



Setup, Use and Care Guide

GL2 / XM2 / XV2 Housings

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, repair, or just want to chat, Gates will take care of you promptly and to your satisfaction.

Please read through all the documentation contained in this package to familiarize yourself with a 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 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 and General Manager

Gates Housing Setup and Use

For Canon GL2 / XM2 / XV2 Housings

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 GL2 / XM2 / XV2 video cameras as a durable and easily transportable package. Please read through this entire guide to become familiar with the Gates GL2 / XM2 / XV2 housing. The following easy setup guidelines will explain how to prepare and use your camera and housing so you'll get the best results from your video endeavors.

Camera and Housing Setup

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 use the housing **without** your Canon camera inside. By doing so you ensure that 1) rough or abusive handling during shipment did not cause unnoticed damage; and 2) you have properly set up and sealed the housing. In addition, you can get a good feel for the use of an underwater housing and simply concentrate on the technique of holding a new piece of video equipment in position while fine tuning your buoyancy.

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 GL2 / XM2 / XV2 Cameras

Your Canon GL2 / XM2 / XV2 cameras will need some preparation before placement into the housing.

- ✓ **Remove lens hood and cap** from camera.
- ✓ **Install a tape**, memory card, and charged battery.
- ✓ **Set camera mode.** Set the "Camera -VCR" slide switch to 'Camera' side, and the "Standby - Lock" switch to 'Lock'.
- ✓ **Set video out info display.** If you are using an external monitor, set the camera to display recording and camera information on the video out display. This is done by entering the menu setup: MENU → DISPLAY SETUP → TV SCREEN → ON.

Preparing the Housing

- ✓ **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.
- ✓ **Open the housing.** Separate the rear half of housing from the front.

⚡ **Note:** Your Gates housing was shipped from the factory with the large orange o-ring installed between the housing halves. This is done so you can observe proper and correct installation of this o-ring. It is recommended you **remove this o-ring for storage** to avoid permanent deformation of the o-ring. **For air travel** you can place a slip of paper across this seal to allow for air pressure changes, but be sure to remove it before diving.

- ✓ **Loosen the camera mount base screw** and remove the mount base from the housing. You need only loosen the screw ~3 turns to slide the base out from the housing.
- ✓ **Mount the camera** to mount plate using supplied pan head screw. Note that the camera will seat snugly against the side and rear stops, which will properly position it for control access and port alignment.
- ✓ **Position the White Balance control** with the trigger in the 12 o'clock position. This will then mate with the white balance mechanism on the camera mount plate.

Installing the Canon GL2 / XM2 XV2 cameras

- ✓ **Insert camera.** Carefully install camera into housing until the two alignment pins on front of mount plate mate with the holes in the front bulkhead. (This might be easier to do with camera housing upright resting on the front port.)
- ✓ **Plug in** the video out cable and microphone if installed. If you are using the video out connector, use the double stick tape to secure the connector cover back as shown in the photo.



- ✓ **Secure camera.** Install screw through mounting tab into mounting plate. Tighten screw with medium screwdriver or small coin. Be careful not to scratch o-ring sealing surface with the screw driver.
- ✓ **Check controls.** When the camera is installed into the housing front, press in each control until it touches the camera, and determine proper operation (refer to the next section for more detail on controls).

✓ **Tip:** With the camera installed you can now get a good view inside the housing. This is a good point to become familiar with the position, operation and 'feel' of each control and prior to closing the housing.



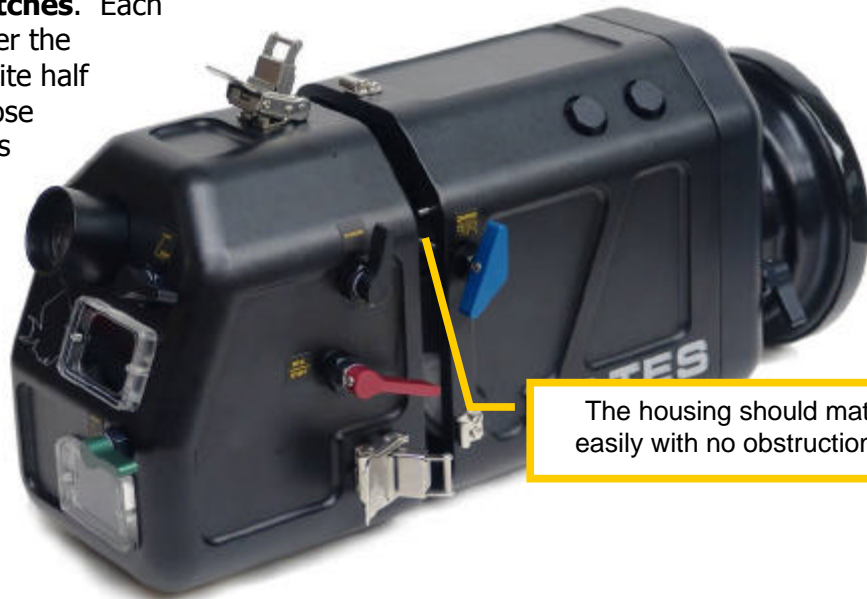
- ✓ **Set viewfinder positioning.** Tilt up the electronic viewfinder (EVF) ~ 30 degrees to align with the viewfinder on the housing back. A good guide is to sight the bottom of the viewfinder with the top of the battery release button (see photo).



View side of camera and align bottom of viewfinder with top of battery release button, as shown.

Closing the housing

- ✓ **Carefully inspect** o-ring on back half and sealing surface on front half. Make sure they are clean and in good condition.
- ✓ **Place back housing half** onto housing front. Align holes in back with alignment pins on front.
- ✓ **Align all three latches.** Each latch should fall over the catch on the opposite half of the housing. 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.



⚡ **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.

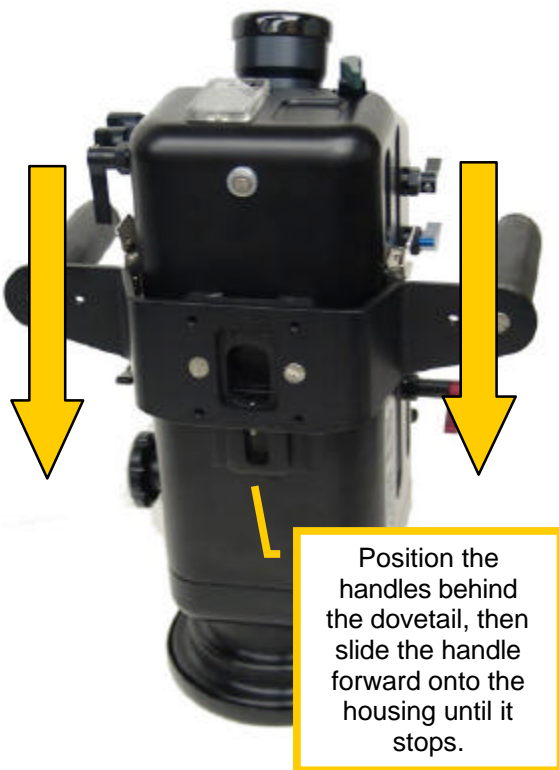
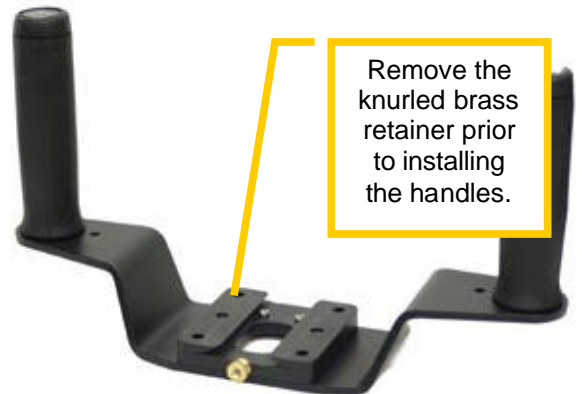
- ✓ **Carefully inspect** parting line between front and rear. If this line is not even and free of gaps all the way around, remove back and find the reason why. (O-ring out of place, hand strap interference, etc.) **FAILURE TO DO THIS MAY RESULT IN A WET CAMERA!**

✓ **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.

- ✓ **Position the Standby/Lock control** until it touches the camera. The trigger should point to the right side of the housing (when viewed from the rear).
- ✓ **Power up camera.** Check all controls for the proper operation before entering water.
- ✓ **Check the Port.** It should be seated flush on the front bulkhead with no uneven gaps. If so, remove the port and re-install per directions in a subsequent section.

Attaching the Handles

- ✓ **Remove the knurled brass retainer** from the handles, then place the handles just to the rear of the dovetail found on the bottom of the housing (see photo).



- ✓ **Slide the handles forward** onto the housing dovetail. It may take firm pressure to fully seat the handles until they come to a solid stop.
- ✓ **Attach the knurled brass retainer** to secure the handles onto the housing.
- ✓ **To reposition the handles** further forward, simply install them sliding onto the dovetail front to back. This will position the handles ~1.5 in / 3.8 cm further forward.

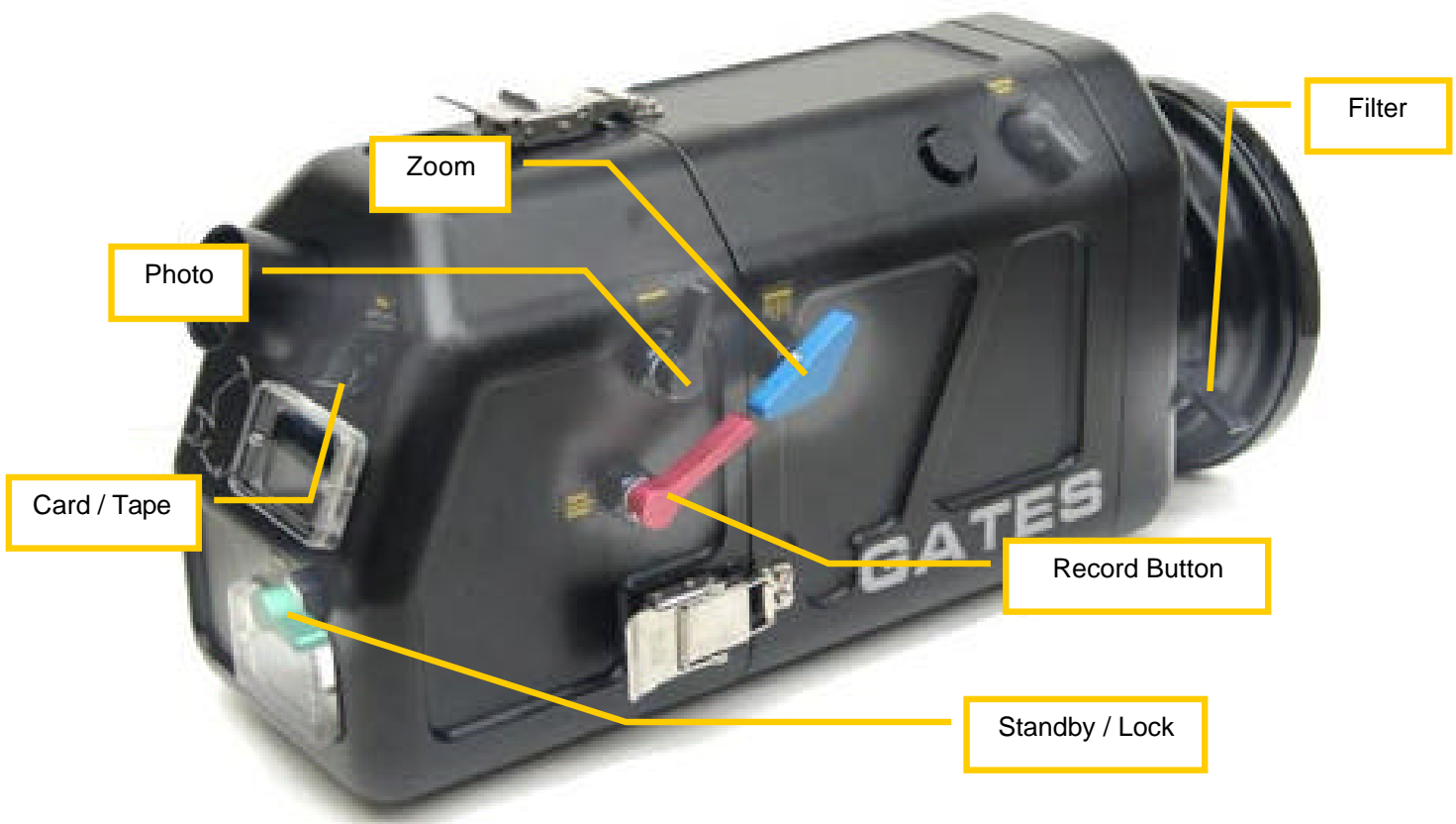
Control Operation

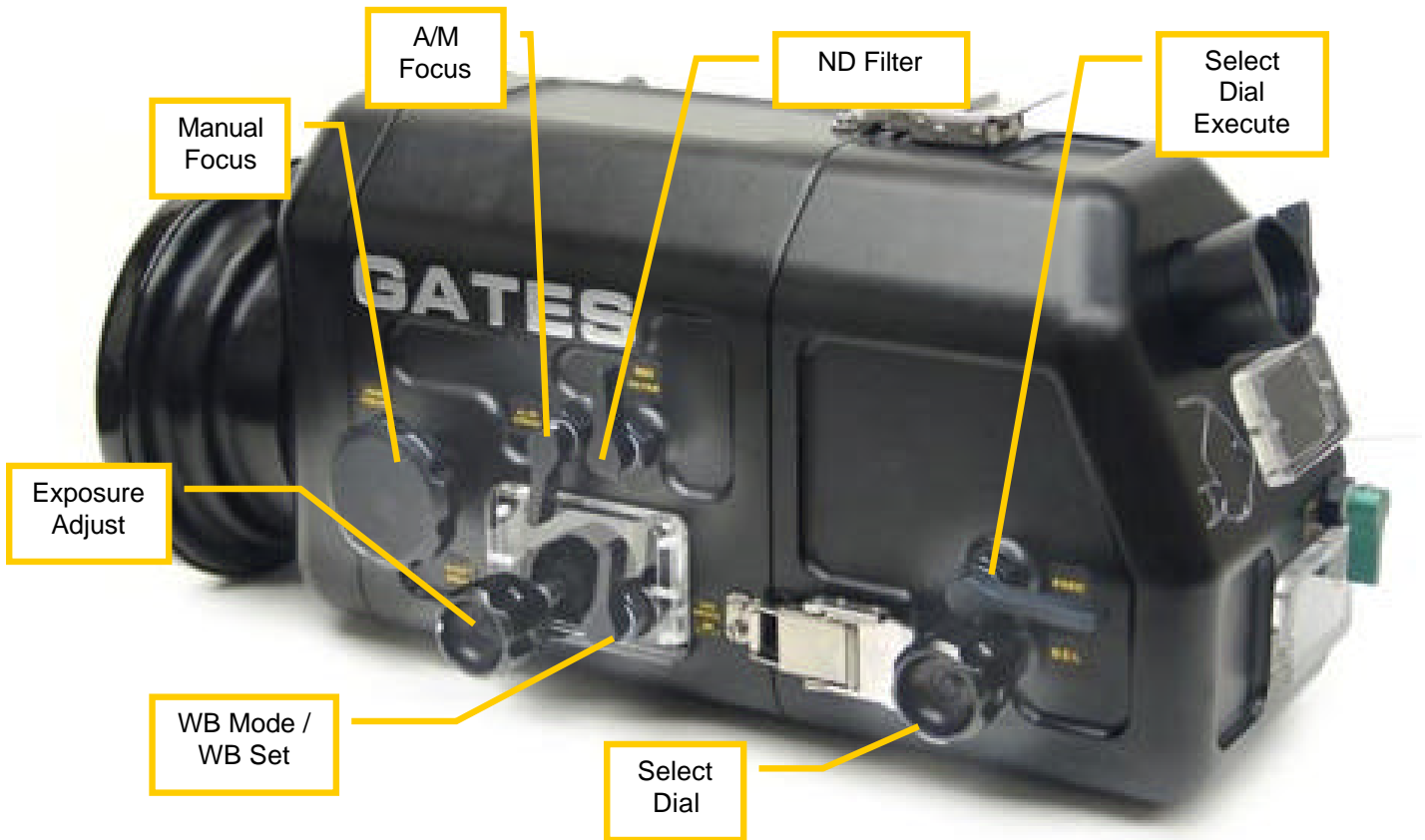
Your Gates housing utilizes 100% mechanical controls to provide you the most reliable operation possible. They are all rotational in nature: that is, there are no push buttons that can become sticky or depress under pressure. There are no batteries to change and little maintenance to perform (see 'Housing 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 you'll find operating them requires similar skill as the actual camera controls.

To help acquaint you with the housing controls, Gates recommends reviewing each control individually, how it actuates the corresponding camera control, and actually 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.





Power (Standby/Lock)

This control is easily identified by the **green** color. It has two positions: 'Standby' (for video) and 'Lock' (to shut off the camera). These positions are exactly like that found on the camera switch, and you will 'feel' the switch move into each position as it passes the tactile detents.

Zoom

The Zoom control is **blue** for quick identification. It operates with a simple rocker motion on the rocker trigger.

Record Button

The Record/Standby control is **red**, and operates by a short upward motion 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.

Photo

This control operates with a short forward motion on the lever trigger as you feel the photo button on the camera depress.

Card / Tape

Viewing through the window will allow you to switch and record directly to either the 'Tape' or 'Card'.

✓ **Tip:** In the 'Tape' mode, depressing the photo button will capture a still image to tape for 7 seconds in low resolution. In 'Card' mode, however, the image will be captured to the SD Card at significantly higher resolution. Refer to your GL2 / XM2 / XV2 owners manual for further details.

Filter

On the front bulkhead of the housing near the port is the filter control, which allows you to move the color correction filter in and out of position in front of the camera lens.

A/M Focus (Auto/Manual Focus)

This trigger control toggles between auto and manual focus when rotated counterclockwise to actuate the A/M Focus button on the camera. In Manual mode, the Manual Focus control may be used to affect focus of the camera. In Auto mode the camera will focus by itself. This control should be 'parked' with the trigger facing up (or the 12 o'clock position) when not in use to avoid accidental activation.

✓ **Tip:** It is common practice to allow the camera to focus on your subject, then 'flip' the camera into manual focus mode, setting the focus to a fixed distance. This prevents the camera from 'seeking' in and out to find a new focus distance as you, the camera, or your subject moves, which becomes quite distracting when viewed later.

Manual Focus

The Manual Focus control is rotated in either direction to rotate the focus ring on the camera. Note that this control will only work if the camera is set to manual focus mode (see previous control for more detail).

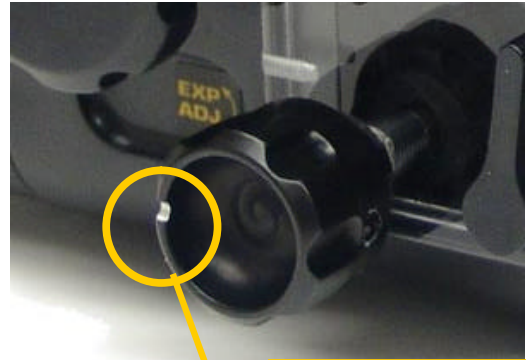
ND Filter (Neutral Density Filter)

This control also actuates the ND Filter button of the camera with a short counterclockwise motion. When not in use, this control should be 'parked' with the trigger facing up (or the 12 o'clock position) to avoid accidental activation.

Exposure Adjust

The Exposure Adjust control performs two functions:

- 1) With the small silver dot facing to the front (or the 9 o'clock position), a small rotation in either direction will actuate the exposure dial, allowing adjustment of gain, shutter speed or aperture;
- 2) To depress the exposure dial, pull the Exposure Adjust control out, rotate 180 degrees so the small silver dot is facing the rear (or the 3 o'clock position), then release the control. Perform this operation in reverse to return to adjusting the exposure you just selected.



Exposure Adjust control. Note silver dot to indicate position.

You can view this control in operation through the window on the side.

Select Dial

The Select Dial control, located toward the rear of the housing on the left side, actuates the select dial on the camera with small rotations of the knob in either direction.

Select Dial Execute

To depress the select dial on the camera, rotate the Execute control clockwise just slightly to select the proper mode.

White Balance Mode & White Balance Set

This control also performs two functions. A small rotation in the clockwise direction will depress the white balance mode button on the camera, allowing you to toggle through the various white balance selections.

To set the white balance, select the appropriate setting, then rotate the control slightly counterclockwise. This will depress the white balance set button on the camera.

Changing Ports

Gates offers several ports for your GL2 / XM2 /XV2 housing, which are attached with a bayonet-style mount. Port changes are easy and straightforward:

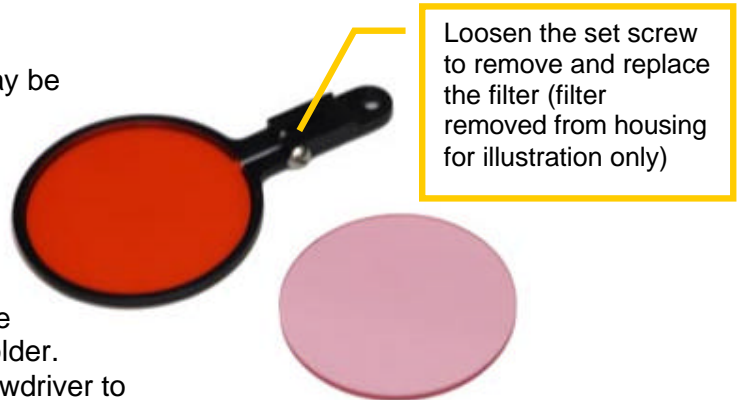
- ✓ Before installing the next port, perform an inspection and lubrication of the sealing o-ring. See "O-ring Care and Maintenance" in this Use and Care Guide for specific details.
- ✓ For the Gates **Super Wide Angle Port (SWP35)** or **Wide Angle Port (WP35)**, you must insert the port with the top approximately 15 degrees counterclockwise when viewing from the front. You will note the locations on these ports where the bayonet tabs will mate. Press the port onto the housing until it is flush with the front bulkhead. Then turn the port 15 degrees clockwise and align it with the top of the housing, where it will stop and turn no further.
- ✓ If you have the Gates **Flat Port (FP35)** or **Standard Port (SP35)** the port is inserted with the small 'flat spots' on the port aligned top and bottom of the housing to mate with the bayonet tab 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 either direction so the silver dot on the port is aligned with the silver dot on the top of the housing.
- ✓ If you have the Gates **Wide Angle Port (model GP35A)** you must install the provided lens element that threads directly onto the GL2 / XM2 /XV2 camera. For all other ports do not use this lens element.

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

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 set screw at the base of the filter holder. To remove, use a stub length blade screwdriver to loosen this screw and remove the filter.
- ✓ **Installation.** Place the filter into the holder against the small 'step' on the filter holder. Tighten the set screw firmly until the filter is held snugly in place.
- ✓ **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.



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.
- ✓ **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.

⚡ **Caution:** Do not submerge port models GP25 or GP35 wide angle ports in water when separated from the housing! These ports are not sealed from the backside and damage will result if submerged.

- ✓ **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.

Diopters

Diopters may be used with the GL2 / XM2 /XV2 housing and the FP35 Flat Port for close up/macro video. There is 1.1 in / 28 cm of space between the camera and port to allow a diopter or several diopters stacked on the camera.

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



External Monitor

This section covers mounting of the EM253 monitor to the GL2 / XM2 / XV2 housing and connection to the Canon camera. Note that the EM253 has no controls – It will power up automatically when a video signal is present and also senses a PAL or NTSC signal automatically and display a proper image regardless of video format.

Camera Connection and Setup

- ✓ **Connect to the Canon Camera** by plugging in the video cable located inside the housing. This can be done just prior to inserting the camera into the housing. The video cable will plug into the yellow video RCA-style jack near the front of the camera (see photo). Plug it in securely.

You can verify operation at this time by plugging in the EM253 (see below) and turning on the camera. Note – your Canon camera must be set to display external video, as well as camera information. These settings are made from within the menu of the camera. Refer to your Canon manual for more details.



- ✓ **Attach the monitor bracket** to the top of the handles. The spacers included with your monitor must be used between the handle and the bracket as shown in the photo. Tighten the bolts securely with the L-hex wrench supplied with your GL2 / XM2 / XV2 housing.

- ✓ **Attach the EM253 Monitor** to the top of the bracket. First remove the wing nut and bolt from the monitor swivel base, and then mate the male/female swivel together far enough to re-insert the bolt. Tighten the wing nut until firm and EM253 moves, but with some resistance.



- ✓ **Plug in the monitor cable** to the GL2 / XM2 / XV2 housing bulkhead connector. Mate the cable until fully seated into the bulkhead connector.

Note: If you are not using the EM253, do not plug the bulkhead wiring into the camera.



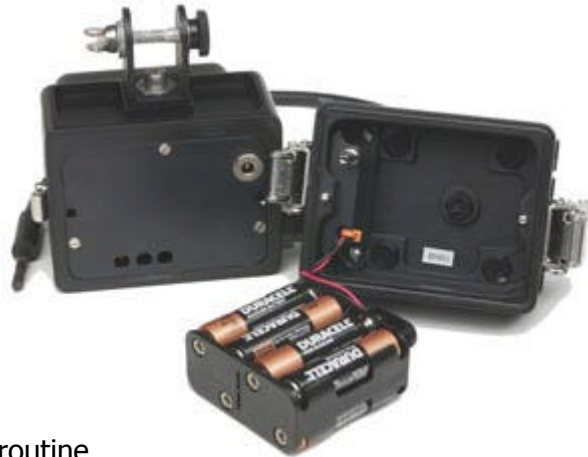
Plug in the EM253 cable to the bulkhead connector. If necessary, use water or silicone lubricant for easier mating of the connectors.

- ✓ **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.

Batteries

The EM253 uses 8 AA cells for power. They can be Alkaline or NiMH/NiCad rechargeable. The monitor will operate for ~14 hours on a fresh set of Alkaline cells, and ~10 hours on fully charged NiMH/NiCad cells depending on the capacity.

To change the cells, release the latches on the either side of the monitor and separate the two halves. You will see the battery pack in the front half of the housing.



When closing the EM253 housing, perform a routine inspection of the o-ring for any foreign material or damage. Replace if necessary and clean the o-ring groove before installing the new o-ring.

⚡ **Caution:** Ensure the battery pack wire connection is tucked into the monitor housing prior to closing. Failure to do so could cause the wire to become trapped in the main seal and cause flooding.

⚡ **Caution:** Verify the batteries are installed in the holder in the proper direction. Reversed cells may leak and cause damage to the EM253.

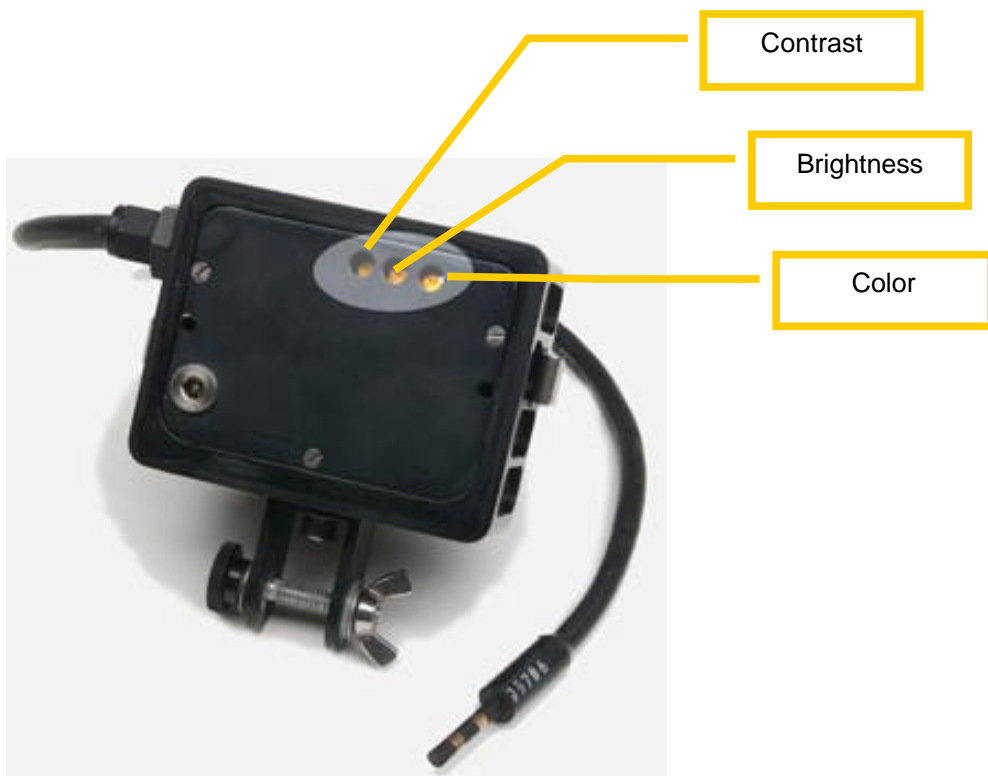
Monitor Adjustment

The EM253 has three adjustments for brightness, color and contrast. These adjustments can be found on the inside rear half of the housing (see photo).

While the monitor is pre-adjusted at the factory, Gates recommends the monitor be further adjusted to match the camera being used. This will ensure a consistent match between the monitor and the image actually being recorded.

Matching the camera and monitor should be done in a darkened area to allow good viewing of both the monitor and the camera electronic viewfinder (EVF). Do not use the LCD – it is not as accurate or sharp as the EVF.

With the camera on and the monitor plugged in, compare the image on the EVF to the monitor. Separate the monitor halves, make a small adjustment to the brightness, contrast or color control, then mate the halves again and view the results. (It is not necessary to secure the latches. Simply mating the halves should produce an image). Fine tune your adjustments until you are satisfied that the image on the monitor accurately reflects that being seen in the EVF.





Lighting Systems

Gates offers a variety of fully integrated lighting systems to suit your needs. If you purchased video lights please refer to the "Lighting Systems" pages of this document for instructions on securing the light heads and batteries to the housing. You can also find this document at www.GatesHousings.com.

For proper operation of the light system, please refer to the manufacturers instructions that came with the light product.

Customer Support

If you have any questions or require further assistance with your Gates 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