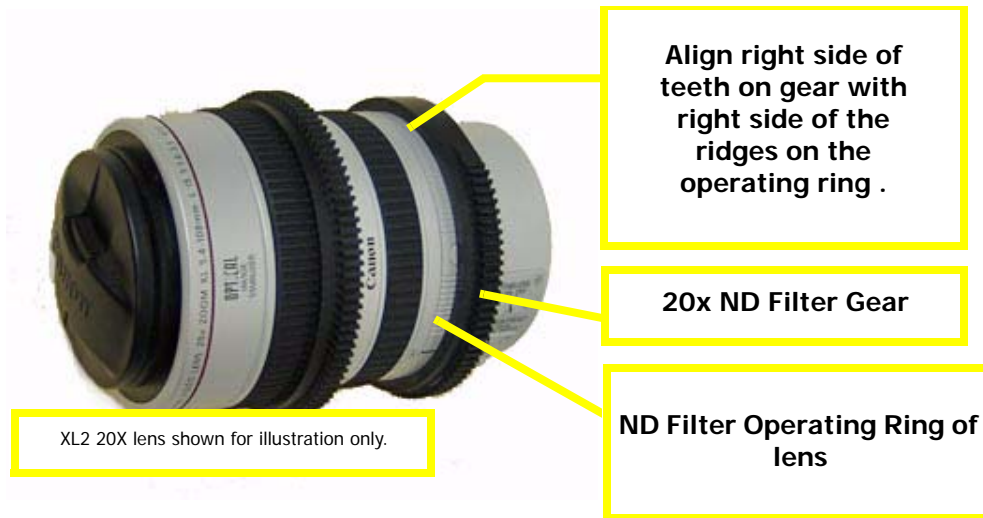
Your Canon camera will need some preparation before placement into the housing.

1. **Remove any lens hood, cap or filters** from the lens.
2. **Display information.** The XL H1 camera must be set to display information through the external monitor. This is done by entering the menu of the camera and selecting as follows: **MENU > DISPLAY SETUP > TV SCREEN > ON** Pressing the EVF button will now toggle information on/off in the external monitor.
3. **Remove the electronic viewfinder (EVF) and microphone boom** completely from the camera.

Remove the handstrap,
microphone and
viewfinder.



4. **Install the ND filter gear.** The filter gear must be installed when the lens is **not** attached to the camera. Align the right side of the teeth on the gear with the right side of the ridges on the lens ND filter operating ring as shown in the photo. Push the gear forward on the lens to completely cover the lens operating ring.



5. **Install manual focus gear** onto focus ring of the camera lens. Place the focus gear over the front of the lens and slide it onto the focus ring oriented with the gear teeth toward the rear of the 20X HD lens (see photos). It may be a snug fit.

Note the alignment on the lens as shown in the photos.



6. **Install the Power Ring** as shown in the photo. The slot in the ring will align with the "Off" marker on the camera and the pin is on the outside of the ring.
7. **Install the White Balance Mode adapter** over the white balance knob on the camera and tighten gently with the allen wrench provided. Orientation is not important.



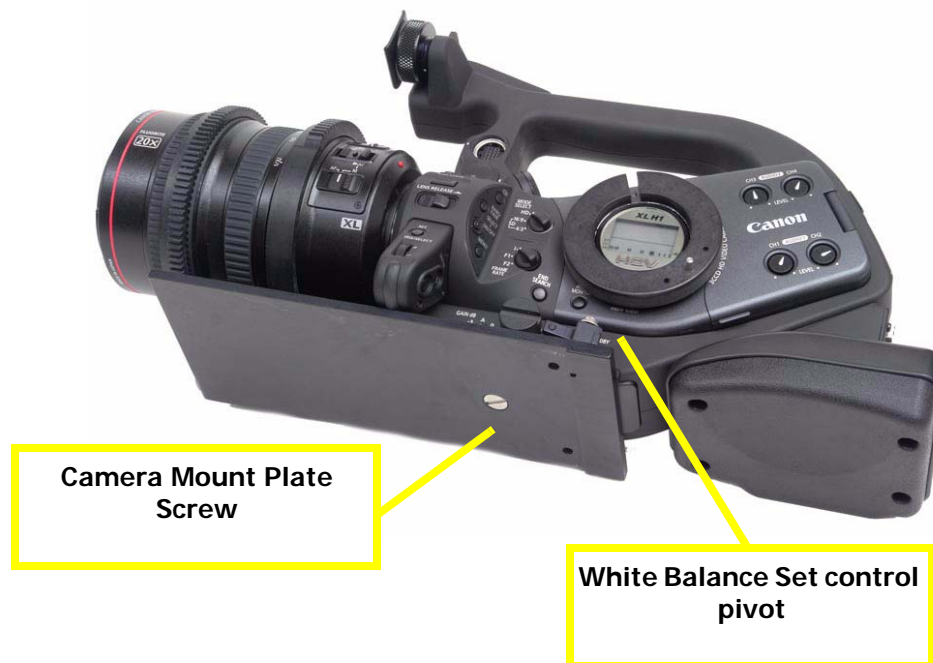
8. **Install a tape** and charged battery.

Preparing the Housing

1. **Release the latches.** Three 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. Depress the bar and lift the rear lever on the top latch, then undo it from its catch hook. Remove the two side latches in a similar fashion.
2. **Open the housing.** Separate the rear half of housing from the front.
3. **Remove the camera mount plate** from the housing. The plate is held in place by two small screws underneath. Use a screwdriver or small coin to remove.
4. **Mount the camera** to mount plate using supplied screw. Note that the camera will seat against the alignment rail on the right side to properly position the camera for control access and port alignment.

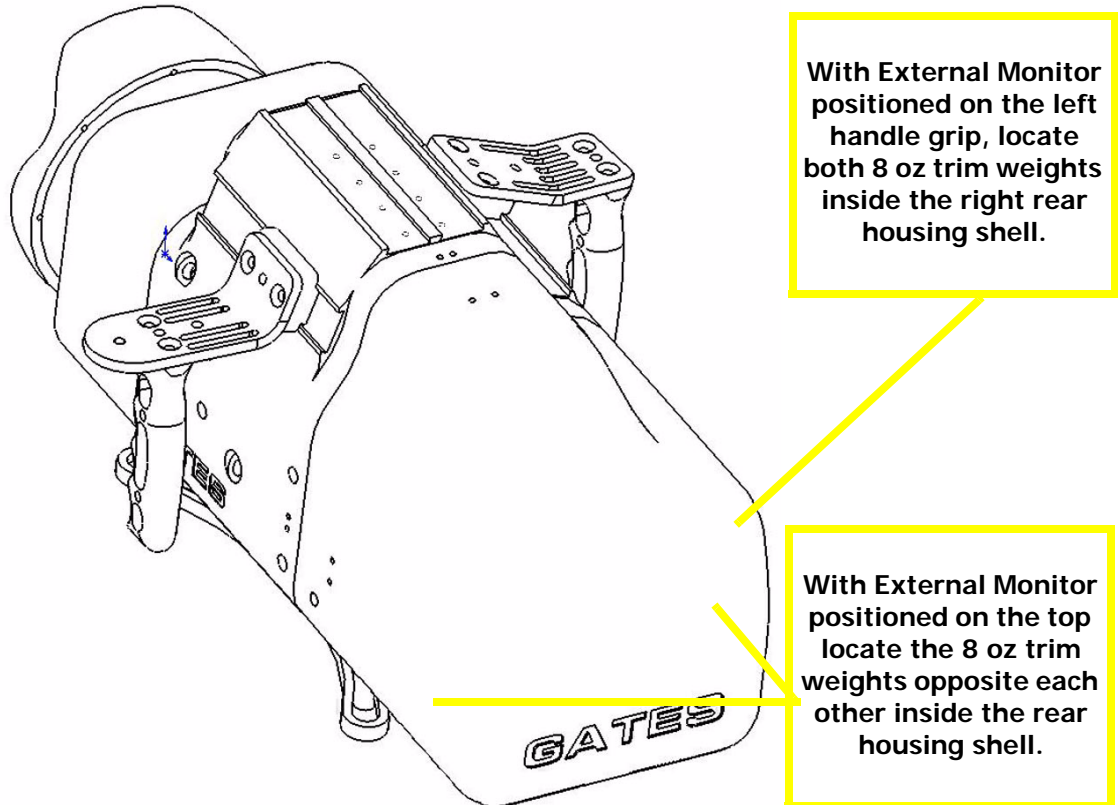
Also Note that the White Balance Set control pivot on the mount plate is properly oriented to activate the White Balance Set button on the camera. This control pivot is located immediately below the power ring.

5. **Secure the camera** to the camera mount plate with the small pan head screw and a small coin or screwdriver. Tighten snug, but do not overtighten.



6. **Buoyancy Adjustment** Your XL H1 housing is designed to be balanced and slightly negative underwater *in its basic configuration* -- which is the housing and a Standard Port. To achieve this there is a single 4 lb / 1.8 kg weight mounted to the foot and 2 trim weights located inside the housing. The weights inside the housing must be positioned for proper trim and balance. The locations are readily identified inside the housing by the black pad mounts against the walls.

With the external monitor positioned on top of the housing the trim weights should be secured on opposite sides of the rear housing shell. (see photo). With the monitor positioned on the left handle grip, secure both trim weights to the right rear housing shell.



With a different port and/or the addition of accessory items, such as lights, batteries, etc. the buoyancy and balance will naturally change, and most likely to the negative. In this case the weights can be repositioned to other areas inside (or outside) the housing to reestablish trim. Extra mounting strips are provided with your housing for this purpose. However, **it is important when installing the weights in the housing to ensure they do not interfere with the camera or controls.**

To remove a trim weight simply pull it away from the wall to which it is mounted. Start at one corner as this will help separate the locking strips. When securing them back into the housing you will feel a 'snap' as the locking strips engage.

⚡ Caution: *Remove weights for travel and shipping to avoid internal damage. The weights can become dislodged during transport.*

If after removing the trim weights you require additional positive buoyancy Gates has an accessory buoyancy system available. Contact Gates for more information.

Installing the Canon camera.

1. **Pull out all controls** on the front of the housing as far as they will go. (Controls will be discussed in greater detail in a subsequent section).
2. **Insert the camera.** Carefully slide the camera on its mount plate into the housing. It is a snug fit into the housing so do not force the insertion. If you feel obstructions look inside and determine the cause before proceeding. With some experience this step will become familiar.

If you have a microphone installed, plug in both connectors when the camera is inserted halfway (see photo).

Just before full insertion the front of the 20X HD lens will be guided into an alignment collar found at the front of the housing just behind the port. If necessary, remove the front port to see this alignment collar to help guide the camera into position.



3. **Secure the camera into the housing.** When fully inserted the camera mount plate screws will in the corresponding slots at the base of the housing (see photos). Tighten snug with a small coin or screwdriver.



4. **Plug in the external monitor cable** at this time. Locate the external monitor cable and plug it into the yellow RCA video jack on the back of the camera.

Note: A small switch is located immediately next to the yellow RCA jack on the XL H1 camera which needs to be in the down position to output video to the RCA jack.

Note: A subsequent section of this guide details mounting and use of the External Monitor.



5. **Check controls.** When the camera is installed into the housing front press in each control and confirm proper operation (refer to the next section for more detail on controls). Note specifically:

- **The Power On/Off Control arm** will mate with the pin on the power ring.
- **The White Balance Mode Control knob** will mate with the White Balance Adapter knob attached to the camera.

✓ **Tip:** with the camera installed you can now get a good view inside the housing and each control. Use a flashlight if necessary to become familiar with the operation and 'feel' of each control in their proper position prior to closing the housing.

Closing the housing

1. **Carefully inspect** the orange o-ring on the back and sealing surface on the front. Make sure they are clean and free of debris or marks that could compromise the seal.
2. **Position controls for mating.** The White Balance Set control should point straight down for easy mating of the housing. **Place back housing half** onto housing front, using the 'drip lip' to guide the alignment. The housing halves should mate easily with no obstructions. If there are any obstructions, separate the halves and identify the problem before trying again.
3. **Align all three latches** -- Each latch should fall over the catch on the front shell. Close the two side latches at the same time, then close the latch on top of housing last. Each latch will 'snap' and lock into position when closed.



The housing should mate without obstruction. Ensure proper alignment and secure latches.

⚡ **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 and 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.*

4. **Carefully inspect** parting line between front and rear. If this line is not even and free of gaps all the way around, remove back and find the reason why. (O-ring out of place, hand strap interference, etc.) ***FAILURE TO DO THIS MAY RESULT IN A WET CAMERA!***

⚡ **Tip:** A simple test of the main seal is to try and slip a piece of paper past the o-ring. A properly sealed housing will have no gaps through which the paper can pass.

5. **Check the Port.** It should be seated flush on the front bulkhead and no uneven gaps should exist. If a gap is found, remove the port and re-install per directions in the 'Port' section found later in this guide.

6. **Power up camera and check all controls.** Check all controls for the proper operation before entering water. The following section describes each control in detail for proper operation.

Attaching the Adjustable Handles

1. **Loosen the thumbscrew** on the handles, then slide the handle onto the accessory rails on each side of the housing (see photo). Position them to suit your preference.
2. **Tighten the thumbscrews** to secure the handles onto the housing.



Controls

General Information

Your Gates housing utilizes 100% mechanical controls to provide you the most reliable operation possible. There are no batteries to change and little maintenance to perform.

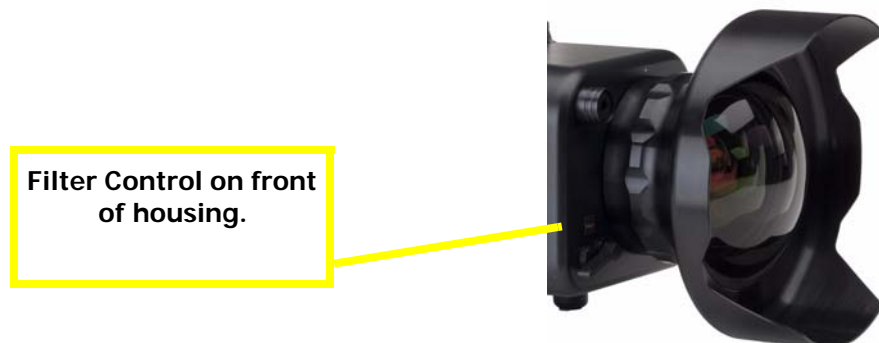
The housing controls are designed by Gates engineers, to the extent possible, to feel and behave like the camera controls. You can also verify operation of nearly every function on the external monitor. With time and use the housing controls will become quite familiar, and you'll find operating them requires similar skill as the actual camera controls.

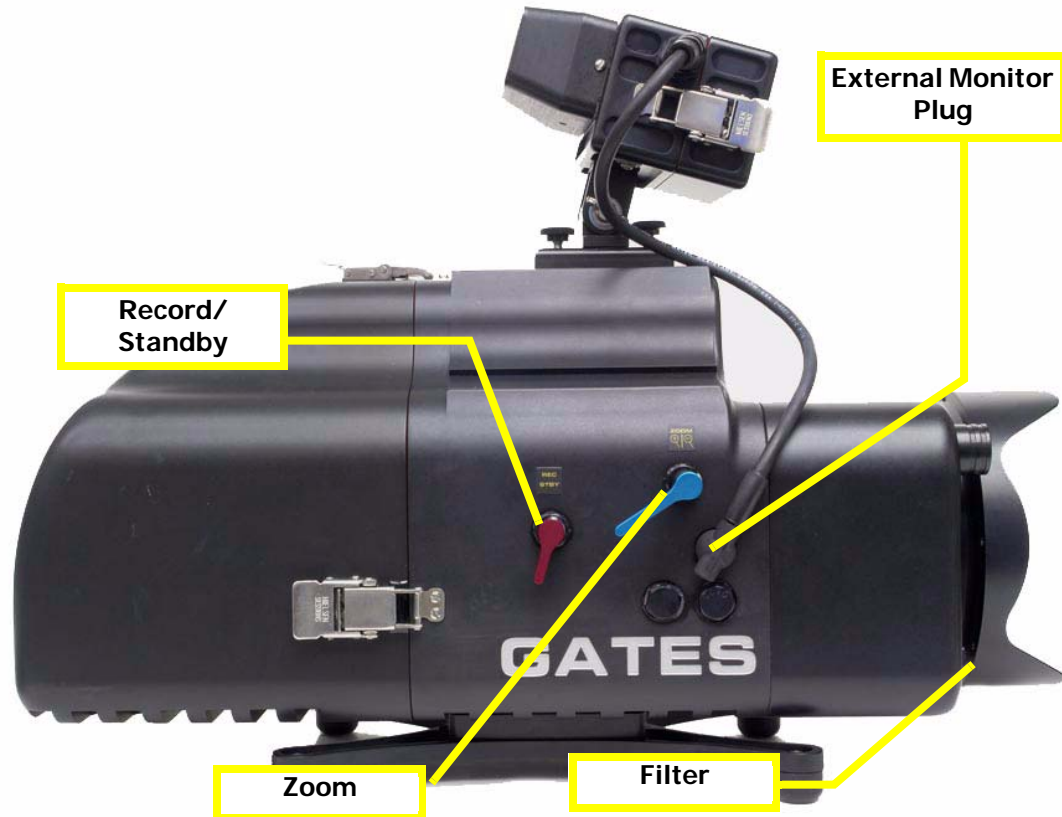
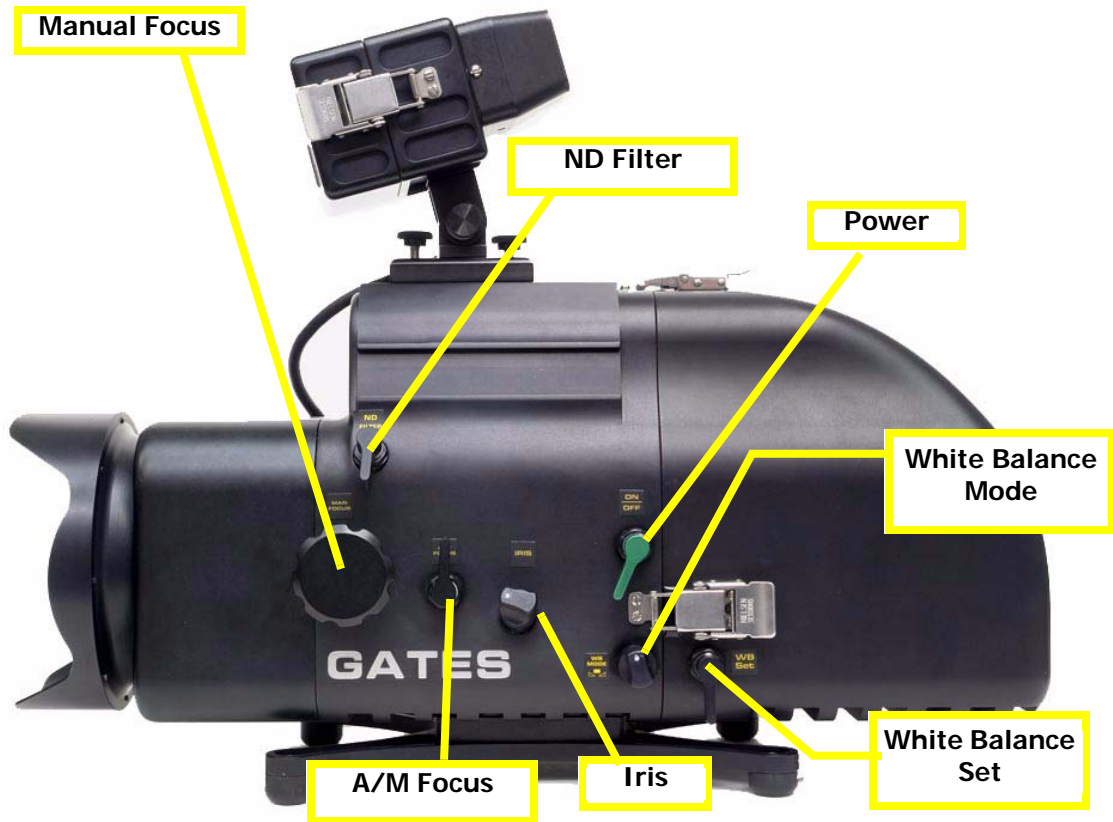
To help acquaint you with the housing controls, review and operate each control individually to see how it actuates the corresponding camera control, and get a 'feel' for the control. You can view all front housing controls with the housing open.

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 pressure.*** The controls will operate properly in this position.

Control Operation

- **Power (Off/Auto/Manual)** This control is easily identified by the green color. The positions for this control are exactly like that found on the camera switch, and you will 'feel' the switch move into each position as it passes the tactile detentes. The mode selected will display in the monitor for verification. In the "Off" position the trigger will point straight down.
- **Record/Standby** The Record Standby control is red, and operates by a short motion clockwise on the lever trigger. Press once to record, press again for Standby. You will "feel" the record/standby button on the camera actuate through the control as it is depressed.
- **Zoom** The Zoom control is blue for quick identification. It operates with a simple rotational movement of the lever trigger. Note that the zoom is variable – that is, the further you move the control, the faster the camera will zoom from wide to telephoto and vice-versa.
- **Filter** The color correction Filter is located on the front of the housing. It operates with a simple rotation of the control to move the filter in and out of position in front of the camera.

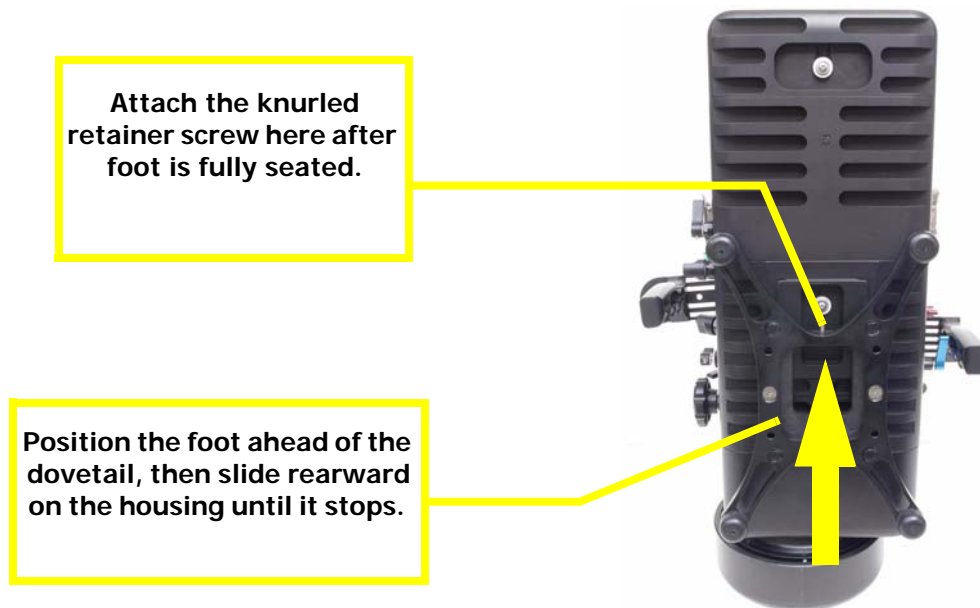




- **Neutral Density (ND) Filter** The ND Filter Control operates with a turning motion. Confirmation of the ND setting is seen in the viewfinder.
- **Auto/Manual (A/M) Focus** The A/M Focus control toggles the camera between manual and auto focus modes. When in manual focus, the manual focus knob can be used to focus on subjects.
- **Manual Focus Knob** The Manual Focus Knob is located just forward of the A/M focus control, and provides fine control of focus. The A/M focus control must be used to set the camera into manual focus mode to utilize this control.
- **White Balance Mode** This control is rotated to move through different white balance modes. Manual white balance is set by selecting 'manual' with this control, and then 'set' with the White Balance Set control.
- **White Balance Set** Manual white balance is set using this control. A short clockwise motion will actuate the white balance set button on the camera.
- **Iris** The iris, or aperture, is changed by rotating the control in either direction. Note that the camera must be in Av or Manual modes for this control to operate.

Attaching the Foot Plate

1. **Remove the knurled brass retainer** from the foot plate, then place the foot plate forward of the dovetail mount on the housing (see photo).
2. **Slide the foot** rearward onto the housing dovetail. It may take firm pressure to fully seat the foot until it comes to a solid stop.
3. **Attach the knurled retainer** to secure the foot onto the housing.



Ports

Change

The ports for the XL H1 housing are attached with a bayonet-style mount. Port changes are easy and straightforward:

1. **To remove a port:**

- rotate the port 90 degrees counter-clockwise so that the alignment dots are 90 degrees apart from each other
- pull the port away from the housing.
- If you have trouble, look inside the front half of the housing and ensure the bayonet tabs of the port are lined up with the cut-outs of the port opening.

✈ **Tip:** If the port has been on the housing for an extended period of time, it may be difficult to turn. You may find that a strap wrench helps to remove it.

2. **Inspect the o-ring** -- Before installing a port, perform an inspection and lubrication of the sealing o-ring. See "O-ring Care and Maintenance" Guide included with this guide.
3. **Insert the port** with the bayonets on the port aligned with the cut-outs of the port opening on the inside of the front bulkhead. Press the port onto the housing until it is flush with the front bulkhead. Then turn the port 90 degrees clockwise so the silver dot on the port is aligned with the silver dot on the top of the housing. The port has a built in stop to prevent further rotation.



⚡ Caution: Perform a final check after installing a port to ensure it's flush with the front bulkhead of the housing. If not, remove the port and reinstall. Failure to do so may result in flooding.

Insert the port with the alignment dots at sides, seat the port fully on the housing, then turn clockwise until dots align on top of port.



Cleaning Ports

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

- **Dust or Lint** can be blown with compressed air, preferably use air 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.
- **If necessary, rinse fresh water** over the outside of the port to loosen any residual salt or sand that may remain. Do this with the ***port sealed*** on your housing to keep water away from the rear of the port.
- **Only if necessary, clean the port** using a mild glass cleaning solution and a non-abrasive, lint free cloth. ***Use light circular strokes*** when wiping away cleaning solution and any foreign material. Excessive pressure used when cleaning dirty lenses (*e.g.*, rubbing sand into the lens surfaces) may damage coatings. ***Use a light touch.***

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

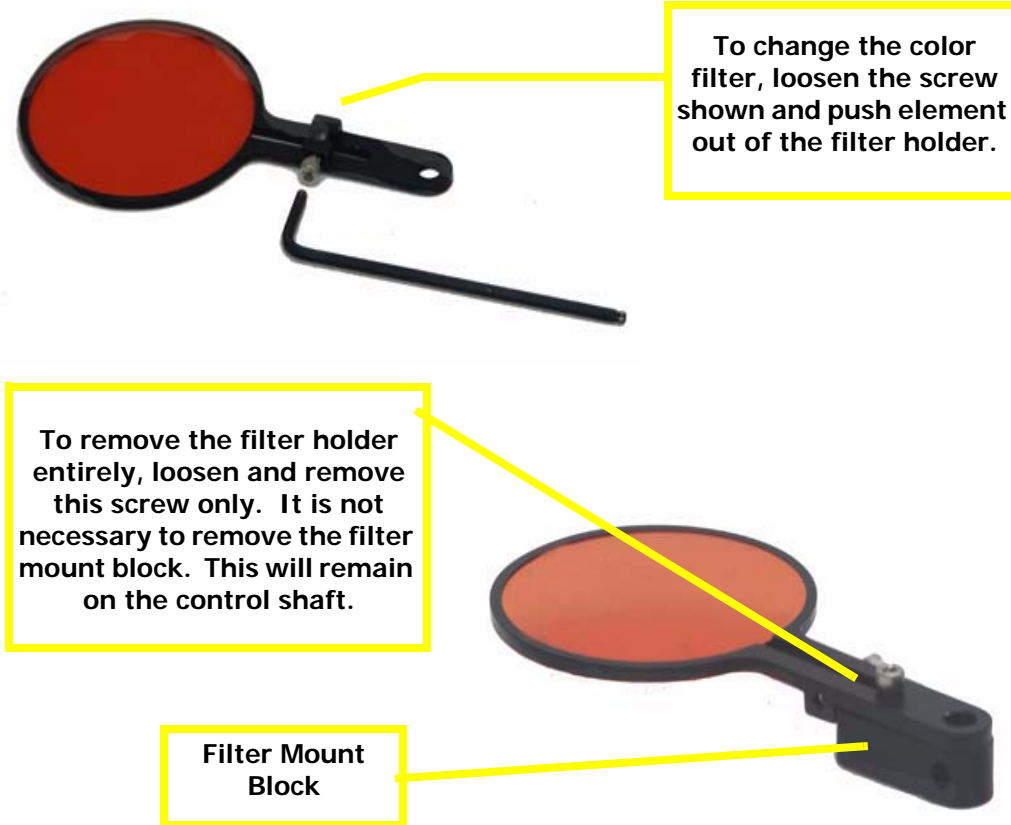
⚡ Tip: Gates offers approved cleaning solutions and lint free cloths as accessory items. Use of these materials will not void your warranty.

Use of Diopters

- The FP44 Flat Port is designed specifically for macro video using multiple diopters mounted to the lens. NOTE that you will not be able to use the color correction filter with diopters on the camera.

Use of the Color Correction Filter

- The internal color correction filter is specially designed by UR Pro to correct for color loss underwater. A "blue water" version (orange in color) is provided standard with the XL H1 housing, however a "green water" version (pink in color) is available as an option.
- **Changing the filter** is accomplished by loosening the screw on the filter holder closest to the filter element using a 7/64" allen wrench. Push element into the housing while stabilizing the filter holder. Reverse this process to install new filter element.
- **Removing the Filter Holder.** Remove the screw holding the filter holder to the filter mount block using a 7/64" allen wrench. The mount block remains attached to the control shaft.



External Monitor

This section covers mounting of the monitor to the XL H1 housing and connection to the Canon camera. Note that the monitor has no controls; it will power up automatically when a PAL or NTSC video signal is present.

Camera Connection and Setup

1. **Connect to the Canon Camera** by plugging in the RCA video cable located inside the housing. This step can be done just prior to closing the housing. The video cable will plug into the very back of the Canon camera.

You can verify operation at this time by plugging in the monitor (see below) and turning on the camera. Note – your Canon camera must be set to display external video, as well as camera information. If you have not already set the external video mode, please refer to the "*Preparing the Camera*" section for directions.



2. **Attach the monitor** to housing. The external monitor can be mounted to the housing on the top or on the side over the left handle.

Mounting on the top requires the swivel base be attached to the dovetail as shown in the photos. The dovetail will then slide onto the accessory rails on the top of the housing and locked in place with the thumbscrew.

Side mounting requires removal of the swivel base from the dovetail and secured to the left side handle. To do so first separate the swivel mount by removing the long thumbscrew and wingnut, then pull apart. Next, loosen the bolt securing the base to the dovetail with a 3/16" allen wrench and 7/16" wrench. Use this same hardware to then secure the swivel base to the left handle as shown in the photos.

EM253 External Color monitor shown with swivel base secured to dovetail.



Swivel base secured to left handle.

EM253 Monitor shown in side mount position.



3. **Plug in the monitor cable** to the XL H1 housing bulkhead connector, which is found on the right side just below the zoom control. Mate the cable until fully seated into the bulkhead connector.



Plug in the monitor cable to the bulkhead connector. If necessary, use water or silicone lubricant for easier mating of the connectors.

⚡ Caution: If you are not using the EM253 monitor for any reason, do not plug the RCA connector into the camera.

4. **Verify operation** by turning on the camera. If properly connected, the monitor will automatically turn on and display an image. You may have to wait 3-4 seconds before an image will appear.

Optional EM419

The EM419 is available offering a 4.1"/104mm color active LCD. As with the EM253, it will power up automatically when a video signal is present. It also senses a PAL or NTSC signal automatically and displays a proper image regardless of video format.

Monitor Setup, Use and Care

The EM253 or EM419 SU&C Guides are included as a separate document with your XL H1 Guide.


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" pages of this document. You can also find it on Gates web site at www.gateshousings.com.

O-Ring Care and Maintenance

Your Gates housing for Canon XL H1 has 3 serviceable o-rings. One is located between the mating halves of the housing (the large orange one), and the other two are located on the rear of each Port.

Servicing the o-rings is easy, and covered in the "O-Ring Care and Maintenance" document in this package. You can also find it on Gates web site 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!

Customer Support

If you have any questions or require further assistance with your XL H1 housing, contact your dealer or Gates directly and we'll be happy to assist.

Email: Customersrvc@GatesHousings.com

Phone: 858-272-2501

Fax: 858-272-1208

