



DEEP KOMODO-X 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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Introducing DEEP KOMODO-X

Congratulations on owning a new Gates product: the DEEP KOMODO-X (DK-X) housing. You've selected a product that will provide years of value and reliable service. We designed DK-X specifically as a professional action underwater rig for cinema, natural history, surf and research applications.

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

Features

DK-X has several key features:

- ✓ **Compact and Travelable.** DK-X is compact and can fit into a carry-on size case for travel.
- ✓ **Lens flexibility.** DK-X can accommodate a variety of DSLR, mirrorless, and compact cinema lenses with no change to control locations. Focus, Iris, Zoom remain in the same location regardless of optics used.
- ✓ **Built In easy-view monitor.** DK-X incorporates an integrated 5" LCD at a comfortable 15° angle for easy viewing.
- ✓ **Gates COMMAND / CONTROL module** for iris control, camear access and multipole assignable buttons.

Warranty Disclaimer

DK-X 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 DK-X. 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 DK-X 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 DK-X, contact Gates directly. Details are in section 4.

Unpacking DEEP KOMODO-X

After you remove DK-X 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

- ✓ DK-X Housing
- ✓ LCD Power and SDI cables
- ✓ Lens Gear Set
- ✓ Seal Check Lite system
- ✓ Tool Kit / Spare Kit with case
- ✓ Woven Carry Handle Lanyard
- ✓ Trim Floats

Optional Items, Required for Operation

- ✓ 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

- ✓ Light System
- ✓ Water alarm
- ✓ Carry Case
- ✓ Trim Weights
- ✓ HD-SDI surface feed bulkhead connector and cable
- ✓ Port Cleaner

Nomenclature

In this Setup, Use and Care Guide for DK-X, the following terms are used:

- ✓ **KOMODO-X** is the camera body style from RED DIGITAL CINEMA. At this writing there is a single KOMODO-X version available.

Required Equipment

The required camera and accessory equipment for DK-X is:

✓ **Camera + Media**

- RED DIGITAL CINEMA KOMODO-X.
- Compatible CF Express

✓ **LCD**

- SMALLHD Ultra 5 **OR**
- SMALLHD 503 Ultrabright **OR**
- Atomos Shinobi SDI

✓ **Compatible Battery** (Micro V-Lock type). Visit [Gates website](#) for current list.

• **RED**

- [REDVOLT 98 WHr](#)

• **CORE SWX**

- [Nano 98 WHr](#)
- [Nano 150 WHr](#)

• **bebob**

- [V98MICRO](#)

• **SWIT**

- [MINO-S70](#)
- [MINO-S140](#)

• **IDX**

- [Imicro-98](#)

✓ **Compatible Lenses**

- DSLR
- Mirrorless
- Compact Cinema / PL Mount
- 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 or PR80 Port Rings
 - Max lens overall OD: 7.5 in / 190mm
 - Max / Min gear OD: same as above.

✓ **Camera Control** (optional).

RED CONTROL and [RED CONTROL PRO](#) apps may be used for setup (via wifi) above water, and for underwater command / control via surface tether cable. Setup details for surface tether can be found on [Gates DEEP WEAPON-RAPTOR page](#). For further information, contact Gates.

1: Cautions

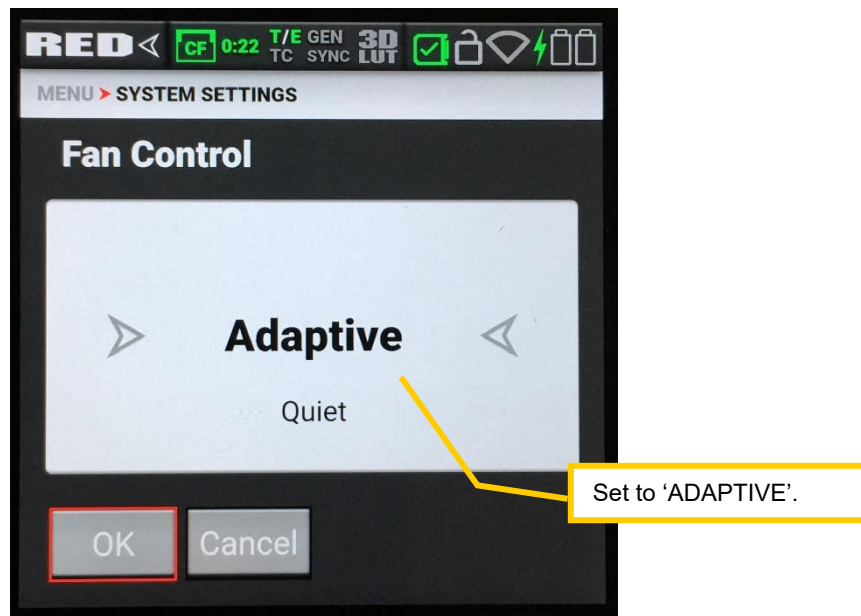
- ✓ **SEAL CHECK VACUUM.** In a later part of this manual, Seal Check Lite will be introduced for verifying seal integrity before diving. You will learn that the vacuum draw on DK-X should be about 100 millibars. This is enough to verify seal integrity.

- ✓ **KOMODO-X CAMERA FAN.**

At time of publication, the KOMODO-X firmware does not include fan control options. This may change in future firmware releases. If so, set the fan to 'Adaptive'.

This setting allows the KOMODO-X camera to maintain a calibrated sensor temperature for optimal image quality. Refer to the KOMODO-X Operations Guide.

Do not block any ventilation openings or obstruct cooling fan airflow. The intake is on the right side of the camera, and the exhaust is on the left.



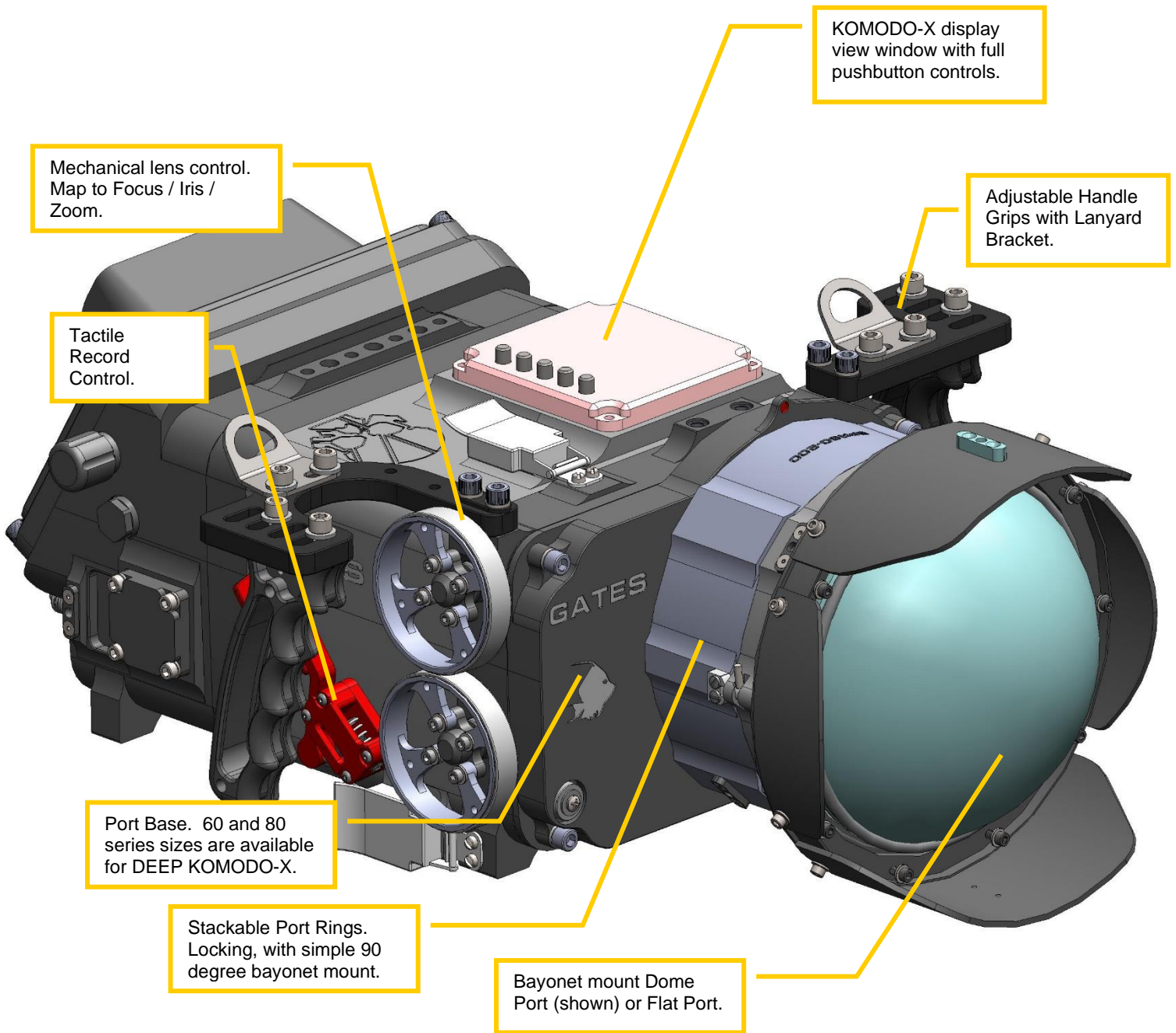
- ✓ **CAMERA TRANSPORT INSIDE HOUSING.** You can transport a securely mounted camera inside DK-X IF the system is in your possession and without abusive handling. DO NOT transport a camera inside DK-X for shipping or checked baggage as forceful and abusive handling can cause damage to both camera and housing.
- ✓ **USER RESPONSIBILITY.** This Setup, Use and Care guide contains important detailed procedures for setup and use of DK-X. 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 DK-X and may void your warranty.

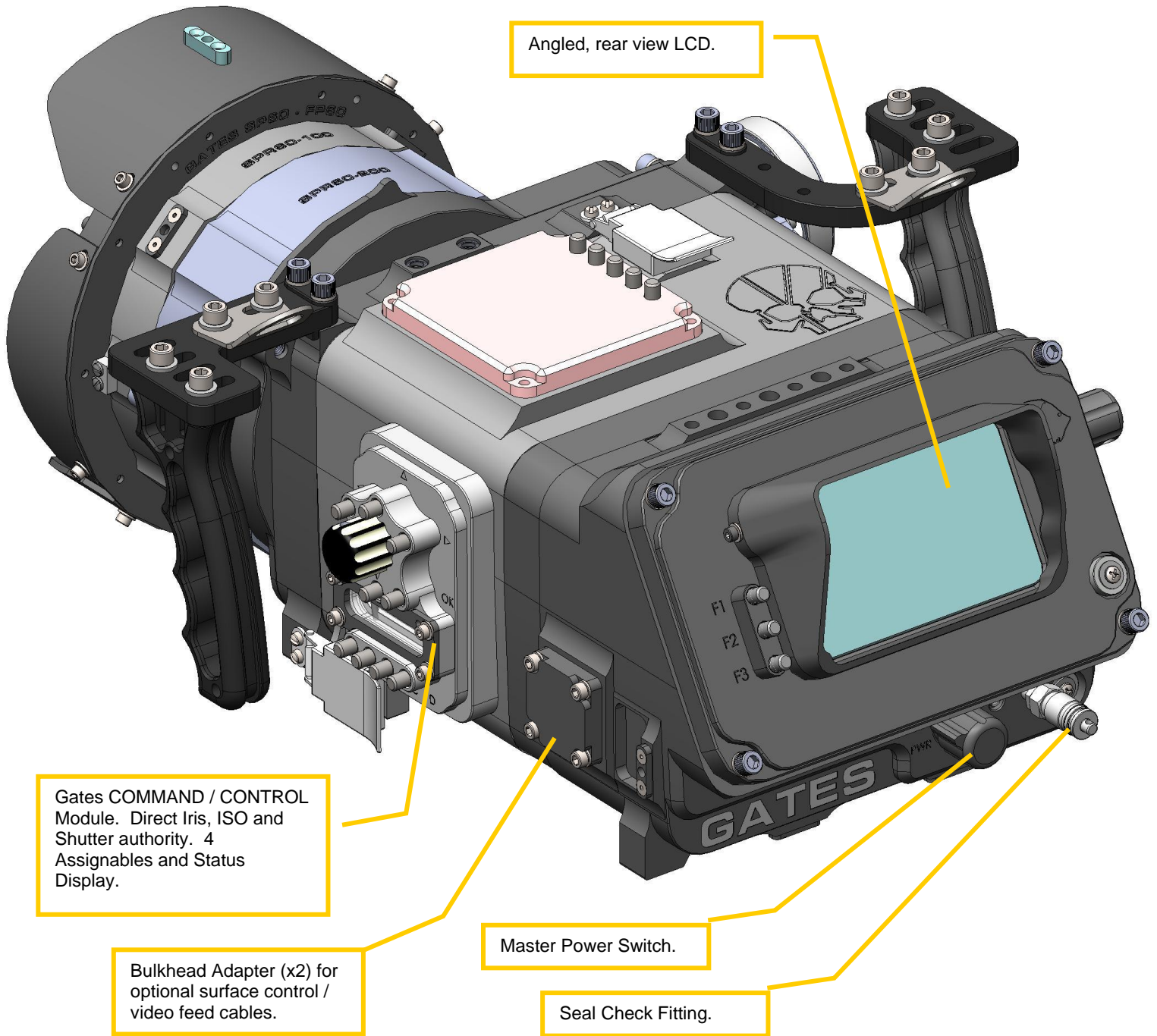
Contact Gates if you have questions about this manual or using DK-X.

2: DEEP KOMODO-X Setup

DK-X Housing Overview

DK-X has many features with which you will become familiar.

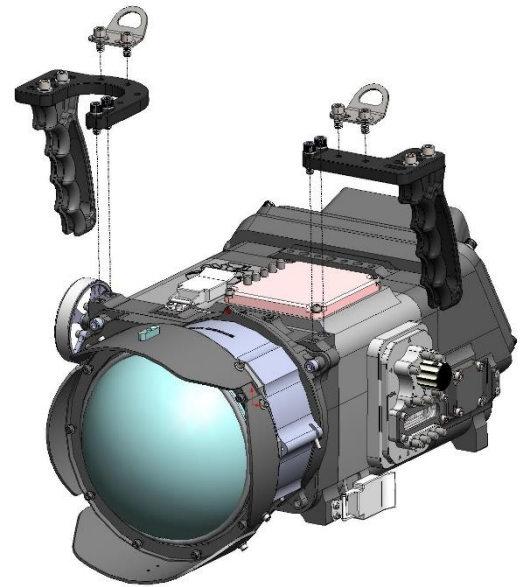




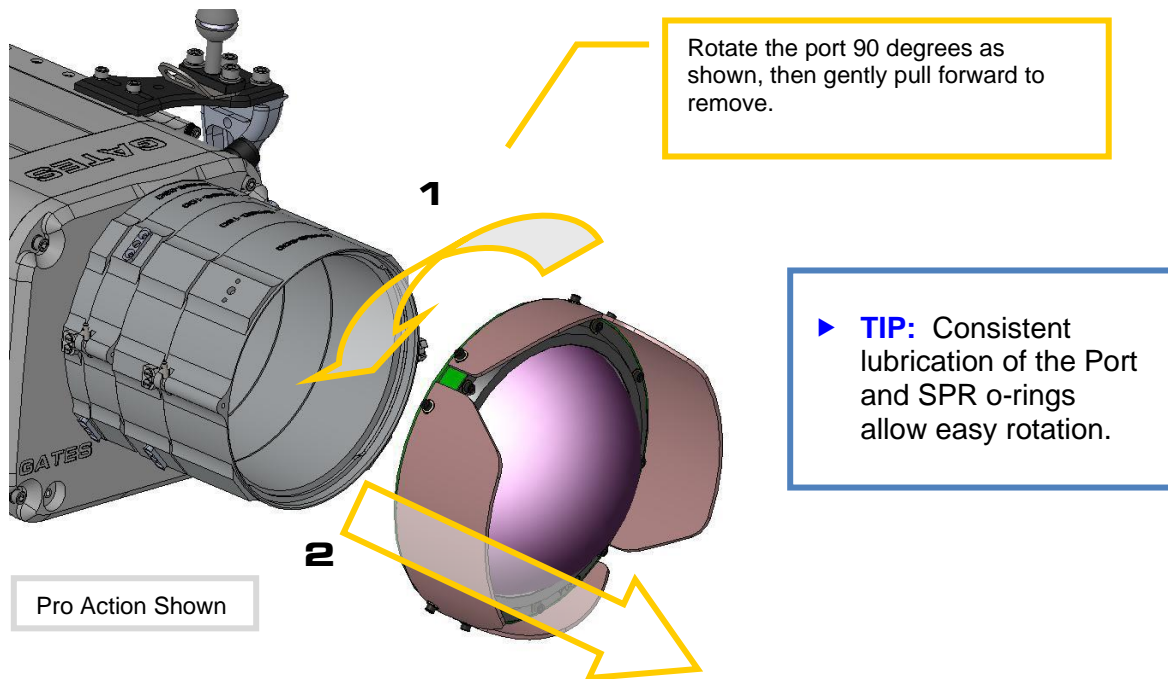
DEEP KOMODO-X Housing Preparation

✓ Handle Grips Install.

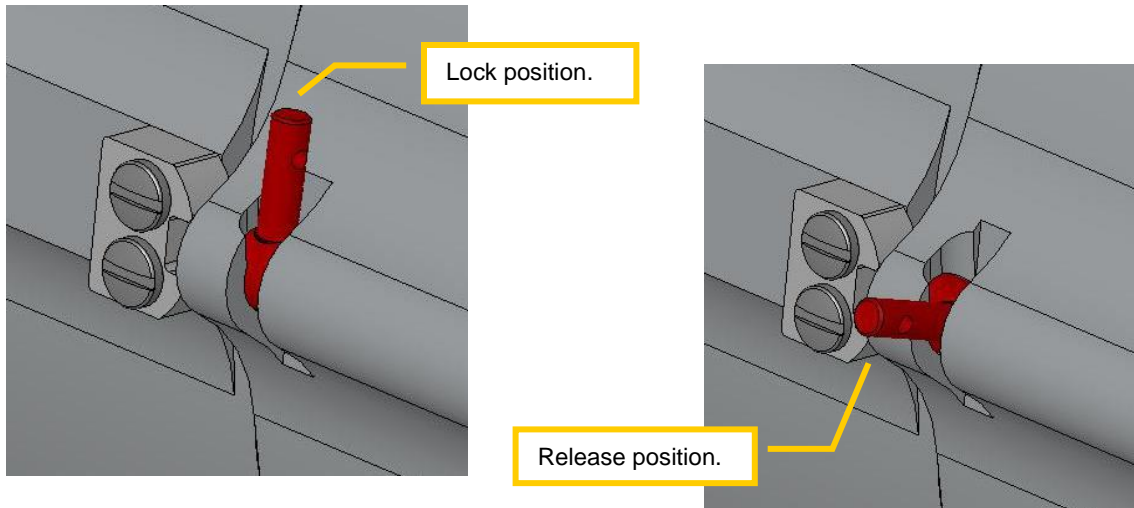
Four screws secure the Handle Grips to DK-X. You can locate the Handle Grips in several different positions forward / aft on the housing.



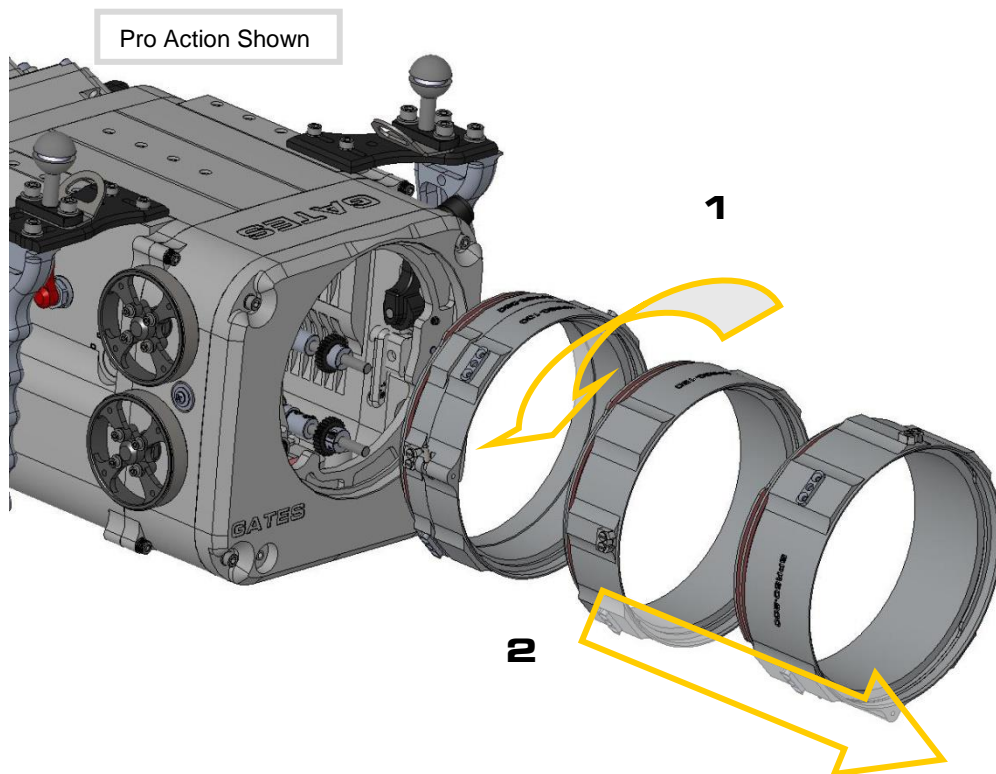
✓ Port Removal. Disengage the Port by rotating 90 degrees in the direction shown. Gently pull the Port away from the Port Ring(s)



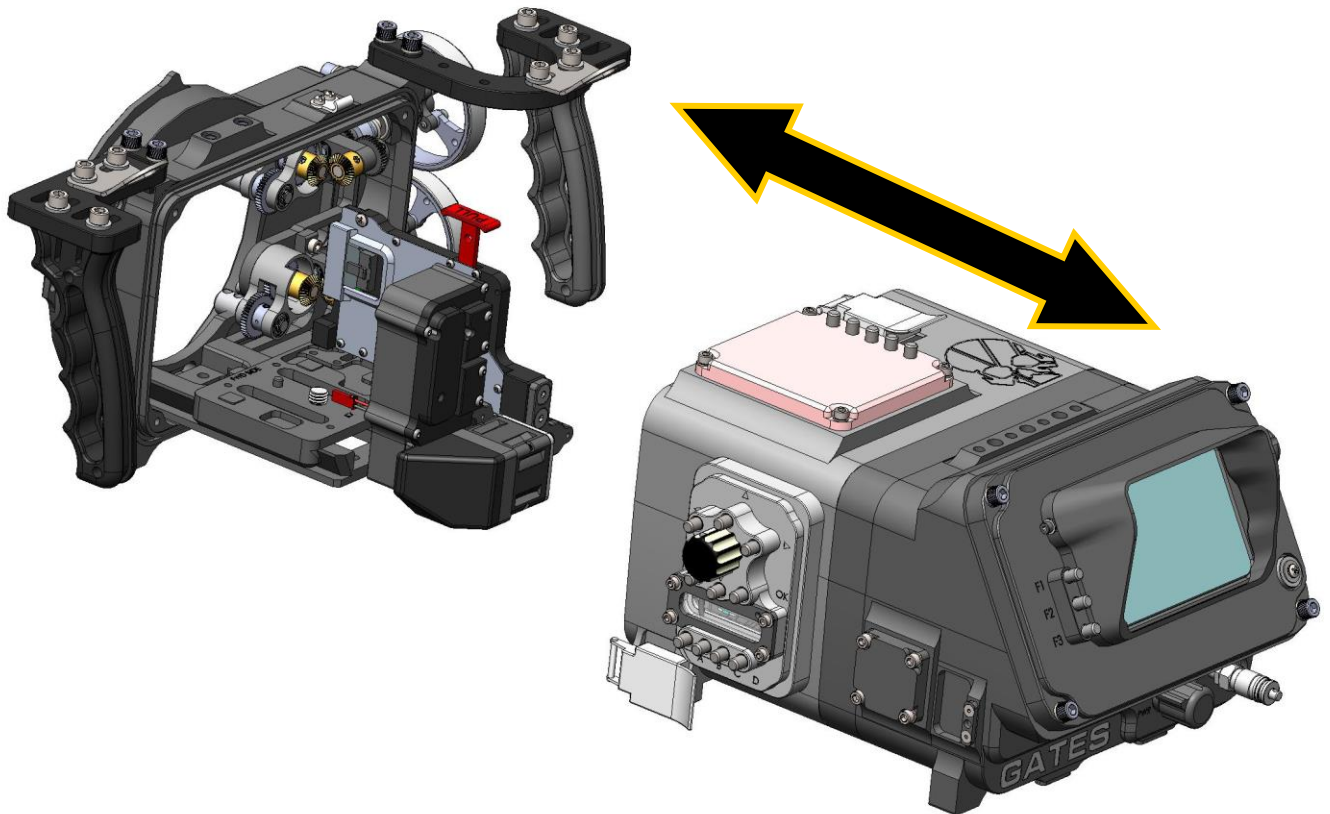
- ✓ **Stackable Port Ring (SPR).** Remove the SPR's one at a time or as a group. The lock pin is shown below in the locked and release position.



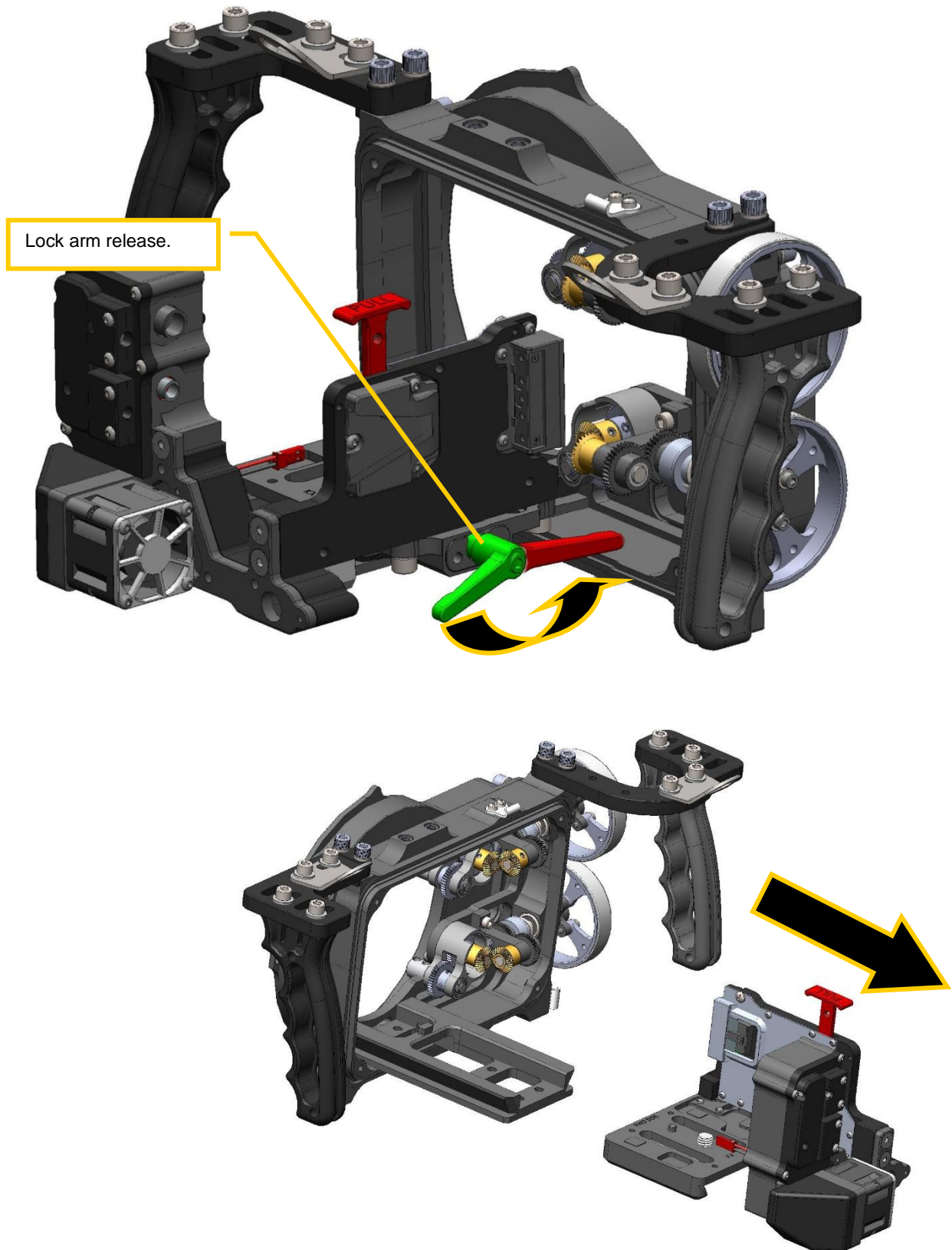
- ✓ With the SPR's unlocked, **rotate 90 degrees and separate.**



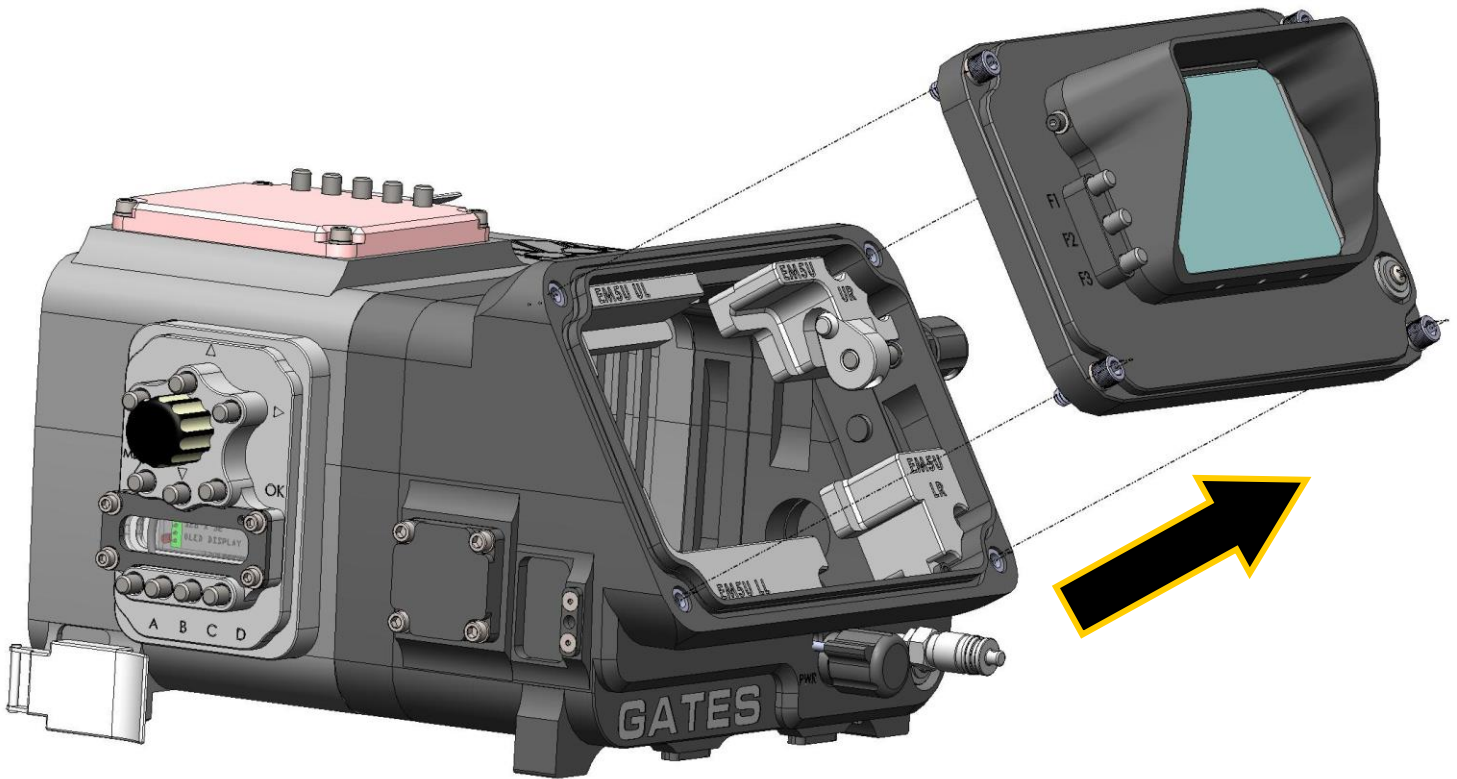
- ✓ **Shell Latches.** Release 3 locking latches. One on top, 2 on the either side.
- ✓ **Separate the two main shells.** They will slide apart.



- ✓ **Release Remove Camera Tray.** Release the lock arm counter-clockwise as shown, from GREEN to RED position, and the camera tray will slide away to the rear.



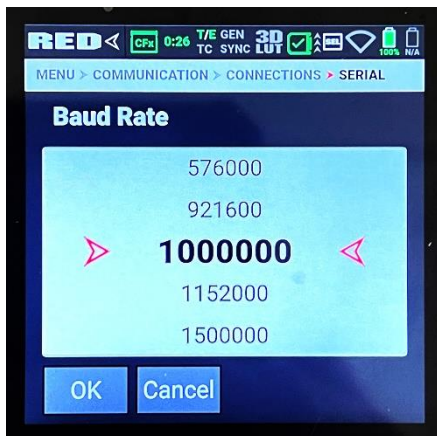
- ✓ **Separate LCD Front Shell.** Use the 3/16 ball driver in the Tool Kit to loosen 4 corner screws, as shown. (These are captive screws and should not be removed.)



Preparing the KOMODO-X Camera

- ✓ **GCC Communications.** KOMODO-X camera requires specific settings within the menu for operation with the COMMAND / CONTROL Module.

BAUD RATE. MENU → COMMUNICATION → CONNECTIONS → SERIAL → BAUD RATE → 1000000



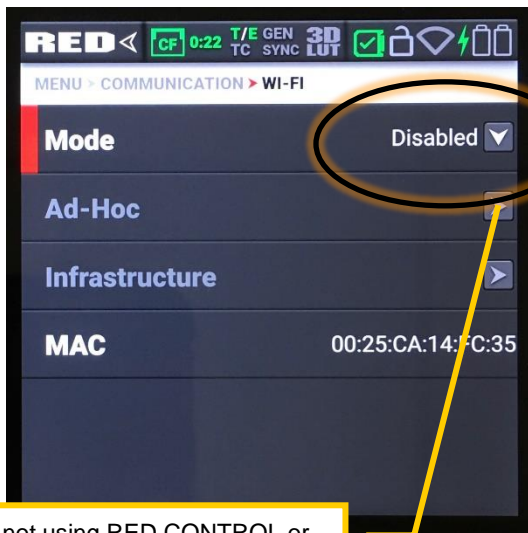
IP ADDRESS. MENU → COMMUNICATION → CONNECTIONS → SERIAL → IP ADDRESS → 169.254.1.1 (This is the camera default).

Record Trigger. DK-X provides a convenient thumb tip record trigger with positive tactile feedback. KOMODO-X requires no special setup for this feature.

- ✓ **Menu Overlay.** KOMODO-X camera provides menu overlay via the SDI output.
MENU → MONITORING → SDI.



- ✓ **Overlay Items.** Turn on any SDI overlay items you plan to use.
- ✓ **WIFI.** If you are not using RED CONTROL App, turn off WIFI.
MENU → COMMUNICATION → WIFI
- ✓ **Camera Basics.** The KOMODO-X camera must be stripped down to the bare body, as shown. A lens adapter (e.g. RF to EF, RF to PL) is OK.
- ✓ **Power Switch.** KOMODO-X power switch must be in the 'on' position to auto-boot in the DEEP KOMODO-X system.



If not using RED CONTROL or RED CONTROL PRO app, disable WIFI.



Turn on KOMODO-X power switch.

Preparing the LCD

DK-X includes a Power On / Off control for Ultra 5 and Shinobi LCDs, but not for 503 LCD. This is because this LCD has an 'auto boot' feature to boot the LCD when DK-X system power is activated (refer to subsequent section on DK-X controls). To use this feature, follow these steps. Note that the Ultra 5 also has this 'auto boot' feature, which you can employ with this same procedure.

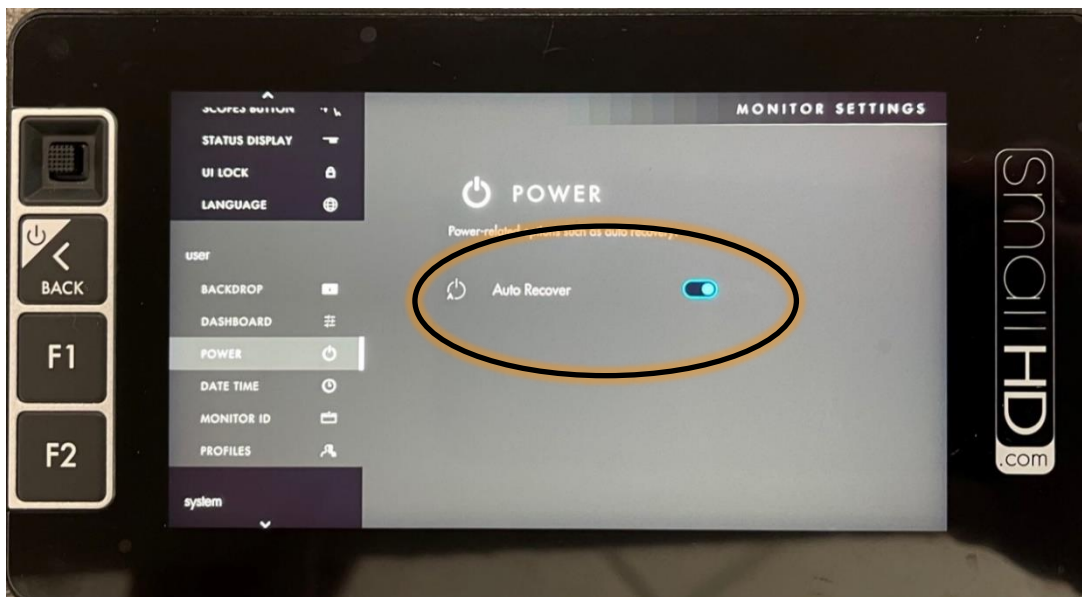
- ✓ **Auto boot.** Setup the 503UB LCD to boot when power is present at the rear connector.

MENU → POWER → AUTO RECOVER → ON

- ✓ **Pages.** Refer to the [503UB](#) (or [Ultra 5](#)) User Guides for details on the 'Pages' feature. The LCD will boot into a default page that must be set, as follows:

* With the LCD on, navigate to the 'page' you wish to use in DEEP KOMODO-X.

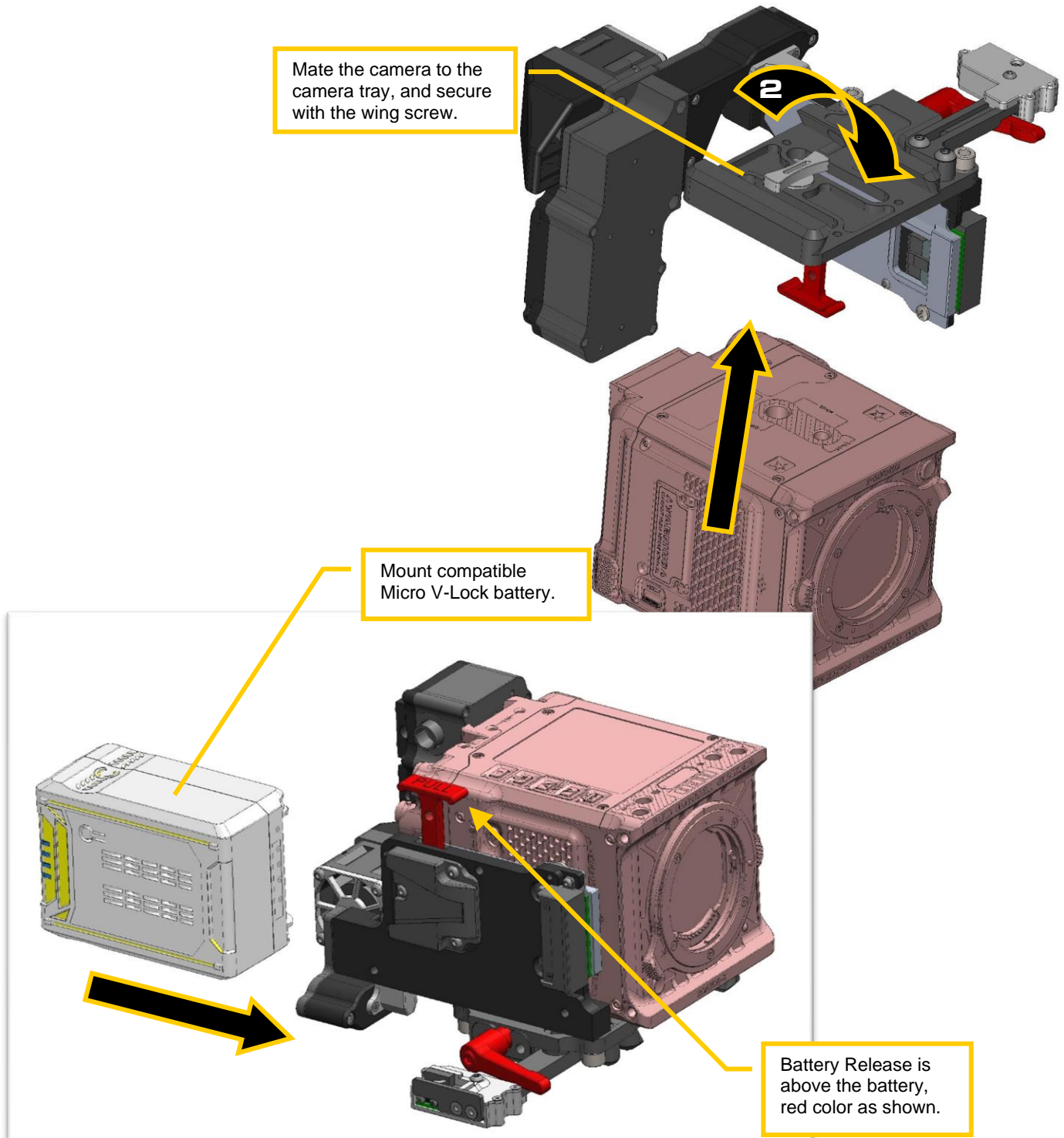
* Turn off the LCD via the POWER button. Then power back on. This 'sets' this page as default for any auto boot.



Camera / Battery Installation

Details of the RED camera install are shown on the following images.

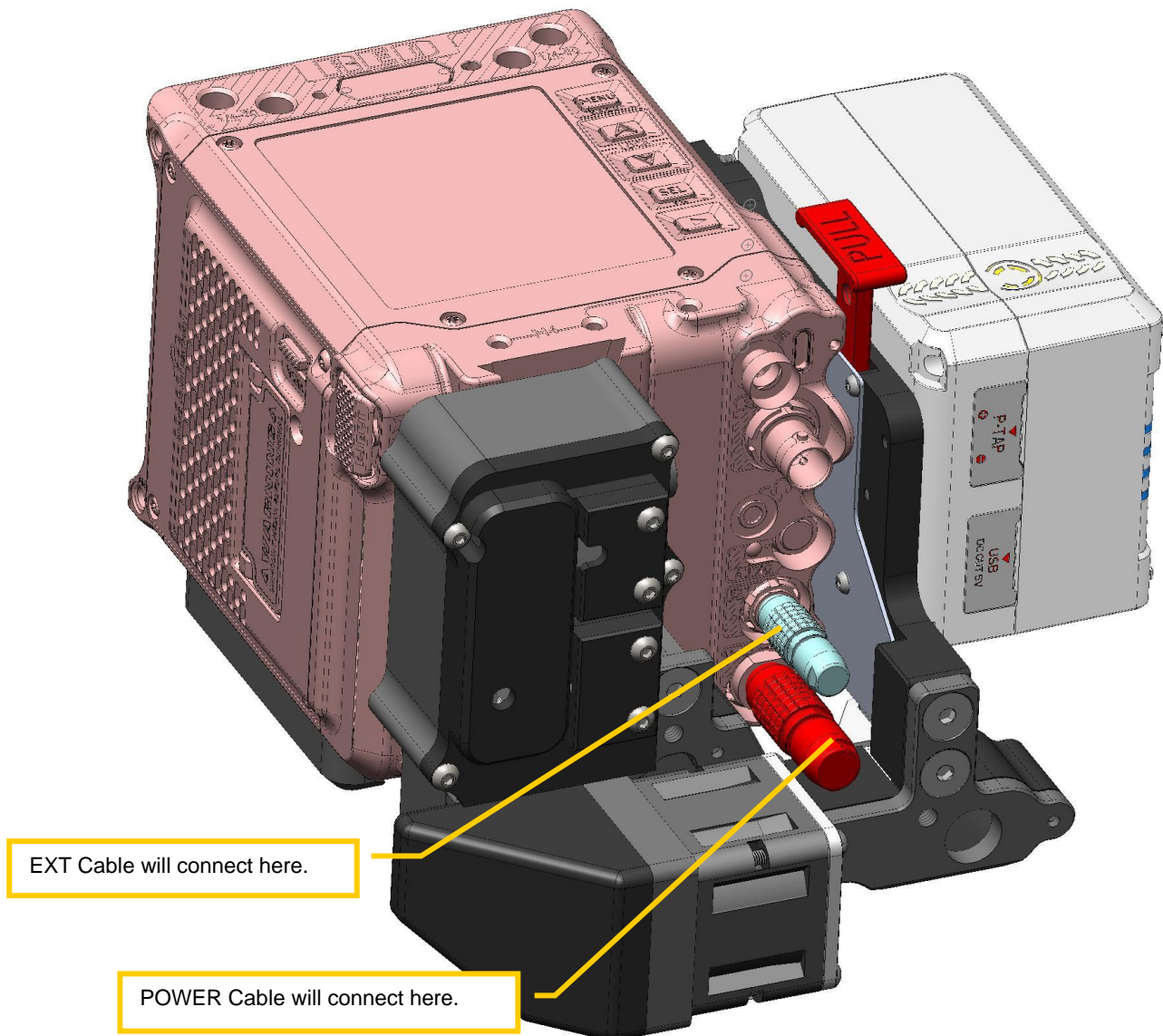
- ✓ **Mate camera to Camera Tray**, then tighten the wing screw to secure in place.
- ✓ **Install Batteries.** Mate and lock battery into place as shown.



KOMODO-X Cables Connect

At this point several connections between KOMODO-X and Camera Tray are required.

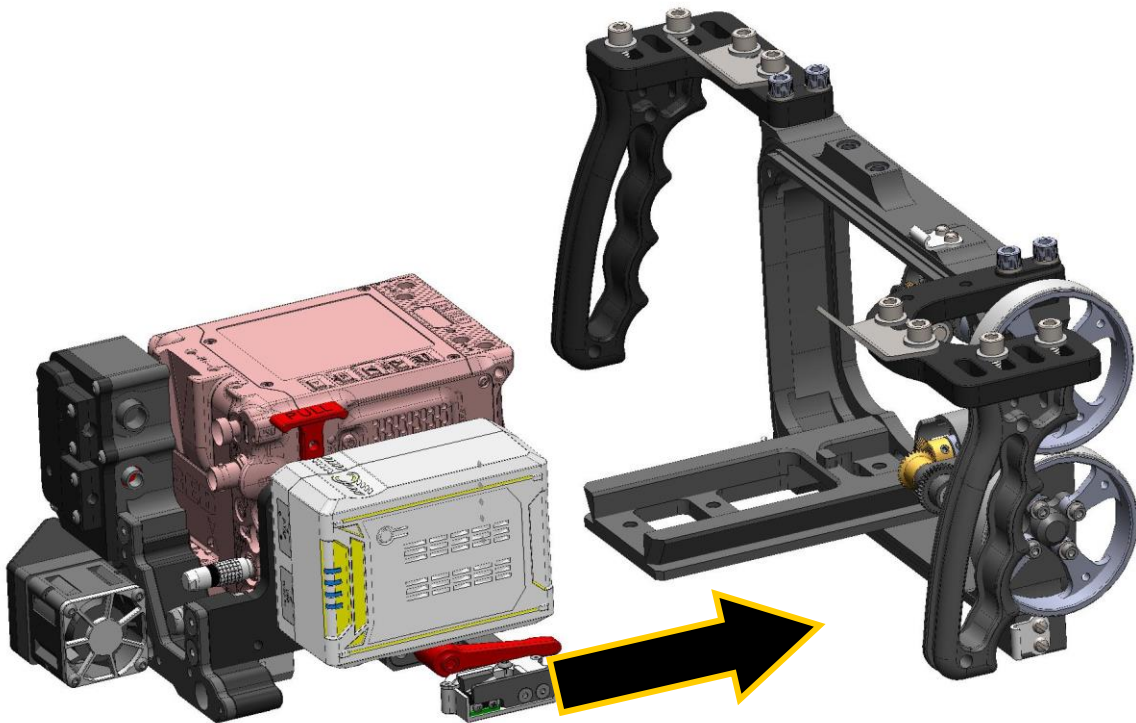
- ✓ **Power.** The power cable will connect on the right rear PWR input on KOMODO-X.
- ✓ **Communications.** Similarly, the communications cable will connect to lower left rear of KOMODO-X, the EXT port. This connection provides both GCC and record trigger inputs.



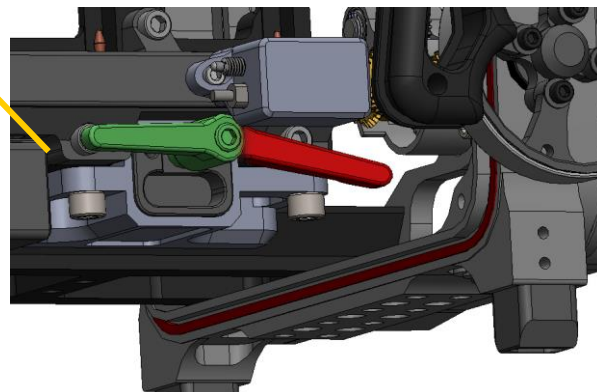
Camera / Camera Tray Install

Next, mount KOMODO-X / Camera Tray package into the DEEP KOMODO-X front shell.

- ✓ **Align the Camera Tray with the dovetail receiver** on the front shell. Slide the camera into the housing until it stops.
- ✓ **Lock Camera Tray** in position with the lock lever.
- ▶ **INSTALLATION TIP:** Position the lock lever horizontal, as shown. This will avoid interference with the record trigger control.



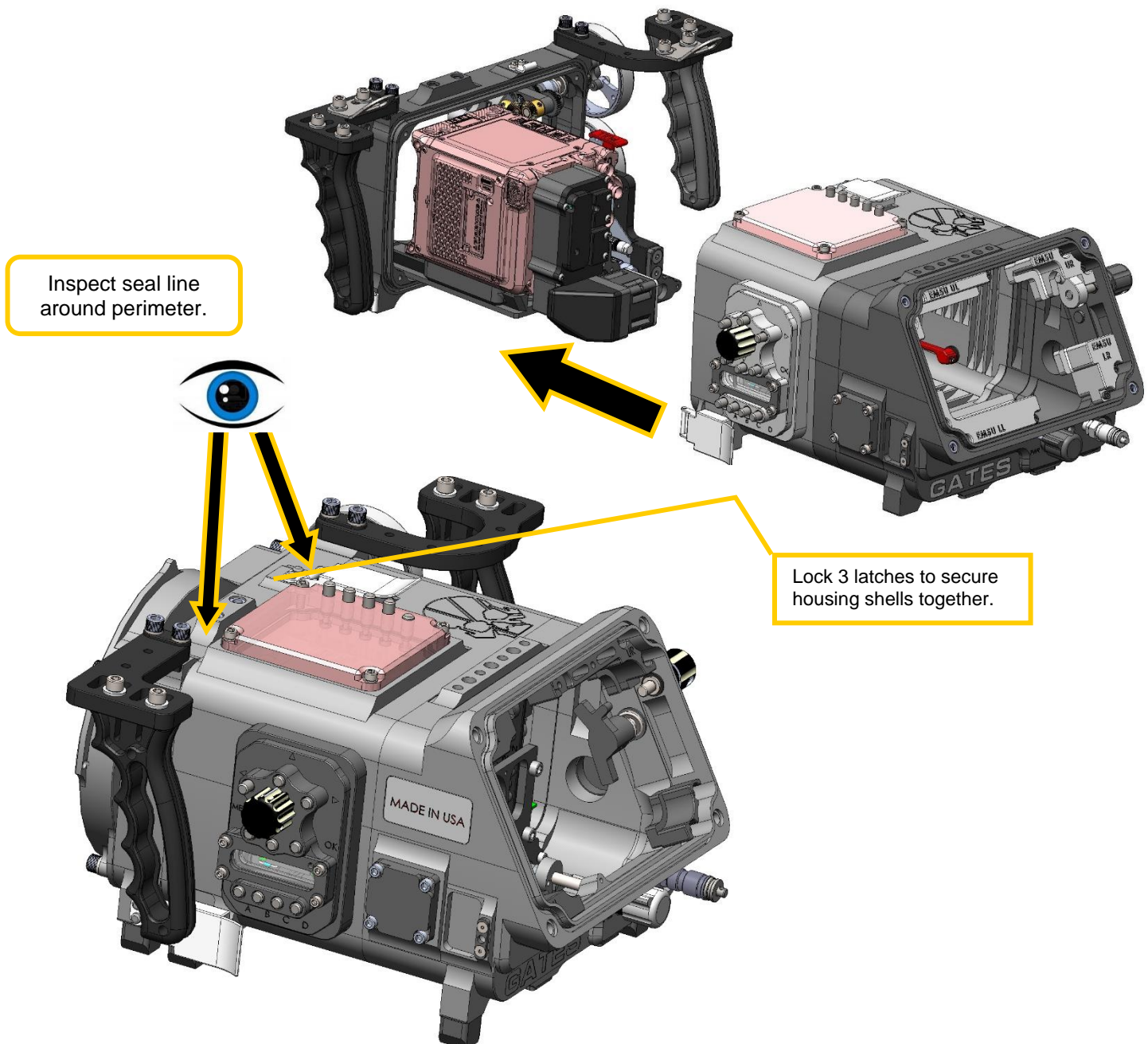
Position the lock lever as shown, horizontal (green).



Main Shell Mating

Mating the main shell parts is straightforward.

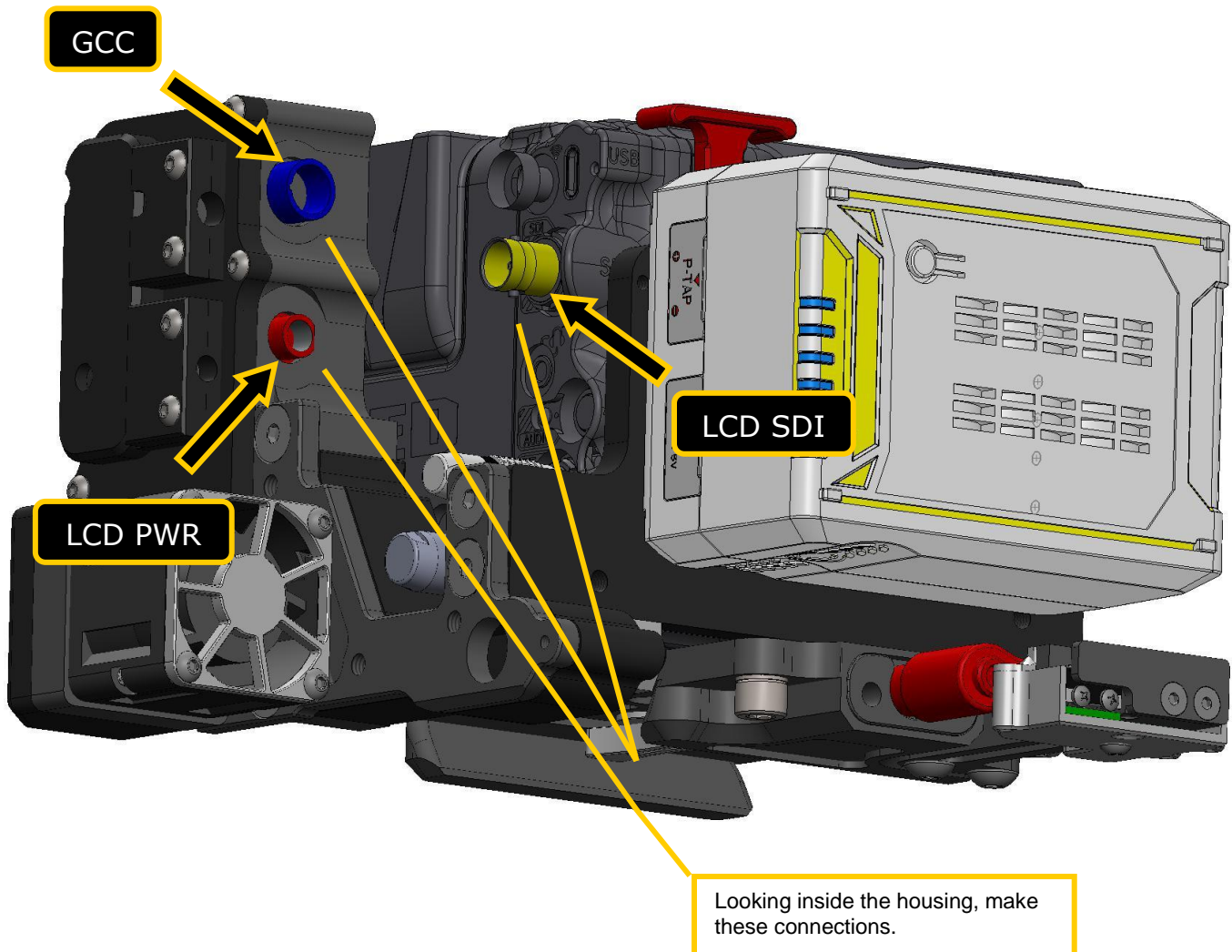
- ✓ **Align the Front Shell / Camera Tray with the Rear Shell**, as shown. Gently slide the shells together until they mate fully.
- ▶ **IF YOU ENCOUNTER AN OBSTRUCTION – STOP – IDENTIFY THE PROBLEM AND PROCEED AGAIN.**
- ✓ **Secure Shells.** Once mated, close 3 latches and ensure locked.
- ✓ **Visually inspect the main seal for gaps.**



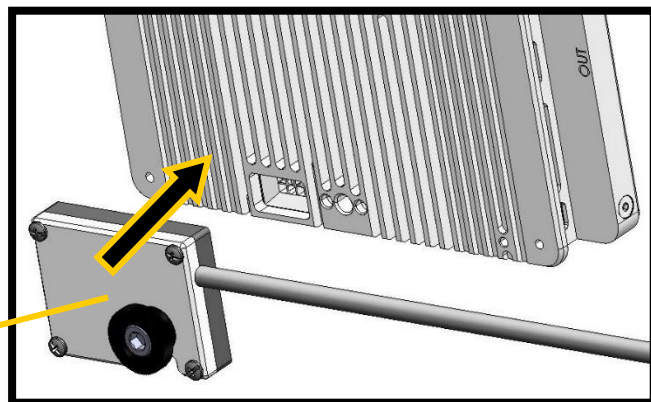
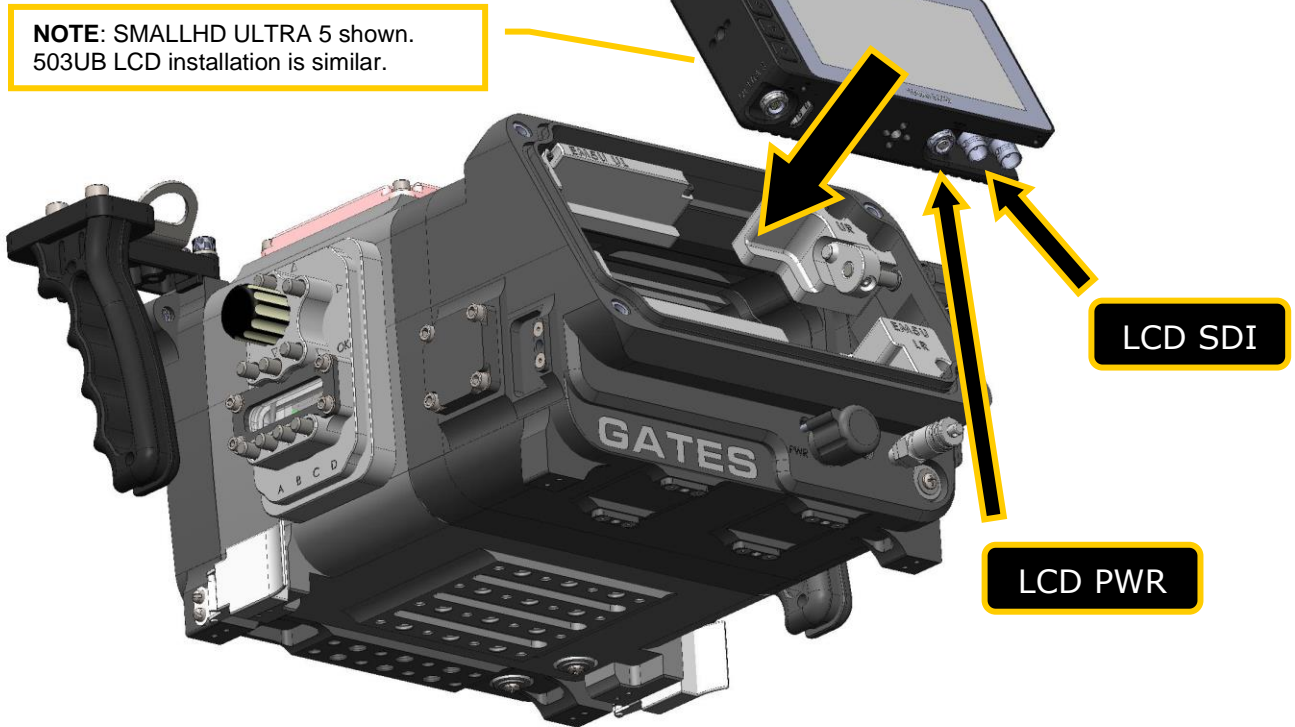
Install LCD & LCD Front Shell

First, make the following cable connections inside the housing. Looking in through the rear shell:

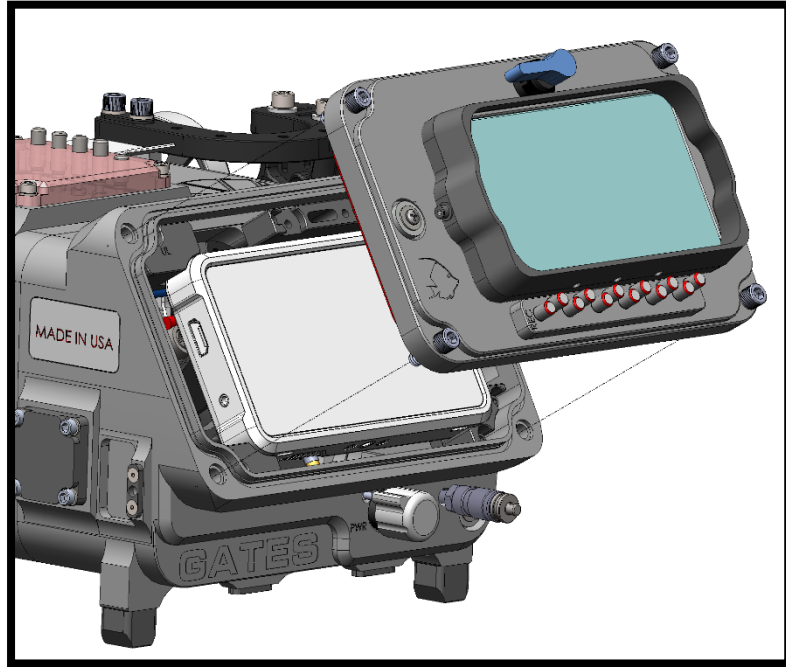
- ✓ **GCC**. Just inside the rear shell opening you will find a cable leading from the GCC. Plug this into the Camera Tray. (Shown in **BLUE**).
- ✓ **LCD Power cable** to Camera Tray as shown in **RED**.
- ✓ **LCD SDI connector** to KOMODO-X camera (shown in **GOLD**).



- ✓ LCD Power to LCD and LCD SDI connections as shown.
- ✓ Place the LCD into the guides, as shown.
- ✓ Place and secure the LCD Front Shell.

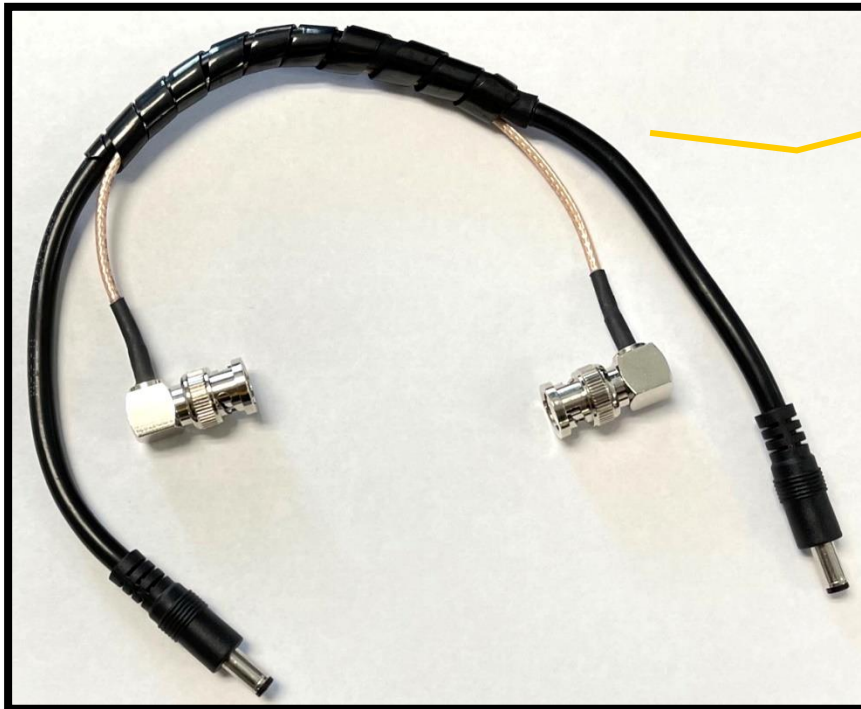


SMALLHD 503 Ultrabright shown.
Connect Power Cable to 503UB
LCD, then secure with thumbscrew.



Cable Management

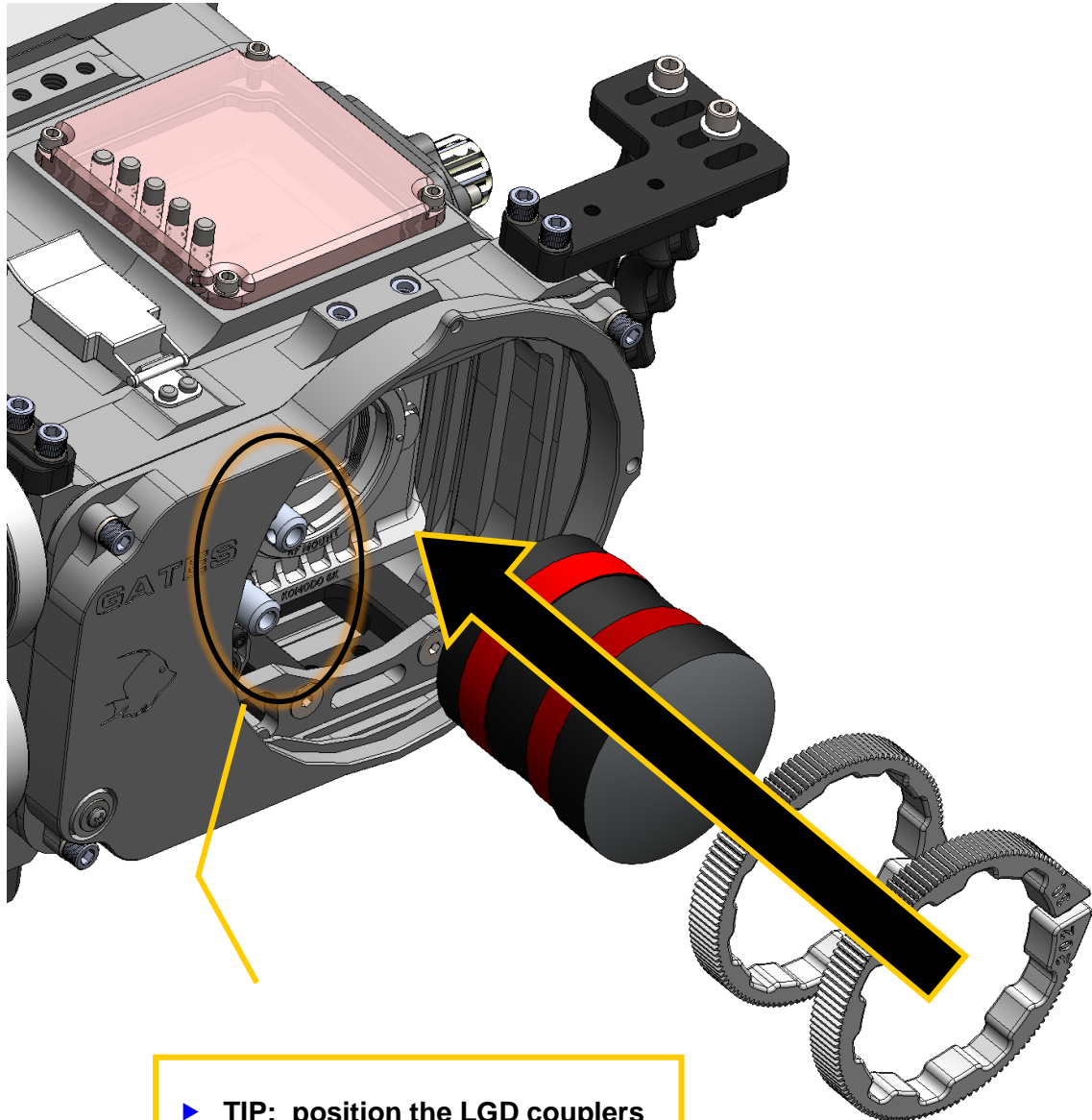
Note that the DK-X SDI and LCD Power Cables are secured together with a flexible cable wrap. We recommend you wrap the GCC Cable into this bundle for good cable management inside the housing.



Use the cable wrap to keep cables organized inside DK housing.

Mount Lens

If your lens requires Flex Gears, install those first and then mount the lens to the camera.



- ▶ **TIP:** position the LGD couplers toward the fish logo to avoid interference when installing a lens. See following pages for details on adjusting the coupler position.

Lens Gear Drives (LGD's)

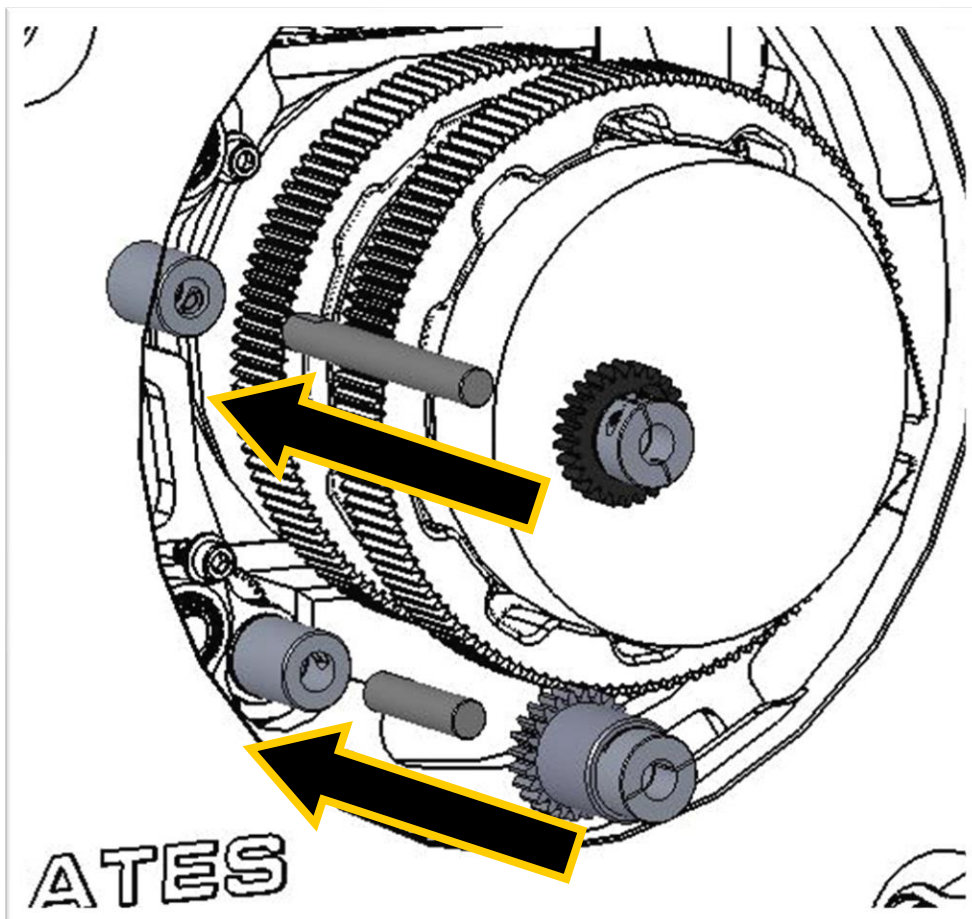
- ✓ **General Notes.** This section addresses the installation of two Lens Gear Drives (LGD's) in DK-X. This is relatively straightforward, using only two parts for each lens control: a drive shaft and drive gear.
- ✓ **Select drive shaft length.** Several lengths of drive shaft are included with the DK-X kit. Select the length to reach the lens gear but does not reach past it.

Install this drive shaft into the coupler on the housing. Using the tool provided in the kit, tighten the shaft onto the coupler.

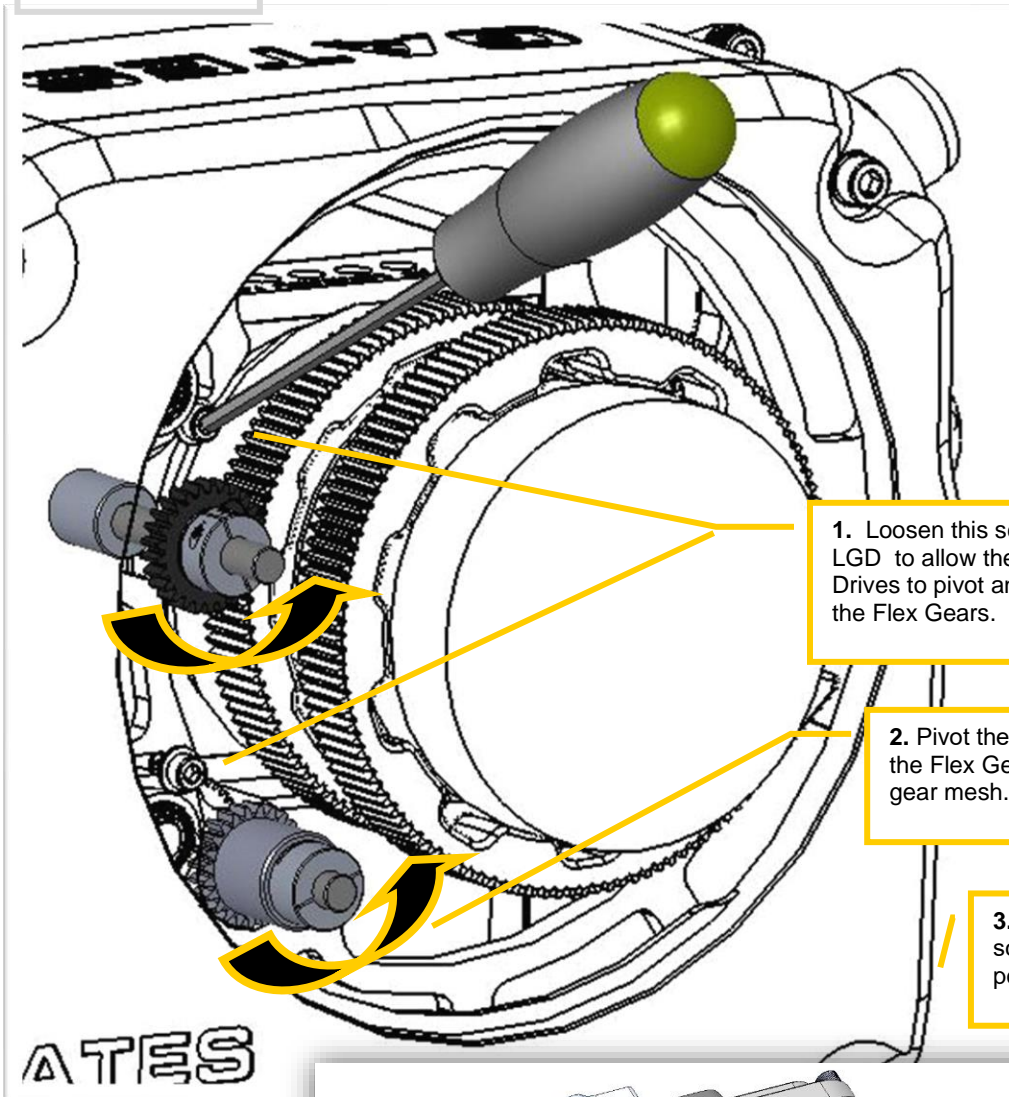
- ✓ **Select and install the Lens Gear Drive.** Note that your kit comes with six versions. Two are specifically designed for Flex Gears recessed into the housing, close to the camera. Refer to the images below.

Once positioned, secure the Lens Gear Drive with the tool provided in your kit.

- ✓ **Pivot the LGD into position** to mesh smoothly with the Flex Gears.
- ✓ **Tighten the screw** as shown in the images to secure the LGD in position.
- ✓ **Verify smooth operation** of the Focus and Zoom controls.



Pro Action Shown

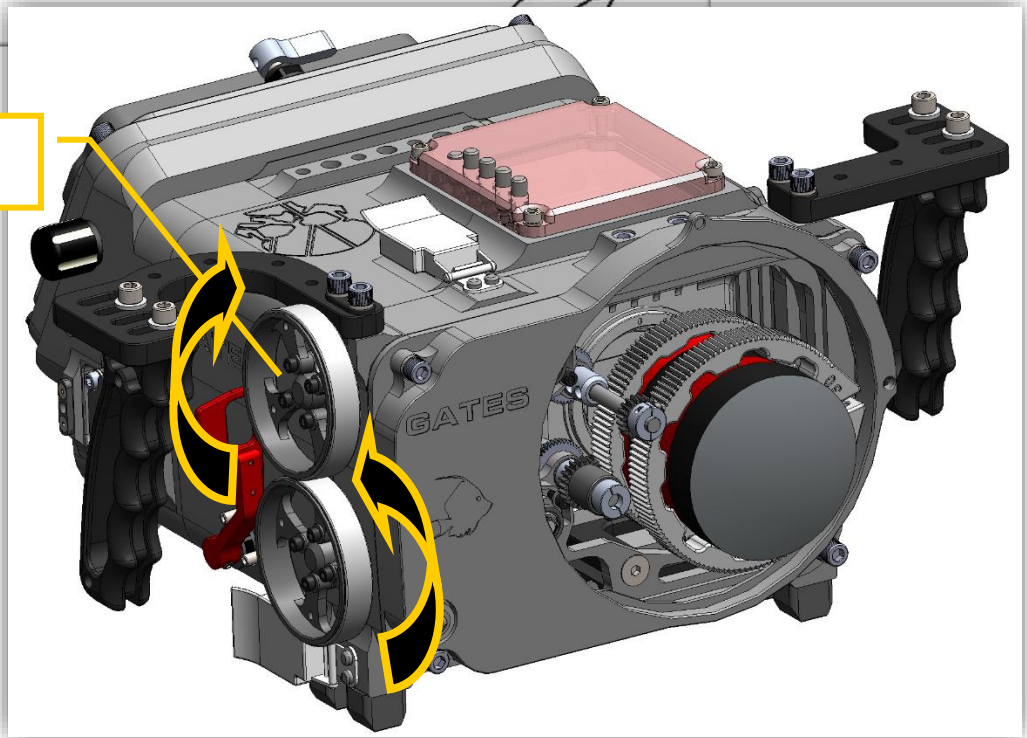


1. Loosen this screw on each LGD to allow the Lens Gear Drives to pivot and mate with the Flex Gears.

2. Pivot the LGD's to mate with the Flex Gear. Ensure a good gear mesh.

3. When positioned, tighten the screw to secure the LGD's in position.

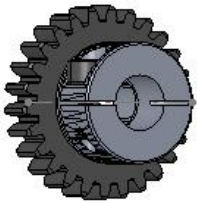
4. Verify focus and zoom operation.



Lens Gear Drive (LGD) Size Reference

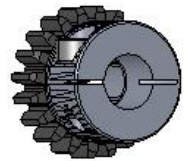
DK-X includes several size LGD's to accommodate different lens sizes. Below is a reference.

Focus Gears

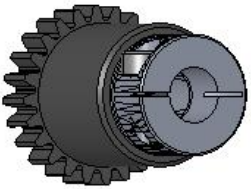


P/N 3000-94-228

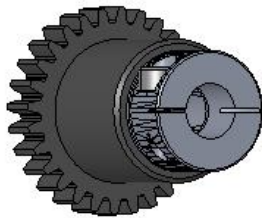
P/N 3000-94-242



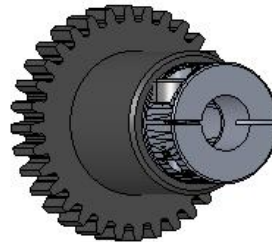
Iris and Zoom Gears



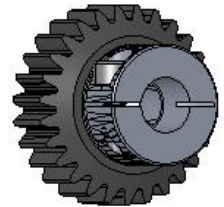
P/N 3000-94-229



P/N 3000-94-239



P/N 3000-94-233



P/N 3000-94-246

LGD's designed for Zeiss CP.3 lenses and others as needed.

Functional System Check

Before the next step – assembling Port Rings and Port – this is a good time to do a full system check. Activate the Master System Power switch and verify all components operational (see next section on controls for location of Master System Power and LCD Power Switch (if installed)).

- ✓ KOMODO-X camera auto boot
- ✓ LCD boot
- ✓ DK-X internal housing cooling fan (which you can feel pushing air left side of the lens)
- ✓ Record Trigger functions
- ✓ GCC control (see control details in next section)
- ✓ Focus and Zoom controls

When complete, power down the system with the Master Power Switch.

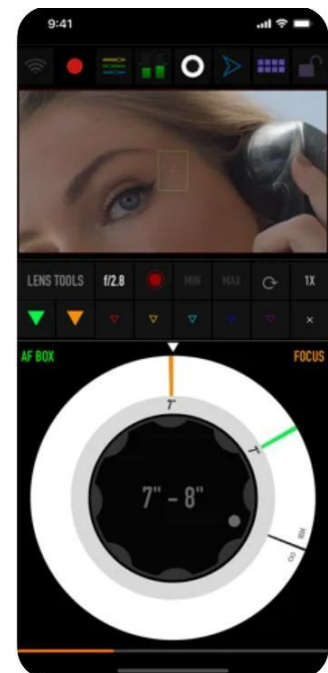
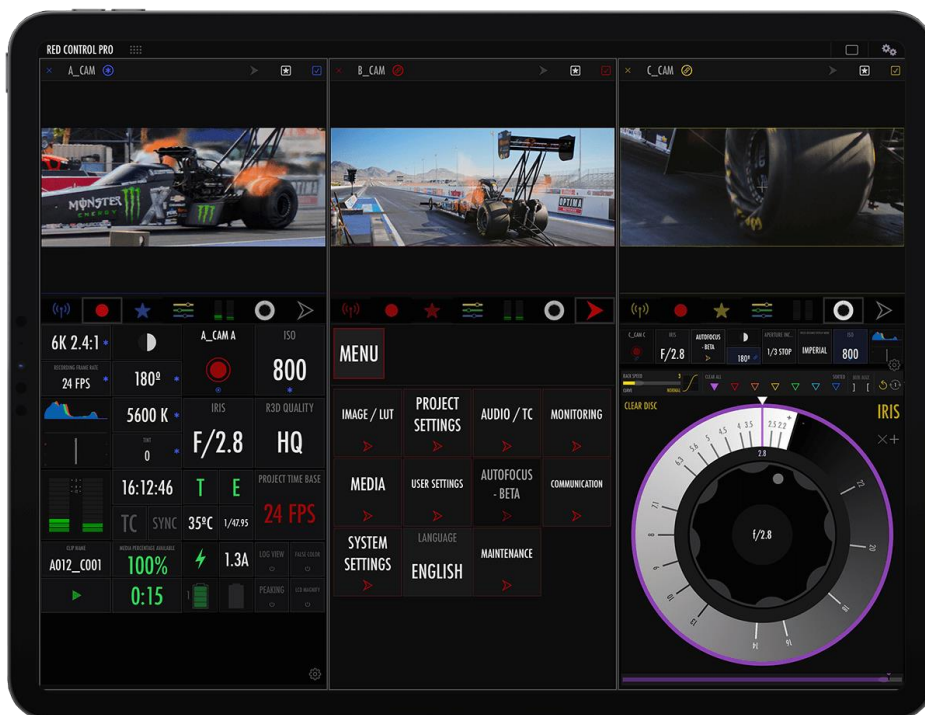
RED CONTROL & RED CONTROL PRO Apps

These apps are a powerful tool for DK-X, and enable camera authority from the surface in several ways.

- ✓ When in close proximity to the camera / housing at the surface, a Wi-Fi connection can be established to change camera parameters.
- ✓ As the name implies, an Antenna Extender cable will allow wifi connection to DK-X while operating underwater. by re-positioning the camera antenna at the surface with a 100ft / 30m cable.
- ✓ Alternatively, an Ethernet cable also provides direct, wired connection between DK-X and iOS device. Details can be found on Gates website [RED CONTROL PRO iOS / USB-C Gig-E Setup](#) and [RED CONTROL iOS / Lightning Gig-E Setup](#).

Antenna Extender and Ethernet cables are optionally available, contact Gates for more details.

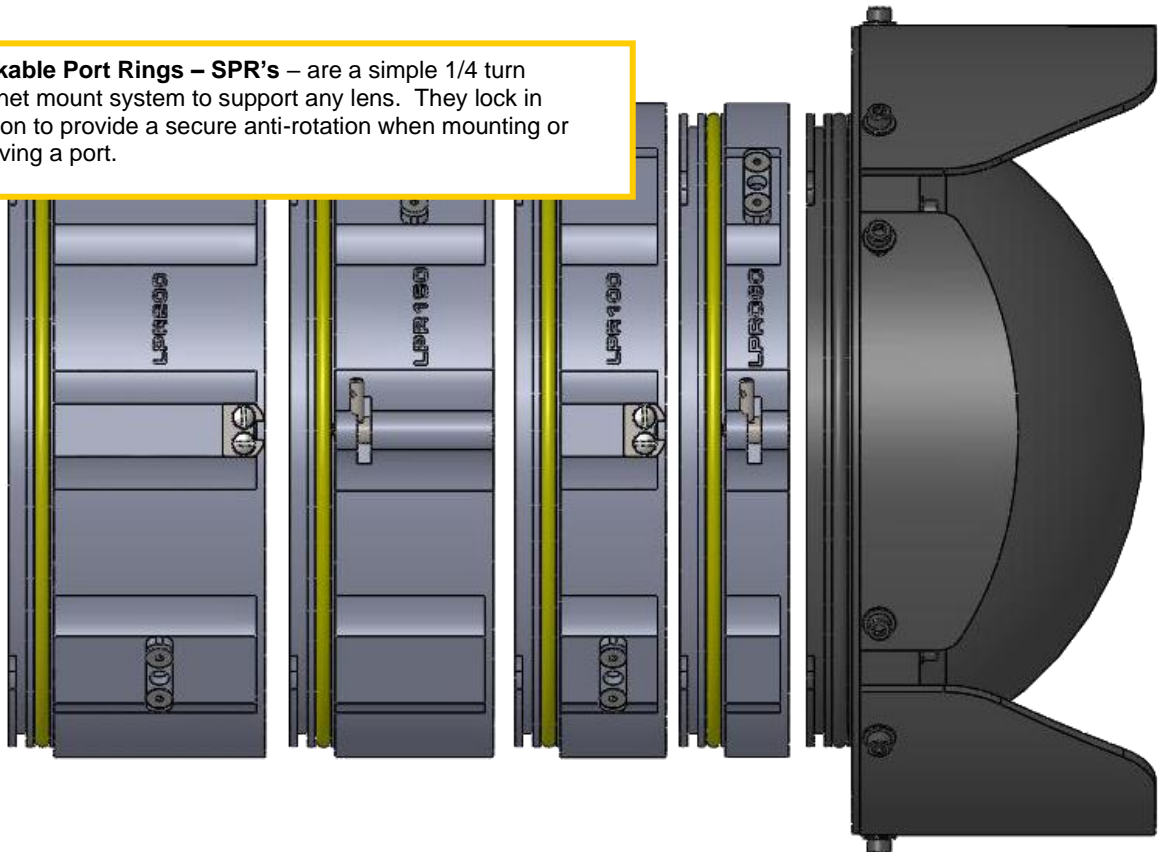
- ▶ NOTE: A Wi-Fi connection does not work through water. A connection is only possible while DK-X / KOMODO-X are at the surface or via the Antenna Extender cable option.



Configure SPR's and Port

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 to provide a secure anti-rotation when mounting or removing a port.



Stacking the right combination of SPR's 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 any given lens to use with DK-X. This lens data is summarized in a Compatibility Matrix. It can be found on Gates Website.

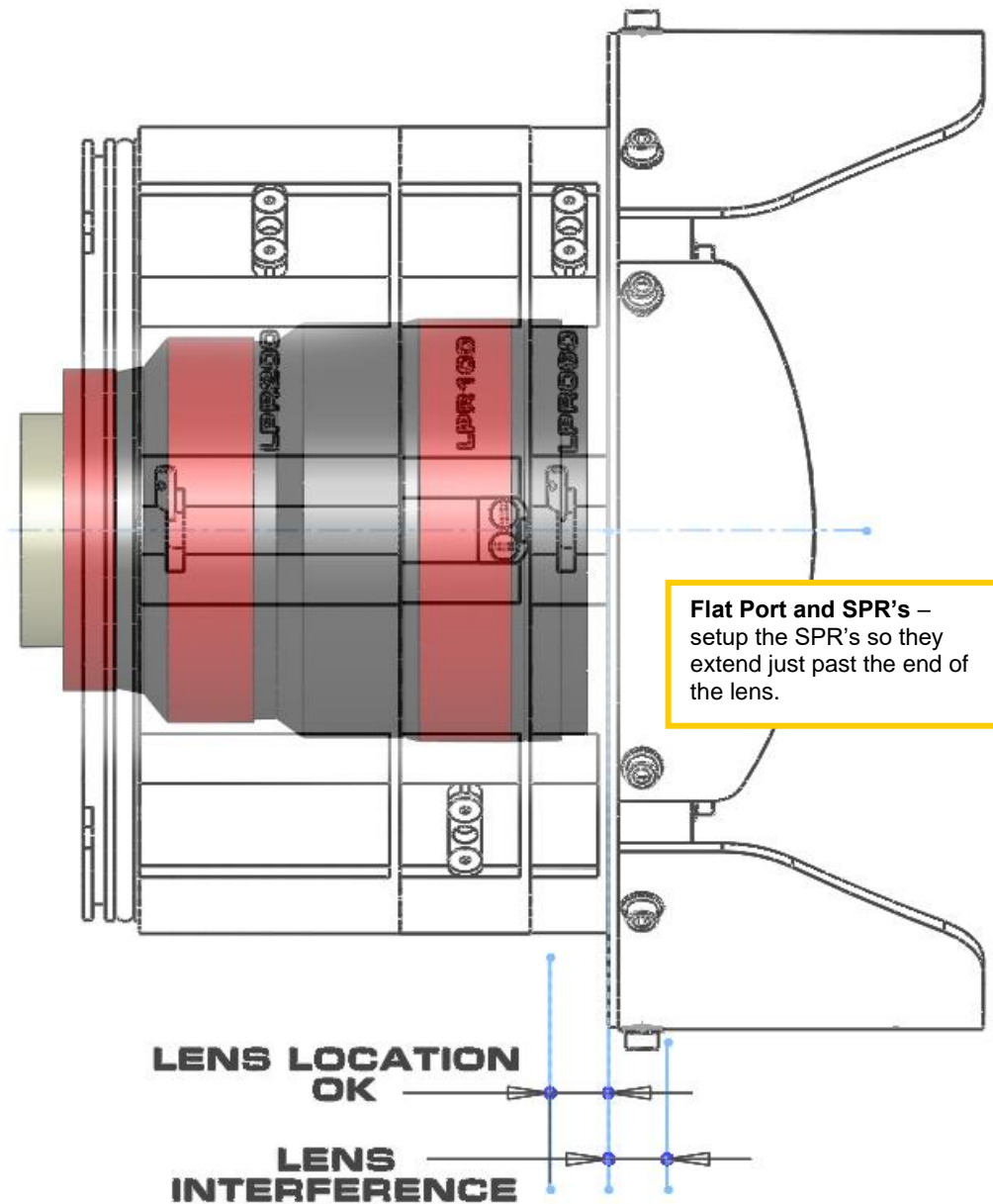
The Compatibility Matrix is constructed to identify the proper Port Extender or Port Ring (used on other Gates cinema-grade housings), and a conversion to a combination of SPR's is available from Gates.

- ✓ **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.

- ✓ **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.

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.

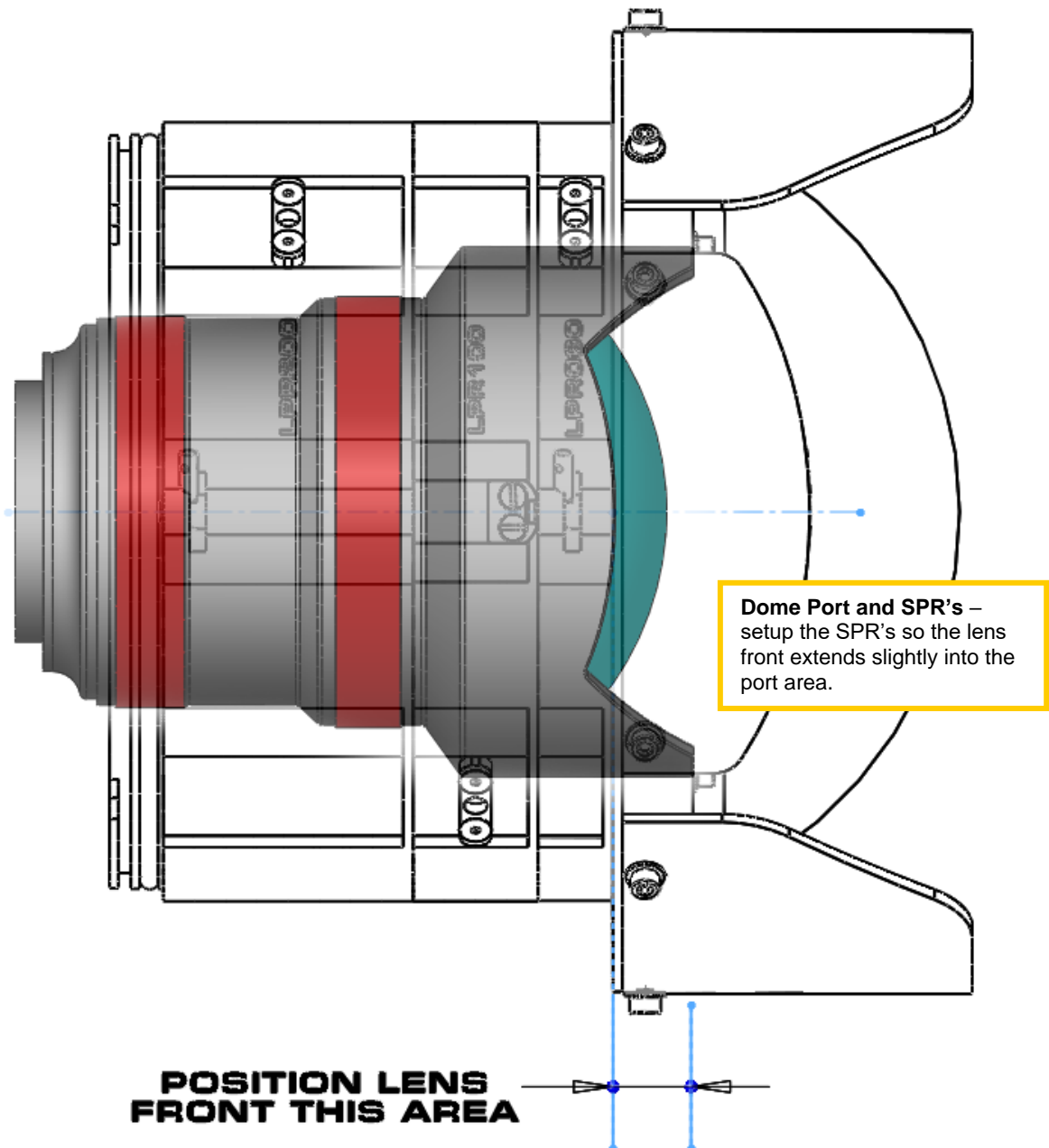


- ✓ **A Dome Port is used commonly with wide angle and fisheye lenses, typically 8mm at the shortest (35mm equivalent) to about 20-35mm.**

Referring to the image, setup the SPR's so the end of the lens – either the lens body or glass element – extends slightly into the port.

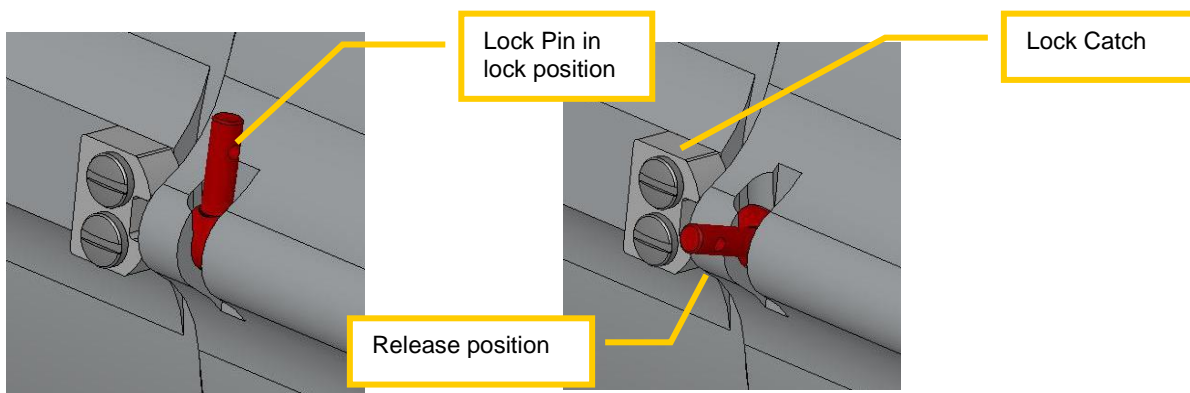
Test for vignetting and image quality. If necessary adjust the position of the lens with respect to the port and re-test to achieve optimum results.

- ✓ **CAUTION! CAREFULLY INSTALL DOME PORT AND OBSERVE POSSIBLE INTERFERENCE WITH GLASS DOME.**

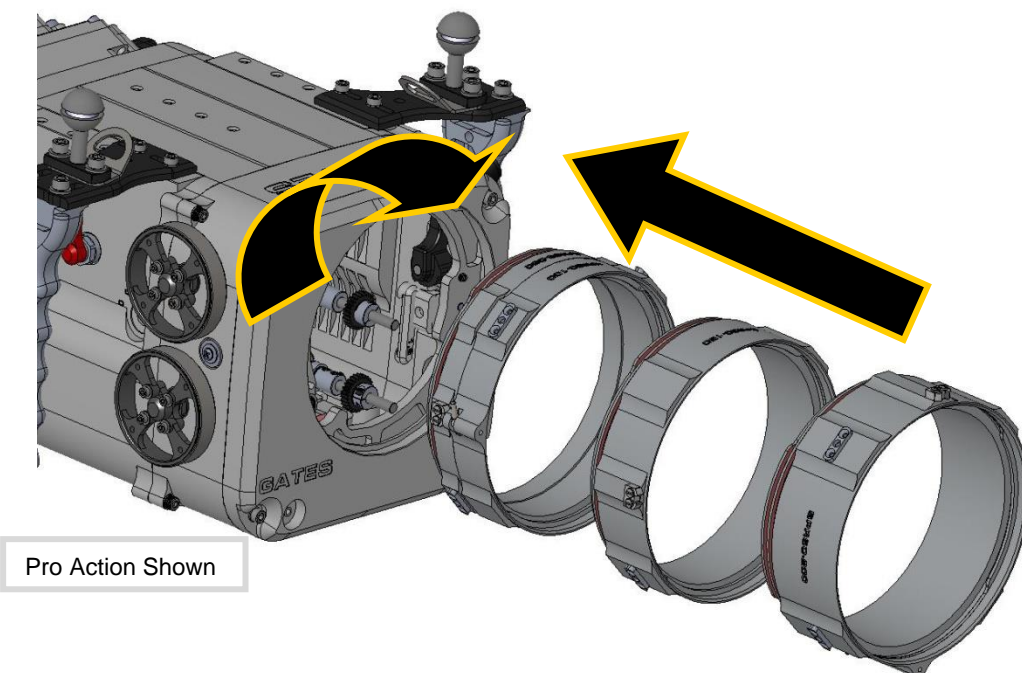


Mount Stackable Port Rings (SPR's) and Port

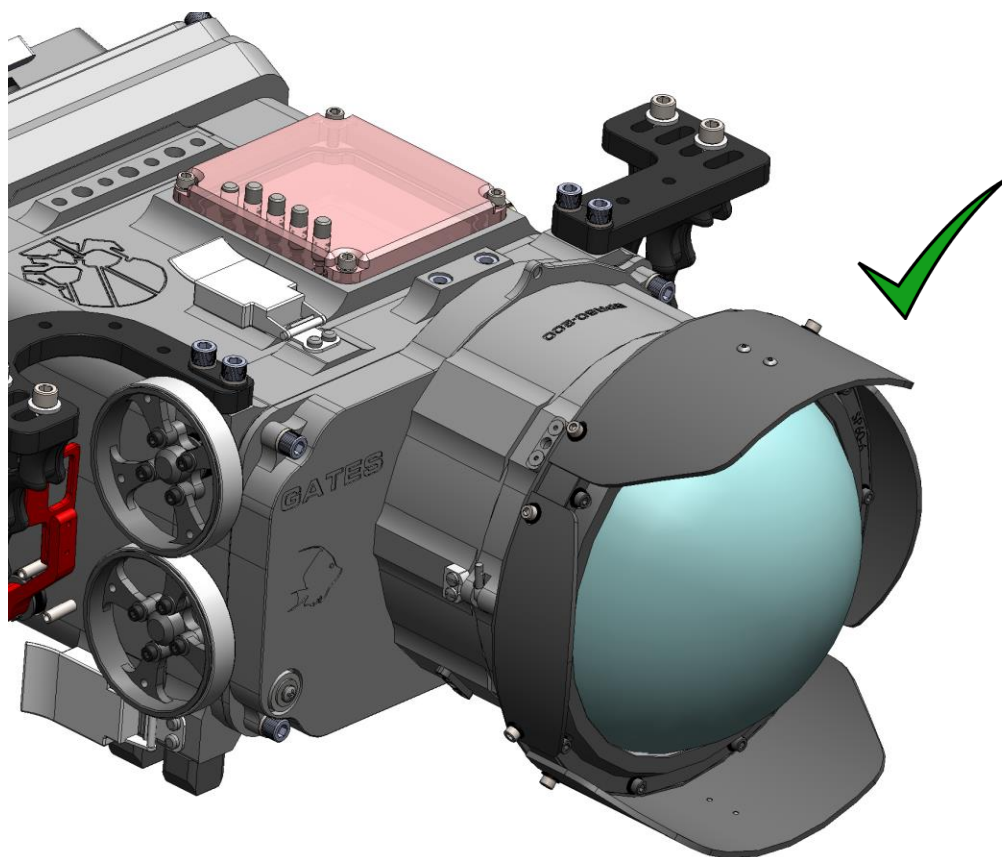
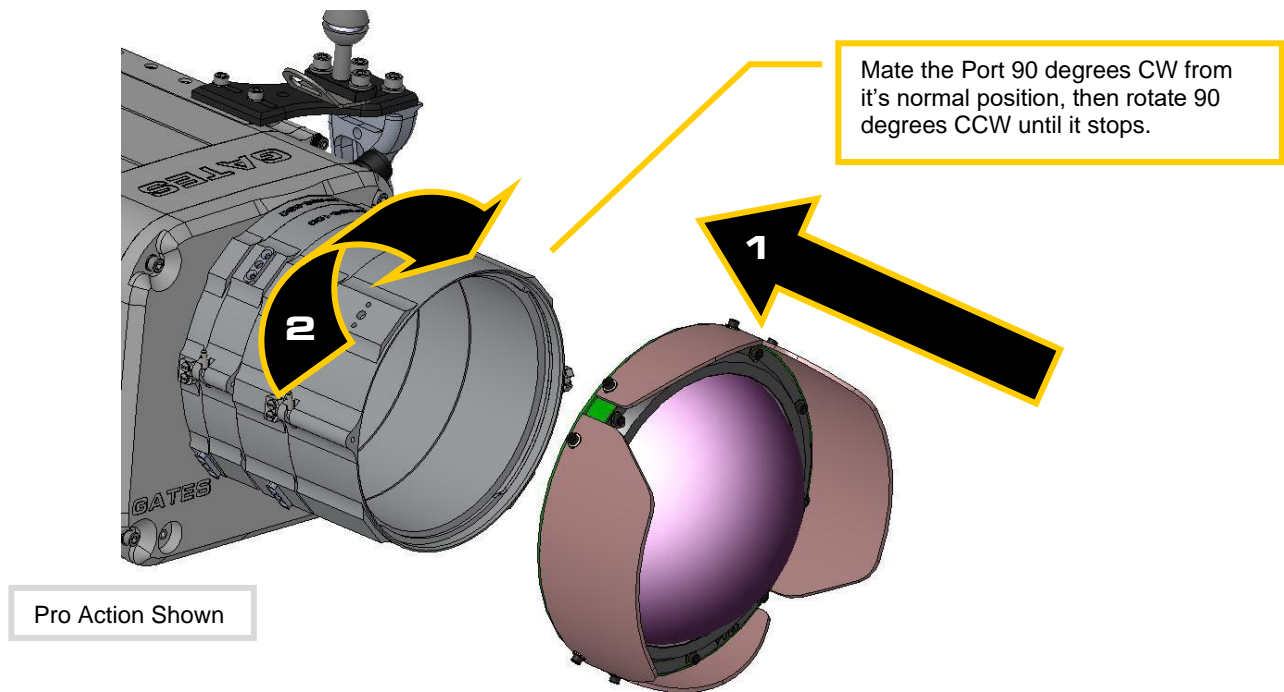
- ✓ **SPR's are assembled in any order on the housing.** Place the lock pin on the first SPR in the 'lock' position.
 - ✓ **Lubricate O-Rings** as necessary for smooth, easy rotation.
 - ✓ **Start by mating the first SPR to the Port Base with the locking pin at the top.** Mate the SPR to the housing fully, then 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.



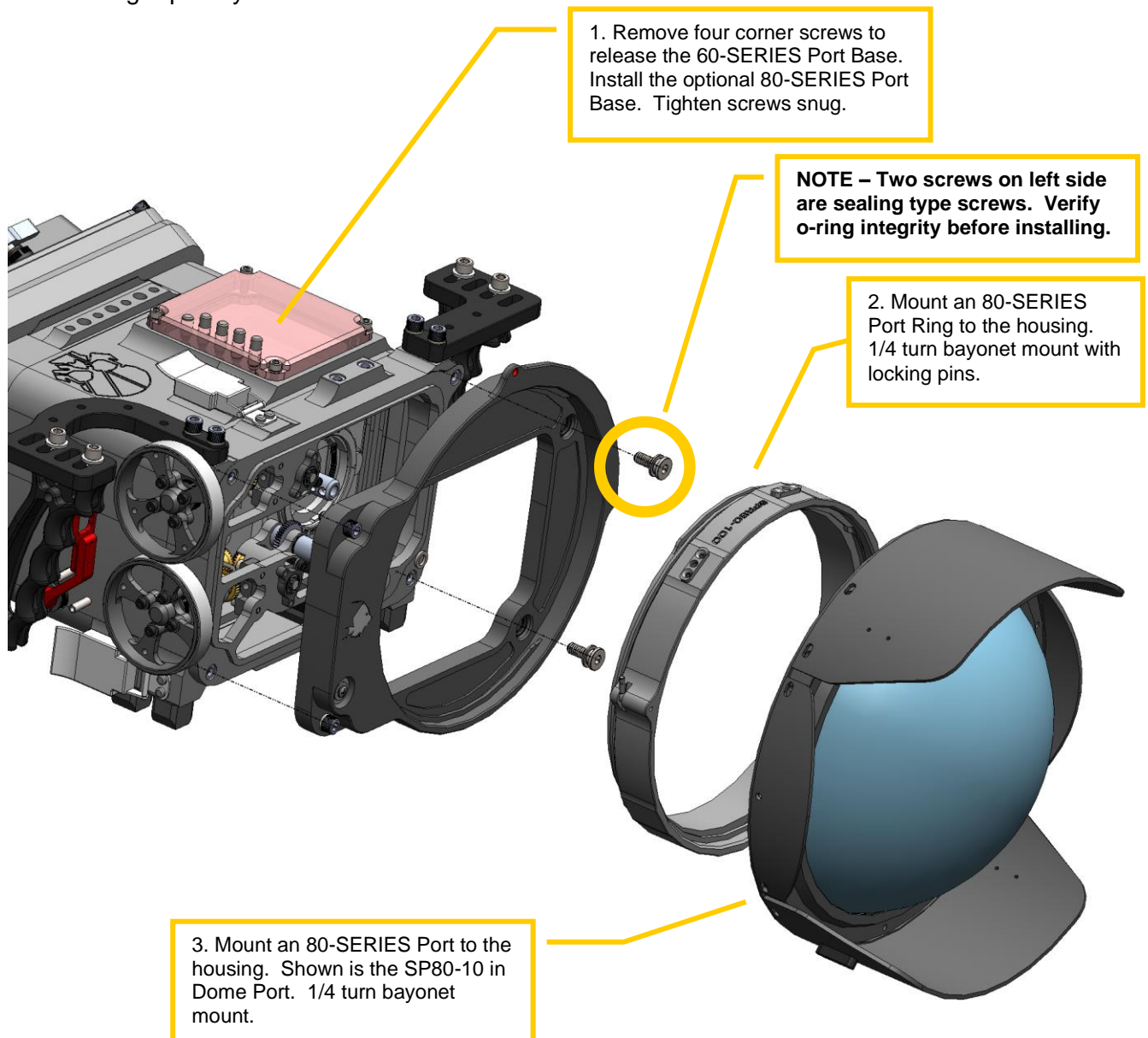
- ✓ When finished mounting SPR's, **mount a Port to the SPR's** in the same manner, mating 90 degrees and rotating counter clockwise when viewing from the rear of the housing.

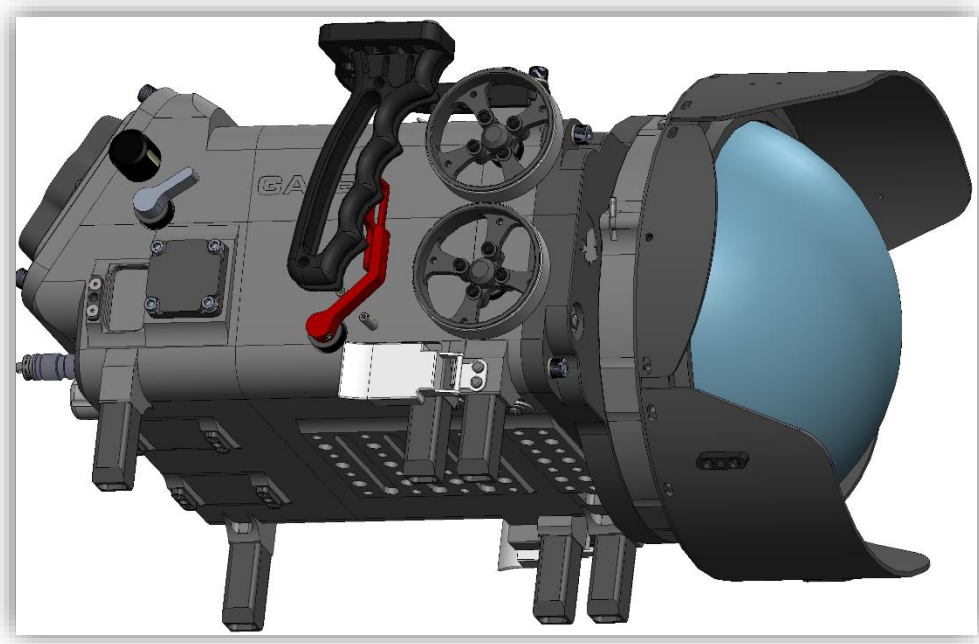
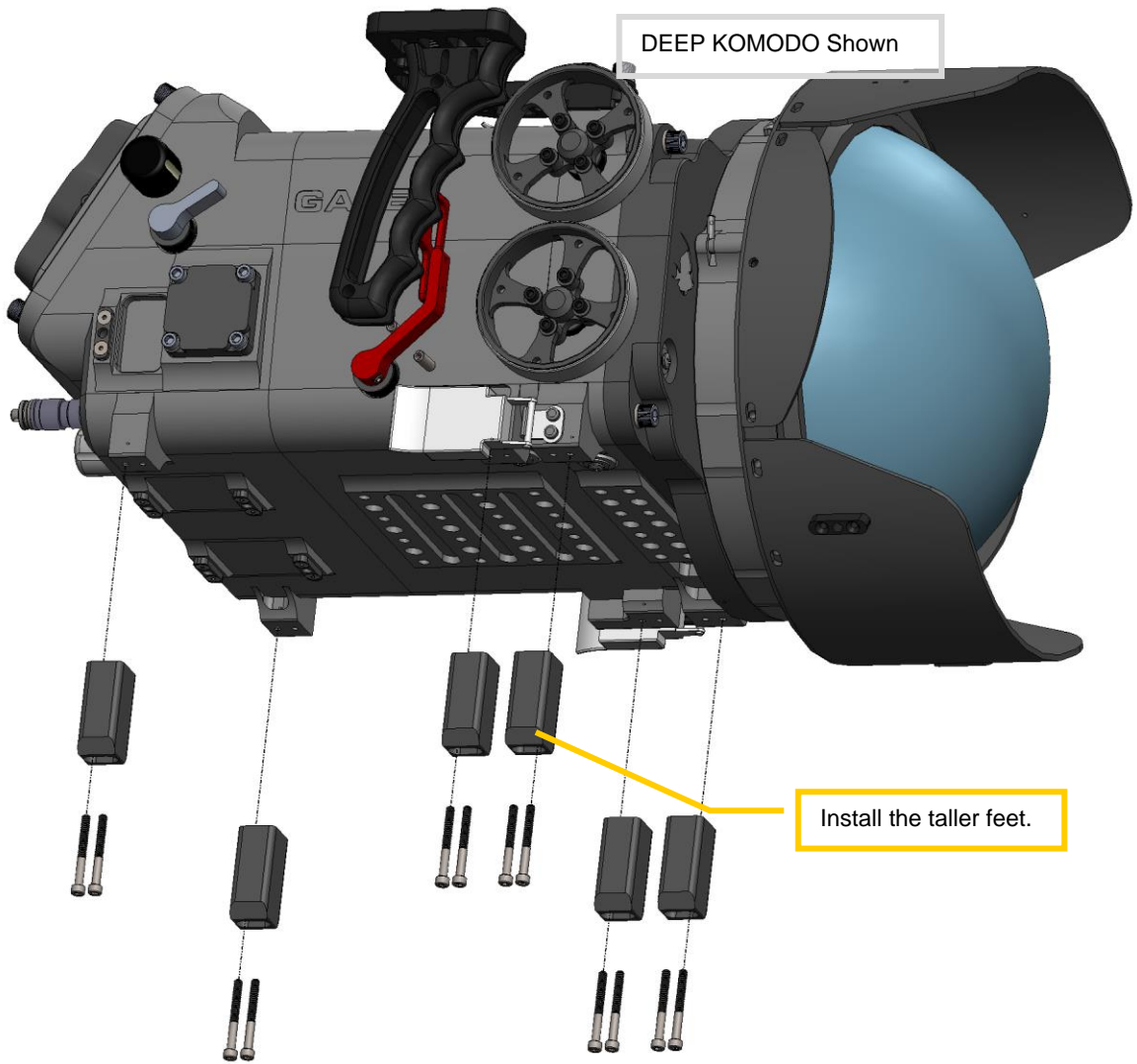


Changing the Port Base

Gates larger port series – the 80 series – can be used with DK-X. The 80 series port system includes both SP80-8 in and SP80-10 in spherical diameter dome ports. This can be useful in certain applications where the benefits of a larger dome are realized.

- ✓ **Remove the 60-SERIES Port Base from DK-X.** The four corner screws will release it from the housing. Install the 80-SERIES Port Base, followed by an 80-SERIES Port Ring and Port.
- ✓ **Visually check the 80 Port Base o-ring** for damage or foreign material that may compromise seal. Do the same with the mating surface on DK-X front shell.
- ✓ **Next, install the taller feet on DK-X.** This keeps the housing from resting on the larger port system.

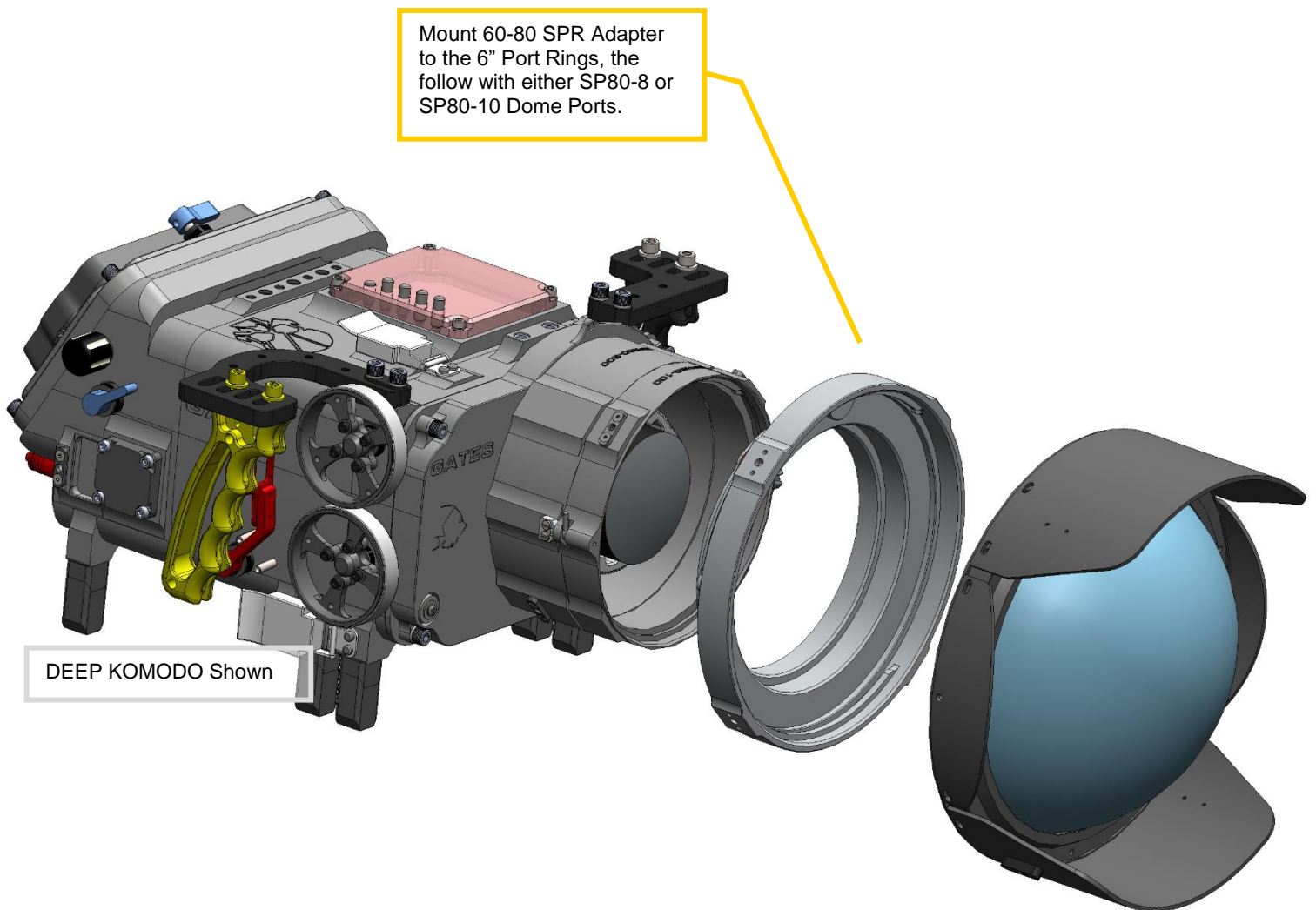




Installing the 60-80 SPR Adapter

DK-X allows for using 80-series ports in another way, with the 60-80 SPR Adapter.

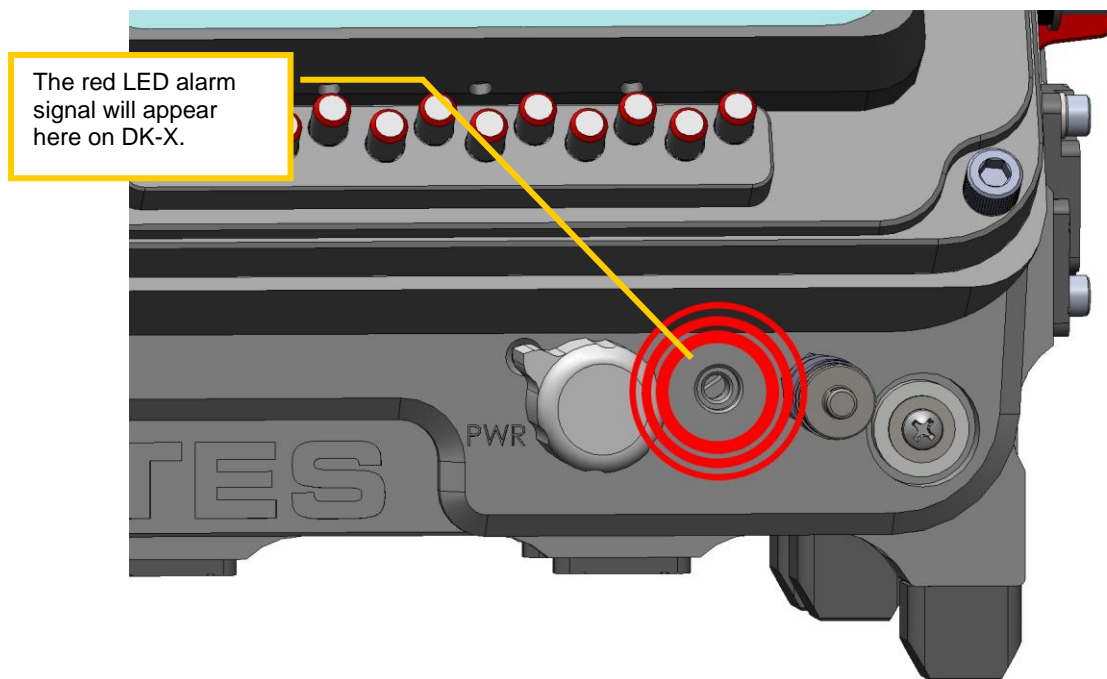
- ✓ **Mount the 60-80 SPR Adapter** to the SPR60 Port Rings in the same manner as mounting another Port Ring, allowing the SPR to lock in place.
- ✓ **Mount an 80-series Port** to the 60-80 SPR Adapter similarly to all other ports, starting 90 degrees CW (viewed from the rear) and rotating 90 CCW into position until the port stops.



Water Alarm (Optional)

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 www.GatesHousings.com

The LED indication for the water alarm is found next to Master Power control, shown below.

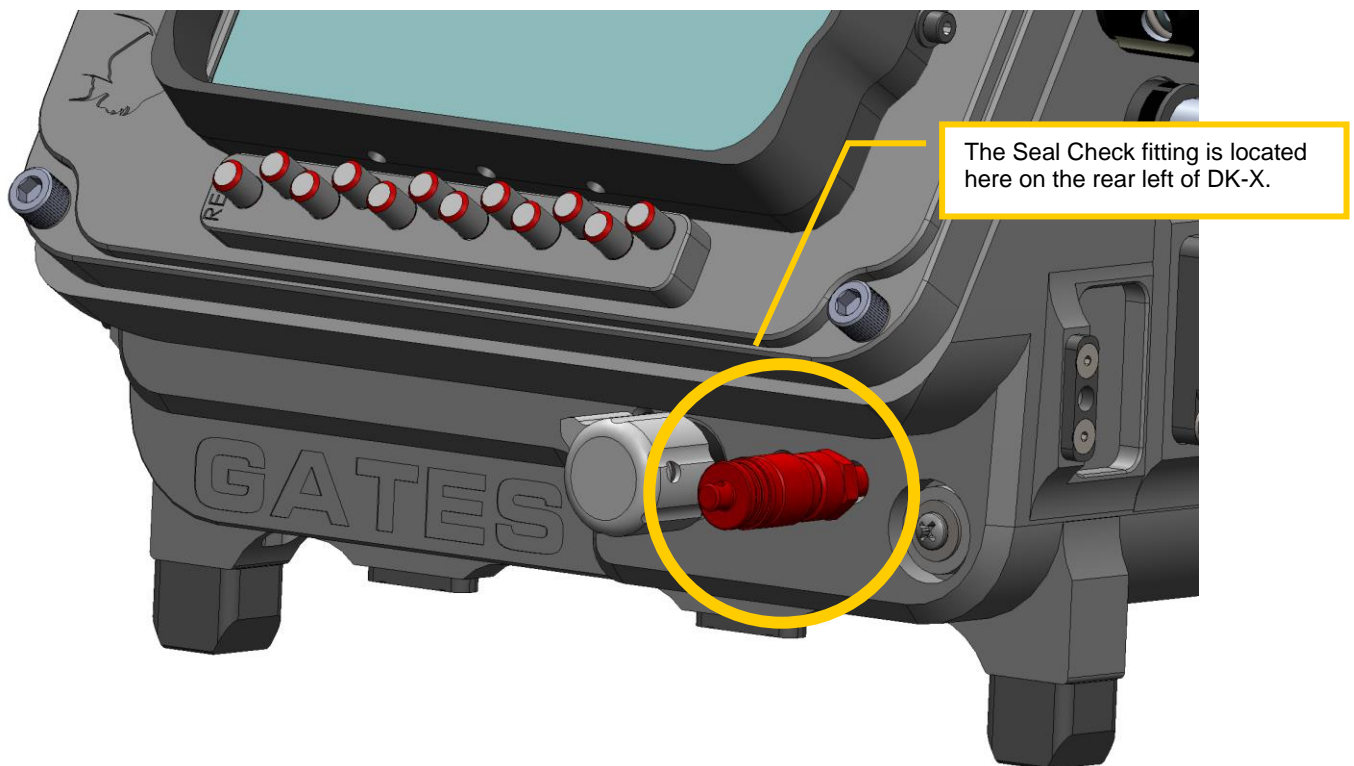


Seal Check

- ✓ **Seal Check Manual.** Follow the procedures in the Seal Check manual for verifying integrity of the housing and monitor.
- ✓ **CAUTION.** Draw only about 100 millibars vacuum (Seal Check Lite and Seal Check II kits) or 3 in Hg (Seal Check I) on DK-X. More vacuum can inhibit the transfer of heat away from the housing.
- ✓ Note that **Seal Check Lite** – included with DK-X – requires about 80 cycles of the hand pump to reach 3 in Hg / 100 millibars vacuum.

Final Checks

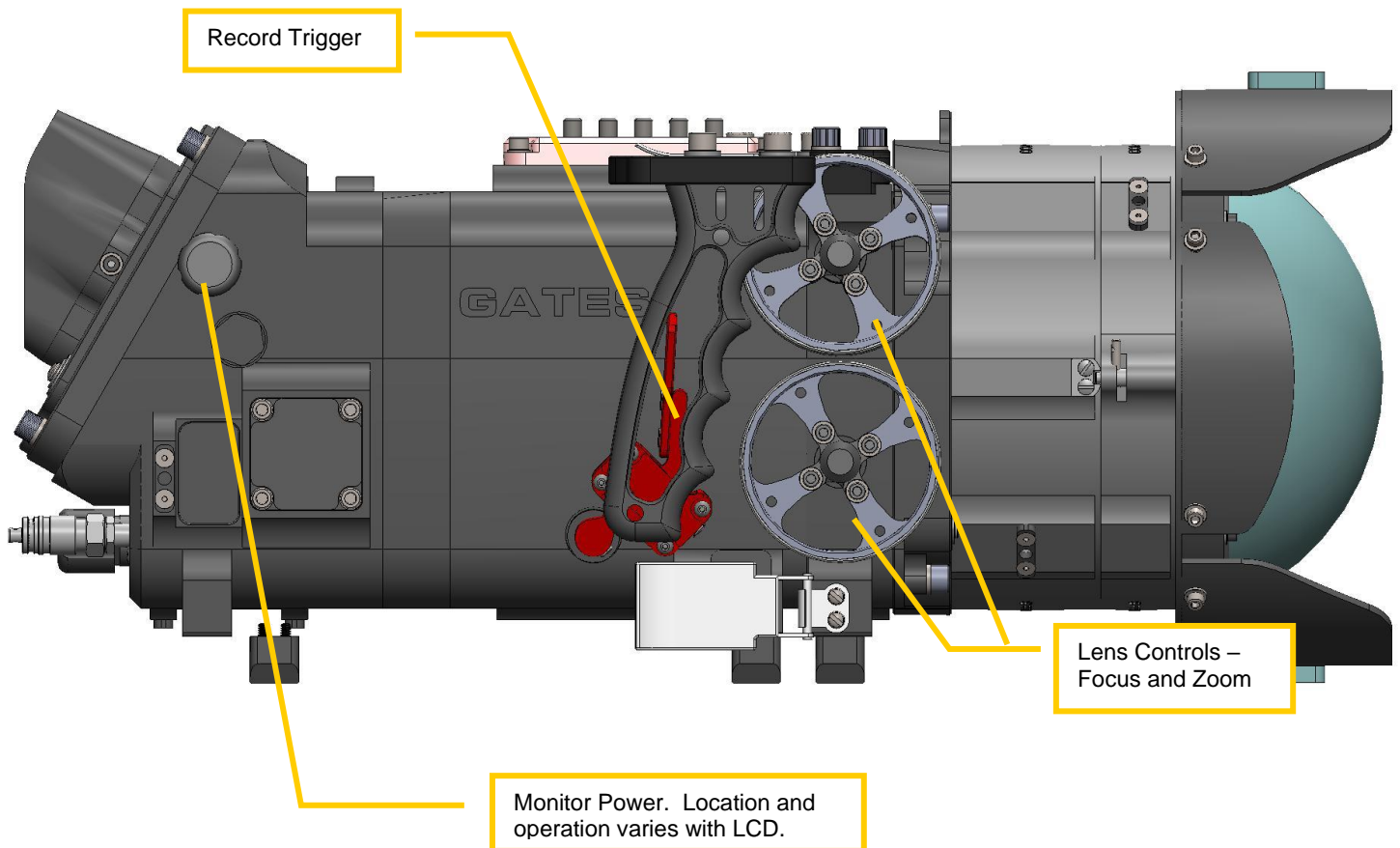
- ✓ **Visual Inspection.** Look closely at all seal mates – Port, SPR's, and main Housing seal – for gaps. Look over the housing one final time.
- ✓ **Verify operation.** As a final check, power on the camera and verify all controls are functioning normally.



3: DK-X Operation

Right Side Controls

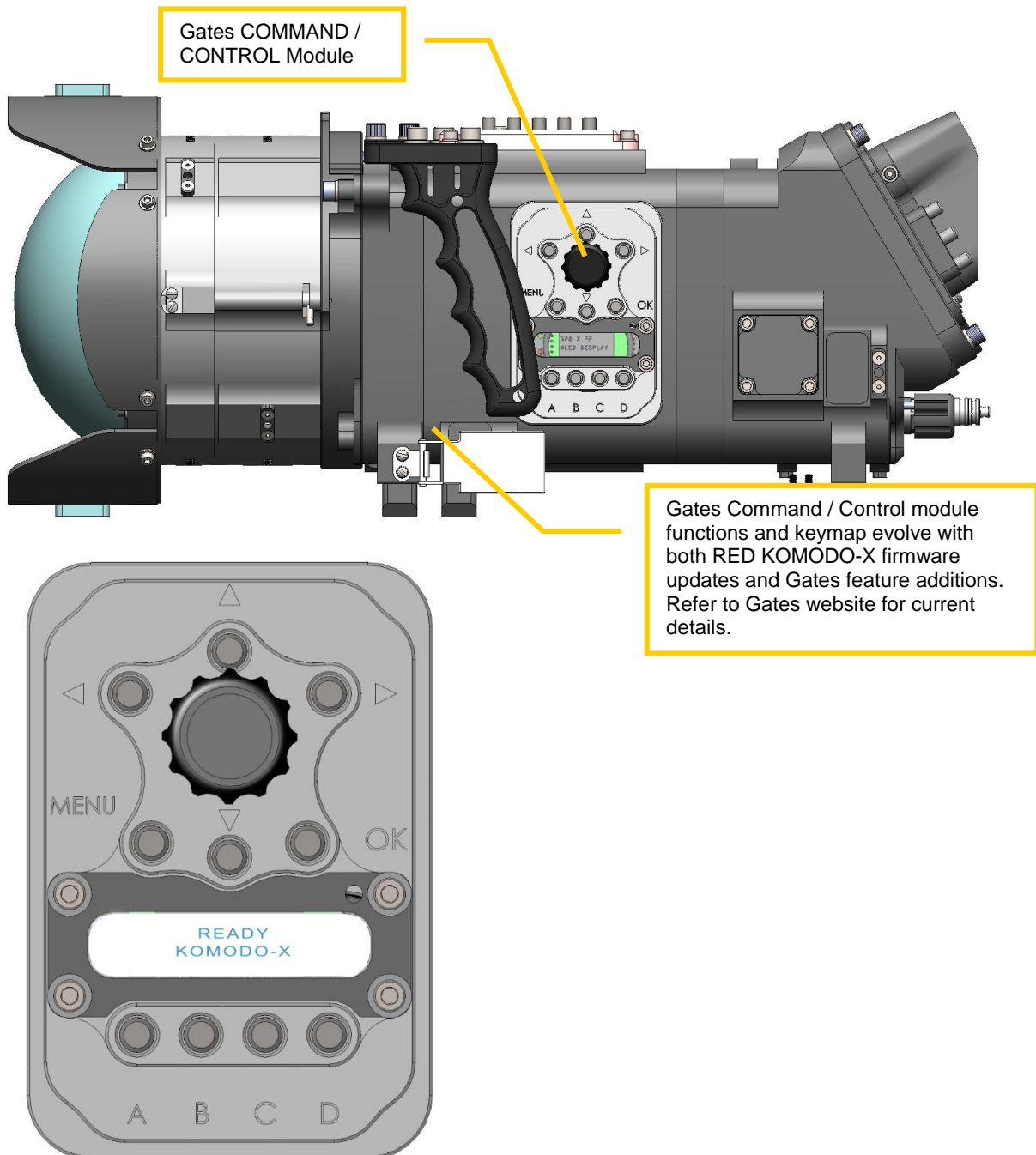
- ✓ **Record Trigger.** Activates record start / stop on all cameras.
- ✓ **Lens Control.** These two mechanical controls can be mapped to a DSLR or compact PL lens for focus, iris or zoom.
- ✓ **Monitor Power.** ATOMOS SHINOBI SDI LCD requires the additional step to press the Power On/Off control with this LCD. A Power On/Off control is also provisioned for the Ultra 5 LC, but not for the 503. Refer to the previous section on 'Auto Boot' feature for the 503 LCD.



Left Side GCC Control

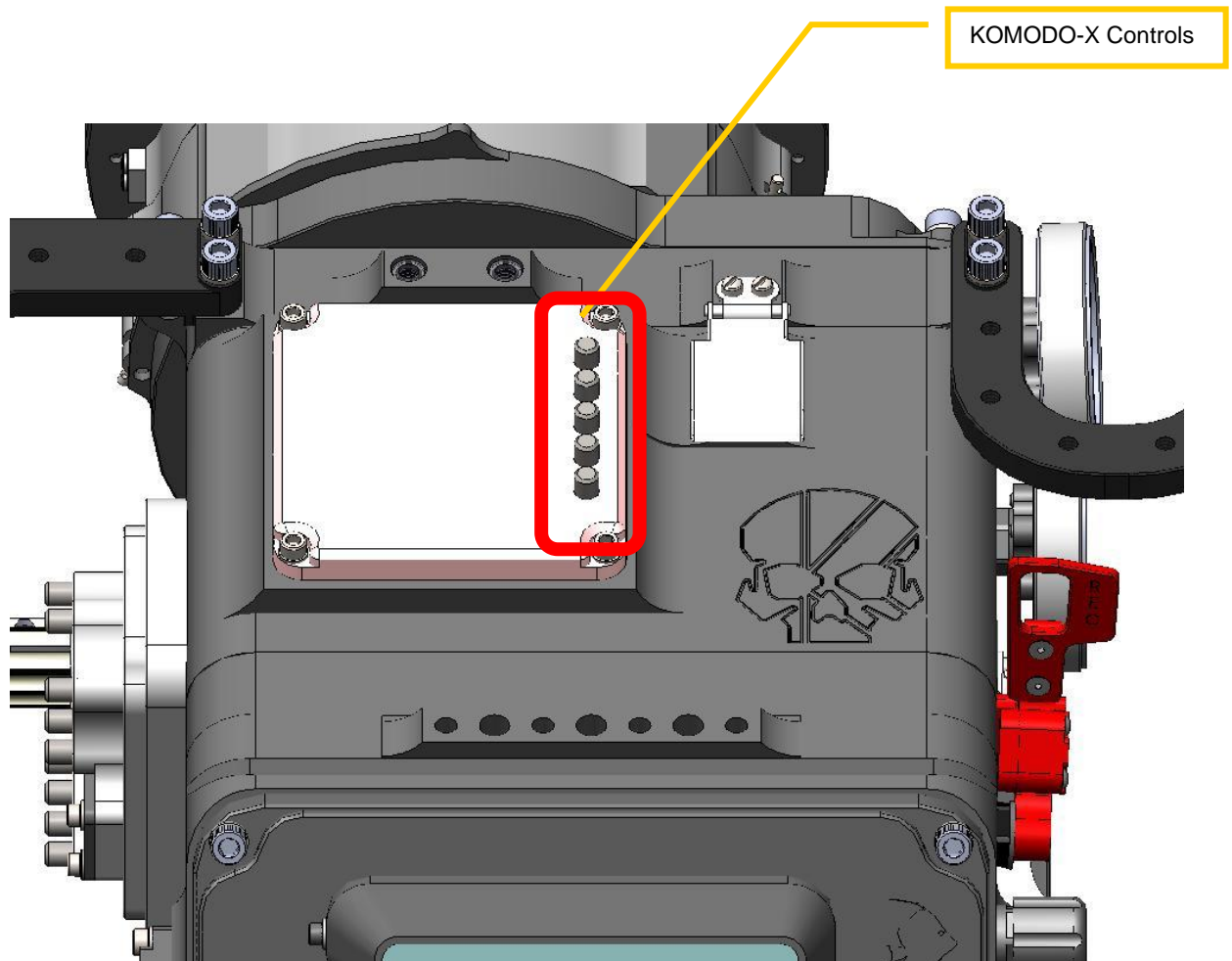
- ✓ **Gates COMMAND / CONTROL Module (GCC).** Provides direct camera control of iris (DSLR and Mirrorless lenses), ISO, shutter speed, frame rate, white balance, focus and exposure tools, and much more.

GCC functions evolve both with RED firmware updates and Gates feature additions. Refer to Gates [DK-X webpage](#) for current release information and GCC keymap



Top Controls

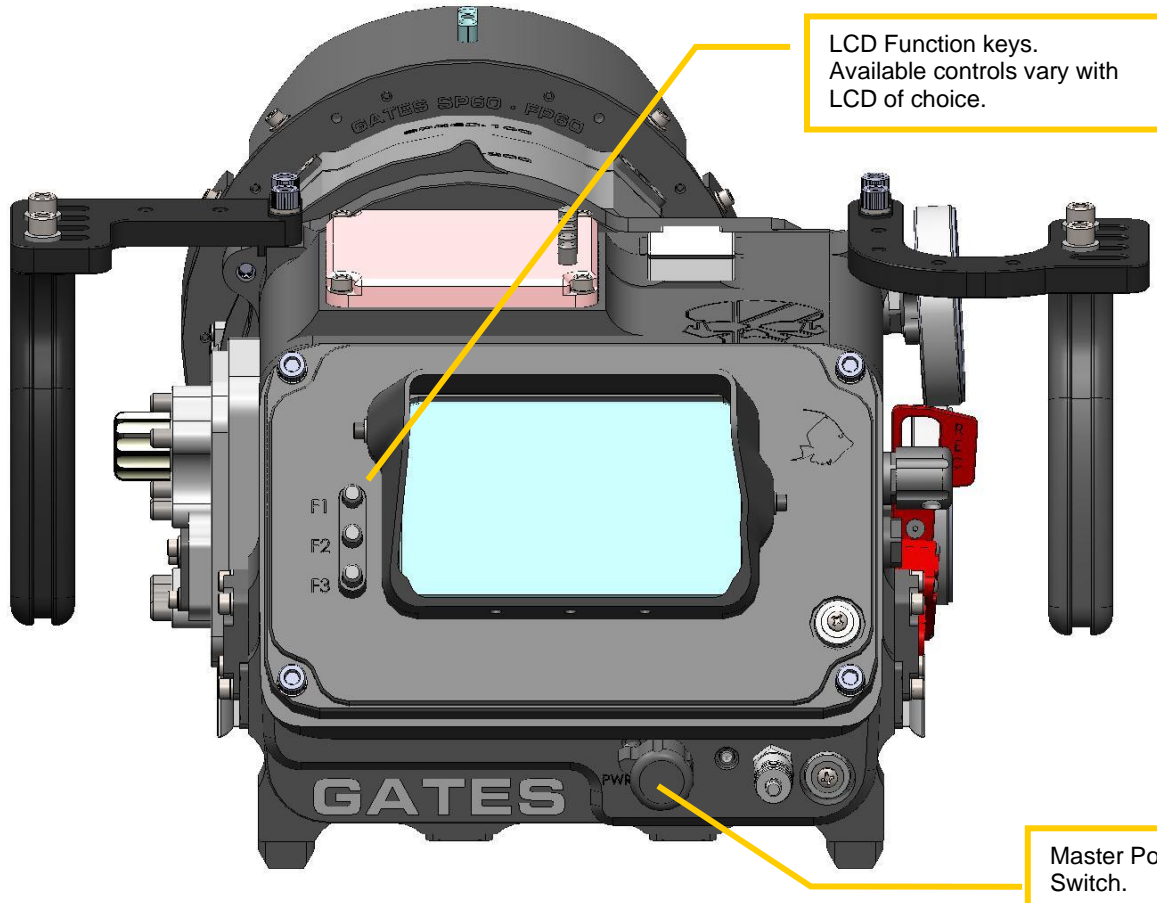
- ✓ Five controls in the top window directly access KOMODO-X navigation buttons: MENU, ▲, ▼, ►, ◀, SEL.



Rear Controls

- ✓ **LCD Controls.** 12 pushbutton controls below the window access the SHINOBI LCD touchscreen for access to a variety of focus / exposure tools.
- ✓ **LCD Overlay.** A rotational / press control above the window allows toggling on / off the SHINOBI overlay. This is useful if it obstructs view of KOMODO-X camera overlay. There are no controls for 503UB or Ultra 5 LCD's.
- ✓ **Master Power Switch.** Rotate the control into position and press to turn on system power.

NOTE: SHINOBI SDI LCD requires turning on power with the separate power control on the right side.

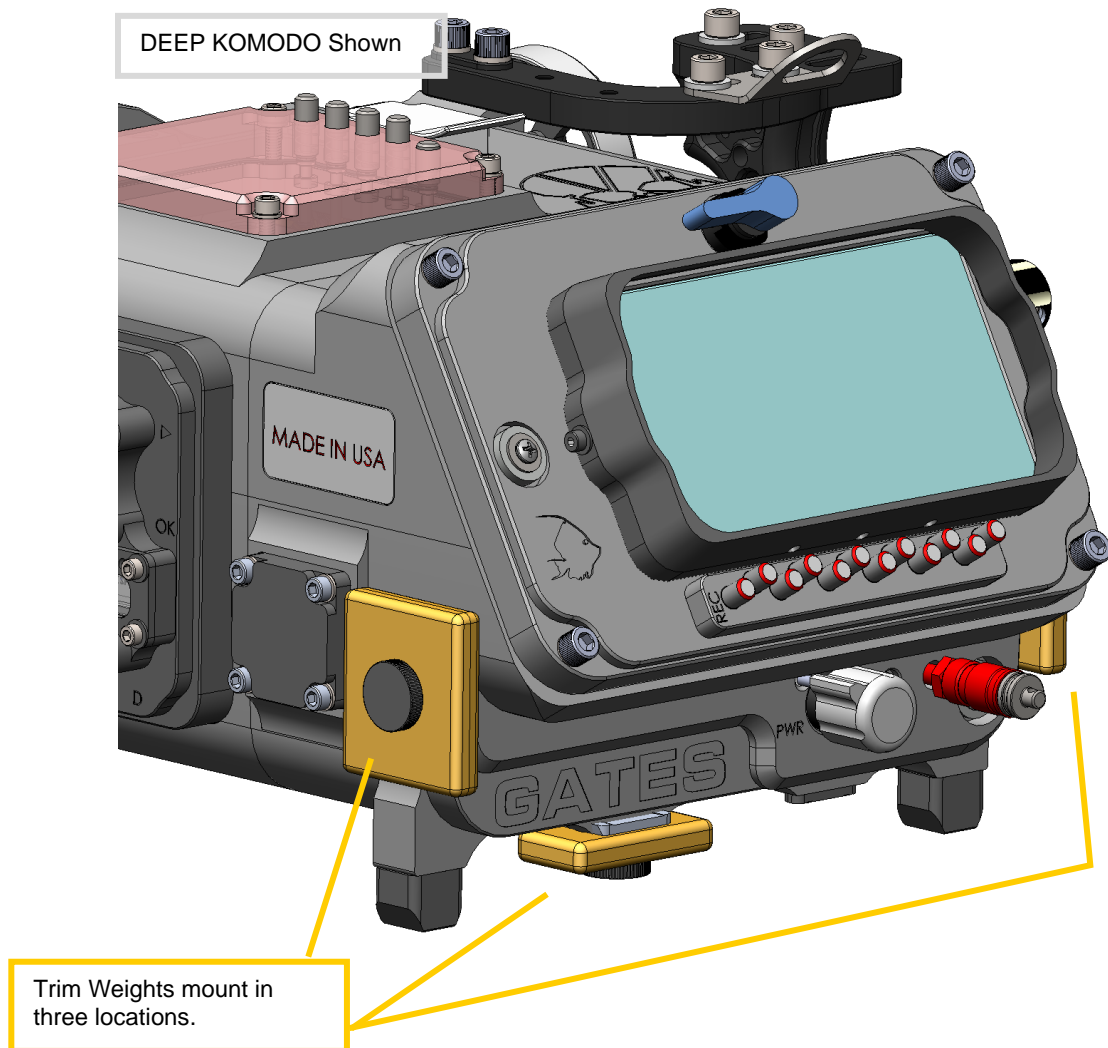


Buoyancy / Trim

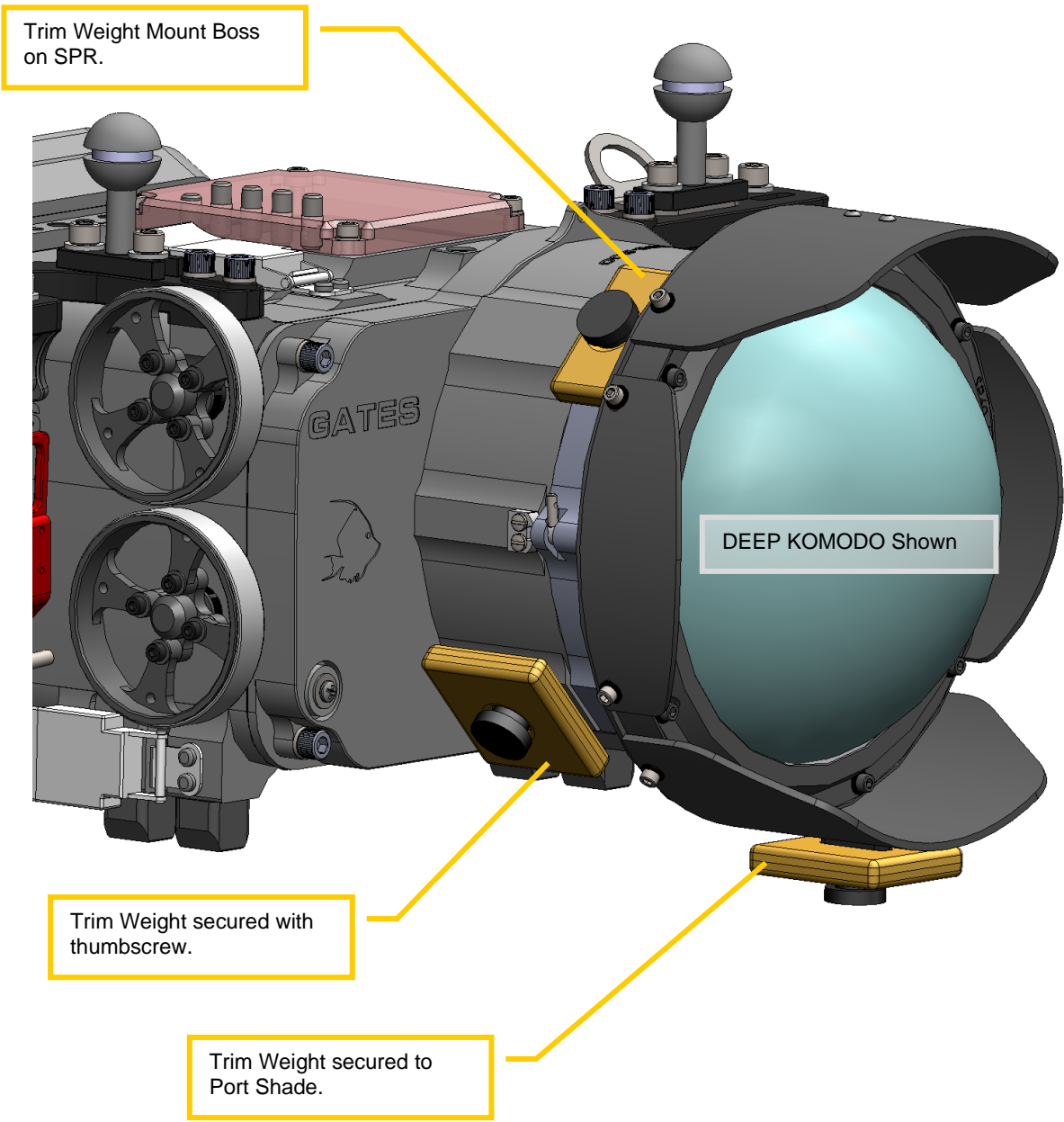
DEEP KOMODO-X has a trim weight / float system for establishing perfect neutral / trim buoyancy underwater. Trim Floats are included with DK-X. Trim Weights are optionally available.

There are two general locations for trim weights.

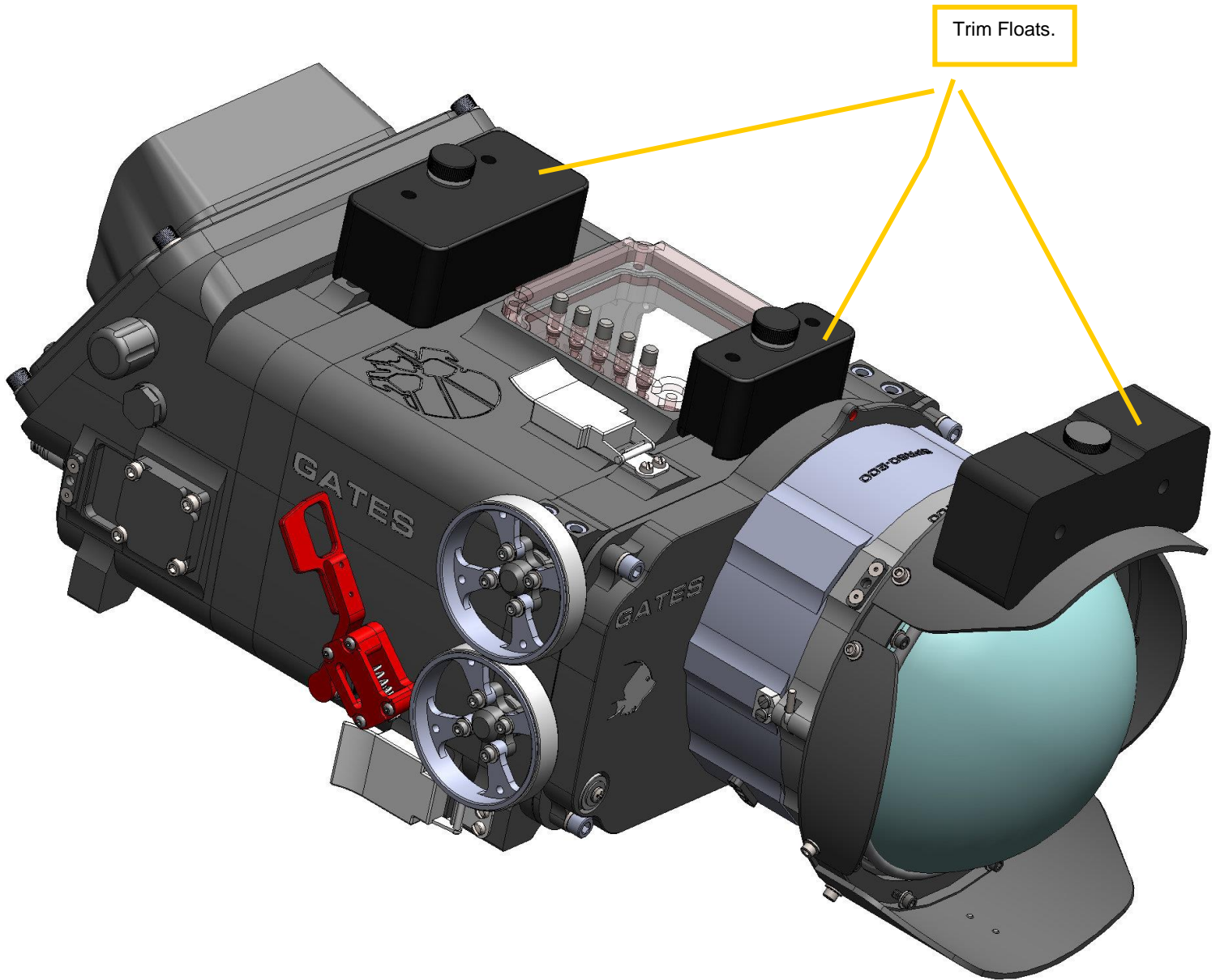
- ✓ **Rear Housing Shell** – see image below. Three locations on left, right and rear of housing shell.



- ✓ **Stackable Port Rings.** Trim weights can also be secured to the SPRs and Port Shades, as shown.



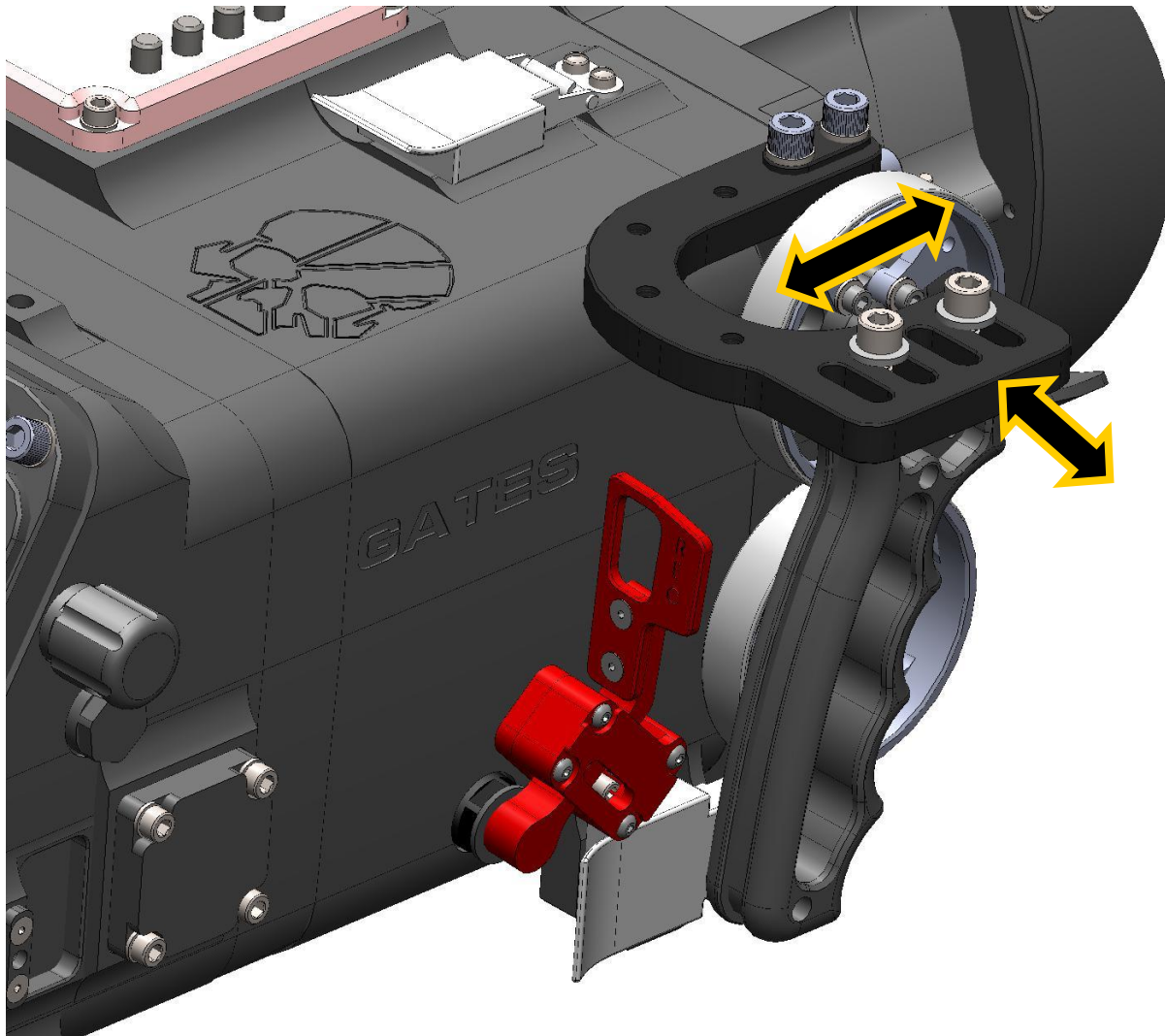
- ✓ **Trim Floats.** These can be positioned in several places. Refer to image below.



Adjustable Handles

DK-X includes adjustable handle grips. They can be moved left / right and forward / back for optimal hand positioning to controls. See image below.

Use the 3/16 ball driver hex tool to loosen (or remove) the two screws to adjust.

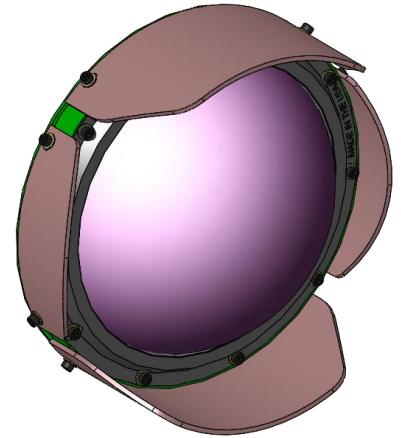


Port Options

At this publication a Dome and Flat Port options are available for DK-X: When choosing a Port consider the following tradeoffs and limitations.

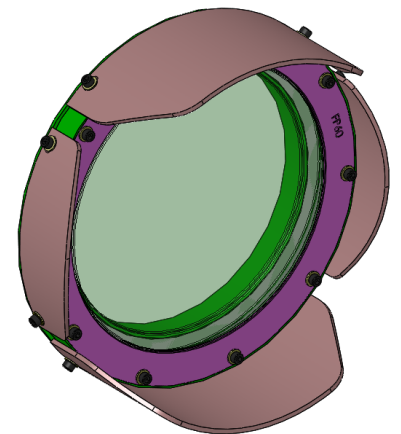
Dome Port

- ✓ **Optical material:** Anti-reflective coated glass or acrylic (SP80 only).
- ✓ **Purpose:** Wide to super wide imaging.
- ✓ **Advantages:**
 - **Retains FOV.** Corrects for field of view distortions inherent in Flat Ports.
 - **Wide FOV capable.** Up to 180 degree fisheye are possible depending on the camera lens capability.
- ✓ **Disadvantages:**
 - **Little or no zoom.** Domes inherently limit zoom through and varies with camera lens employed.



Flat Port

- ✓ **Optical material:** Optical grade acrylic or glass.
- ✓ **Purpose:** Medium to macro imaging.
- ✓ **Advantages:**
 - **Zoom through.** Flat Ports retains the zoom capability of a lens.
 - **Macro.** Flat Ports are excellent for macro shots and the use of close up diopters to capture small subjects.
- ✓ **Disadvantages:**
 - **No wide shots.** By their nature, Flat Ports do not allow wide shots.
 - **Loss of FOV.** Like a SCUBA mask, Flat Ports decrease FOV by 25%.



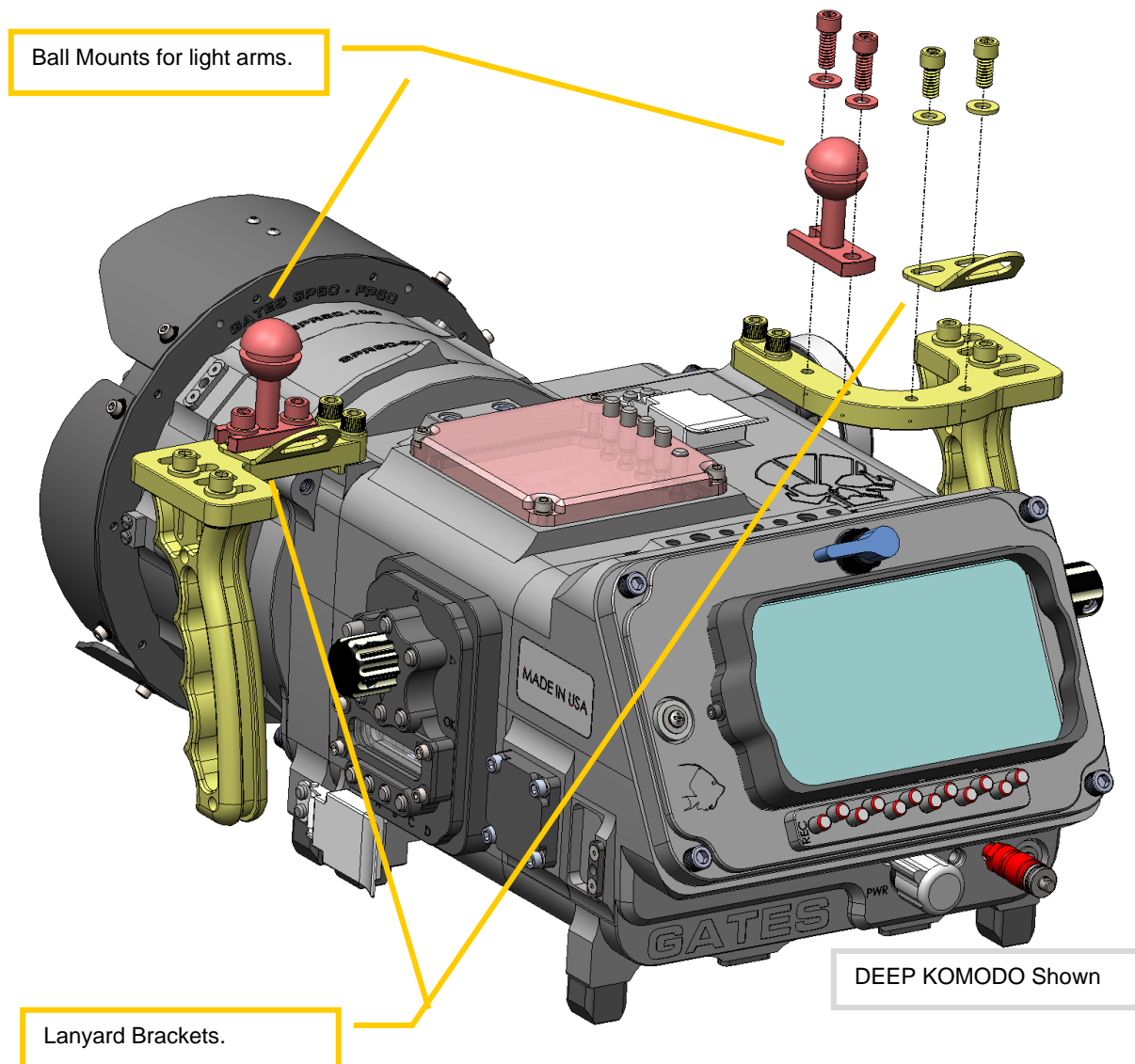
- ▶ **Note:** The optical interaction between any given lens and a Dome or Flat Port is largely predictable, however distortions and aberrations can occur with either Port. As such, Gates does not warrant optical performance or image quality.

Gates endeavors to collect data from the field and our own testing as a resource to customers, but you should always characterize your lens of choice for use underwater.

Lanyard and Light Mounting (Optional)

DK-X has provisions to utilize a variety of lighting systems. Strong, secure ball mounts for the light arms are located on the handle grips as shown in the image.

Lanyard Mounts also attach to the Grip Arms, and can be located forward or aft for best positioning.



Travel / Transport

DK-X requires several considerations for travel.

- ✓ **Camera.** It is OK to transport the camera / lens inside DK-X *ONLY IF* you are in control of the equipment.

DO NOT ship or place in checked airline baggage with the camera inside as rough handling can cause damage.

- ✓ **No Trim Weights.** DO NOT transport DK-X with trim weights attached.
- ✓ **Cap and bundle connectors.** Bundle all connectors together and protect. Install the caps that originally came with the housing as well.
- ✓ **Packing.** Ensure the complete system is packed well in transport cases.



4: DEEP KOMODO-X 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 about DK-X and its operation, please contact Gates at the numbers below.

Email: Customer.srvc@GatesHousings.com
Web: www.GatesHousings.com
Phone: +1-858.391.0052