

FX6 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 FX6

Congratulations on owning a new Gates product: the FX6 housing. You've selected a product that will provide years of value and reliable service.

Please read through this entire guide to learn about FX6 so you can get the most out of this imaging tool. In this section, we'll introduce you to the features of FX6 so you can get started.

Features

FX6 has several key features:

- ✓ Integrated Monitor. FX6 does not require a separate monitor housing.
- ✓ Compact, Lightweight Design. FX6 is one of Gates' lightest housings, making it easy to travel anywhere.
- ✓ Full control access. FX6 allows access to the full camera menu.
- ✓ Lens flexibility. FX6 can accommodate a huge variety of DSLR, mirrorless, and cinema lenses.
- ✓ New Lens Gearing system. The new gearing system provides a more rigid, lightweight, and easy to install system using only 1 tool and featuring a quick release clamp.

Warranty Disclaimer

FX6 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 FX6. 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.

We warrant FX6 as an image acquisition tool for a period of 2 years. The Seal Check unit is warranted for 1 year. Optics (Dome and Flat ports) are warranted for a period of 1 year or 100 hours salt water contact, whichever comes first.

Gates does not warrant optical performance or image quality.

If you have any questions about the setup, use and care of FX6, contact Gates directly.

Required Equipment

The following camera items are required to operate the FX6 underwater system and are not included with the housing.

- ✓ **Camera**
 - *Sony FX6 model ILME-FX6V*
- ✓ **Compatible Media**
 - *Use Sony approved media cards only*
- ✓ **Monitor**
 - *FX6 included monitor*
- ✓ **Battery**
 - *Sony BP-U35*
 - *Sony BP-U60*
 - *Sony BP-U70*
- **Max Lens Envelope:**
 - *SPR60 Port Rings*
 - **Max lens overall OD: 5.6 in / 142mm**
 - **Max lens gear OD: 4.25 in / 108 mm / 136 Teeth**
 - **Min lens gear OD: 3.1 in / 79 mm / 100 Teeth**
 - *SPR80 Port Rings (requires optional SPR60 to SPR80 expander)*
 - **Max lens overall OD: 7.5 in / 190**

Unpacking FX6

After removing FX6 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.

✓ Included Items

- FX6 Housing
- Seal Check Lite system
- Tool Kit / Spares Kit
- Standard Lens Gear Drive Kit

✓ Optional Items, Required for Operation

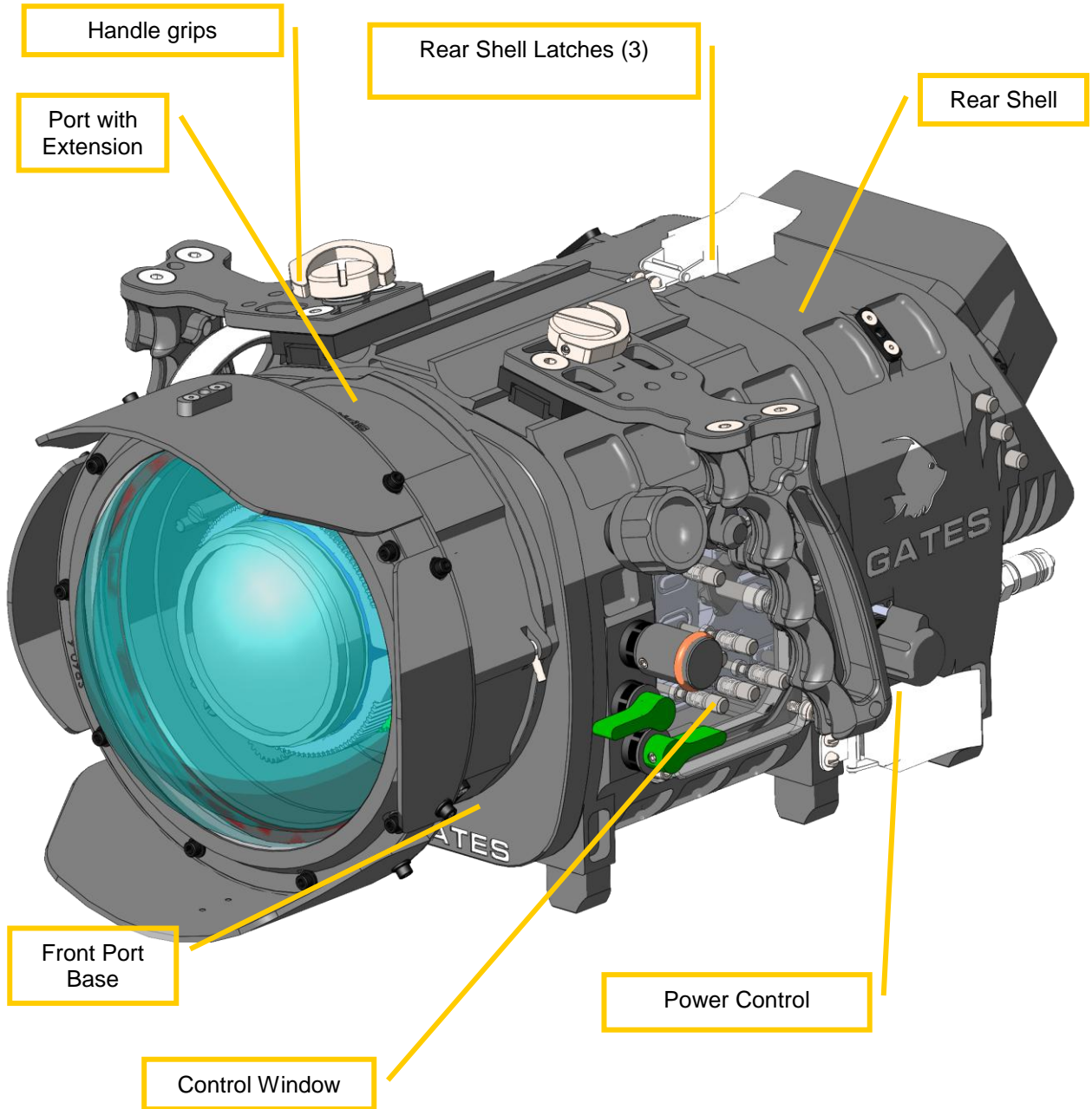
- Flex gears for lenses without gearing
- Stackable Port Rings (SPR) for your lens(es) of choice
- Port(s) of choice (Dome or Flat in either glass or acrylic material) and shade

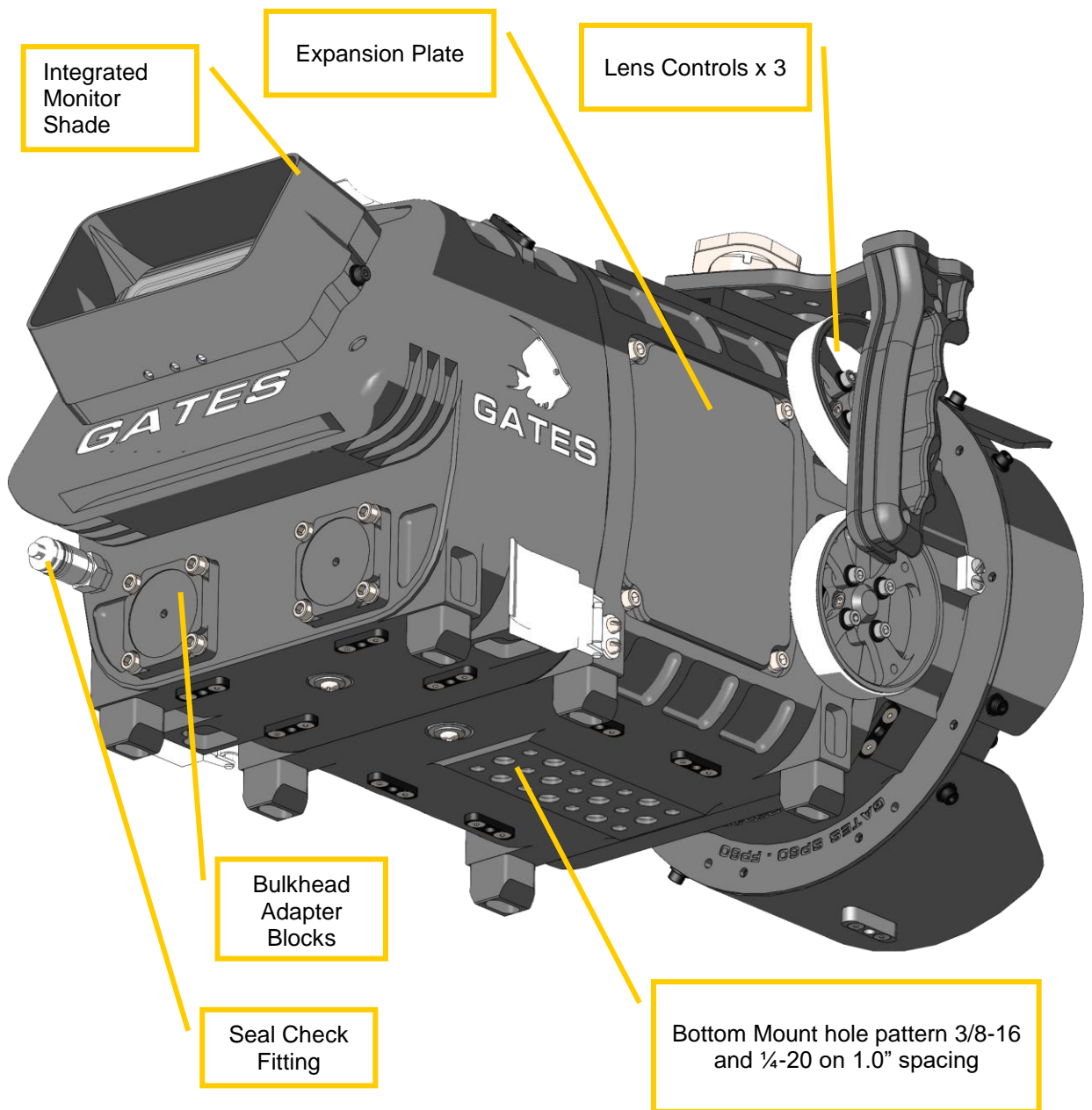
✓ Optional Items

- Trim Floats
- Extended Length Lens Gear Drive Components
- Trim Weight Kit
- Surface Command / Control Cables
- SDI Surface Feed Cable
- Water alarm
- Carry Handle
- Body Cap

2.FX6 Housing Overview

- ▶ FX6 has many features with which you will become familiar.





3. Cautions

Please read before you continue

- ✓ **SEAL CHECK VACUUM.** In a later part of this manual, Seal Check will be introduced for verifying seal integrity before diving.

The vacuum draw on FX6 should be about 100 millibars. This is enough to verify seal integrity.

- ✓ **CAMERA TRANSPORT.** Avoid transporting the housing with a Camera inside. Only transport a securely mounted camera inside FX6 IF the system is in your possession and without abusive handling. DO NOT ship or place in checked airline baggage with the camera inside as rough handling can cause damage. DO NOT transport FX6 with trim weights attached. Bundle all connectors together and protect. Install the caps that originally came with the housing,
- ✓ **USER RESPONSIBILITY.** This Setup, Use and Care guide contains important detailed procedures for setup and use of FX6. 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 FX6 and may void your warranty. Contact Gates if you have questions about this manual or using FX6.
- ✓ **PACKING.** Ensure the complete system is packed well in transport cases.



4. Preparing the FX6 Camera Body

Preparation Steps

The following steps must be completed before inserting the camera into the housing:

- ✓ Change critical camera menu settings.
- ✓ Strip the camera body down and remove interfering parts.
- ✓ Install the dovetail mount plate.
- ✓ Install the monitor.

Changing Critical Camera Menu Settings

When the FX6 camera is installed into the housing the red indicator lights on the record button and rear of the camera are obscured. In order to easily determine recording status, the record indicator must be enabled for the monitor overlay in the menu.

- ✓ Long Hold the menu button to access “Full Menu”.



- ✓ Navigate to “Monitoring”.



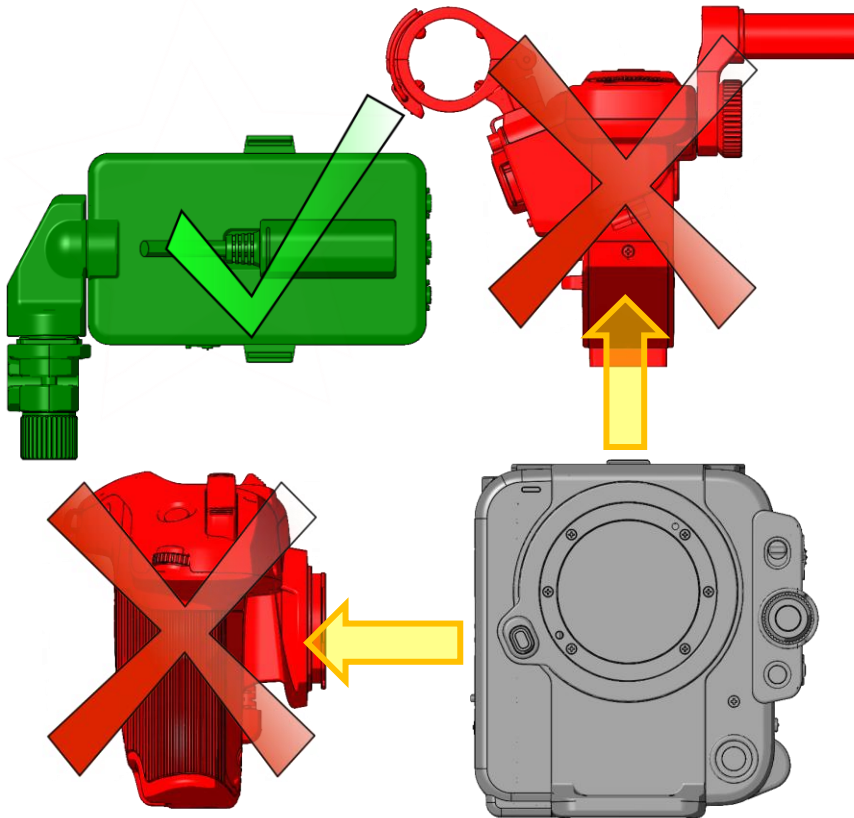
- ✓ Select “Display On/Off”.



- ✓ Select “Rec/Play Status” and enable.

Stripping the Camera Body

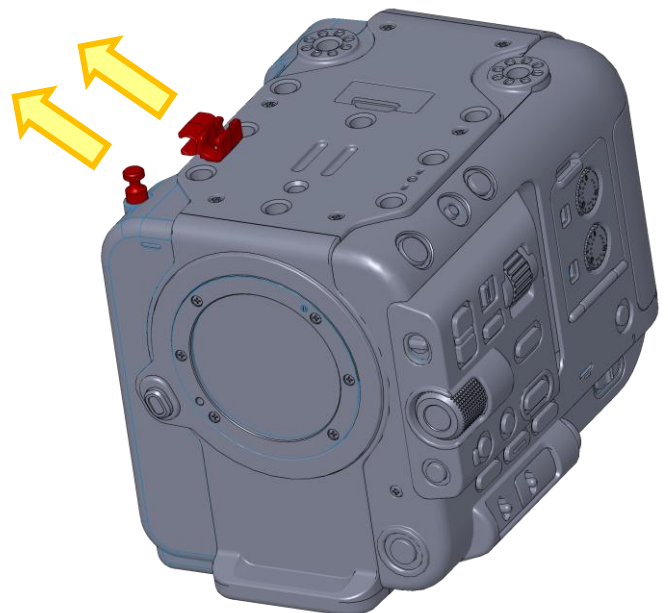
- ✓ The FX6 camera must be stripped down to the bare body and powered off prior to use in the Gates FX6 Housing.



✓ Remove side and top handles from the camera body. They will not be used in the housing and can be stowed away for future topside use. (Please note microphone input will now be unavailable!)

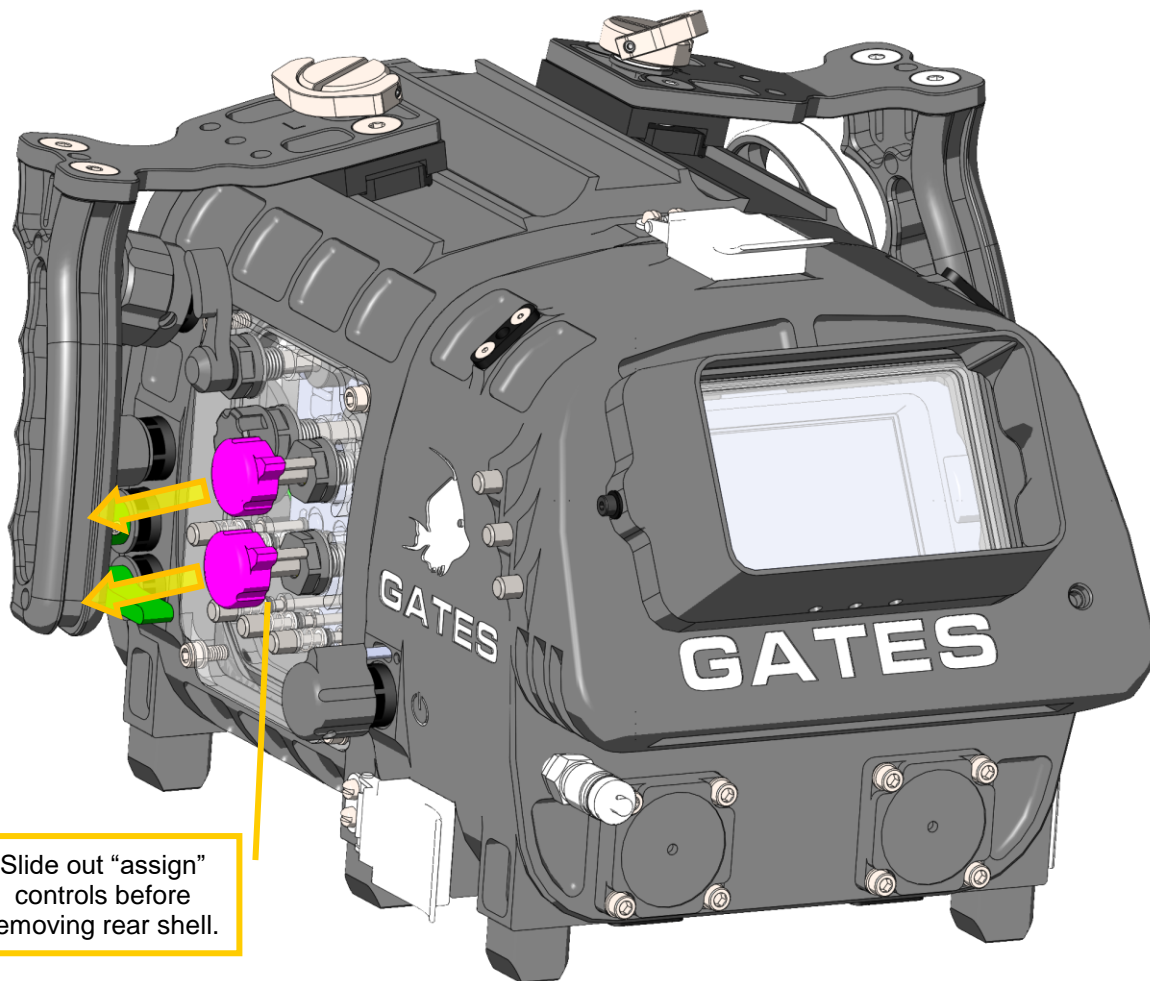
✓ Remove monitor and set aside for installation in the next step.

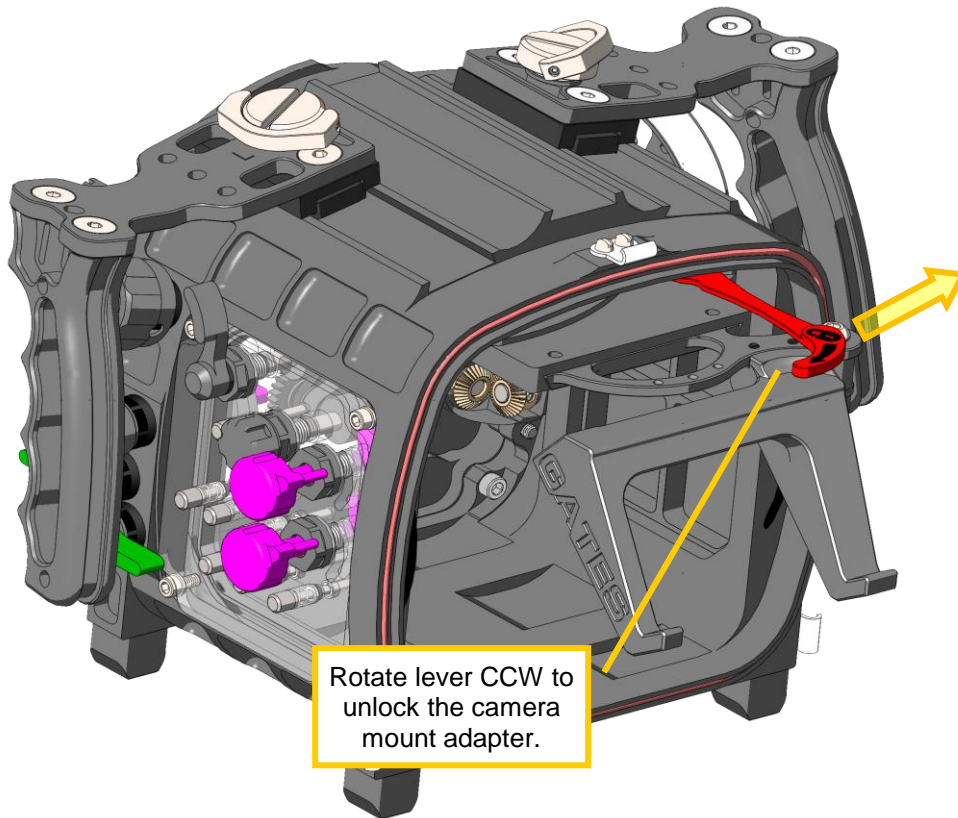
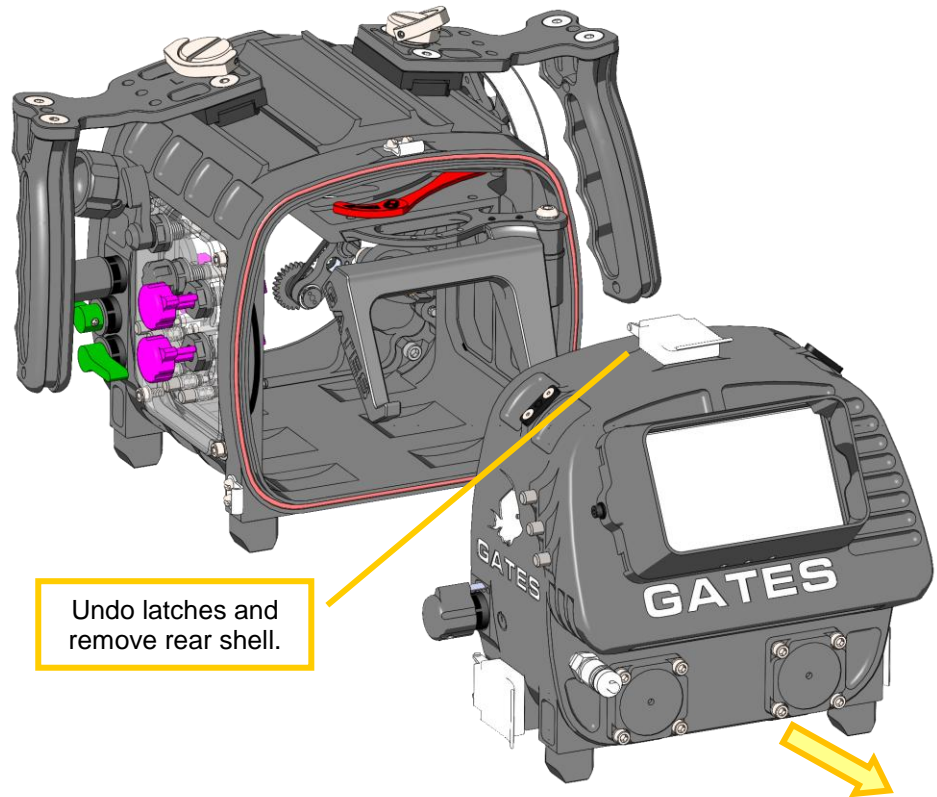
- ✓ Remove marker stud and plastic cable guide.

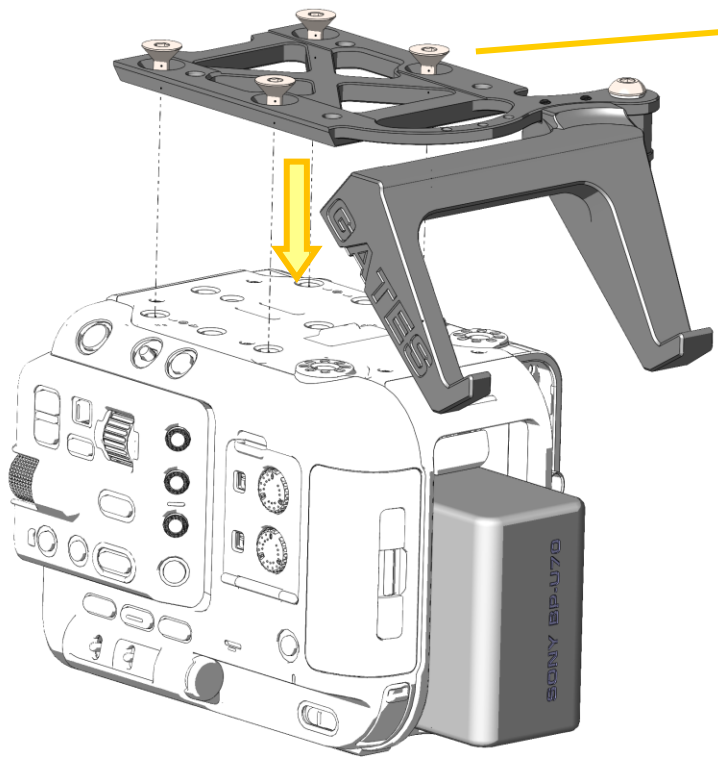


Installing the Camera Mount Adapter

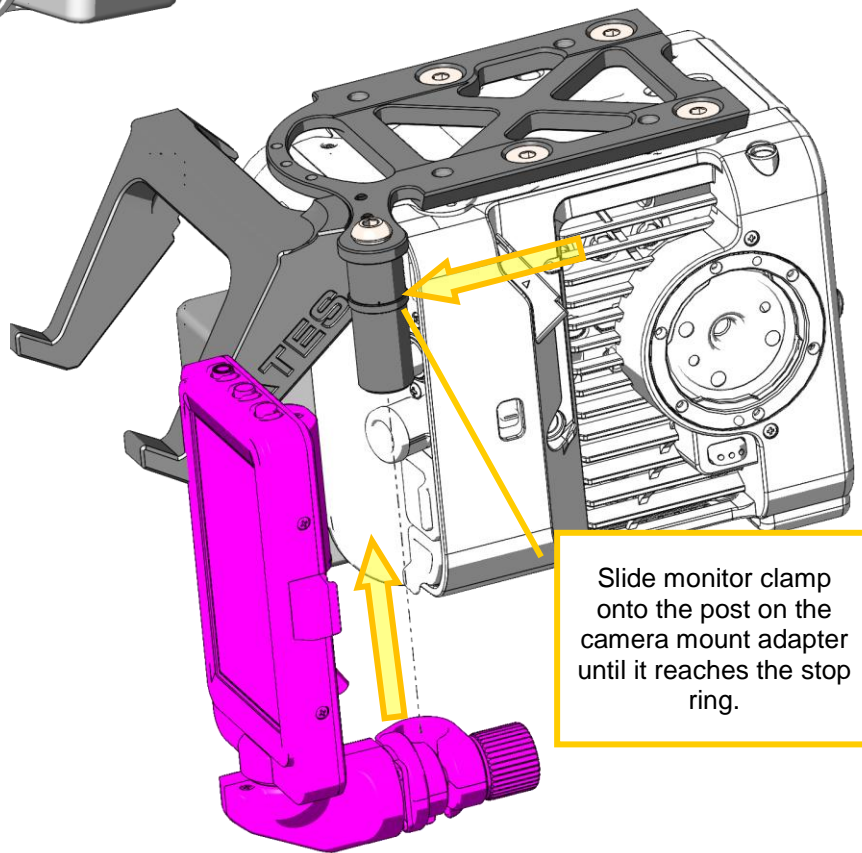
- ✓ Locate the “assign” controls at the rearmost position on the control window.
- ✓ Pull the “assign” controls out to avoid interference with the camera.
- ✓ To access the mount plate, release the 3 latches and remove the rear shell.
- ✓ Rotate the red lock lever on the mount plate counter clock wise to unlock the mount plate.
- ✓ Slide the camera mount adapter rearwards to remove it.





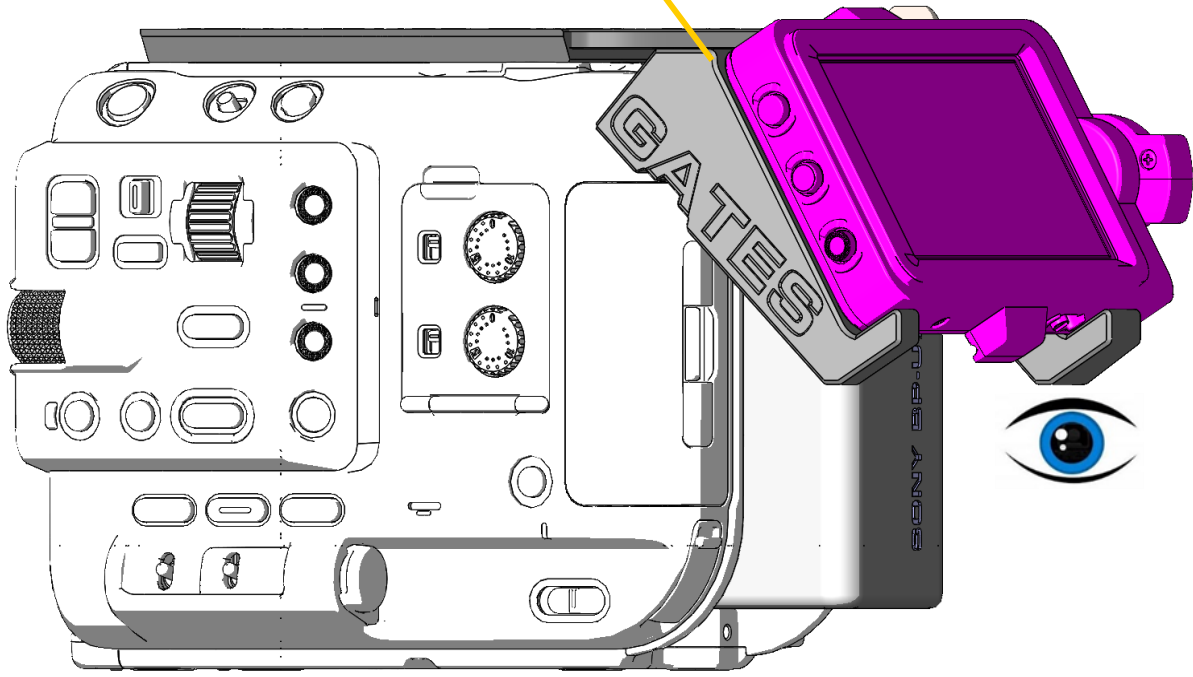


Use a 5/32" hex tool to fasten the camera mount adapter to the top of the camera body.



Slide monitor clamp onto the post on the camera mount adapter until it reaches the stop ring.

Rotate monitor until it aligns with the bracket then fully tighten the clamp.



Route the monitor cable along the right side of the camera body as shown.

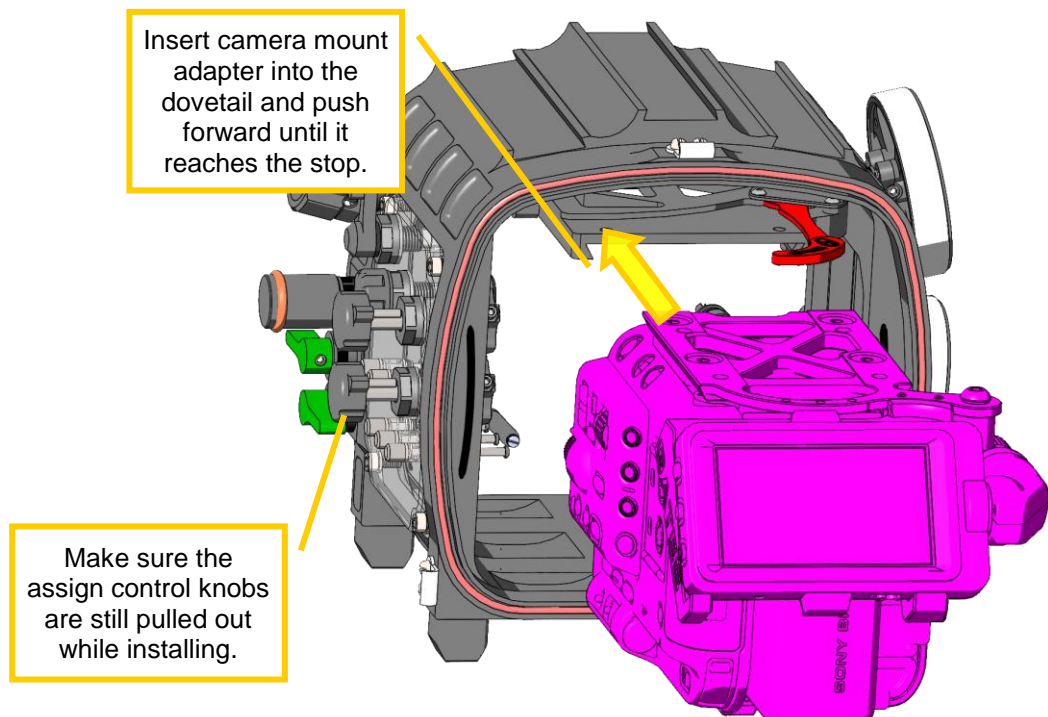
5. Installing the Camera

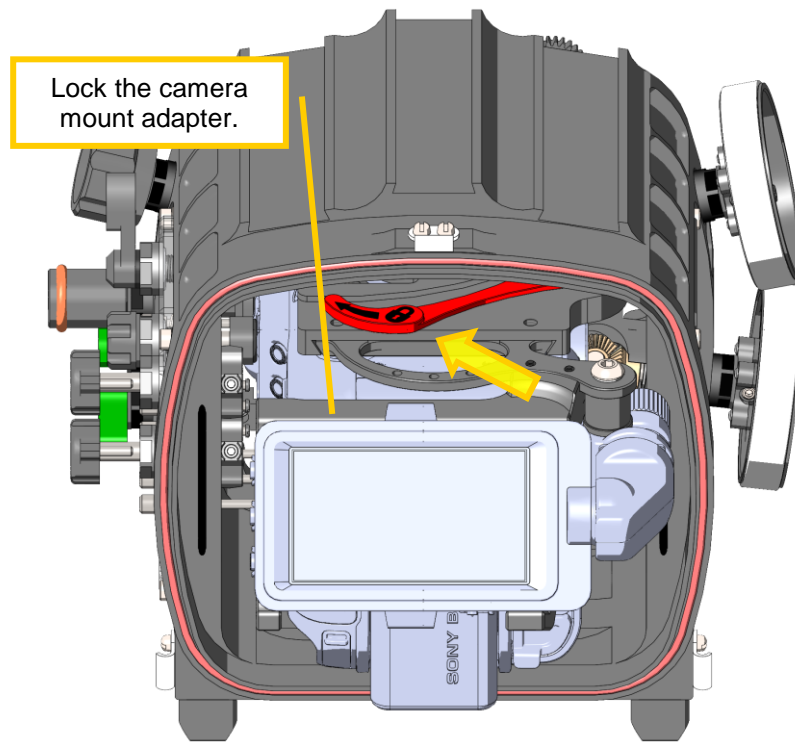
Prepare for installation

- ✓ Ports and/or Stackable Port Rings (SPR's) should be removed before the camera is installed into the housing. See section 7 for instructions on removing ports and port rings.
- ✓ Lenses should be removed to avoid interference.
- ✓ Pull out the assign controls.

Seating and Locking the Camera Assembly

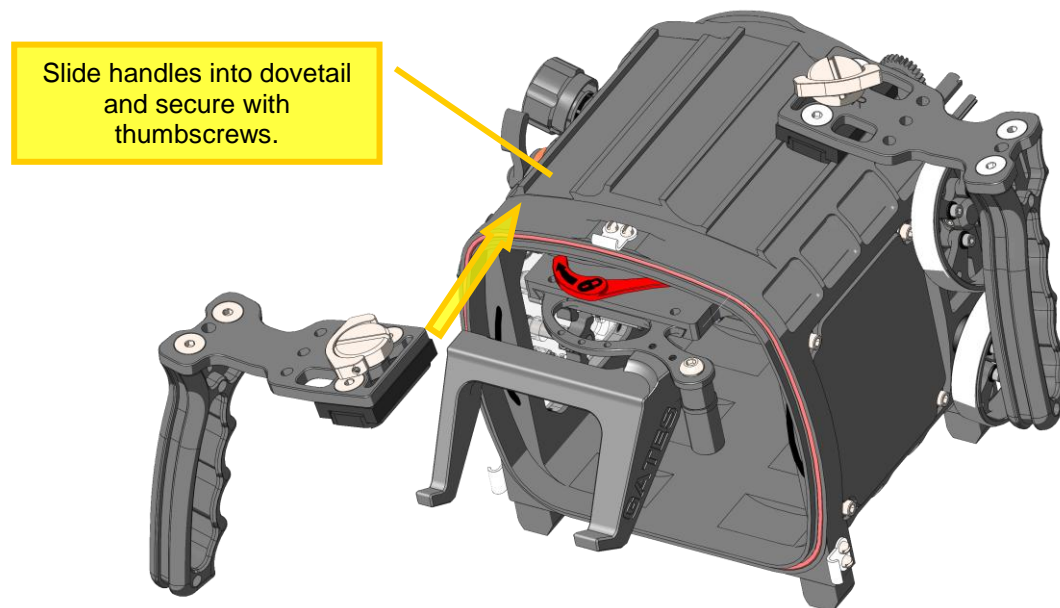
- ✓ **Insert camera mount adapter into the dovetail and push fully forward until it reaches the stop.** Examine the stop on the dovetail to make sure it contacts the end of the camera mount adapter.
- ✓ **Rotate the lock arm fully clockwise all the way forward** to lock everything into place.





Installing Handle Grips

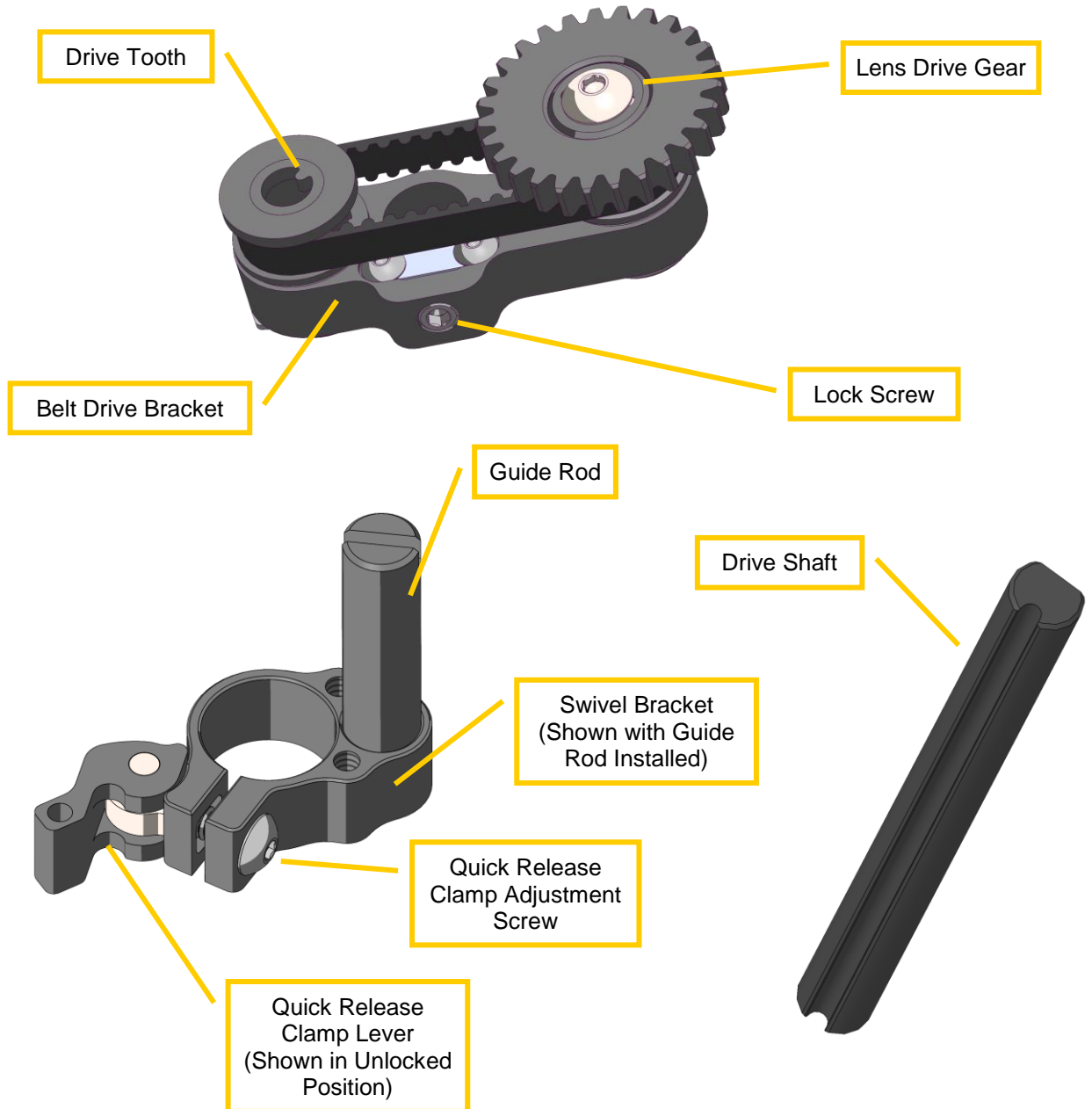
Use the thumbscrew to secure the Handle Grips to FX6. You can locate the Handle Grips in several different positions forward / aft on the housing.



6. Lens Gear Drive installation

The Gates FX6 has a newly designed lens gear drive that is able to accommodate a wide variety of Sony FE and compact prime lenses without having to purchase a specialized part for each and every lens. It was also designed so that only a 5/64" hex tool will be needed to make adjustments for different lenses.

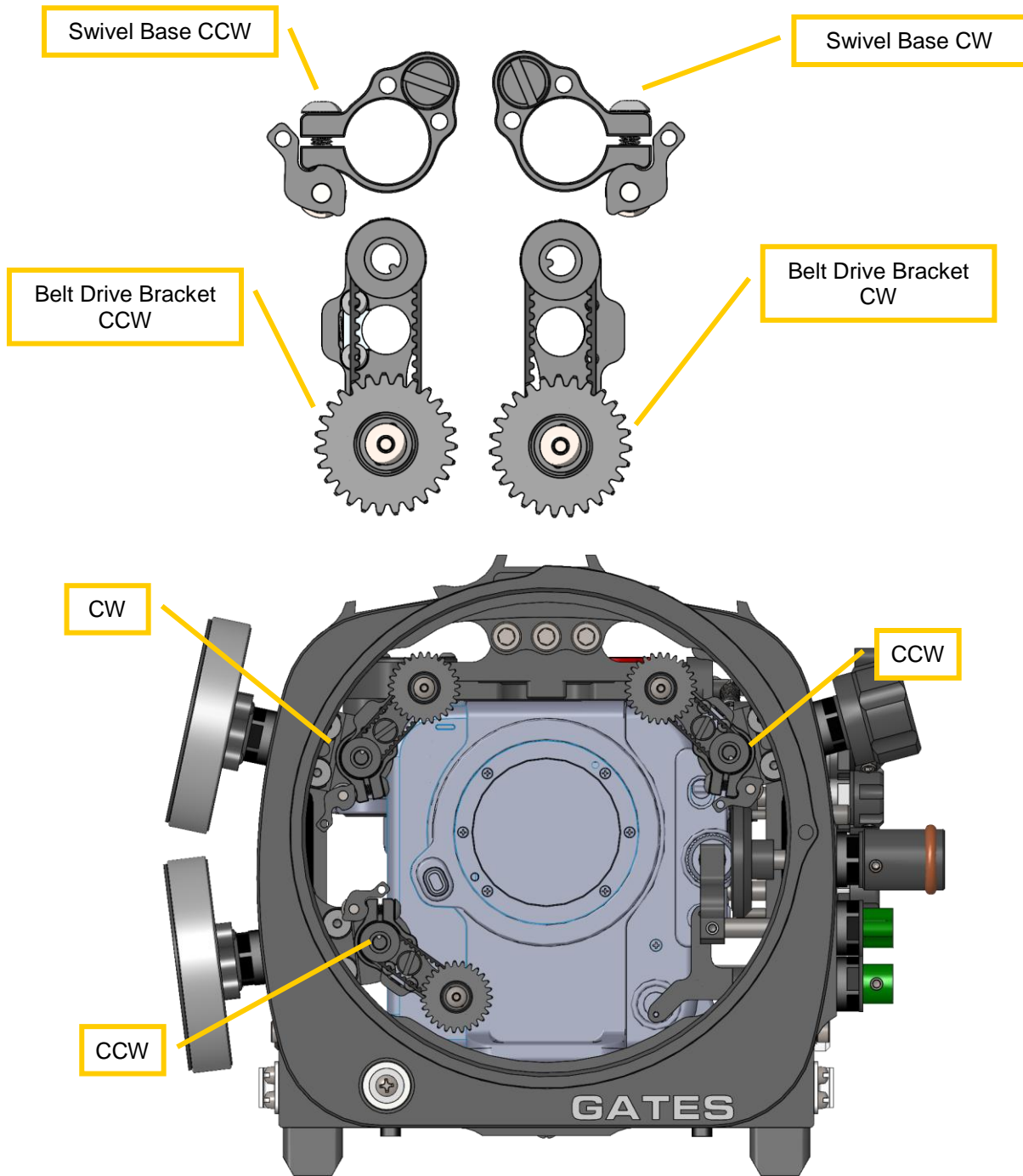
LGD Parts Identification



Left/Right Orientation ID

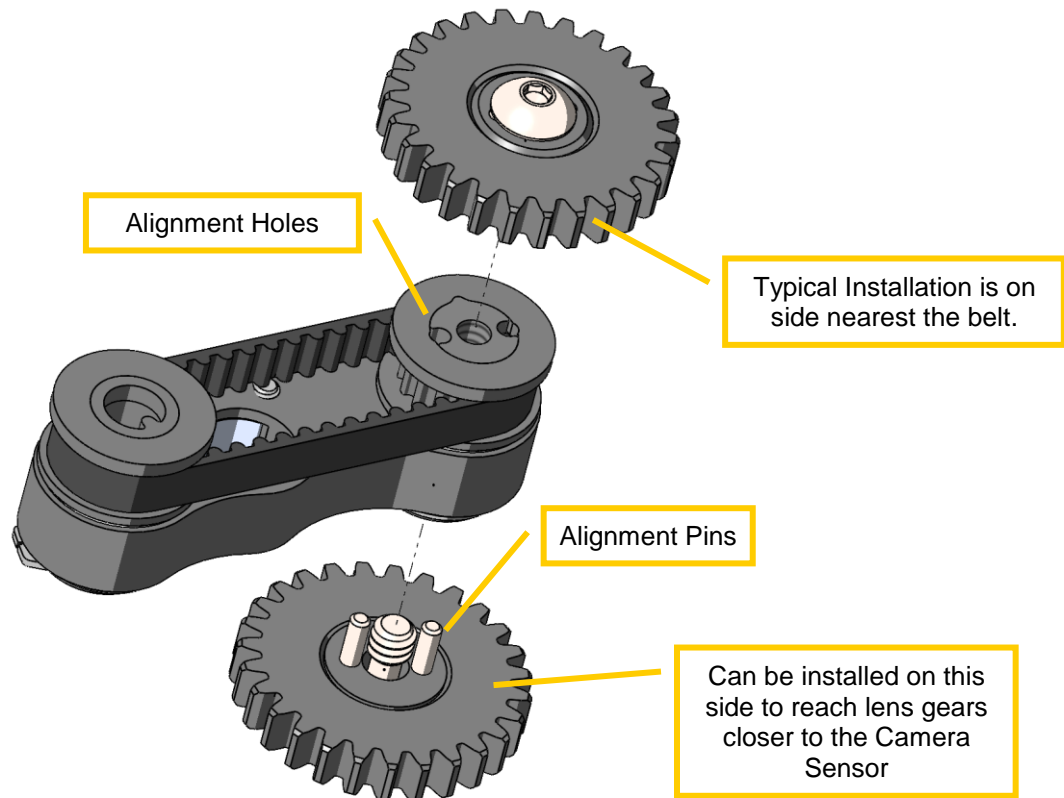
LGD Belt Drive Brackets and Swivel Brackets are made with either a clockwise or counterclockwise orientation.

In order to use all 3 LGD positions for Focus, Iris and Zoom, 2 CCW sets and 1 CW set are needed.

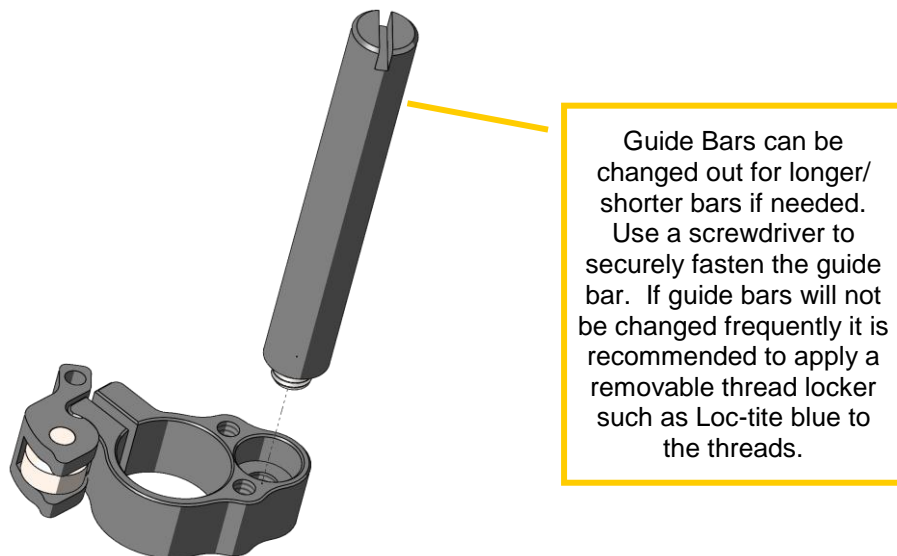


Drive Gear Assembly

The drive gear can be installed on either side of the belt drive bracket for flexibility. To install, simply guide the 2 alignment pins into the holes and tighten the screw with your 5/64" hex wrench.

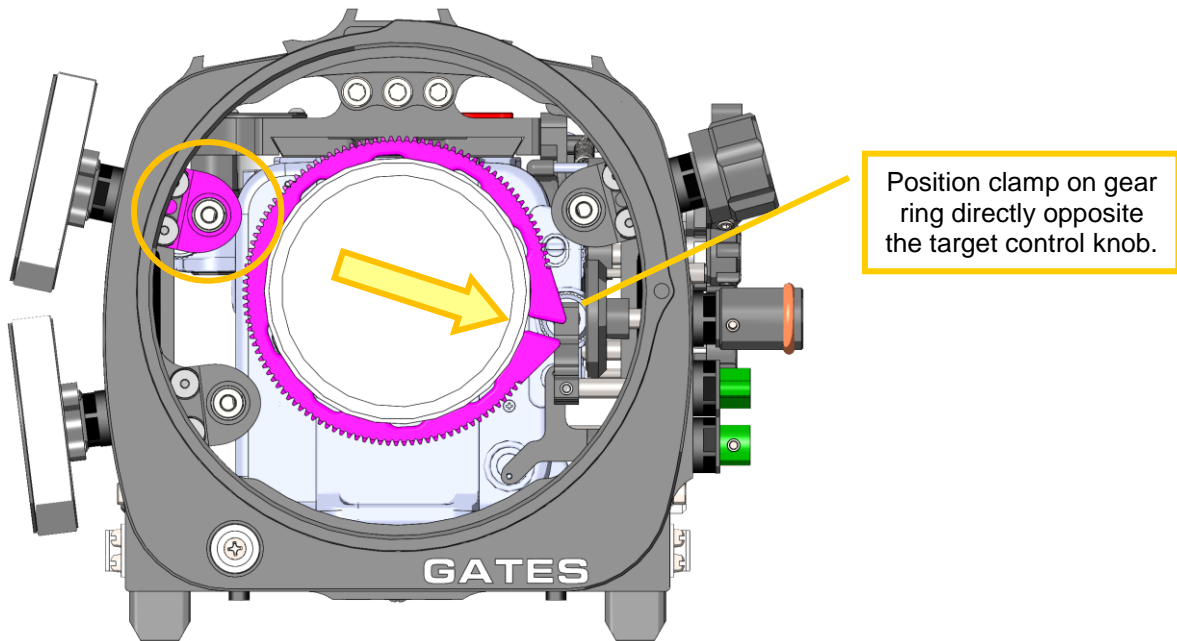


Guide Bar Installation

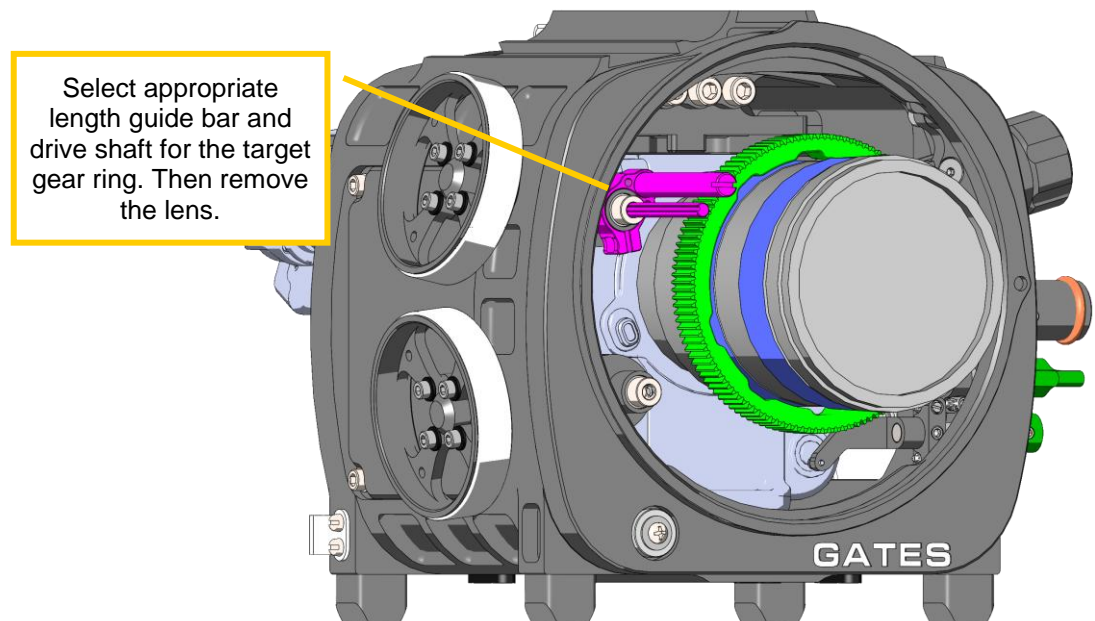


LGD Setup

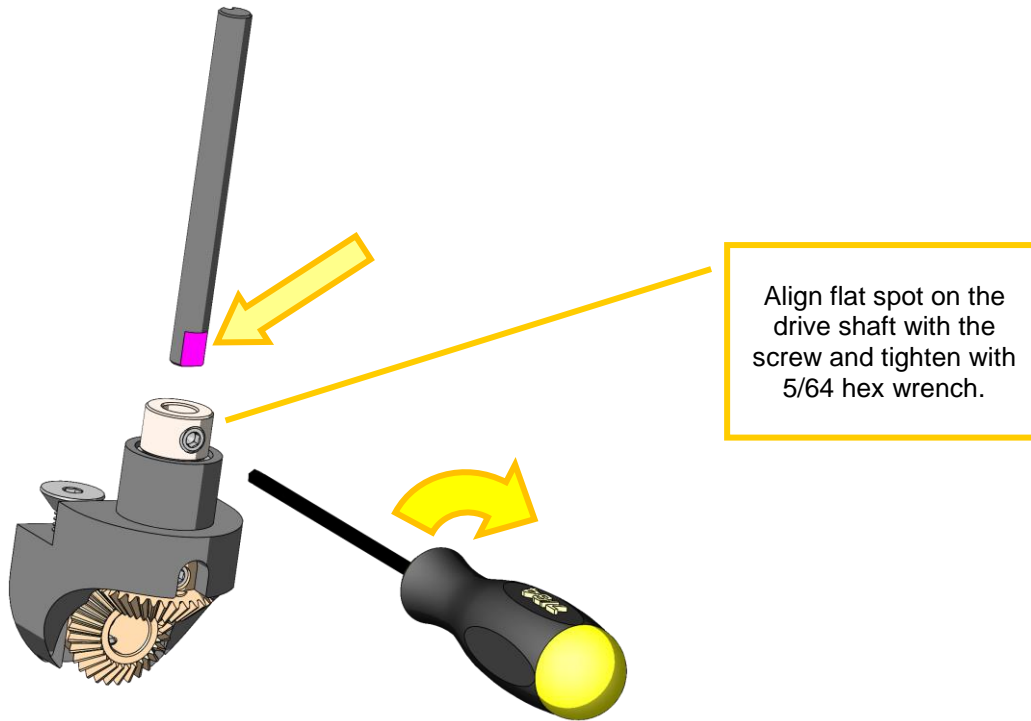
- ✓ Determine which of the 3 lens drive positions are desired to use as Focus, Iris, or Zoom. It is recommended to use the left side control as the least used control.
- ✓ Install flex gear ring onto lens if it does not already have integrated gears. If installing a flex gear ring a screw clamp, install with the clamp opposite the gear drive position you would like to use.



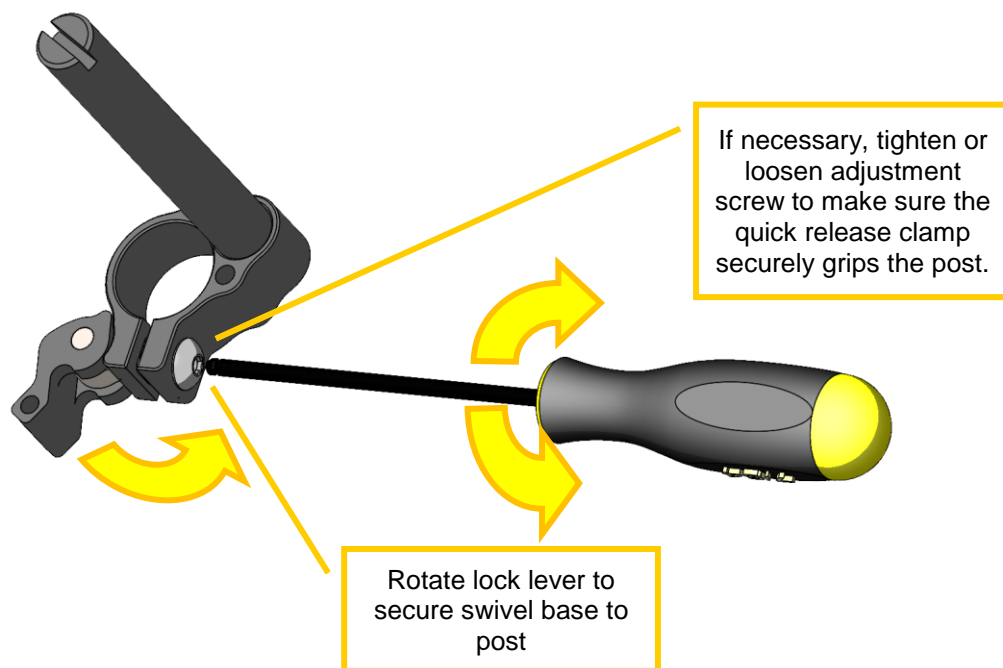
- ✓ Mount lens onto the Camera Body, then select a Drive Shaft and Guide rod that are long enough to reach the gear.



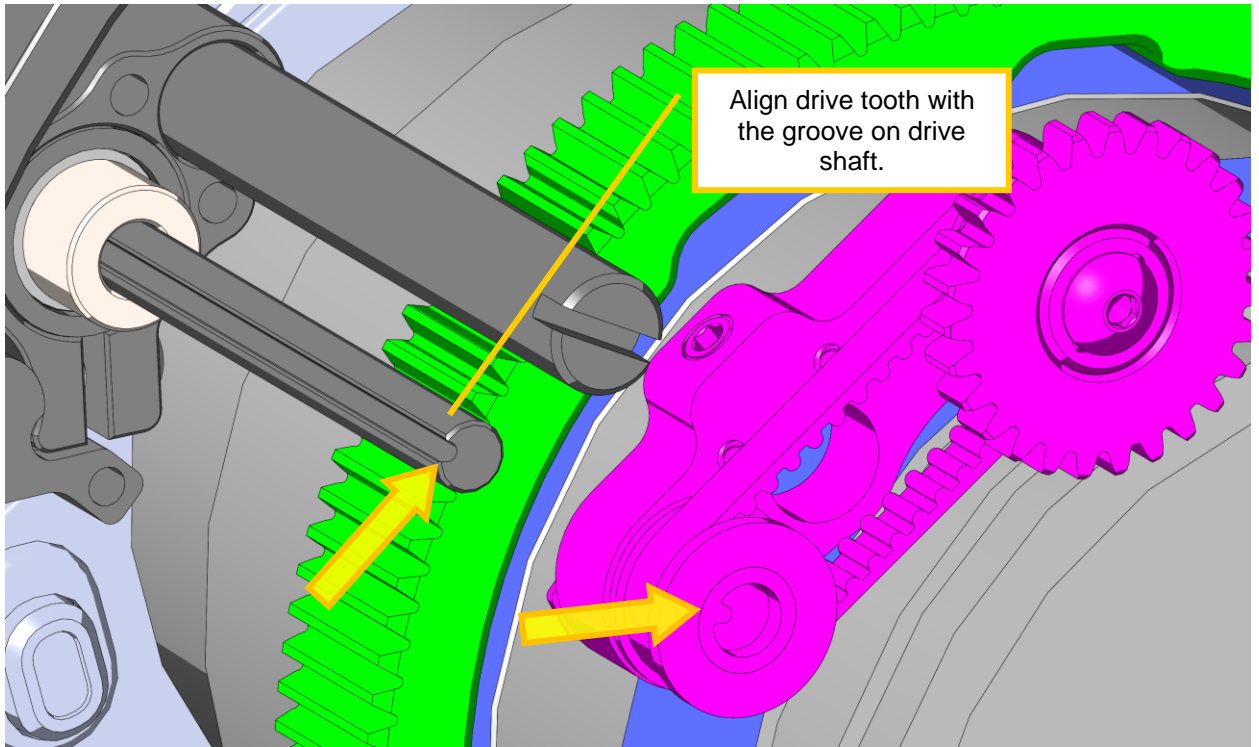
- ✓ Insert guide rod into the coupler. Align flat spot on guide rod with screw on coupler and then tighten with 5/64" hex wrench.



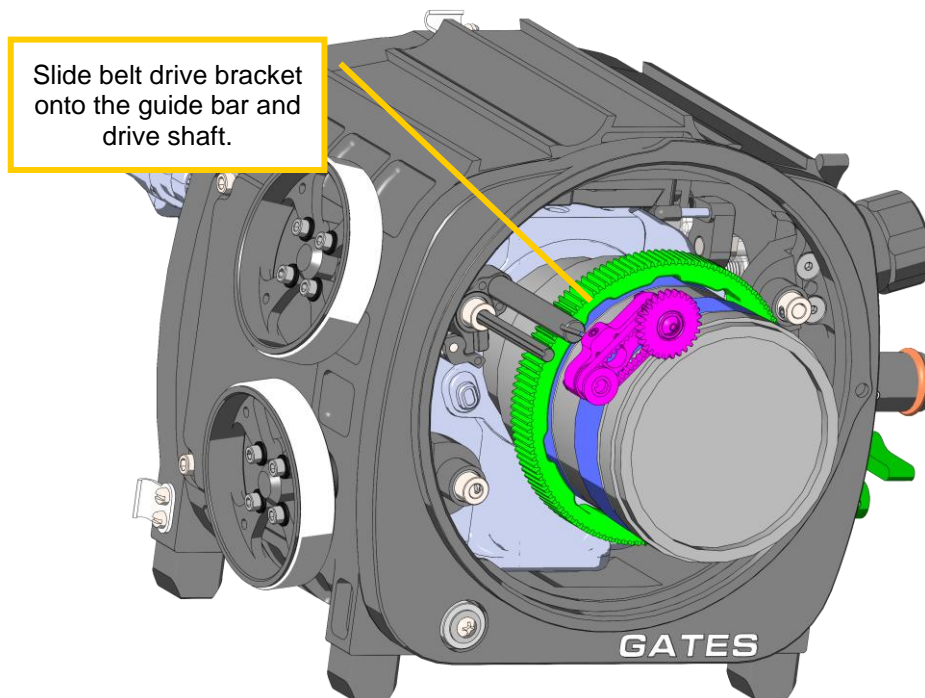
- ✓ Place LGD swivel bracket onto boss behind the coupler and then tighten the quick release clamp lever. If the clamp lever is not tight enough remove it and use 5/64" wrench to tighten the set screw by 1/8" turn increments until it stays tight.



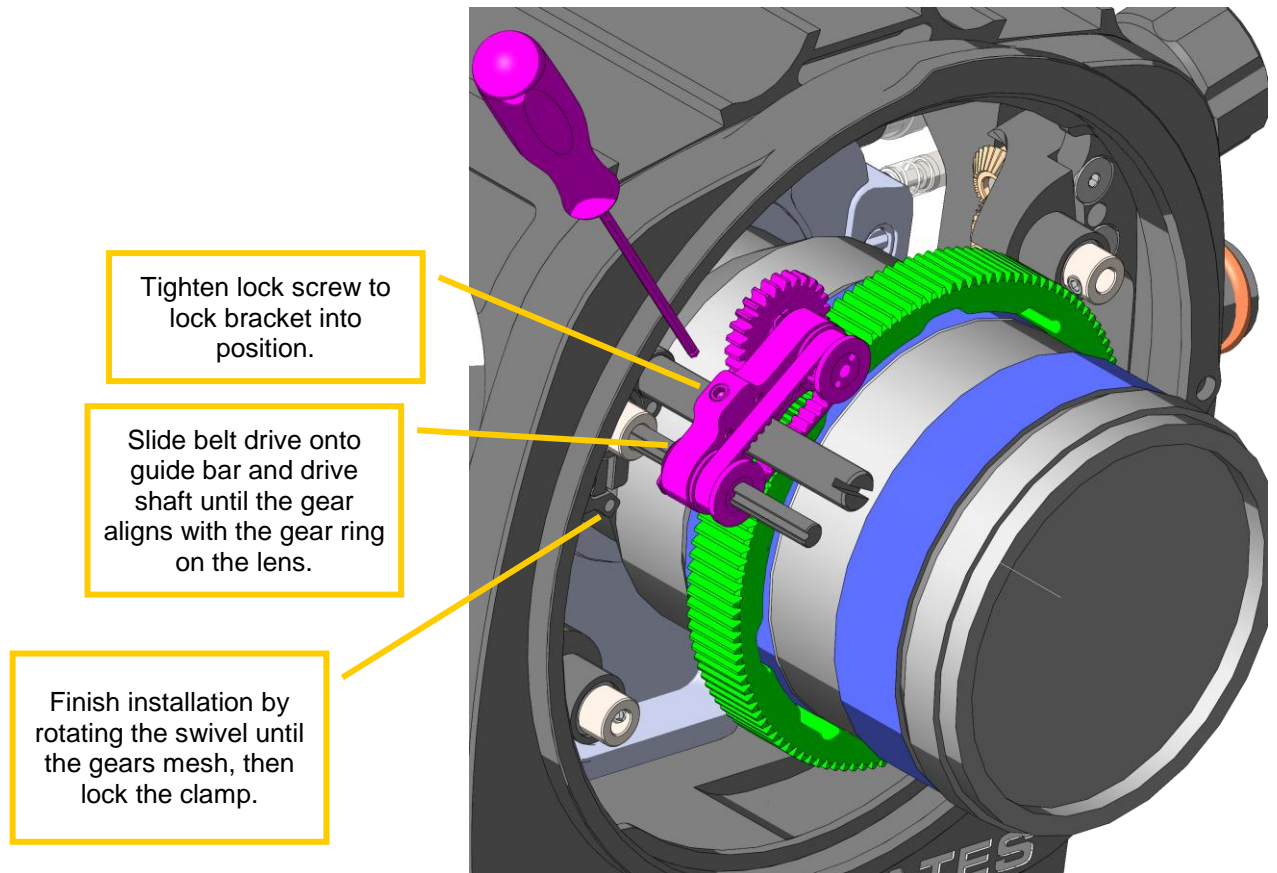
- ✓ Align Drive tooth on Gear Drive bracket with the groove on the drive shaft.



- ✓ Slide gear drive bracket on the guide rod until the gear is at a distance where it will mate with the gear on the lens.



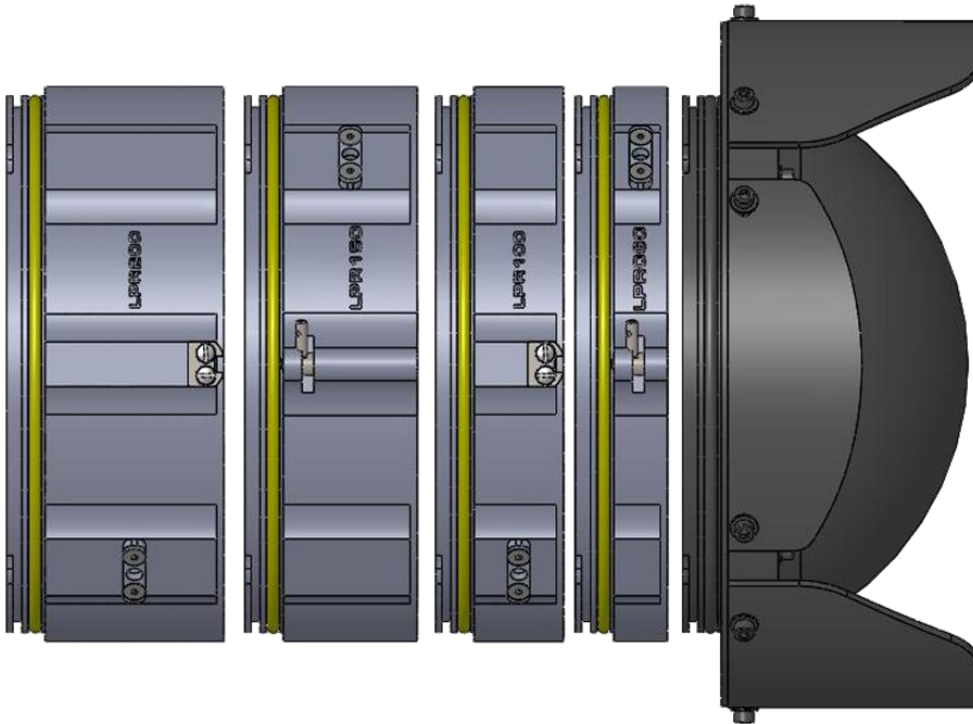
- ✓ Tighten the lock screw on gear drive bracket.
- ✓ Loosen QR clamp on swivel bracket then rotate the bracket until the teeth on the drive gear mesh with the teeth on the lens gear.



7. Ports and Stackable Port Rings (SPR's)

About Stackable Port Rings (SPR's)

Stackable Port Rings are a flexible and convenient way to support many different lenses. They can be stacked in many combinations to support virtually any lens.



Stackable Port Rings – SPR's – are a simple 1/4 turn bayonet mount system to support any lens. They lock in position for mounting or removing a port.

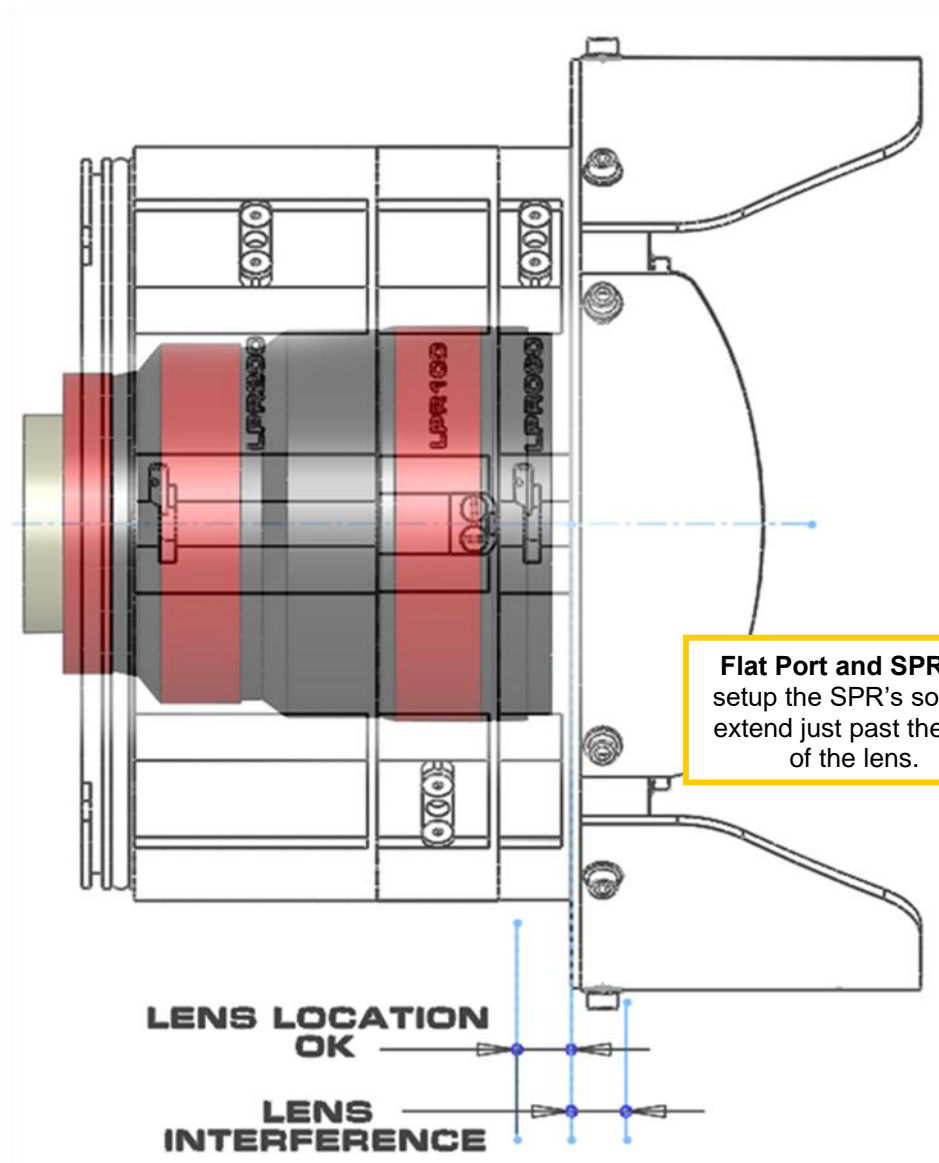
The SPR's stack for a lens can be determined in two ways:

- ✓ **Gates Lens Compatibility Matrix.** Gates has gathered extensive lens data for decades and can provide SPR configuration guidance for many lenses. This lens data is summarized in a Compatibility Matrix. It can be found on the Gates website.
- ✓ **Visual Setup and Test.** Use the following guide to setup the SPR's with a Dome Port or Flat Port, and then test in water for acceptable image quality.

Using Flat Ports with SPR's

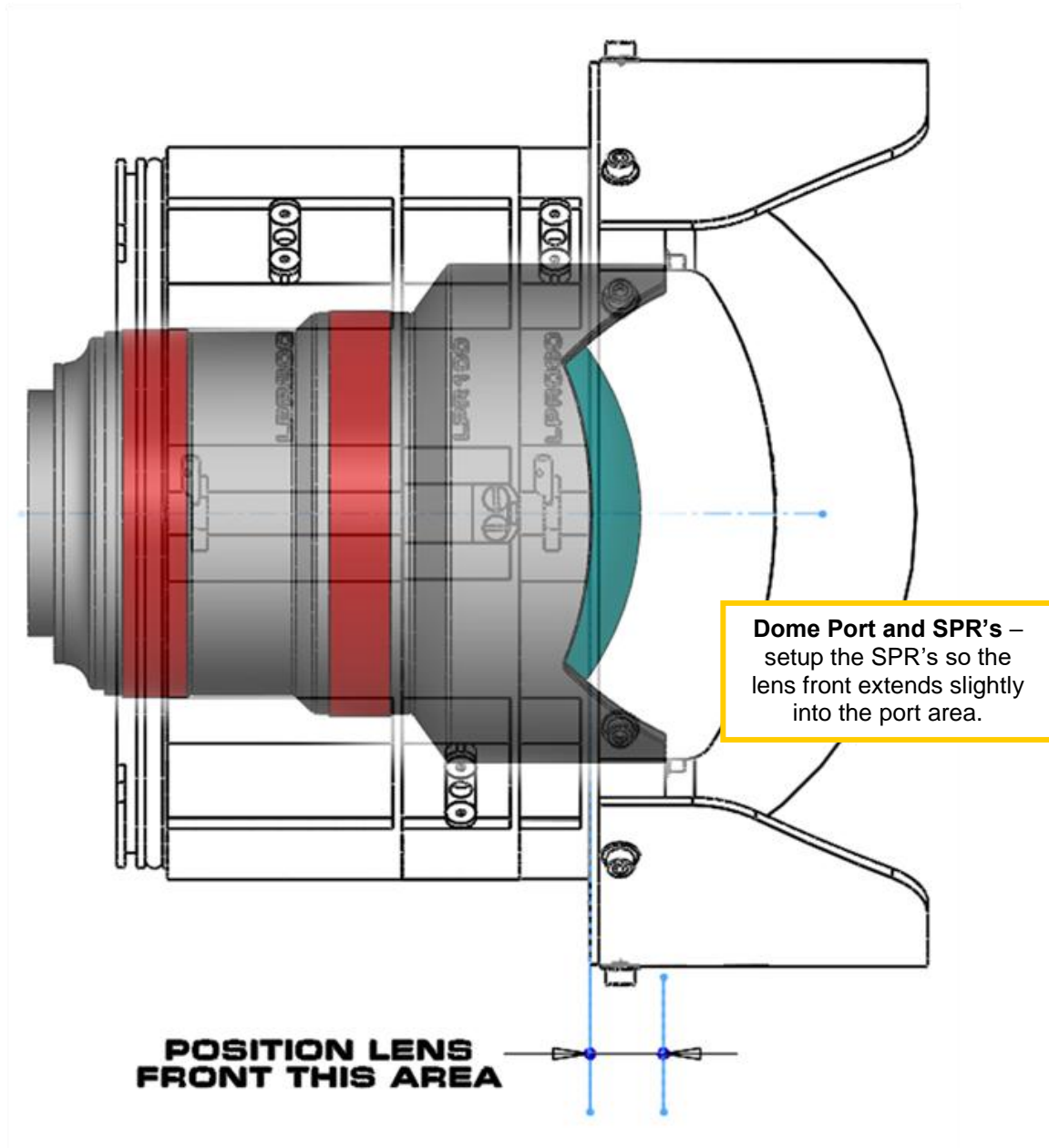
- ✓ A Flat Port is used commonly for macro lenses, and also for medium to long focal length lenses. The focal range that works best starts at approximately 20-35 mm. the SPR's to extend just past the end of the lens. Referring to the image, setup the SPR's to extend just past the end of the lens. Keep the entire SPR stack as short as possible while preventing interference with the port.

Test for vignetting and image quality. If necessary, adjust the position of the lens with respect to the port by adding or removing SPR's. Re-test and re-adjust as necessary to achieve optimum results.



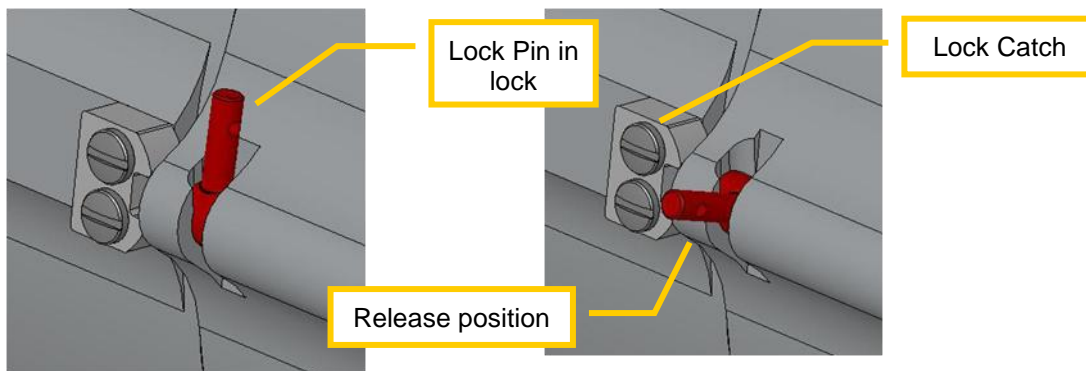
Using Dome Ports with SPR's

- ✓ A Dome Port is used commonly with wide angle and fisheye lenses, typically 8mm at the shortest to about 20-35mm. Setup the SPR's so the end of the lens – either the lens body or glass element – extends slightly into the port. Test for vignetting and image quality. If necessary adjust the position of the lens with respect to the port and re-test to achieve optimum results.
- ✓ **CAUTION!** CAREFULLY INSTALL DOME PORT AND OBSERVE POSSIBLE INTERFERENCE WITH GLASS DOME.

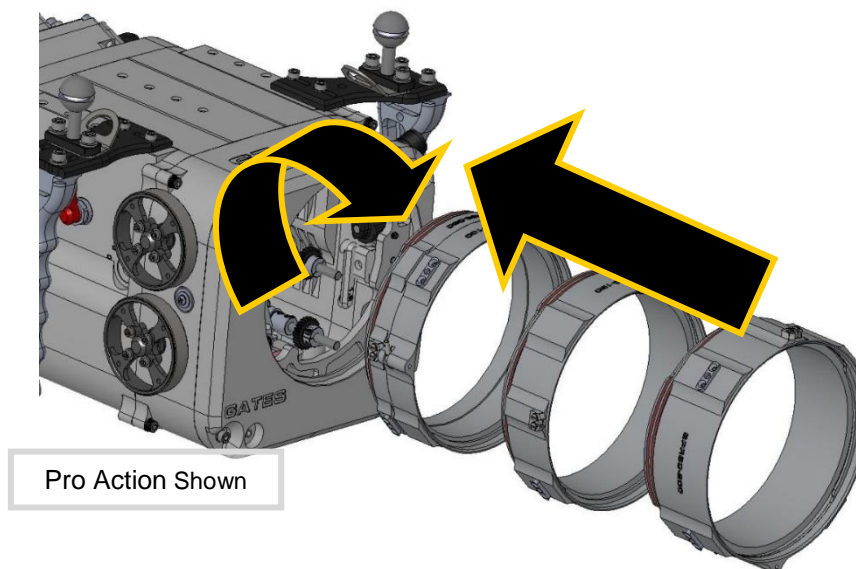


Mounting Stackable Port Rings (SPR's) and Port

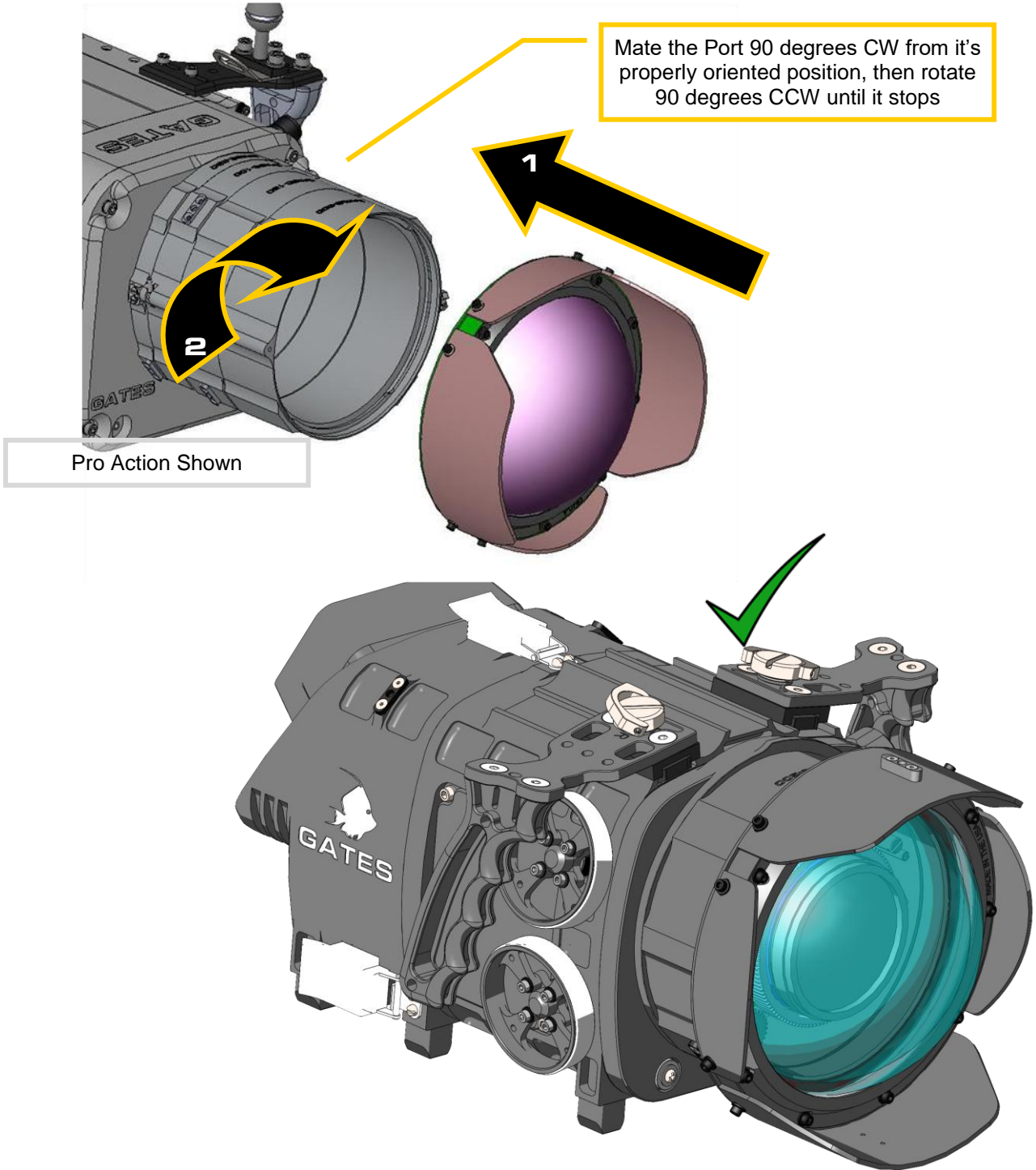
- ✓ **SPR's are assembled in any order on the housing.** Place the lock pin on the first SPR in the 'lock' position.
- ✓ **Lubricate O-Rings as necessary for smooth, easy rotation.** Start by mating the first SPR to the Port Base with the locking pin at the top. Fully mate the SPR to the housing fully, and rotate 90 degrees until the lock pin 'snaps' into place.
- ▶ **TIP:** Perform this procedure from the rear of the housing, pulling toward you to mate SPR's and Ports.



- ✓ Mate the next SPR with the lock catch at the top, and rotate 90 degrees until the lock pin 'snaps' into place.



- ✓ When finished mounting SPR's, mount a Port to the SPR's in the same manner, mating 90 degrees and rotating counter clockwise when viewing from the rear of the housing.



8. Sealing the Housing

Pre-sealing Checklist

Before sealing the housing make sure the following is done:

- ✓ Power on/functional test of electronic and controls
- ✓ Media inserted
- ✓ Lens gear drives properly adjusted and tested
- ✓ Port installed
- ✓ Plugs installed on any unused surface feed fittings.

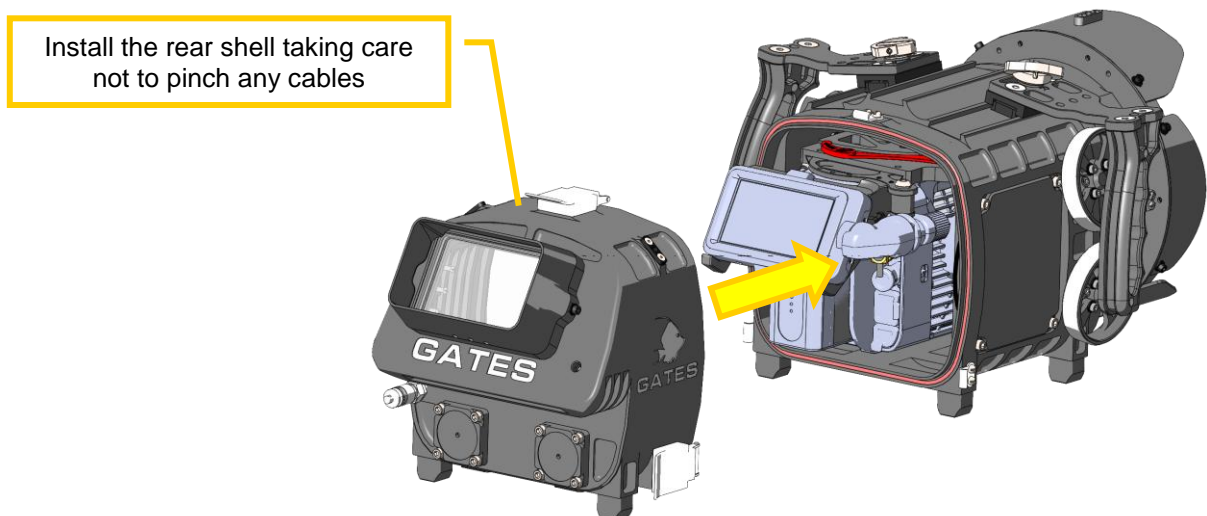
Cable Routing

Double check the monitor cable routing before putting on the rear shell. Avoid pinching the cable when mating the rear shell.

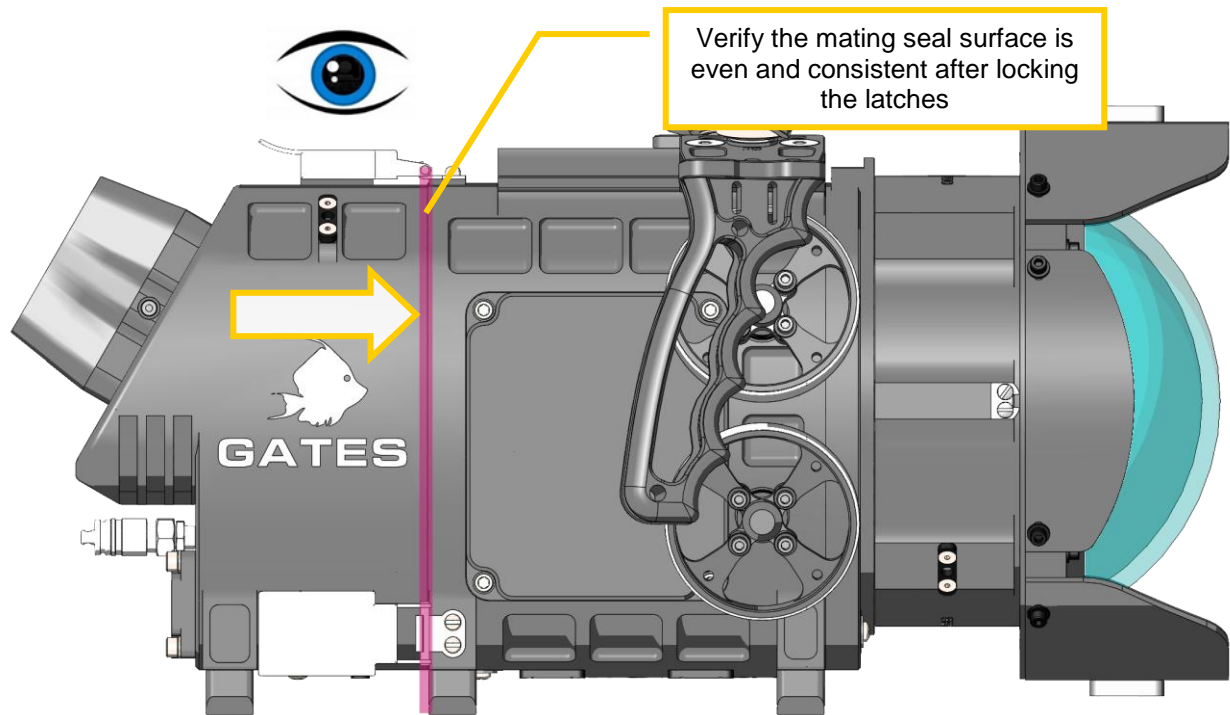
Mating the Rear Shell

- ✓ The **Rear Shell** should **freely mate** with the front shell.

CAUTION: avoid obstructions. The rear shell should slide freely, without obstruction. If obstructions or resistance are encountered, stop. Remove the camera, find the cause of the obstruction, and try again.

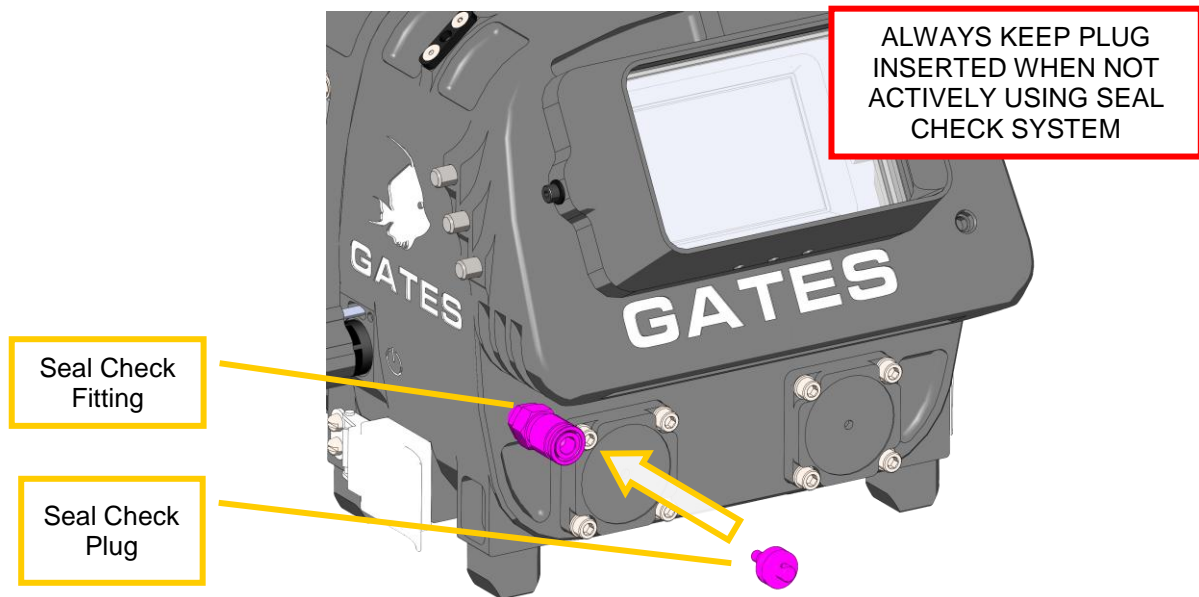


- ✓ **Latches.** Once properly mated, secure the 3 latches. Verify that the two shells are mated evenly and consistently around the sealing line of the housing.
- ✓ **CAUTION.** Faulty Latches can lead to a wet camera! Replacements for faulty latches are available at no charge from Gates.



The Seal Check Fitting

The seal check fitting is located on the rear shell. The plug is retained with a cable to prevent it from being lost. Always keep the plug inserted when not actively using the seal check system.



Using the Seal Check System

Seal Check Lite uses a separate hand pump and gauge to verify seal integrity.

Follow the procedures in the appropriate Seal Check manual to verify the integrity of the housing.

CAUTION. Draw only about 100 millibars vacuum (Seal Check Lite and Seal Check II kits) or 3 in Hg (Seal Check I) on FX6. More vacuum can inhibit the transfer of heat away from the housing.

Note that Seal Check Lite – included with FX6 – requires about 80 cycles of the hand pump to reach 100 millibars vacuum.

Seal Check with Optional External SDI monitors

If using an SDI External Monitor, It is necessary to Seal Check both the housing and External Monitor. The monitor will also have a seal check fitting.

- ✓ Use the pump to **draw a vacuum on the main housing**.
- ✓ **Insert gauge**, then note the gauge reading.
- ✓ **Remove the gauge** from the main housing.
- ✓ Then use the pump to **draw a vacuum on the monitor housing** as close as possible to the previous reading on the main housing.
- ✓ **Remove and plug the Seal Check fitting** on the External Monitor.
- ✓ **Move the Seal Check gauge back to the camera housing** and start the monitoring process.

Why do this?

The LCD cable is water blocked but not air-blocked. After drawing vacuum on the External Monitor air passes from there to the camera housing until the vacuum is equalized.

By drawing a vacuum on the External Monitor, very little air must pass between the housings so the 'settling' process and determination of housing integrity takes far less time.

**CAUTION. ENSURE THE FITTING PLUG IS INSTALLED PRIOR TO SUBMERSION!
FAILURE TO DO SO WILL RESULT IN A FLOOD.**



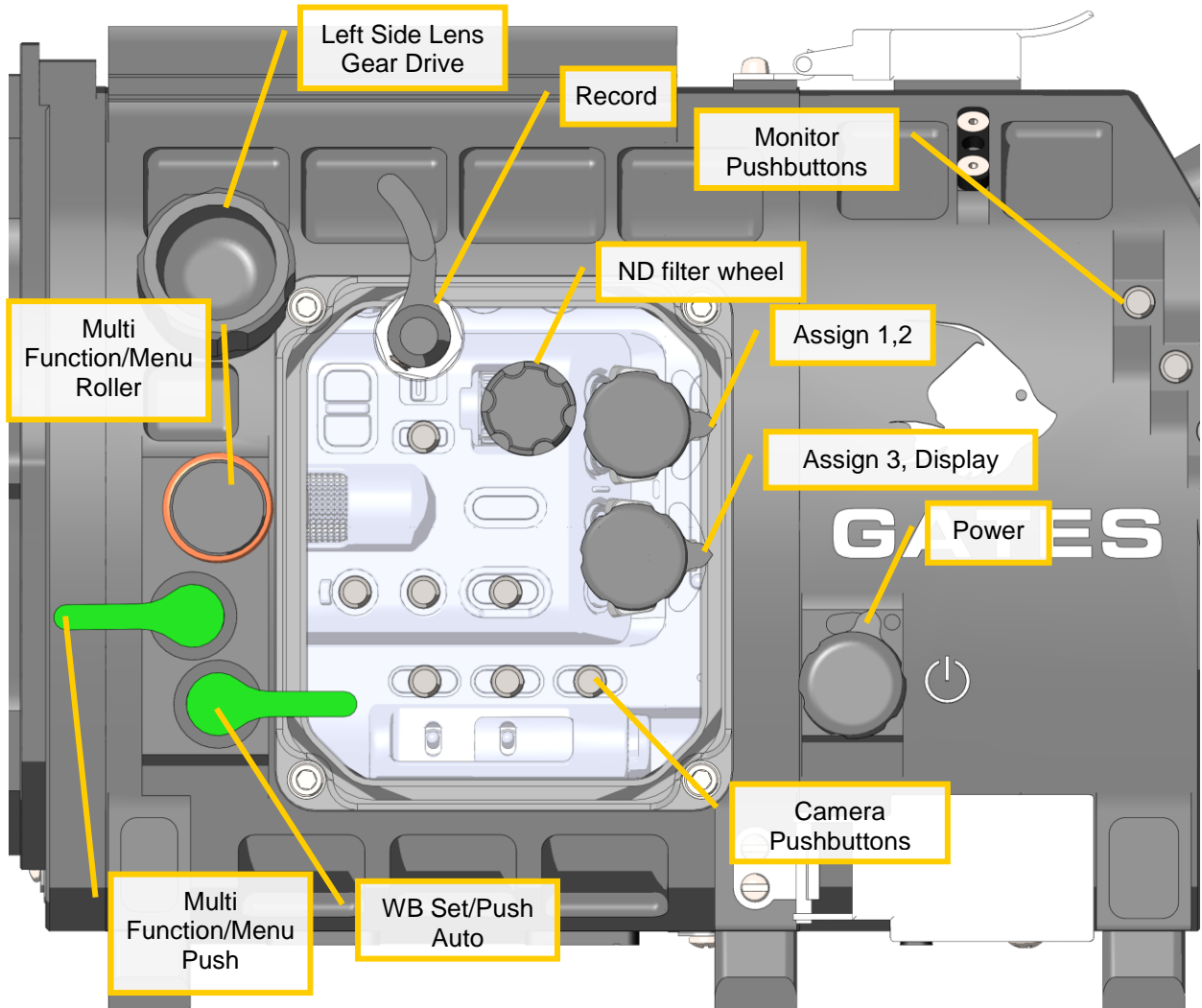
Final Checks

- ✓ Visual Inspection.
 - *Look closely at all seal mates – Port, Port Ring, Port base and main housing seal – for uneven 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.*

9. Control Operation

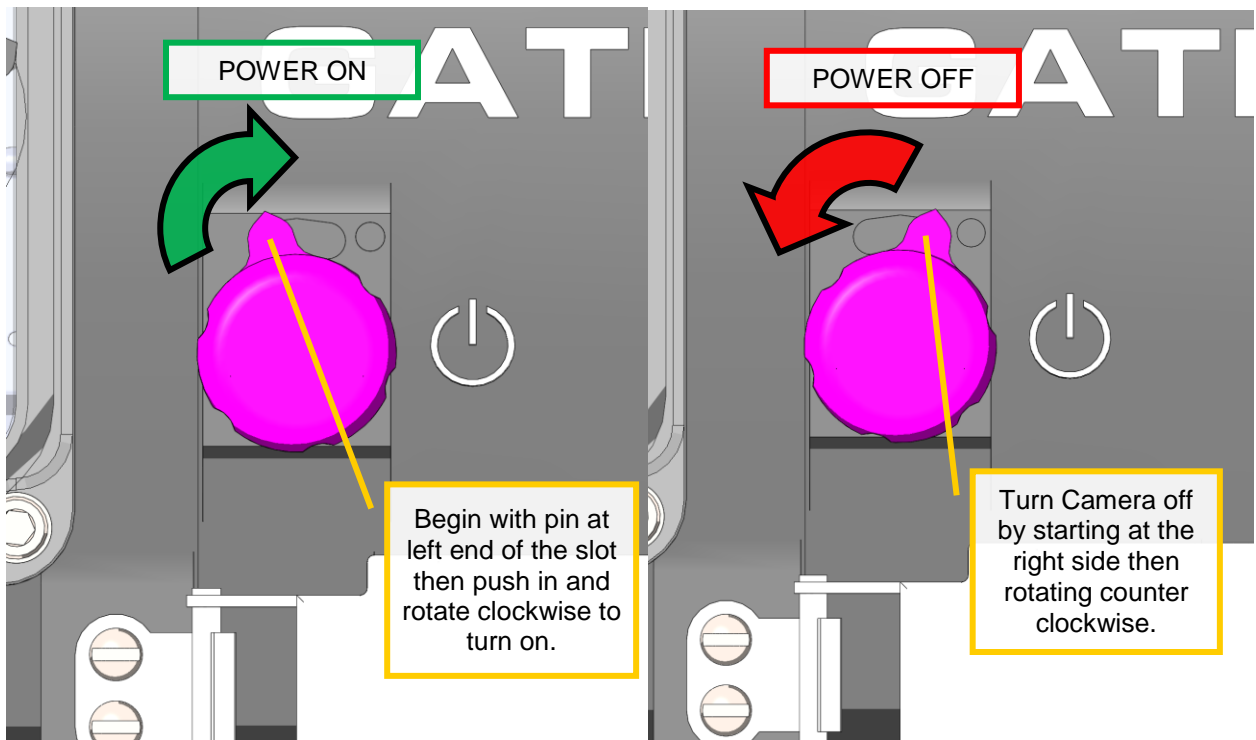
Overview



Power Control

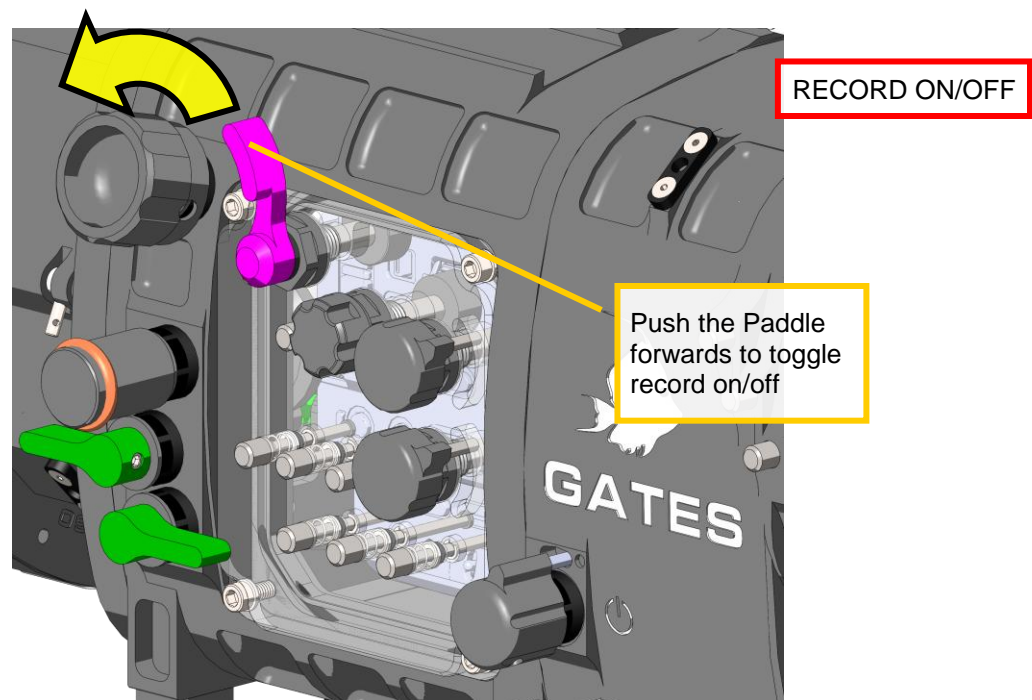
The power control is located on the rear shell.

- ✓ To power the housing on, place the pin in the leftmost position in the slot, push the knob in, and rotate clockwise.
- ✓ To power the housing off, place the pin in the rightmost position on the slot and rotate the knob counter clockwise.



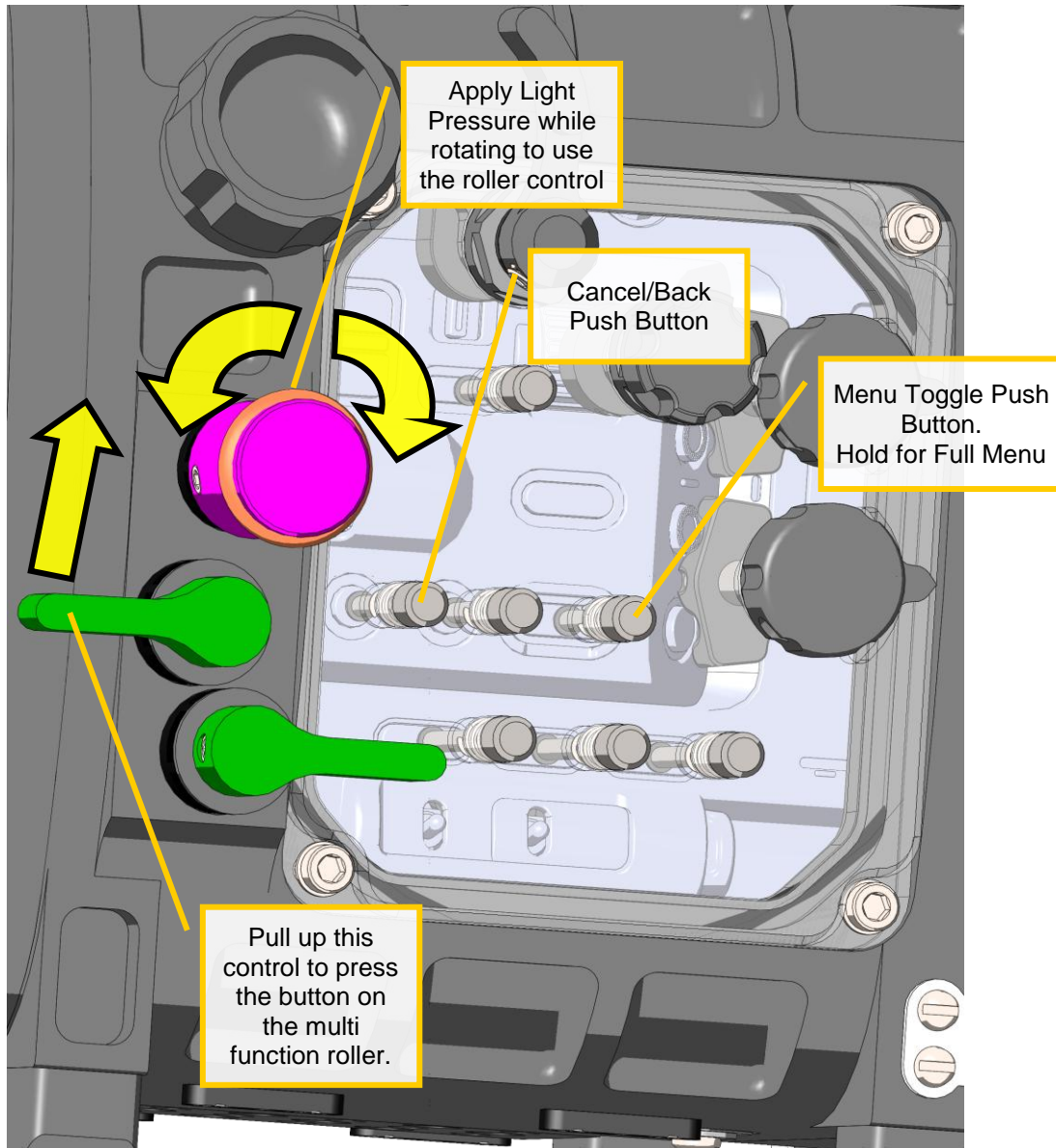
Record Trigger

The record trigger is located on the front shell window. Push the paddle forward to toggle record on/off. Note that the user needs to enable the record on/off indicator on the monitor overlay. See section 4 for instructions.



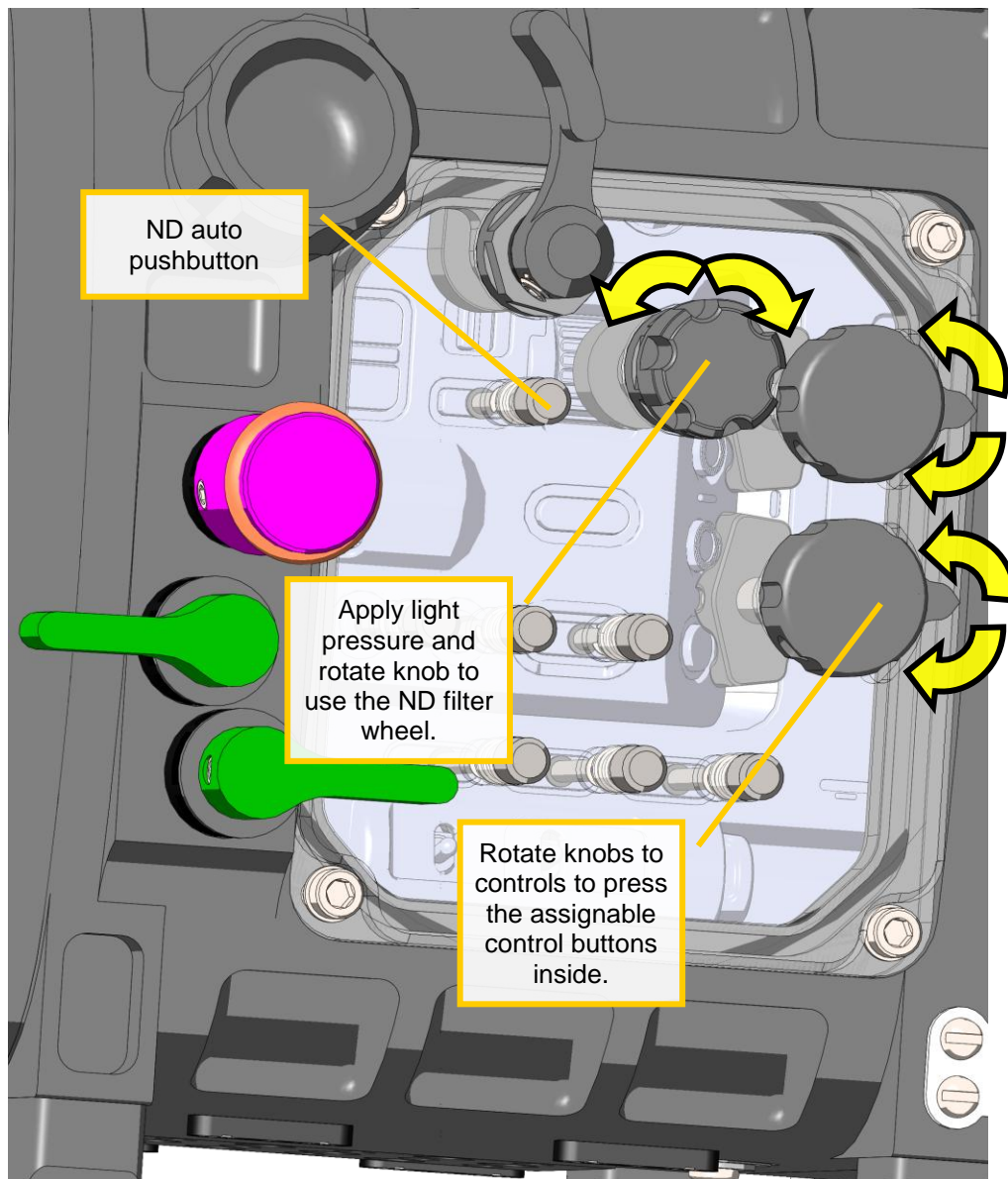
Menu Access

2 pushbuttons, a roller and a lever allow full access to the Camera Menu.



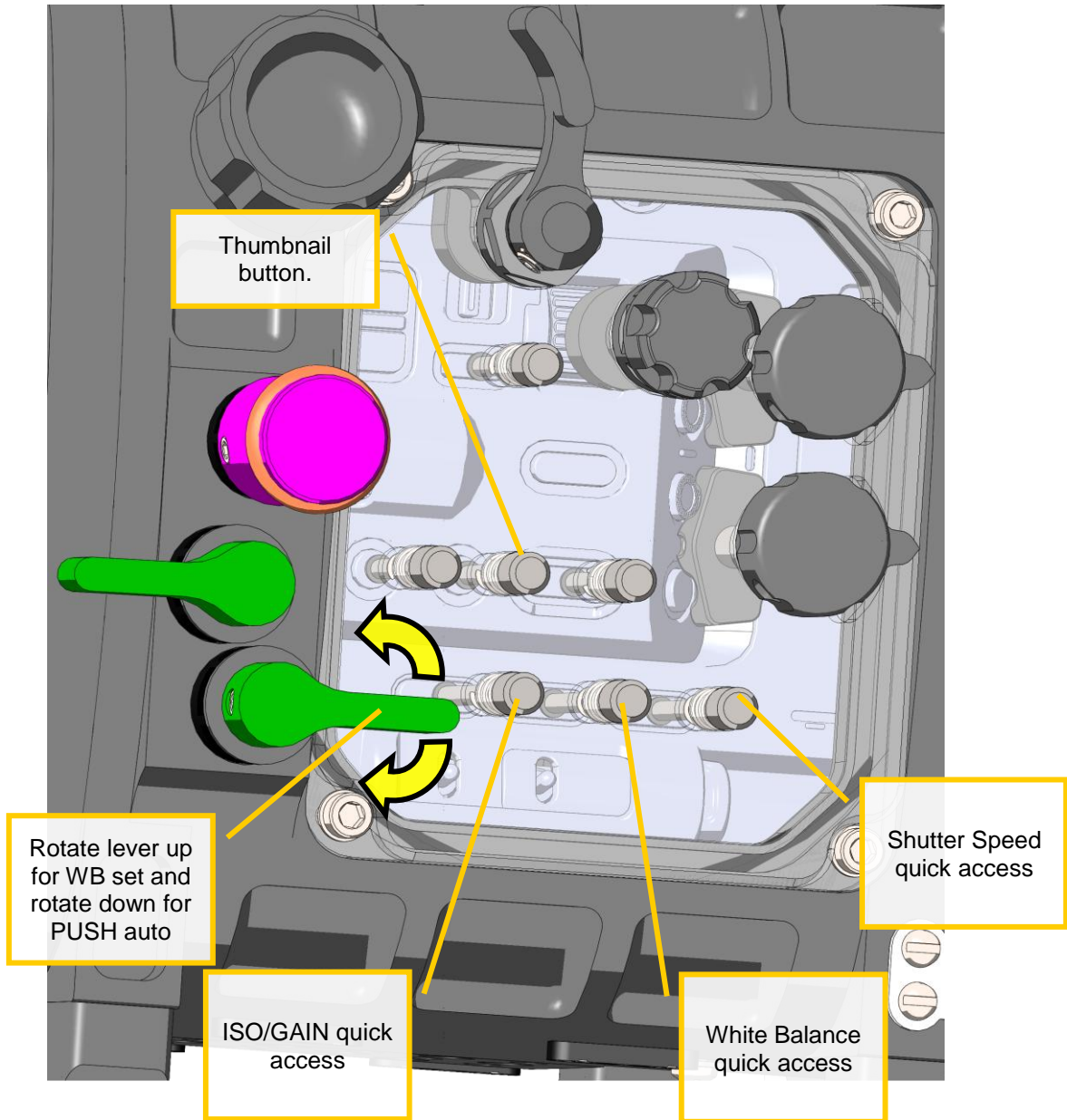
Assignable and ND filter controls

The assignable controls are accessed by 2 knobs. Remember to fully retract these knobs when removing or inserting the camera. The ND filter can be controlled fully with the pushbutton and wheel.



Miscellaneous Controls

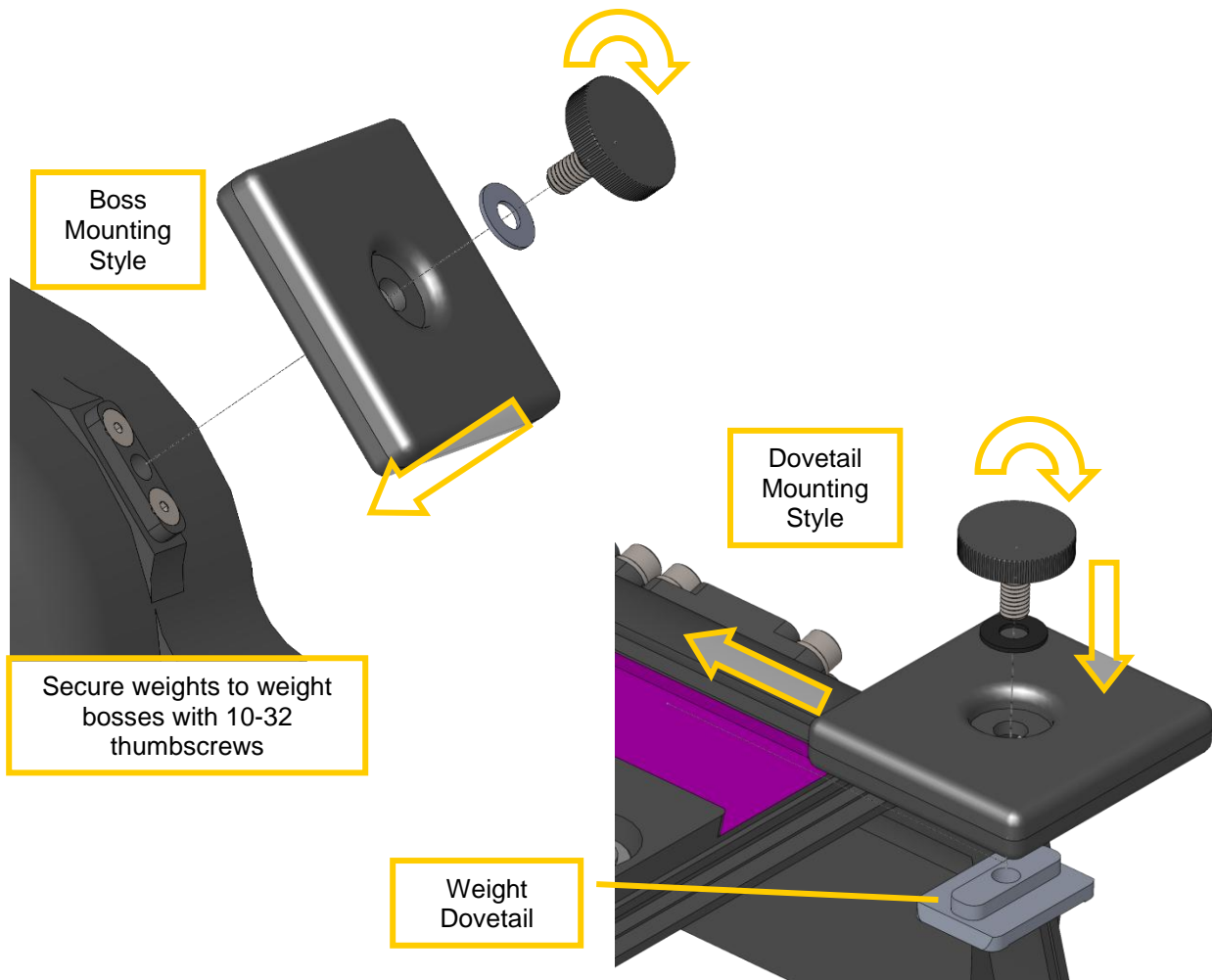
The WB set and Push Auto buttons are accessed with lower control lever. The remaining pushbuttons are for quick access features.



10. Optional Accessories

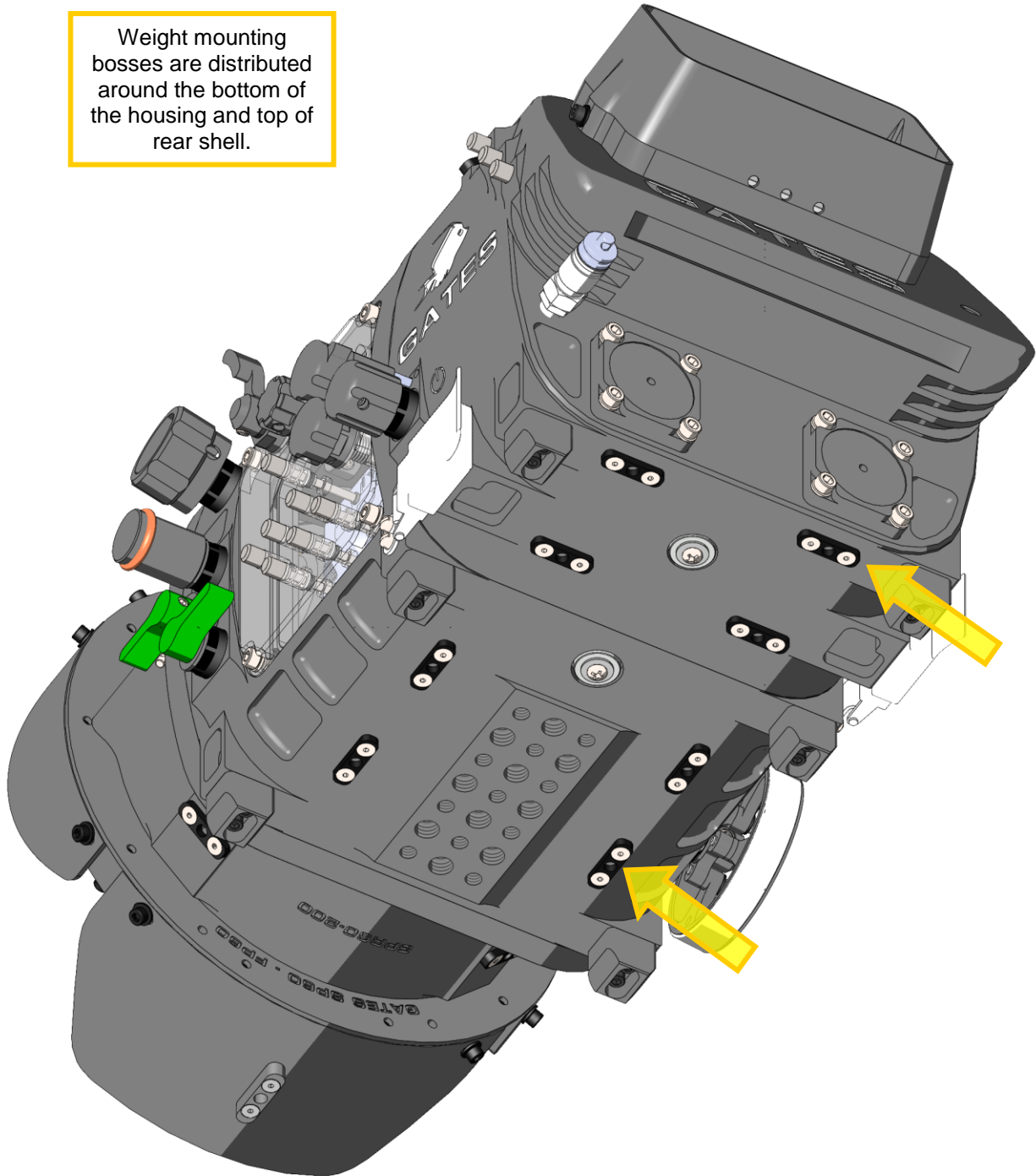
Trim Weights

FX6 is provisioned with several weight mounting points to allow the user to trim the housing. Trim weights can either screw directly onto weight bosses or use a sliding dovetail.



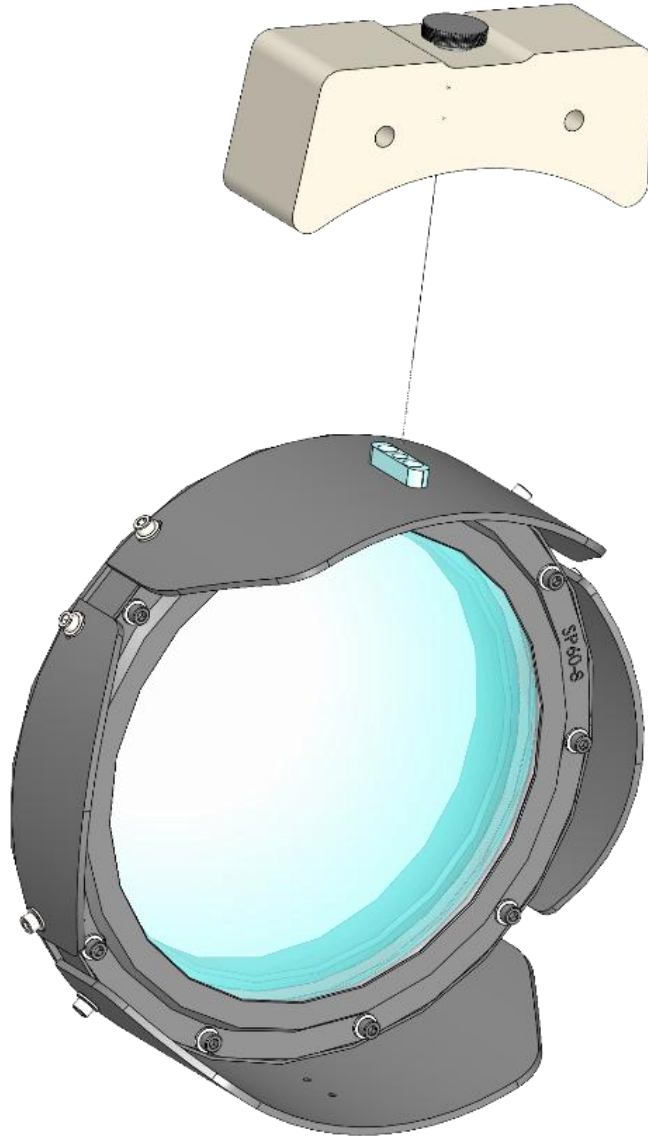
The bottom of the front shell has 4 weight mounts and the rear shell has 6. Dovetail weights can also be attached to the top of the housing. Additional mounting points are available on the ports and port rings.

Weight mounting bosses are distributed around the bottom of the housing and top of rear shell.



Optional Trim Floats

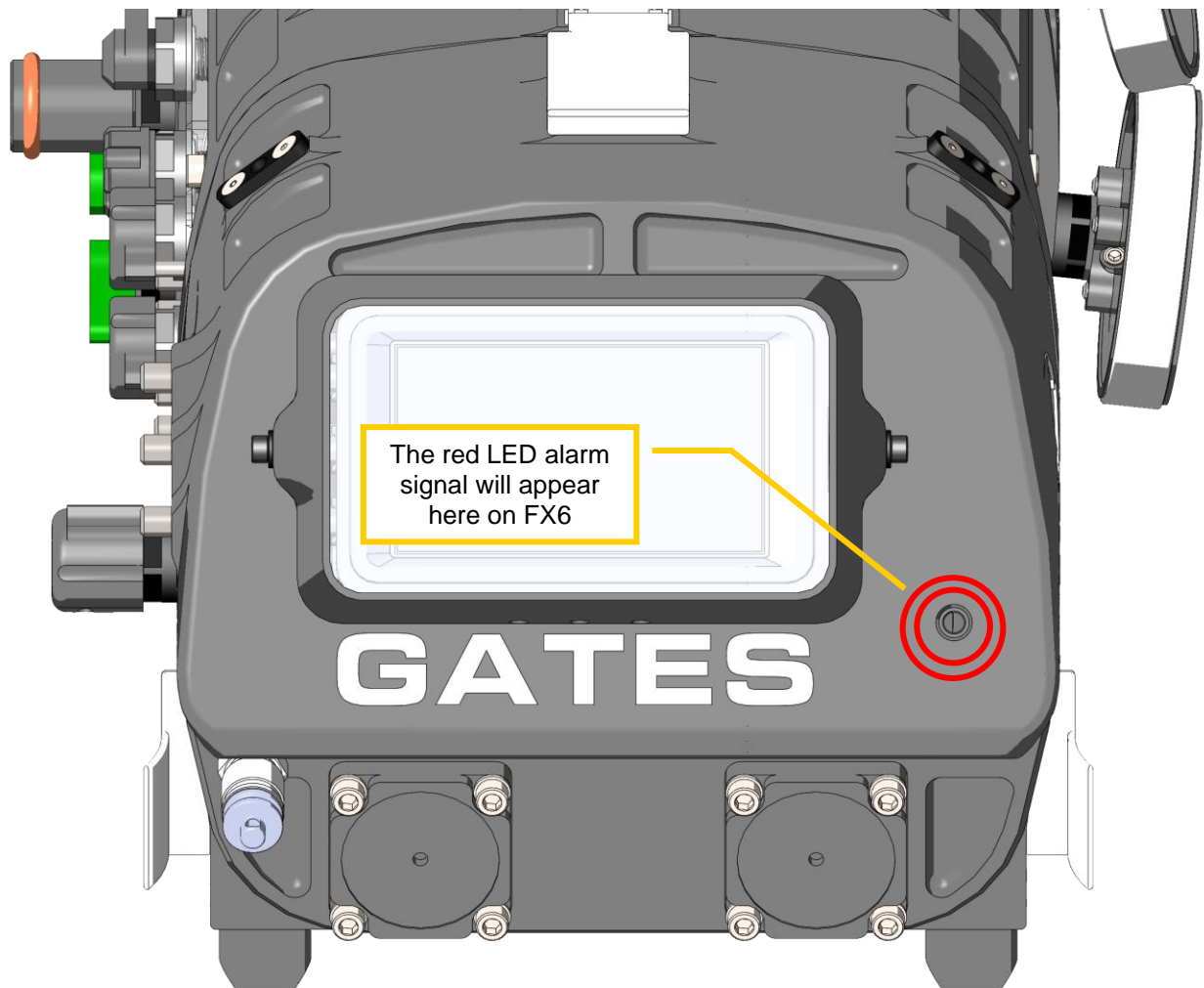
Gates trim floats are made from high density foam to withstand pressure at depth. A specific float is available for the SP60 port which is useful for ultra compact setups.



Water Alarm

If you have the optional GWA-2000 Water Alarm installed, refer to the separate user manual for this item. It can be found on the Gates website [GWA-2000 Water Alarm](#).

The LED indicator for the water alarm is found on the Rear Shell.



11. Housing Maintenance

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.

Your Gates housing has 3 serviceable o-rings:

Housing Main Seal & LCD Cover Seal (ORANGE);

Port (YELLOW); and

Port Ring (YELLOW).

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 ORANGE o-ring! It is a special silicone o-ring and can be damaged by petroleum-based lubricants. Only the BLACK and YELLOW o-rings are safe to lubricate.

CAUTION: Never use metal tools or objects for removing o-rings!

Customer Support

Should you have any questions, please contact Gates.

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Phone: +1-858.391.0052