

Z3 Housing

Setup, Use, and Care Guide

Copyright 2020, Gates Underwater Products, Inc.

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

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

Gates Underwater Products, Inc.

13685 Stowe Drive
Poway, California 92064 USA

Phone: 858.391.0052 outside the U.S.
Fax: 858.391.0053
Web: GatesHousings.com

Table of Contents

	Features	4
	Warranty Disclaimer	4
	Unpacking Z3	5
	Required Equipment	6
1:	Cautions	7
2:	Z3 Setup	8
	Z3 Housing Overview	8
	Z3 Housing Preparation	10
	Preparing the Z-CAM Camera	15
	Preparing the SmallHD 503 Ultrabright LCD	16
	Camera / Battery Installation	18
	Z-CAM Cables Connect	19
	Camera / Camera Tray Install	20
	Main Shell Mating	21
	Install LCD & LCD Front Shell	22
	Cable Management	25
	Mount Lens	26
	Lens Gear Drives (LGD's)	27
	Lens Gear Drive (LGD) Size Reference	29
	Functional System Check	30
	Z-Camera App – a note about wireless camera control	31
	Configure SPR's and Port	32
	Mount Stackable Port Rings (SPR's) and Port	35
	Changing the Port Base	37
	Installing the 60-80 SPR Adapter	39
	Water Alarm (Optional)	40
	Seal Check	41
	Final Checks	41
3:	Z3 Operation	42
	Right Side Controls	42
	Left Side FUNCTION & GCC Control	42
	Top Controls	43
	Rear Controls	44
	Buoyancy / Trim	46
	Adjustable Handles	47
	Port Options	48
	Lanyard and Light Mounting (Optional)	50
	Lighting Systems (optional)	51
	Travel / Transport	51
4:	Z3 Maintenance	52
	Housing Care and Maintenance	52
5:	Customer Support	53

Introducing Z3

Congratulations on owning a new Gates product: the Z3 housing. You've selected a product that will provide years of value and reliable service. We designed Z3 specifically as a professional action underwater rig for cinema, natural history, surf and research applications.

Please read through this entire guide to learn about Z3 so you can get the most out of this imaging tool. In this section, we'll introduce you to the features of Z3 so you can get started.

Features

Z3 has several key features:

- ✓ **Lens flexibility.** Z3 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.
- ✓ **Compact and Travelable.** Z3 is compact and can fit into a carry-on size case for travel.
- ✓ **Built In Monitor.** Z3 incorporates an integrated 5" LCD that can be quickly removed for topside use.
- ✓ **Gates COMMAND / CONTROL module** for full iris control, menu access and 4 assignable buttons.

Warranty Disclaimer

Z3 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 Z3. 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 Z3 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. Electronics, cables and connectors for 1 year. You can find [full warranty details](#) on Gates website

Gates does not warrant optical performance or image quality.

If you have any questions about the setup, use and care of Z3, contact Gates directly. Details are in section 5.

Unpacking Z3

After you remove Z3 from its shipping container, carefully inspect it for missing parts or damage that may have occurred during shipment. If you discover any discrepancies, contact Gates or your dealer immediately for assistance.

Standard Parts

- ✓ Z3 Housing
- ✓ LCD Power and HDMI cables
- ✓ Lens Gear Drive set
- ✓ Seal Check Lite system
- ✓ Tool Kit / Spare Kit
- ✓ Woven Carry Handle Lanyard

Optional Parts

- ✓ Stackable Port Rings (SPR) for your choice lens*
- ✓ Port(s) of choice (Dome or Flat in either glass or acrylic material) and shade*
- ✓ Light System
- ✓ Water alarm
- ✓ Carry Case
- ✓ HD-SDI surface feed bulkhead connector and cable
- ✓ Trim Weights
- ✓ Port Cleaner

* Necessary for operation

Nomenclature

In this Setup, Use and Care Guide for Z3, the following terms are used:

- ✓ **Z-CAM** is the camera body style from Z-CAM Company. At this writing there are three Z-CAM models compatible with Z3 Housing:
 - * E2-S6 (Super 35 6K)
 - * E2-F6 (Full frame 6K)
 - * E2-F8 (Full frame 8K)

Required Equipment

The required camera and accessory equipment for Z3 is:

✓ **LCD**

- ATOMOS SHINOBI, ATOMOS NINJA V *or* SmallHD 503 UltraBright

✓ **Camera**

- Z-CAM Flagship series E2-S6 (Super 35 6K), E2-F6 (Full frame 6K), or E2-F8 (Full frame 8K)

✓ **Battery (x2)**

- Sony NP-F970
- HEDBOX RP-NPF970
- Equivalent L-Series battery of dimensions:
 - 2.34H x 1.5W x 2.19D in (Max Depth)
 - 59H x 38.1W x 55D mm (Max Depth)

✓ **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 Setup (optional)**

- Z-Camera App

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 Z3 should be about 100 millibars. This is enough to verify seal integrity.
- ✓ **CAMERA TRANSPORT INSIDE HOUSING.** You can transport a securely mounted camera inside Z3 IF the system is in your possession and without abusive handling. DO NOT transport a camera inside Z3 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 Z3. 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 Z3 and may void your warranty.

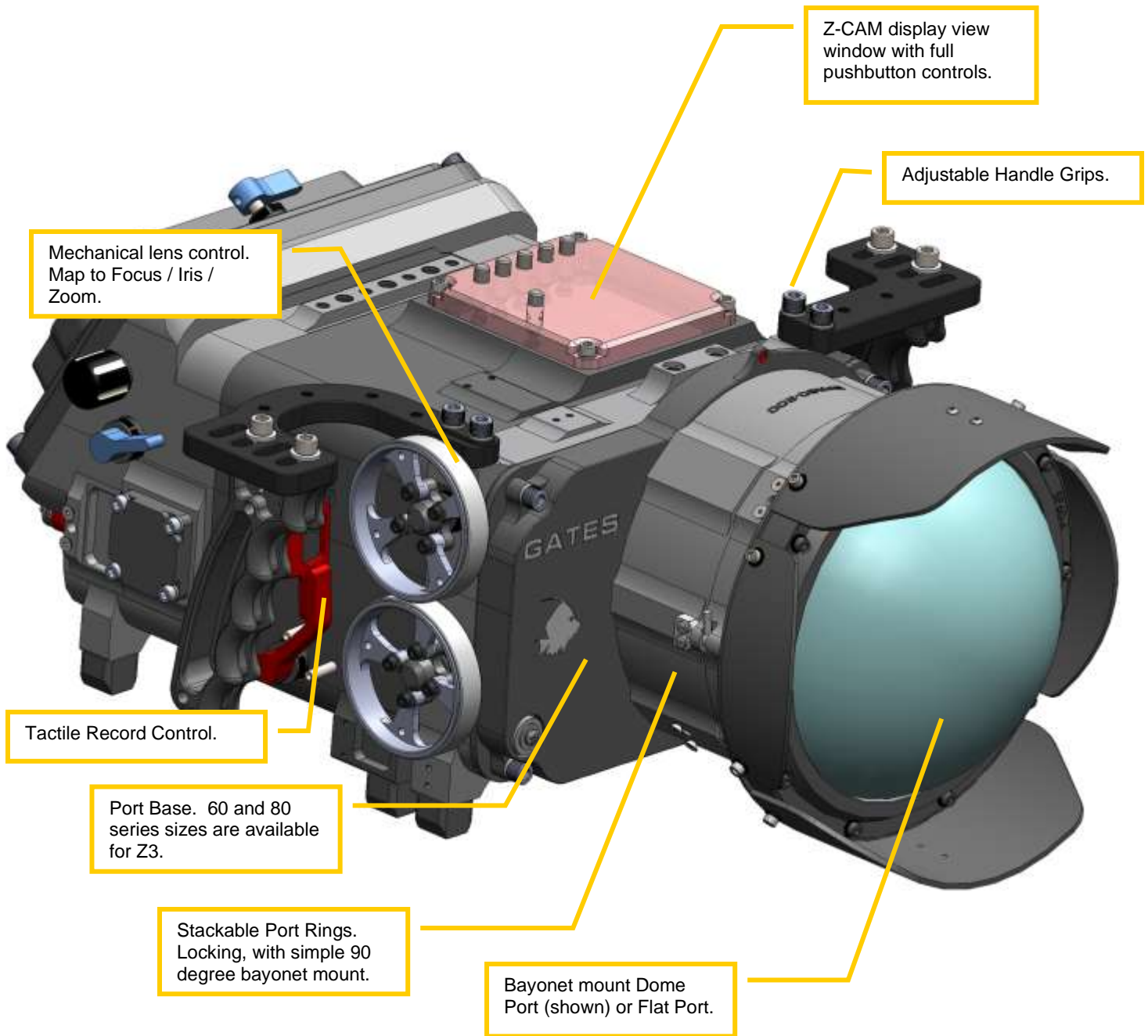


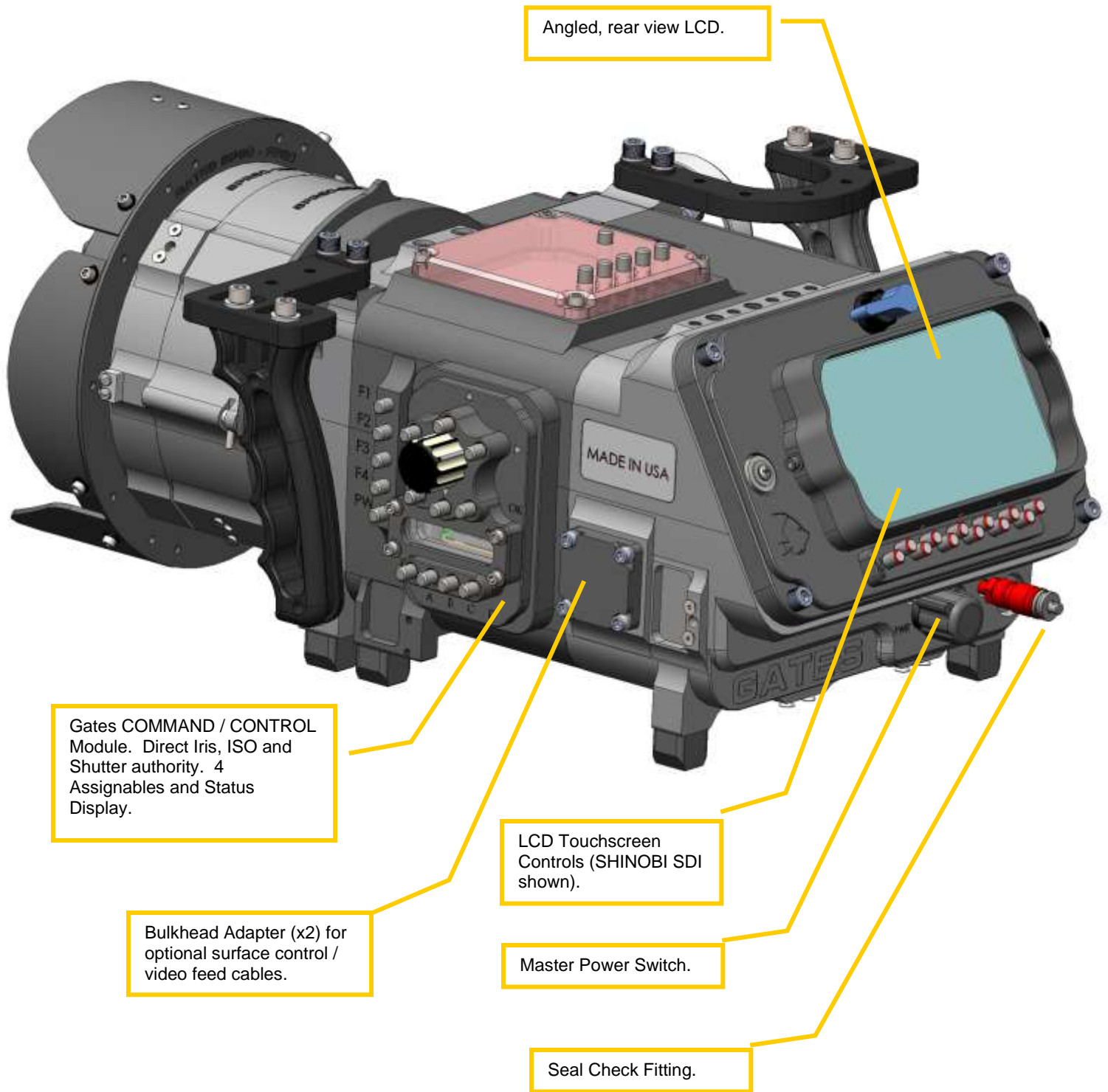
Contact Gates if you have questions about this manual or using Z3.

2: Z3 Setup

Z3 Housing Overview

Z3 has many features with which you will become familiar.





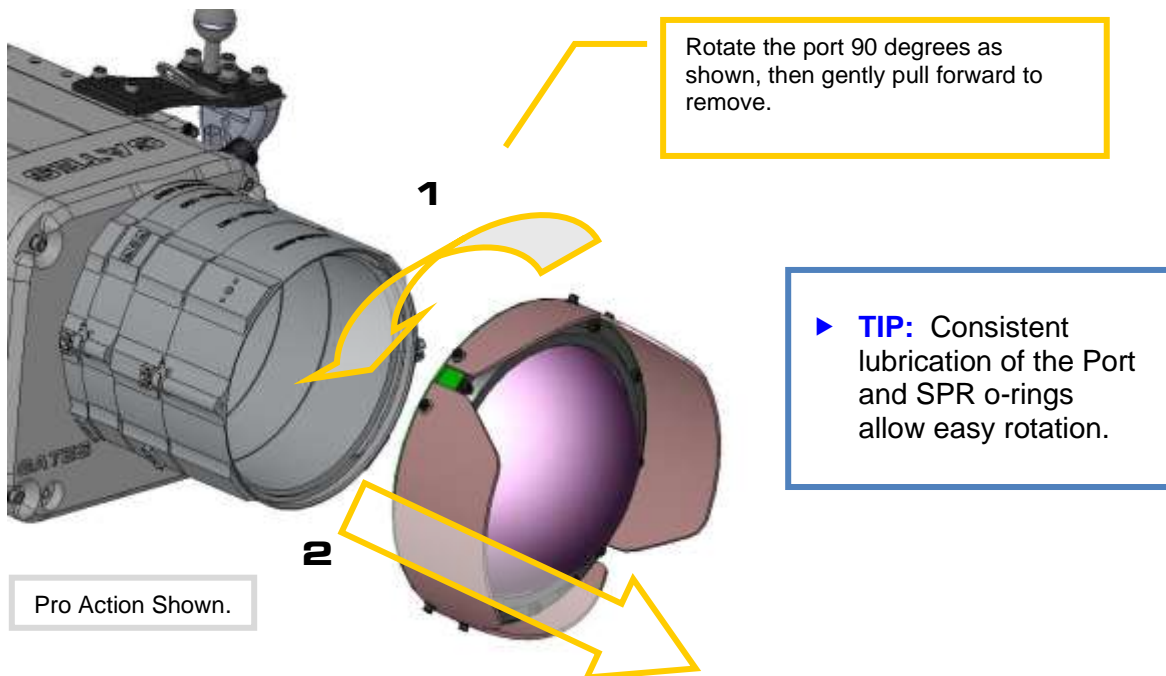
Z3 Housing Preparation

✓ Handle Grips Install.

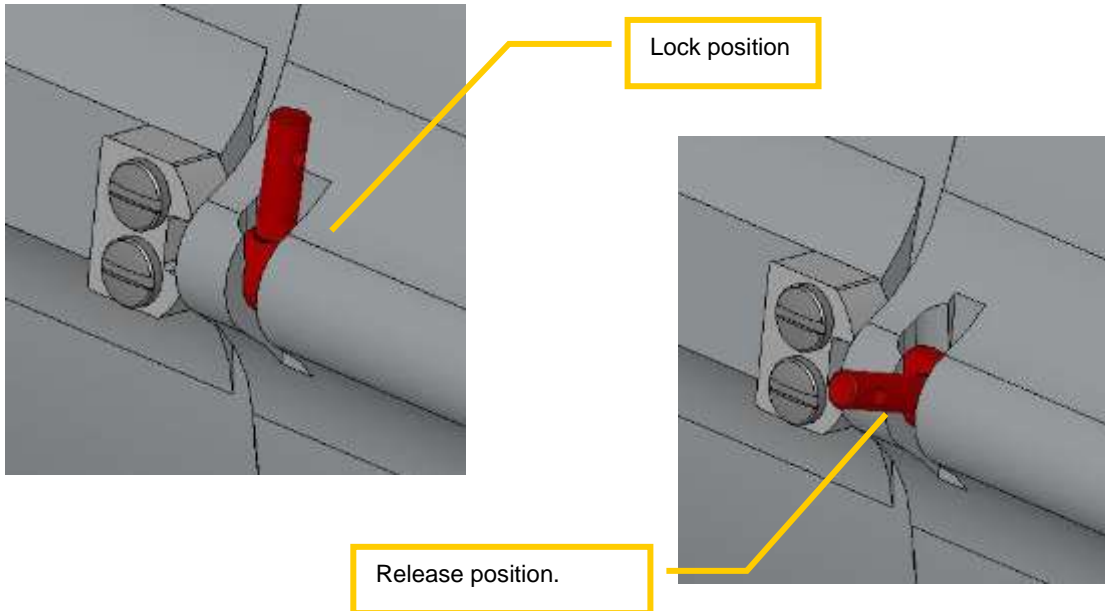
Four screws secure the Handle Grips to Z3. You can locate the Handle Grips in several different positions forward / aft on the housing.



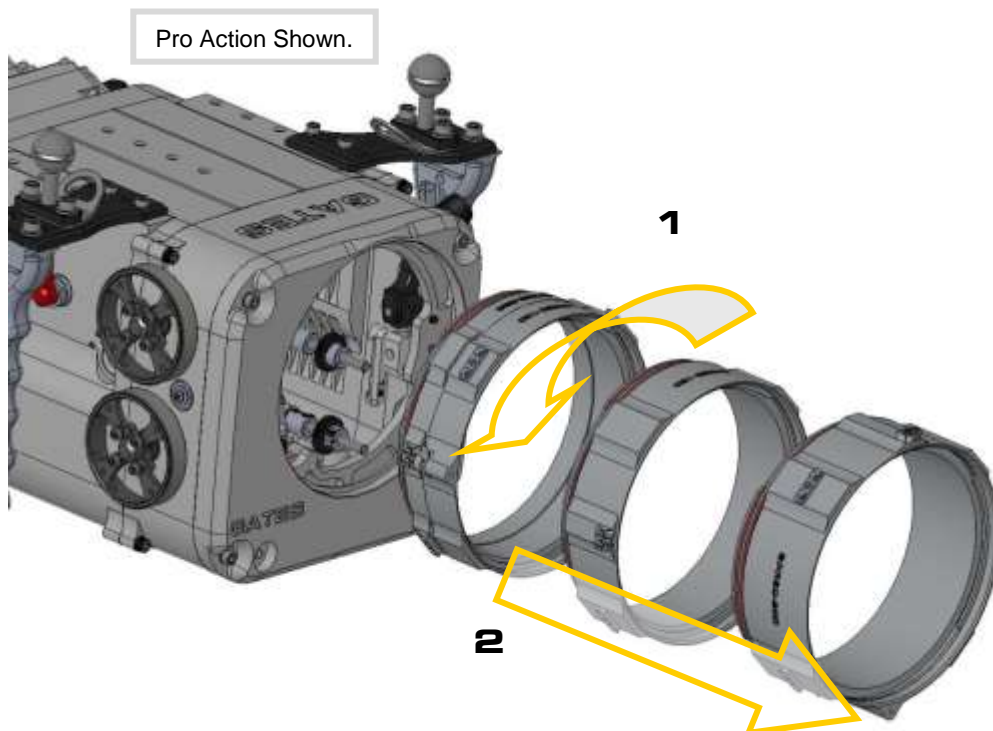
✓ Port Removal. Disengage the Port by rotating 90 degrees in the direction shown. Gently pull the Port away from the Port Ring(s)



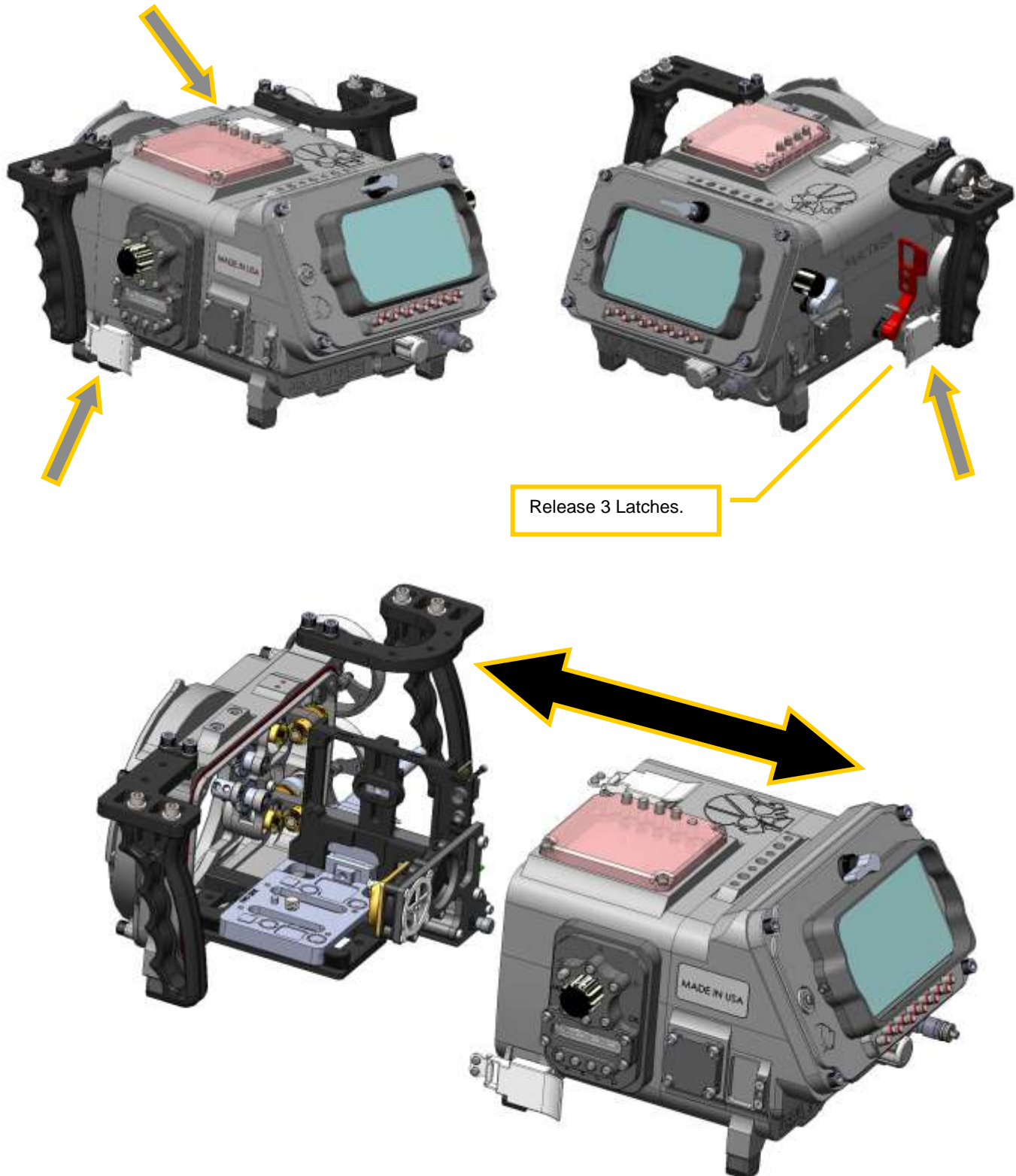
- ✓ **Stackable Port Ring (SPR).** Remove the SPR's one at a time or as a group. The lock pin is shown below in the locked and release position.



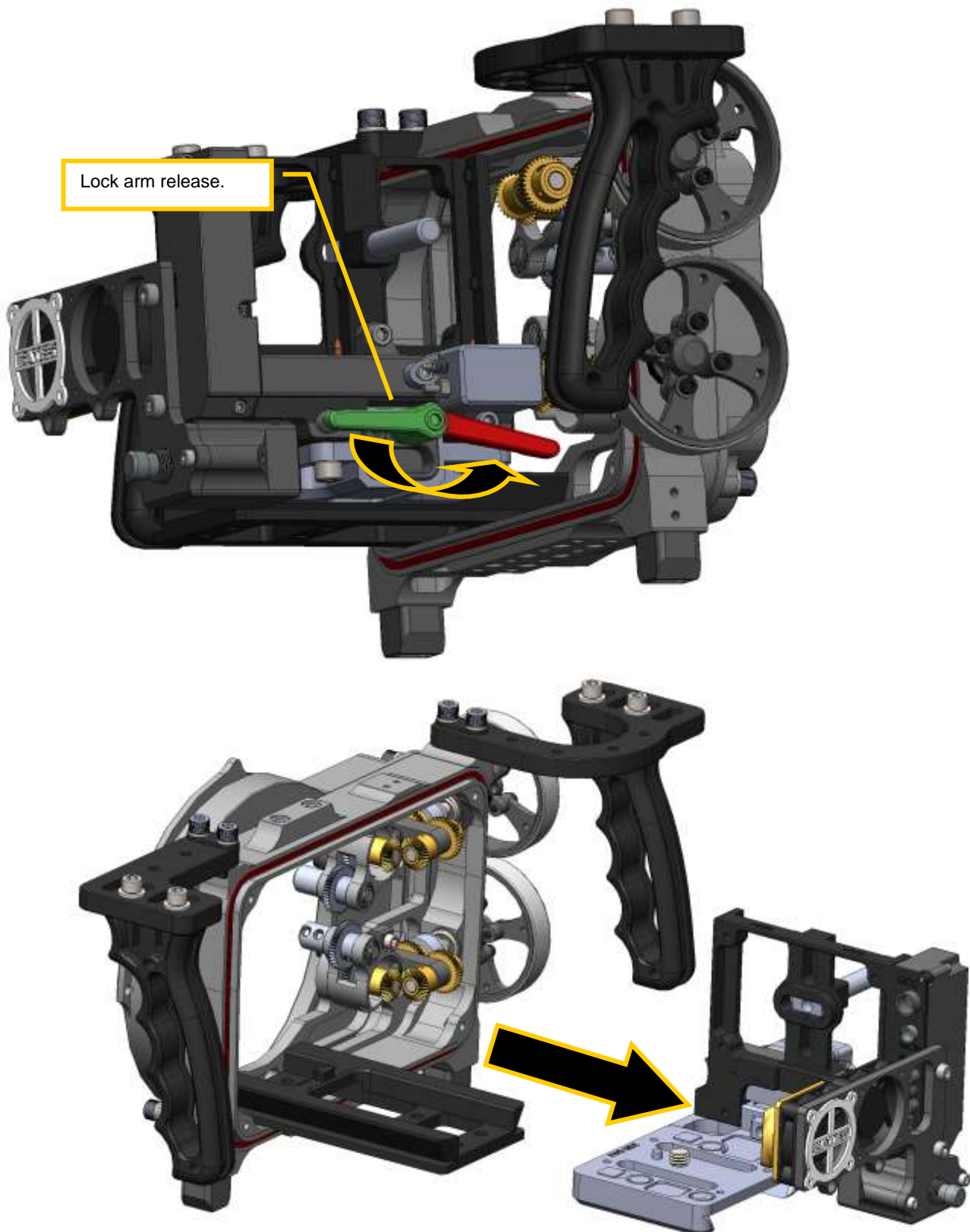
- ✓ With the SPR's unlocked, **rotate 90 degrees and separate.**



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



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



- ✓ **Seperate LCD Front Shell.** Use the 3/16 ball driver in the Took Kit to loosen 4 corner screws, as shown. (These are captive screws and do not remove.)



Preparing the Z-CAM Camera

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

SERIAL COMMUNICATION.

MENU → CONNECT → UART → CONTROLLER



✓ **USER BUTTONS**

MENU → SYSTEM → USER BUTTON → (Set as desired)

- ▶ **NOTE:** Z-CAM firmware changes on a regular basis to provide increased functionality, and may affect these particular setup instructions.

- ✓ **Menu Overlay.** Z-CAM camera provides menu overlay via the HDMI output.

MENU → CONNECT → HDMI → DISPLAY INFO → ON

MENU → CONNECT → HDMI → OSD LAYOUT → (choose type preferred)



- ✓ **WIFI.** If you are not using Z-CAM App, turn off WIFI.

MENU → CONNECT → NETWORK → WIFI → OFF

- ✓ **Camera Basics.** The Z-CAM camera must be stripped down to the bare body, as shown.



Preparing the SmallHD 503 Ultrabright LCD

- ✓ **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 User Guide](#) 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.

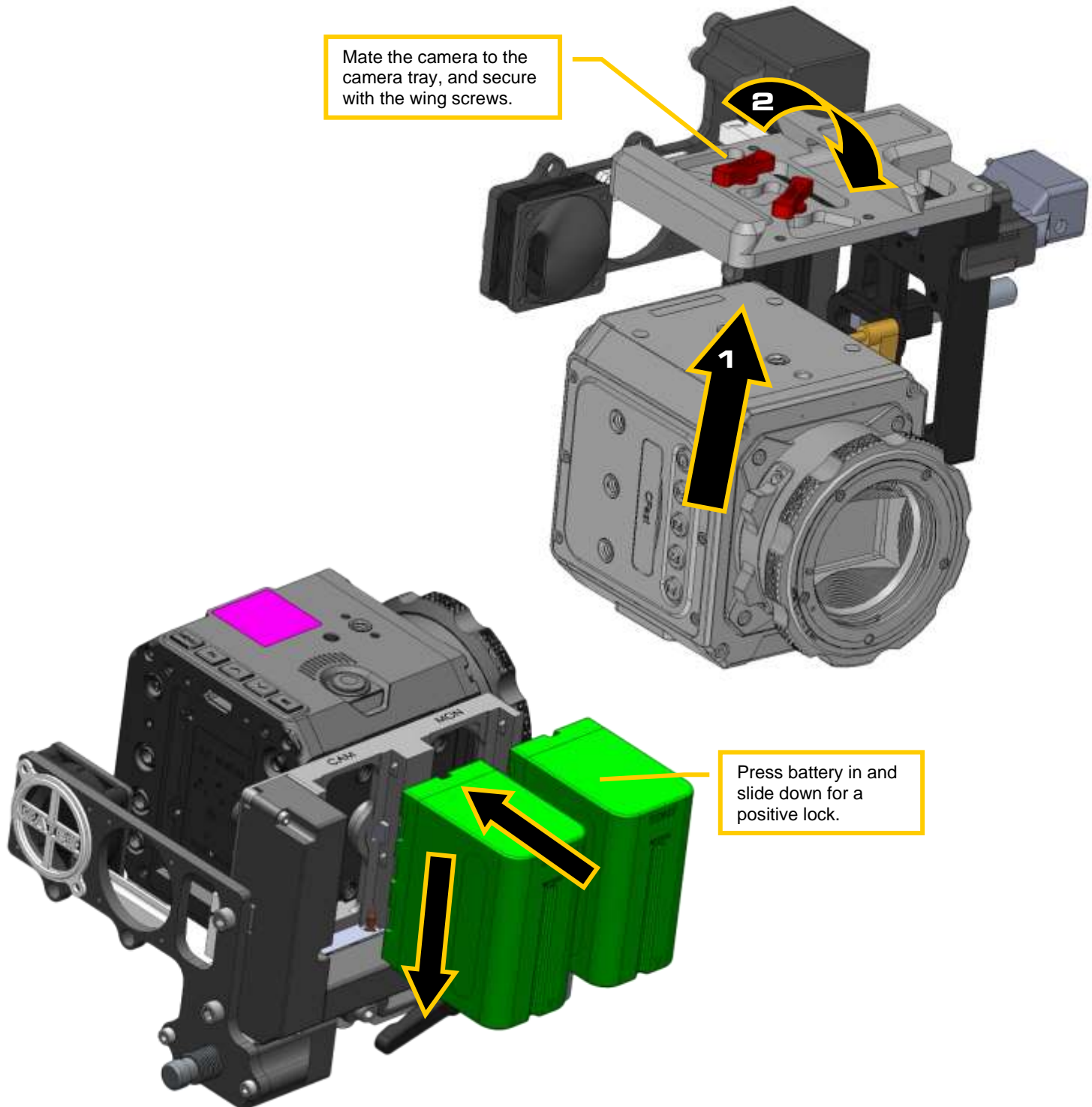
* Turn off the LCD via the POWER button. Then power back on. This 'sets' this page as default for any auto boot.



Camera / Battery Installation

Details of the Z-CAM camera install are shown in the following images.

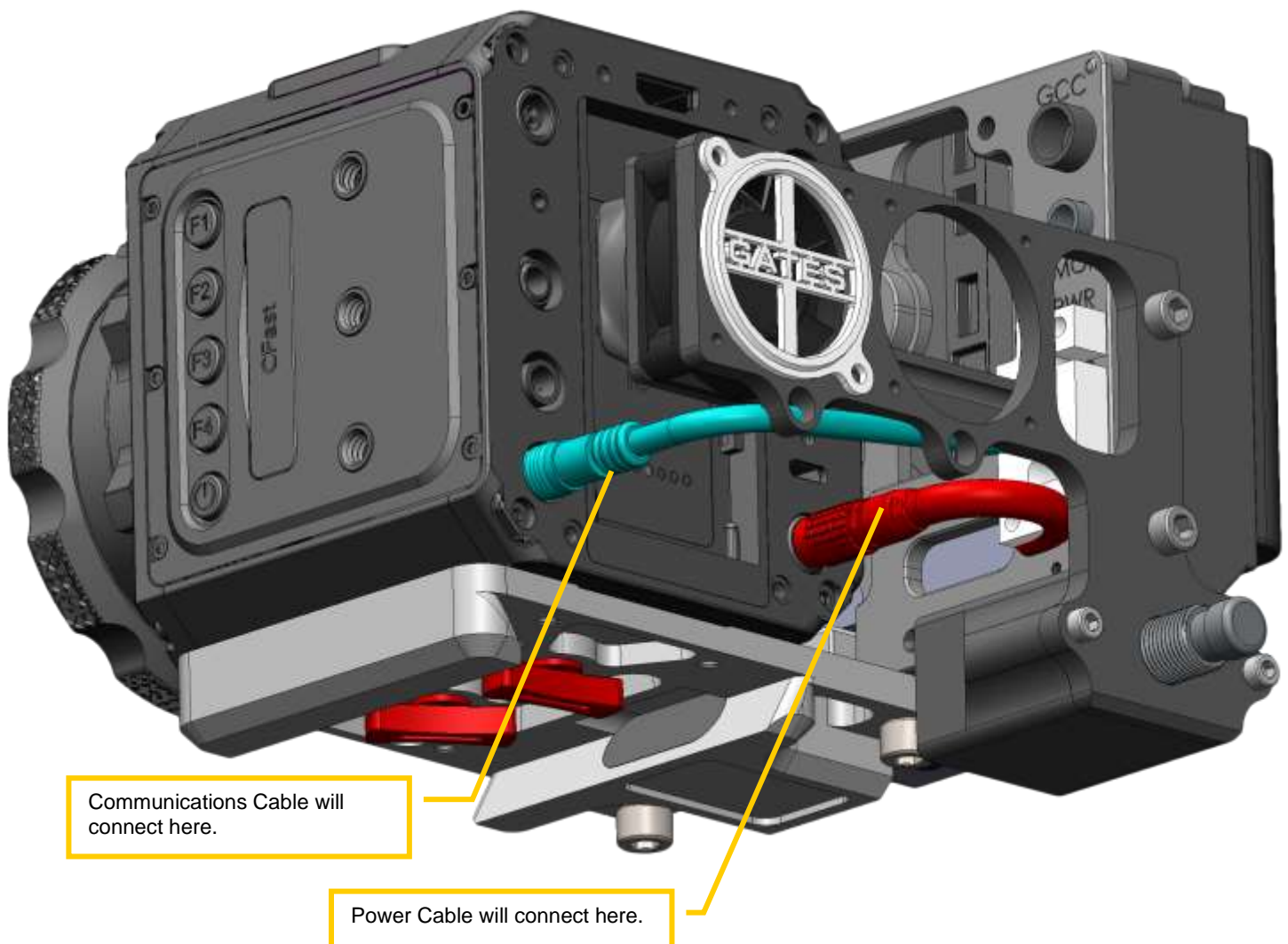
- ✓ **Mate camera to Camera Tray**, then tighten the wing screws to secure in place.
- ✓ **Install Batteries.** Mate and lock batteries into place as shown.



Z-CAM Cables Connect

At this point several connections between Z-CAM and Camera Tray are required.

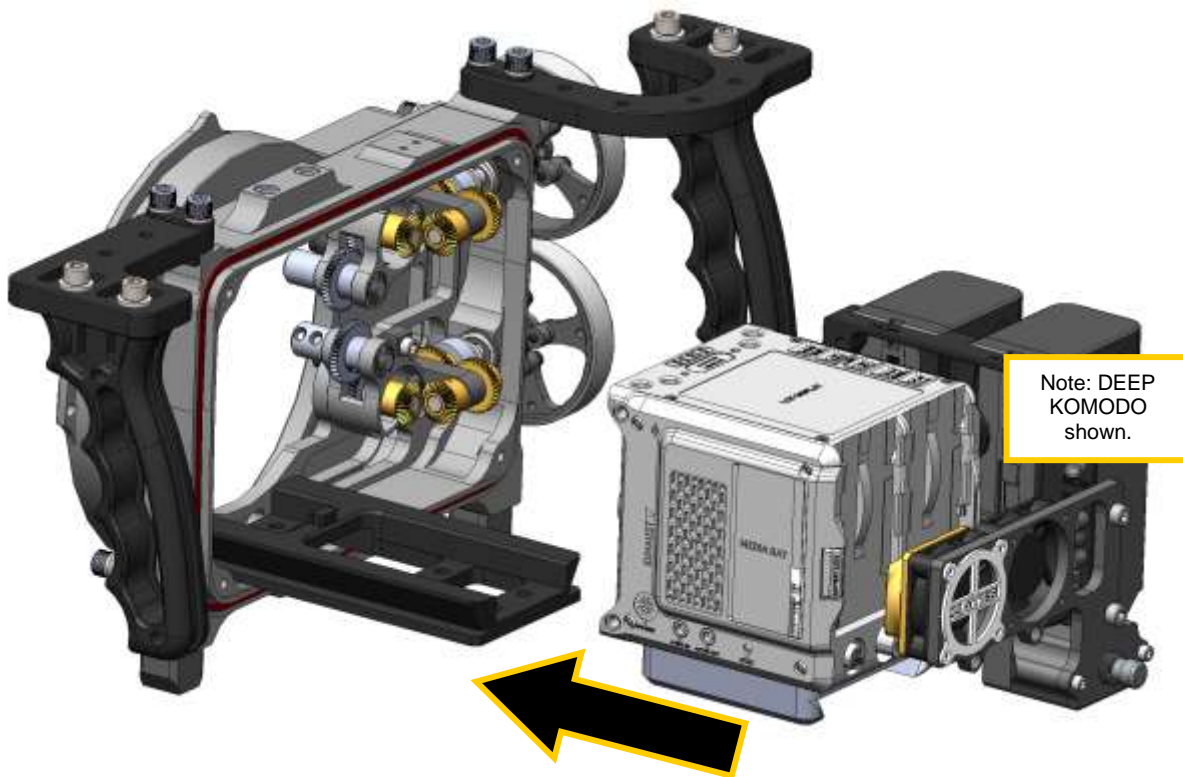
- ✓ **Power.** The power cable will connect on the right rear PWR input on Z-CAM.
- ✓ **Communications.** Similarly, the communications cable will connect to lower left rear of Z-CAM, the CTRL port. This connection provides both GCC and record trigger inputs.



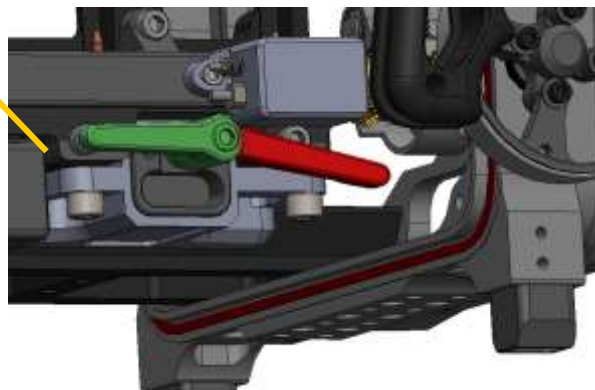
Camera / Camera Tray Install

Next, mount Z-CAM / Camera Tray package into the Z3 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.



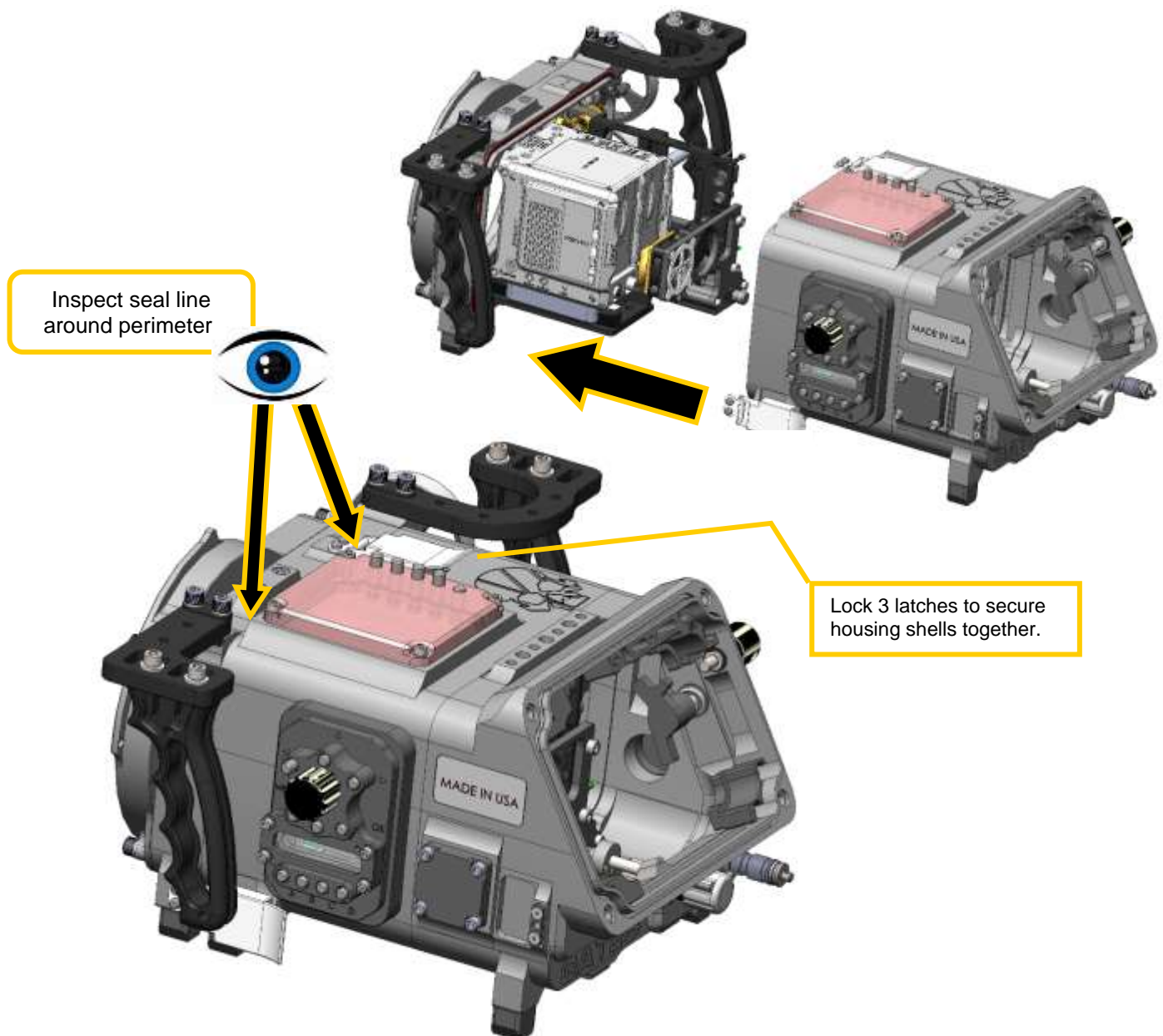
Position the lock lever as shown, horizontal (green).



Main Shell Mating

Mating the main shell parts is straightforward.

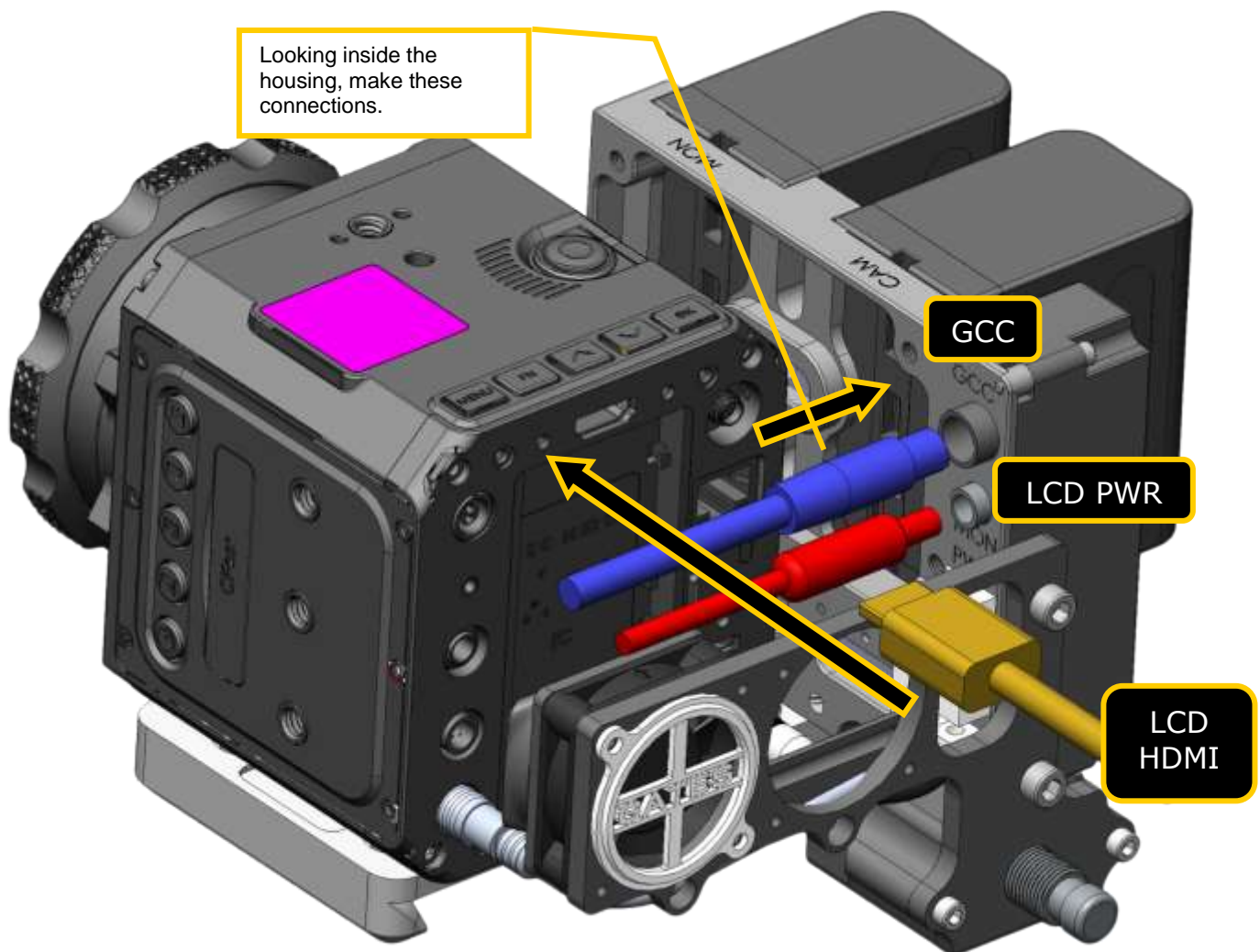
- ✓ **Align the Front Shell / Camera Tray with the Rear Shell**, as shown. Gently slide the shells together until they mate fully.
- ▶ **IF YOU ENCOUNTER AN OBSTRUCTION – STOP – IDENTIFY THE PROBLEM AND PROCEED AGAIN.**
- ✓ **Secure Shells.** Once mated, close 3 latches and ensure locked.
- ✓ **Visually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



Install LCD & LCD Front Shell

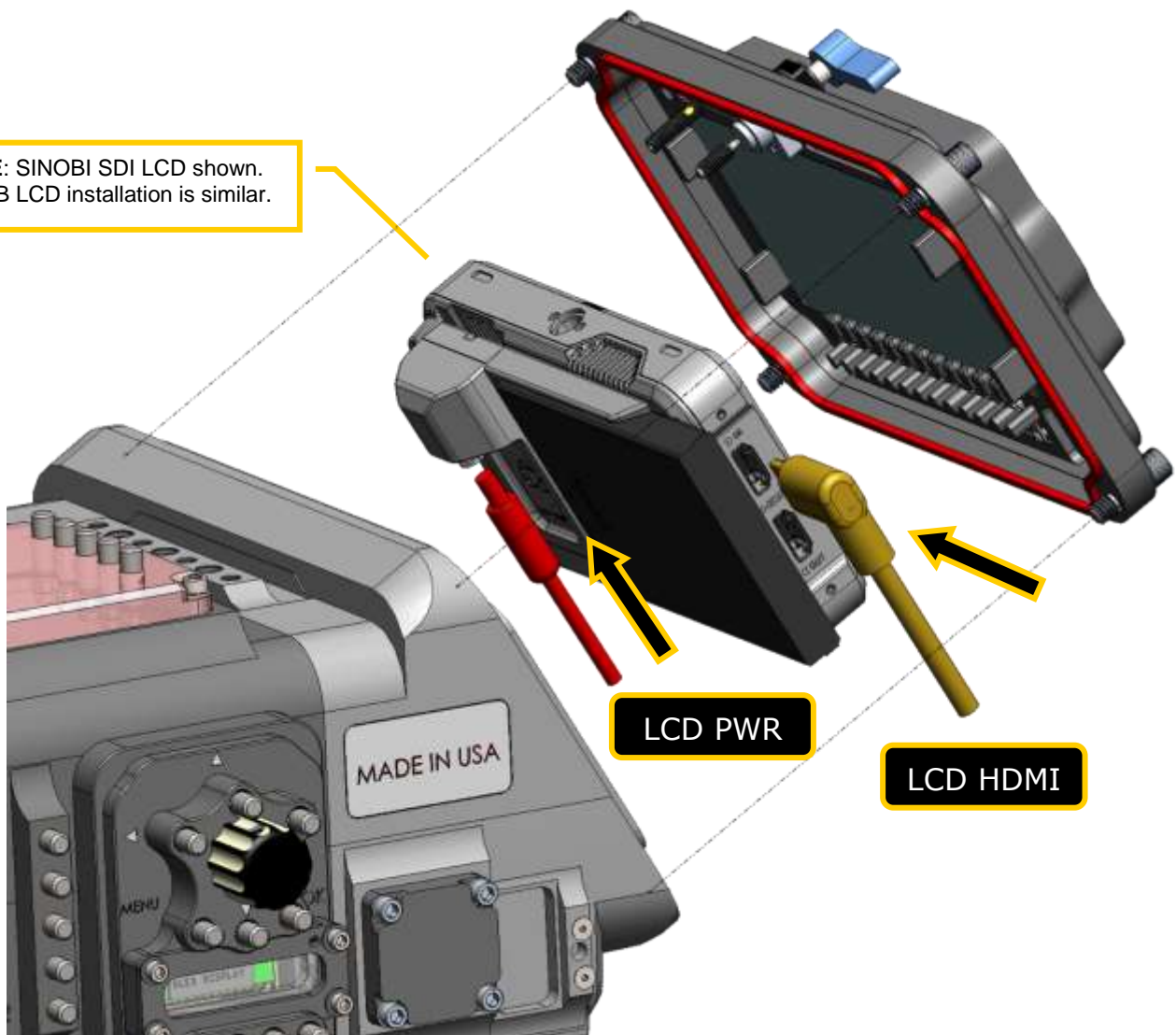
First, make the following cable connections inside the housing. Looking in through the rear shell:

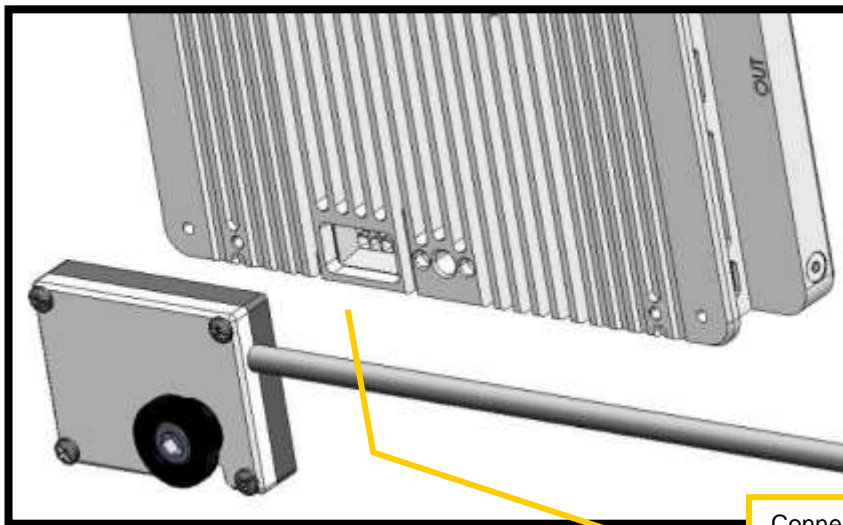
- ✓ **GCC**. Just inside the rear shell opening you will find a cable leading from the GCC. Plug this into the Camera Tray. (Shown in **BLUE**).
- ✓ **LCD Power cable** to Camera Tray as shown in **RED**.
- ✓ **LCD HDMI connector** to Z-CAM camera (shown in **GOLD**).



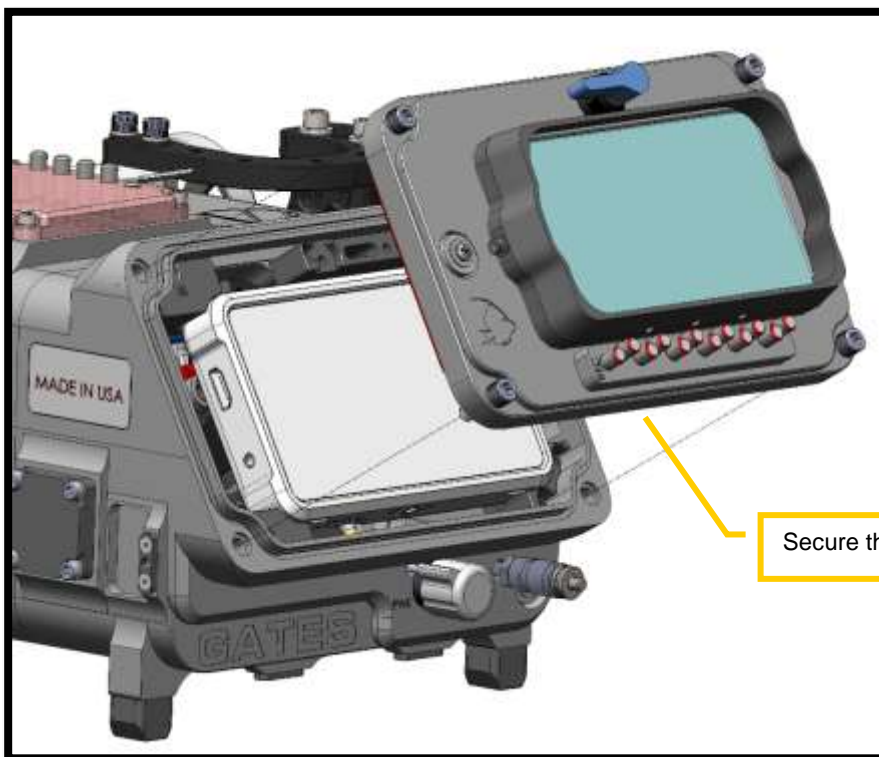
- ✓ LCD Power to LCD as shown in **RED**.
- ✓ LCD SDI to LCD SDI Input, shown in **GOLD**.
- ✓ Place the LCD into **the guides**, as shown.
- ✓ Place and secure **the LCD Front Shell**.

NOTE: SINOBI SDI LCD shown.
503UB LCD installation is similar.





Connect 503UB Power Cable to 503UB LCD as shown. Secure with thumbscrew.



Secure the LCD Front Shell.

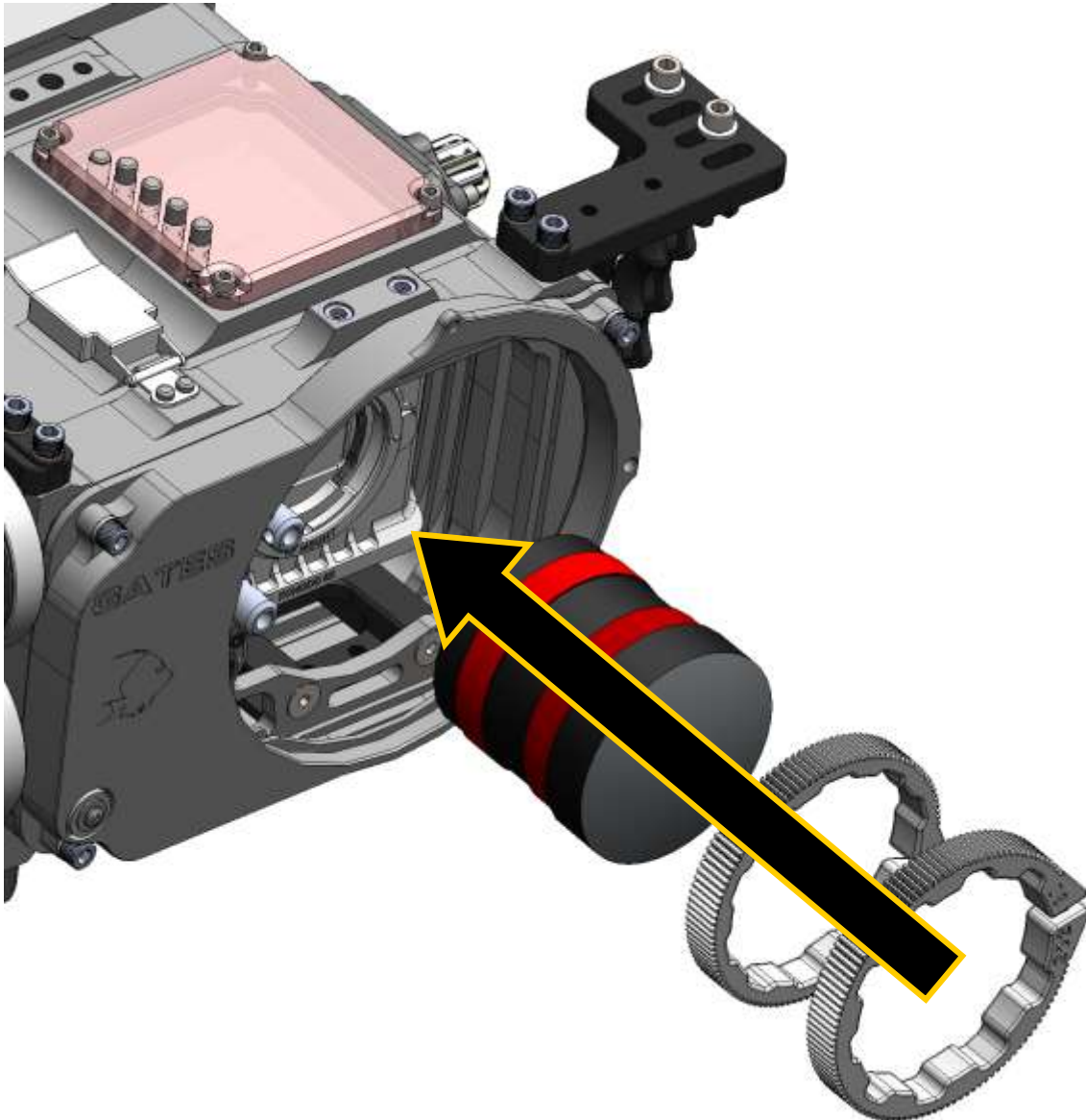
Cable Management

Note that the Z3 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.



Mount Lens

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



Lens Gear Drives (LGD's)

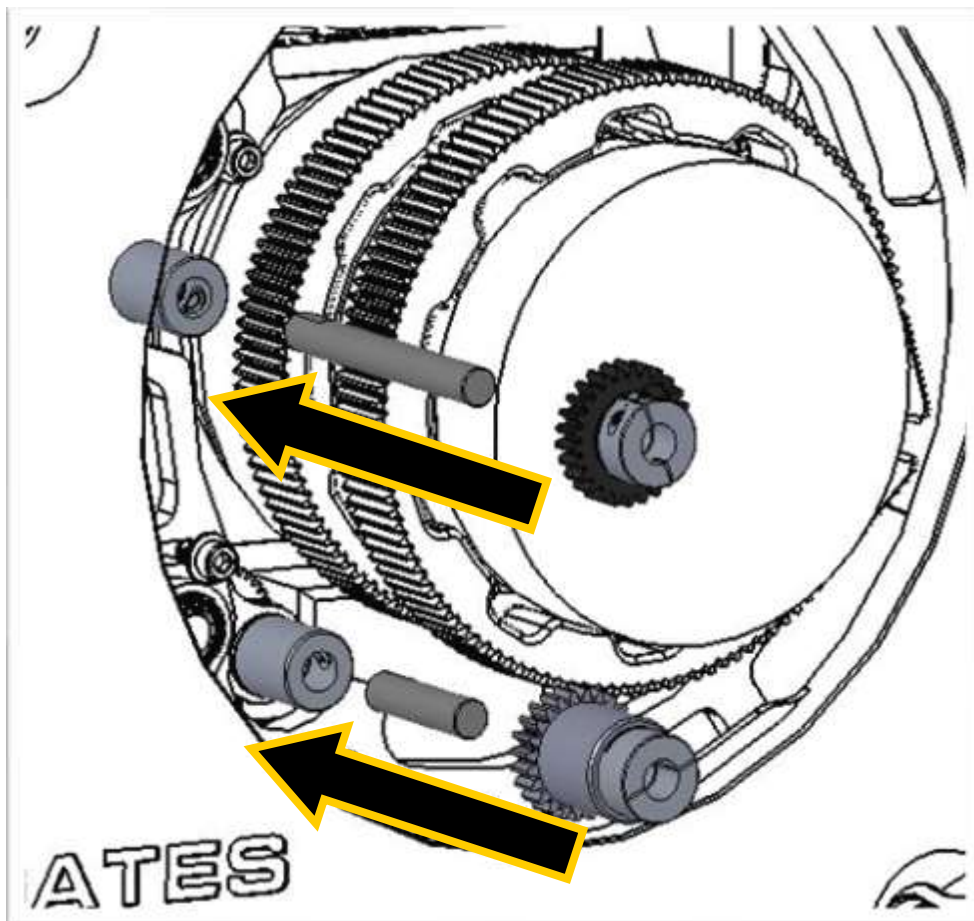
- ✓ **General Notes.** This section addresses the installation of two Lens Gear Drives (LGD's) in Z3. This is relatively straightforward, using only two parts for each lens control: a drive shaft and drive gear.
- ✓ **Select drive shaft length.** Several lengths of drive shaft are included with the Z3 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.

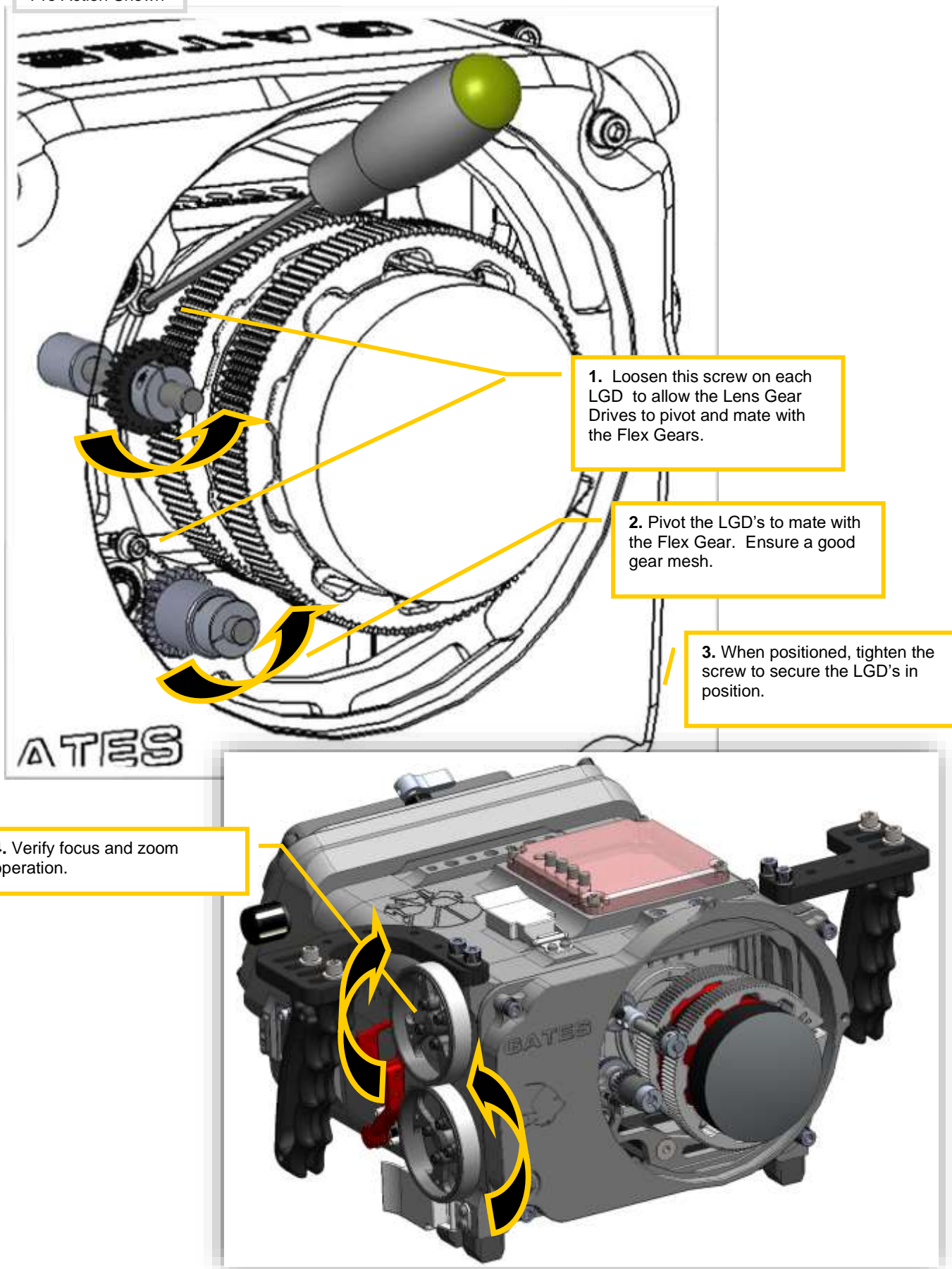
- ✓ **Select and install the Lens Gear Drive.** Note that your kit comes with six versions. Two are specifically designed for Flex Gears recessed into the housing, close to the camera. Refer to the images below.

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



Lens Gear Drive (LGD) Size Reference

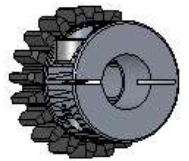
Z3 includes several size LGD's to accommodate different lens sizes. Below is a reference.

Focus Gears

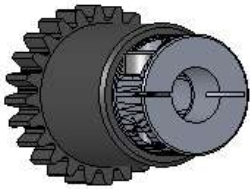


P/N 3000-94-228

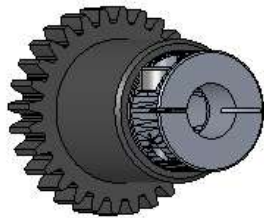
P/N 3000-94-242



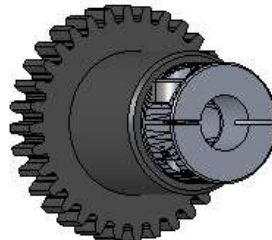
Iris and Zoom Gears



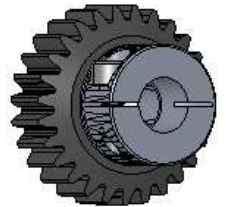
P/N 3000-94-229



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)).

- ✓ Z-CAM camera auto boot
- ✓ LCD boot
- ✓ Z3 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.

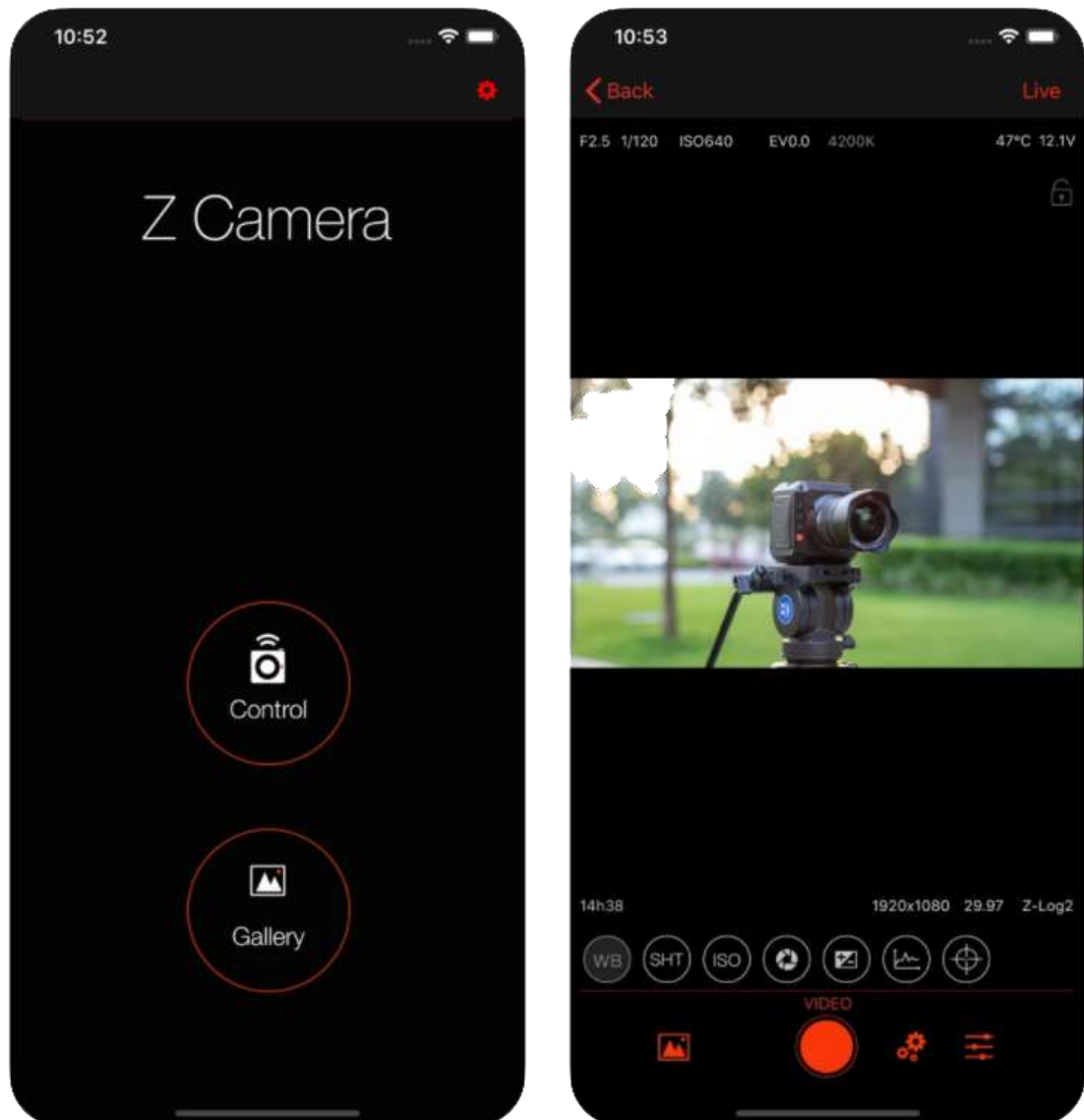
Z-Camera App – a note about wireless camera control

A useful tool for Z3 is wireless control of camera functions. The official Z-CAM app enables such control – even at close proximity through the Z3 housing shell. What you can do with Z-Camera App:

- ✓ Check setup and system function;
- ✓ Change any parameters as needed;
- ✓ Between dives, check and change settings.

► NOTE: A WIFI connection does not work through water. A connection is only possible while Z3 / Z-CAM are at the surface.

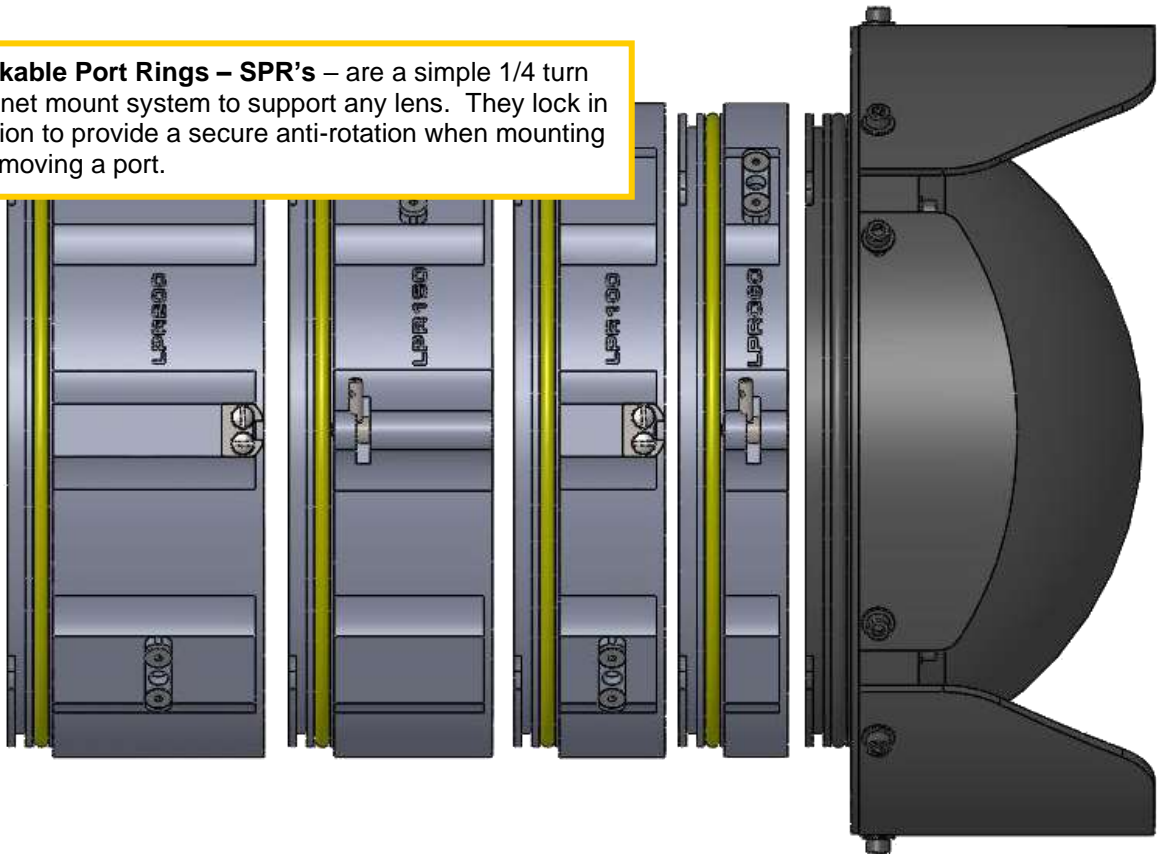
If you are using the Z-Camera app at any time for setup or system changes, enable WIFI (see page 16)



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 Z3. This lens data is summarized in a Compatibility Matrix. It can be found on Gates Website.

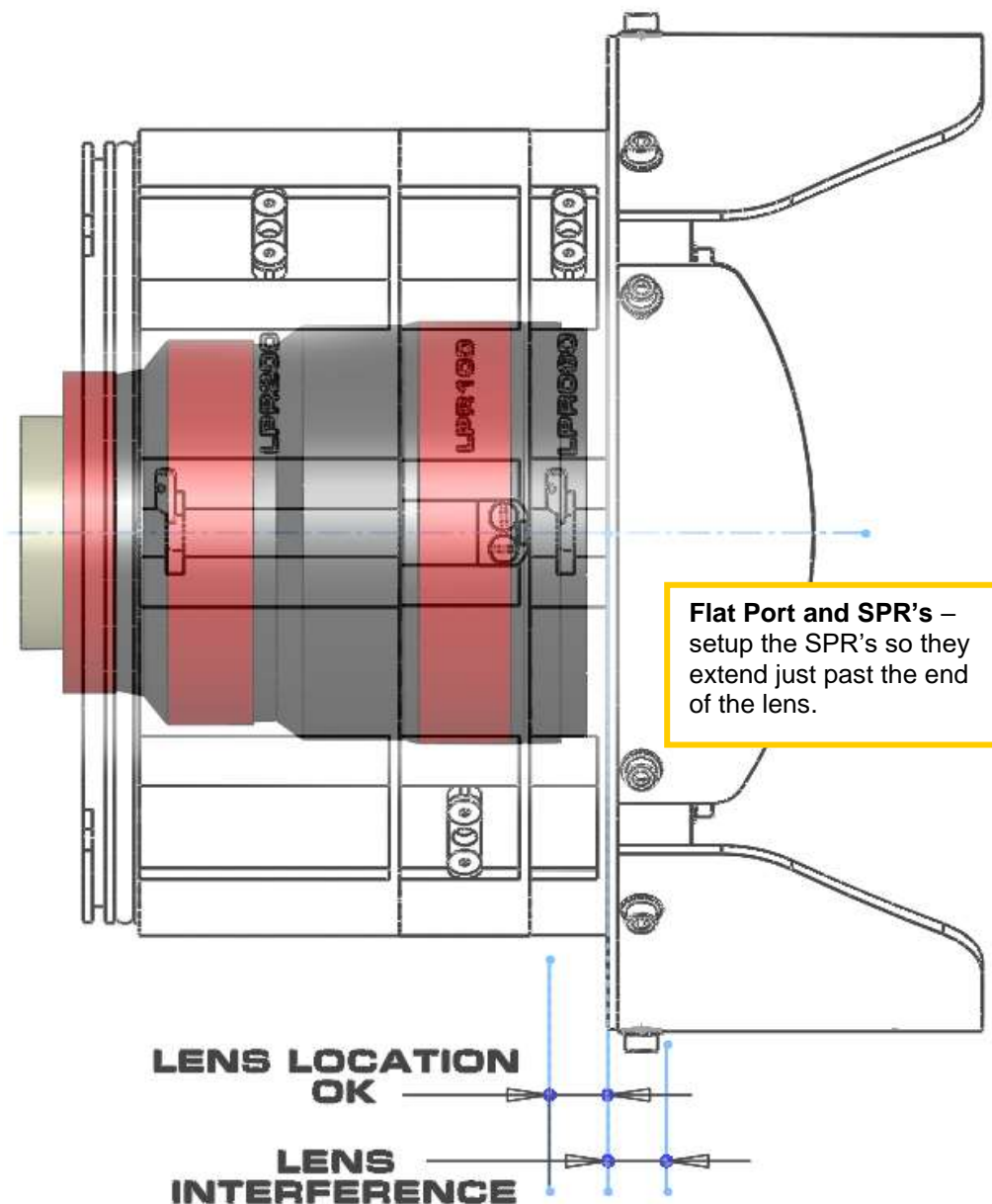
The Compatibility Matrix is constructed to identify the proper Port Extender or Port Ring (used on other Gates cinema-grade housings), and a conversion to a combination of SPR's is available from Gates.

- ✓ **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.

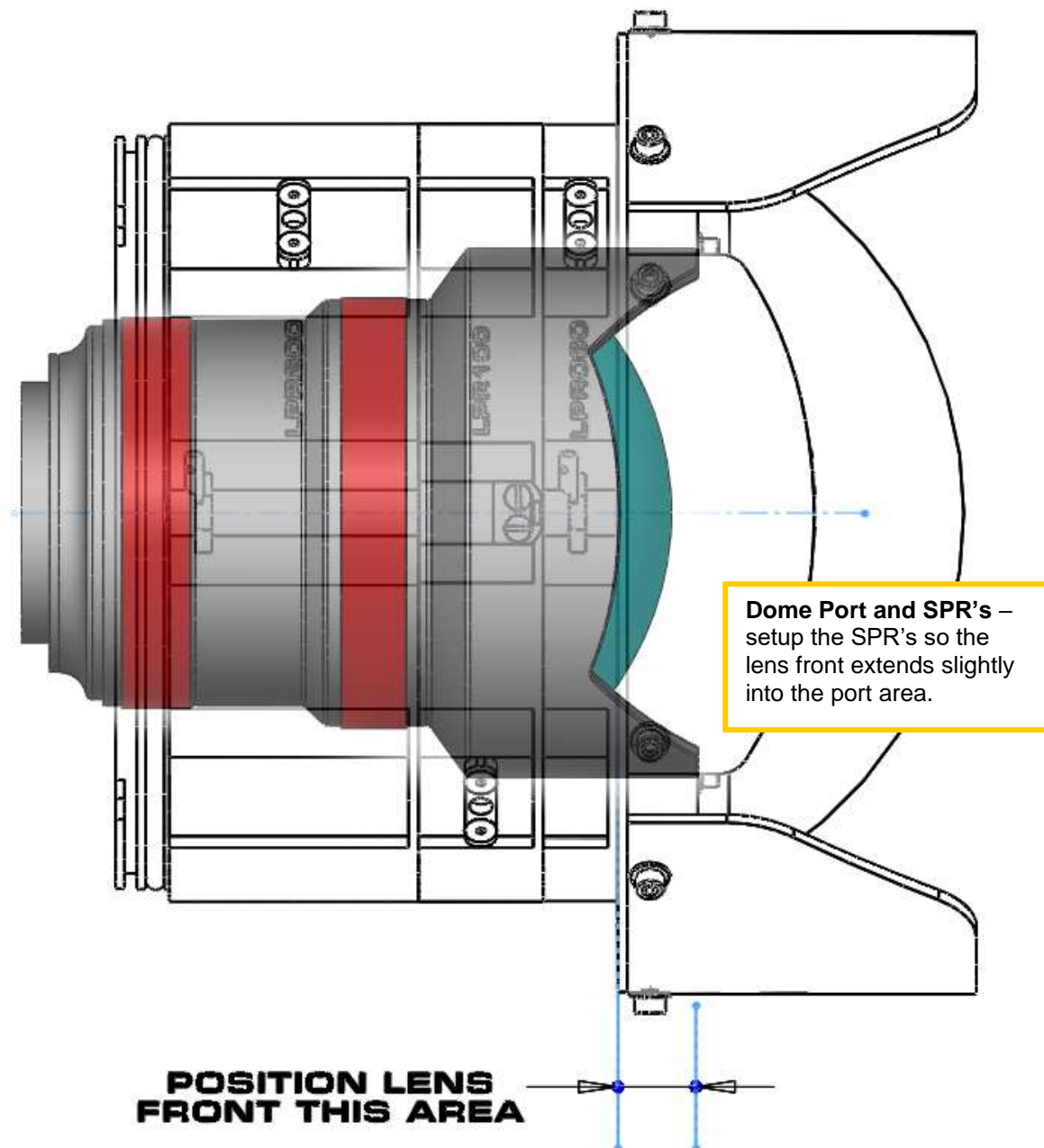


- ✓ **A Dome Port is used commonly with wide angle and fisheye lenses, typically 8mm at the shortest (35mm equivalent) to about 20-35mm.**

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.

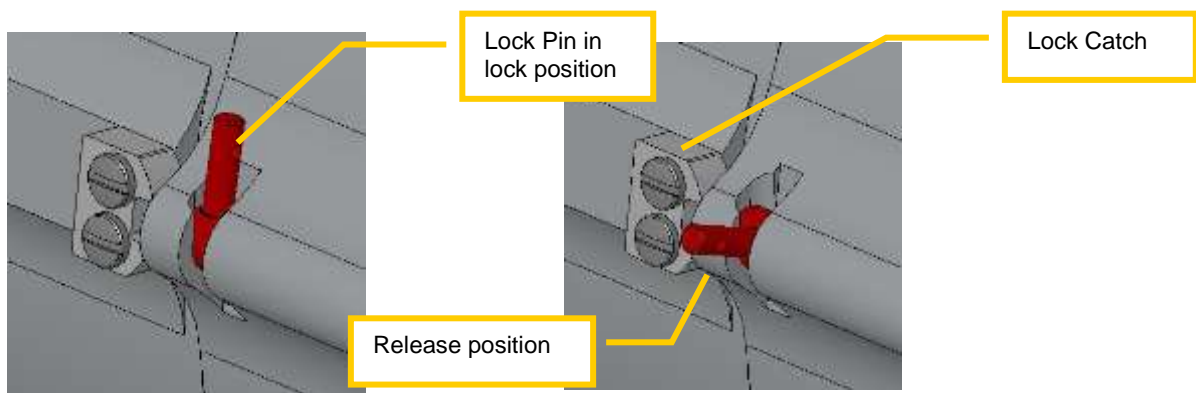
Test for vignetting and image quality. If necessary adjust the position of the lens with respect to the port and re-test to achieve optimum results.

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

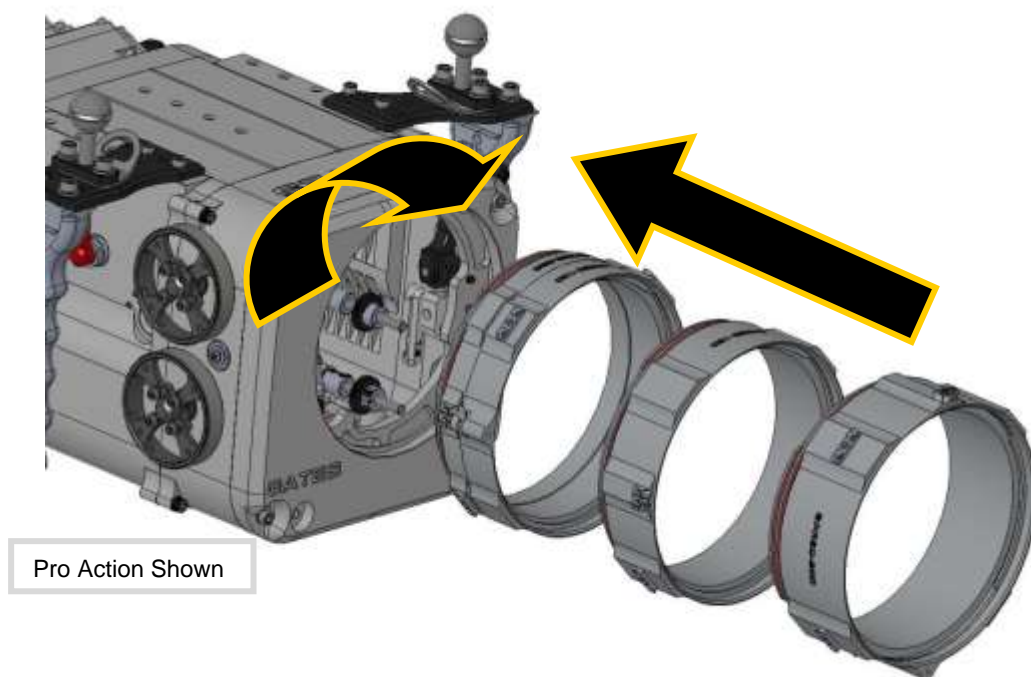


Mount Stackable Port Rings (SPR's) and Port

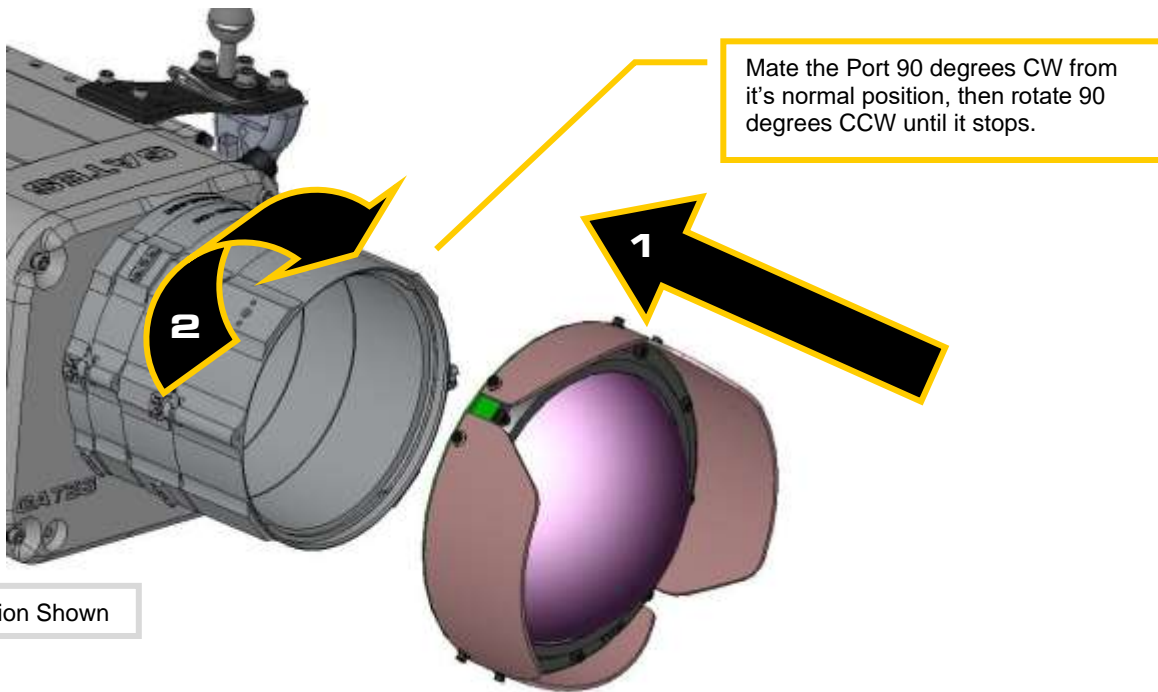
- ✓ **SPR's are assembled in any order on the housing.** Place the lock pin on the first SPR in the 'lock' position.
 - ✓ **Lubricate O-Rings** as necessary for smooth, easy rotation.
 - ✓ **Start by mating the first SPR to the Port Base with the locking pin at the top.** Mate the SPR to the housing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



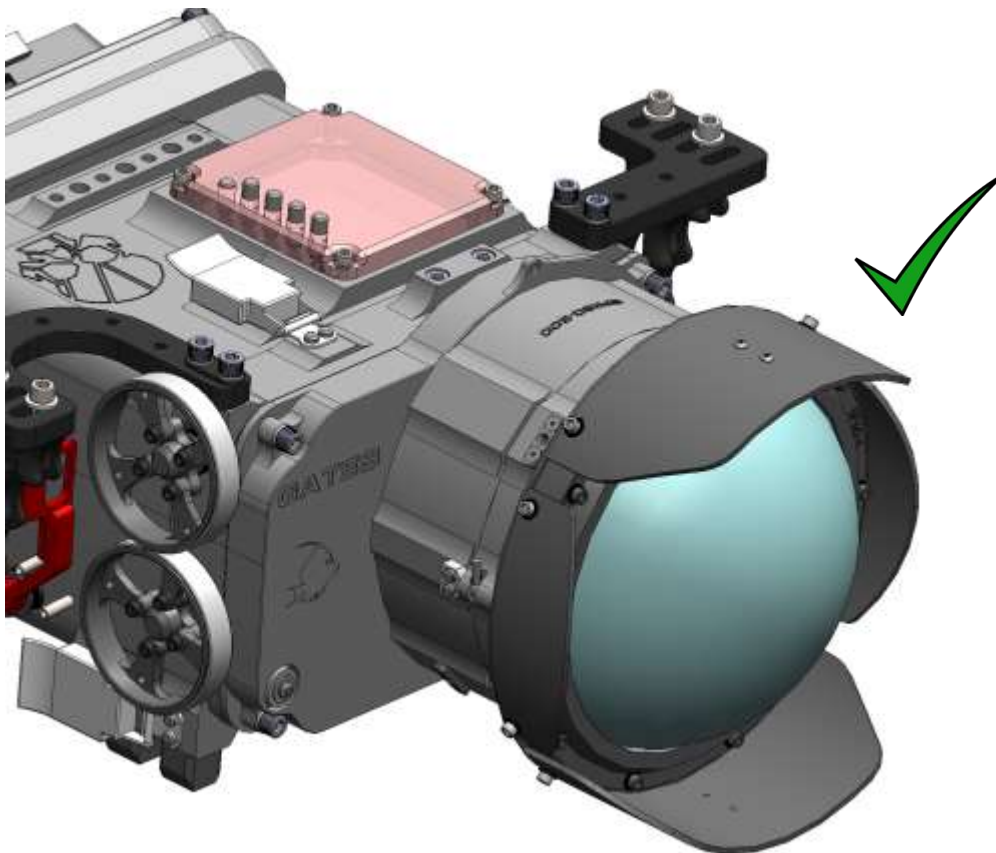
- ✓ **Mate the next SPR with the lock catch at the top, and rotate 90 degrees until the lock pin 'snaps' into place.**



- ✓ 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.



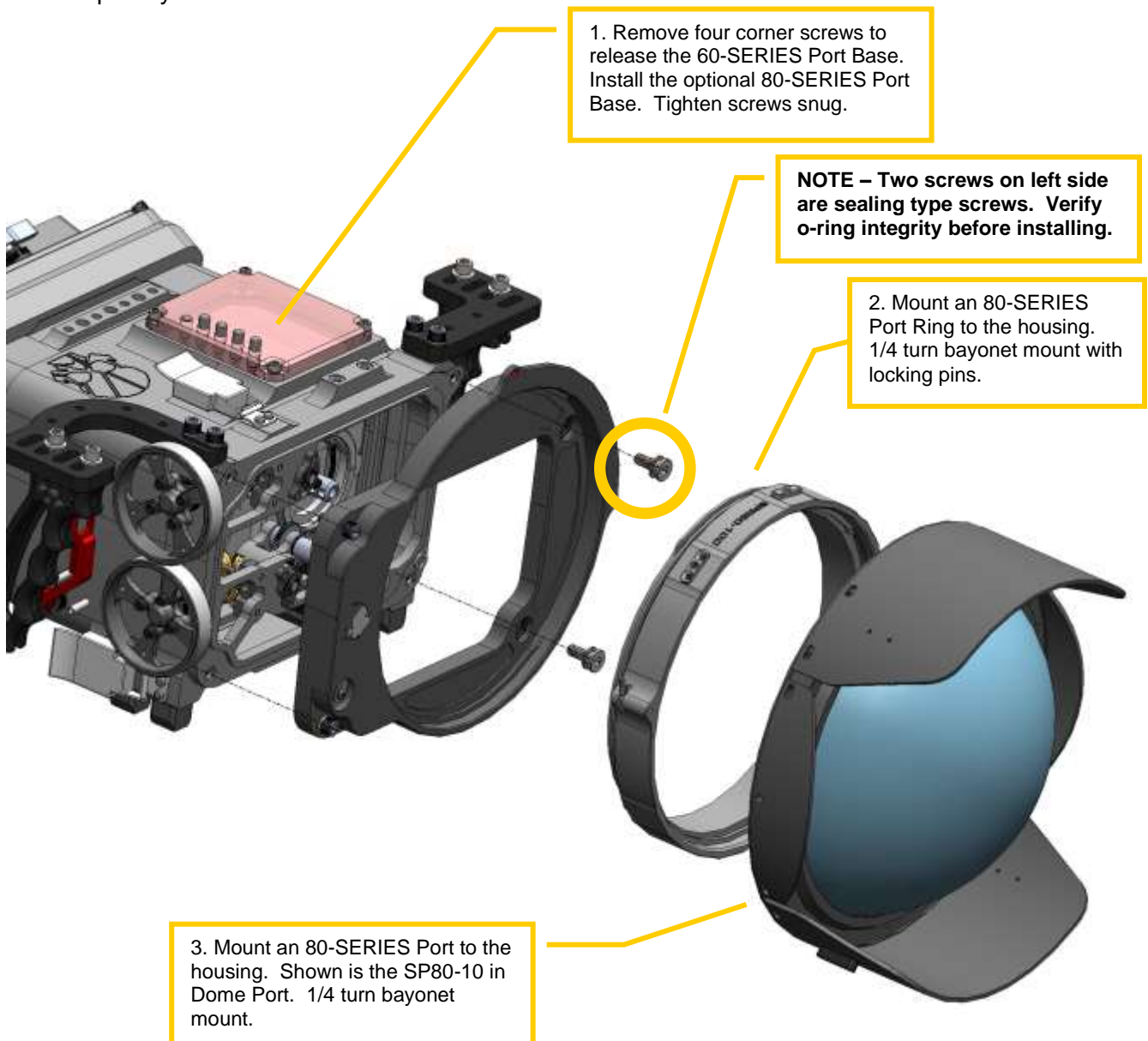
Pro Action Shown

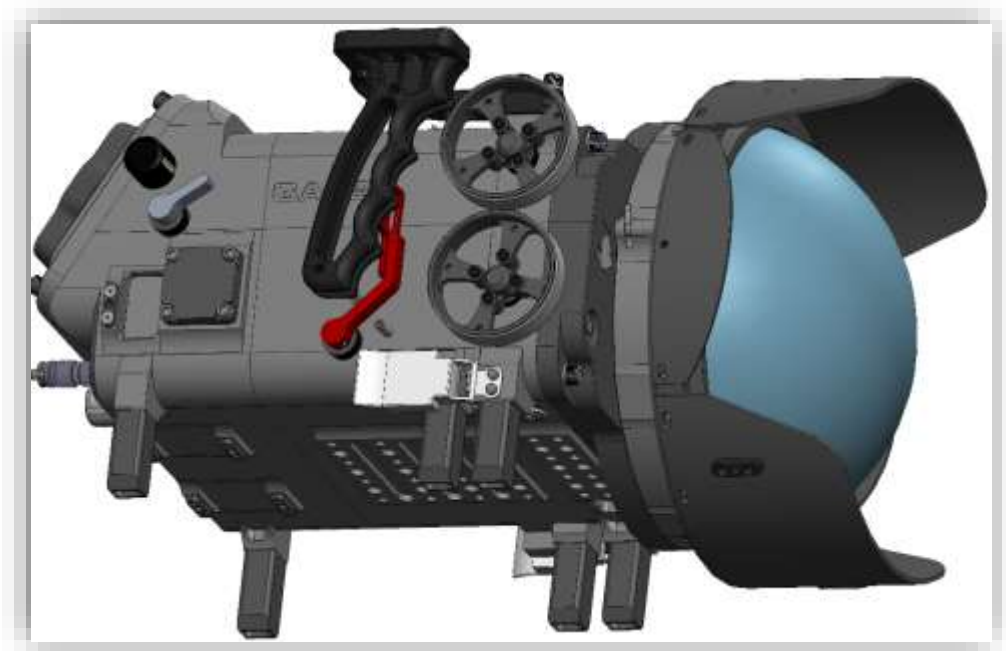
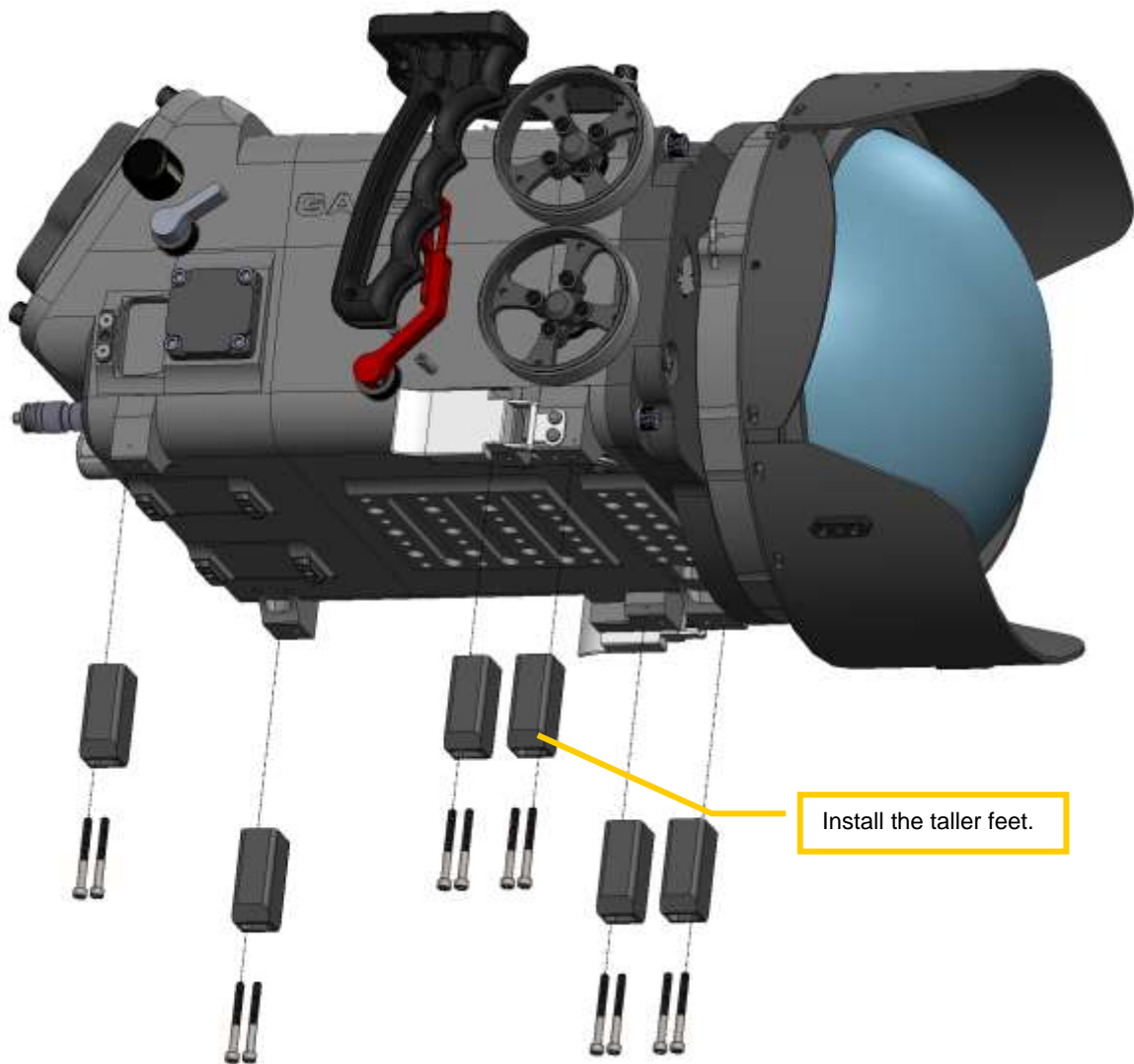


Changing the Port Base

Gates larger port series – the 80 series – can be used with Z3. 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 Z3.** 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 Z3 front shell.
- ✓ **Next, install the taller feet on Z3.** This keeps the housing from resting on the larger port system.



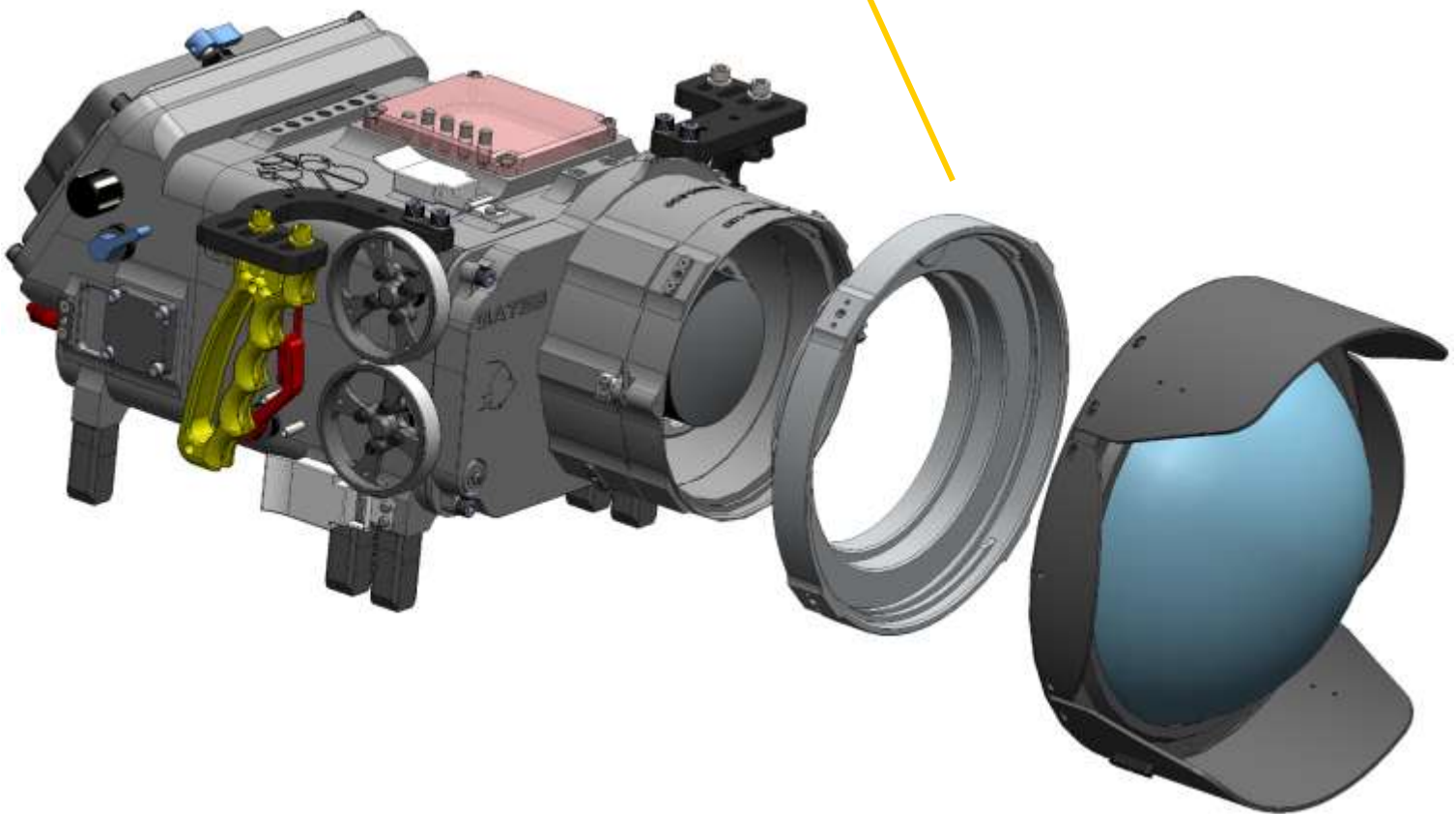


Installing the 60-80 SPR Adapter

Z3 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.

Mount 60-80 SPR Adapter to the 6" Port Rings, the follow with either SP80-8 or SP80-10 Dome Ports



Water Alarm (Optional)

If you have the optional water alarm installed there are three alarm conditions to know:

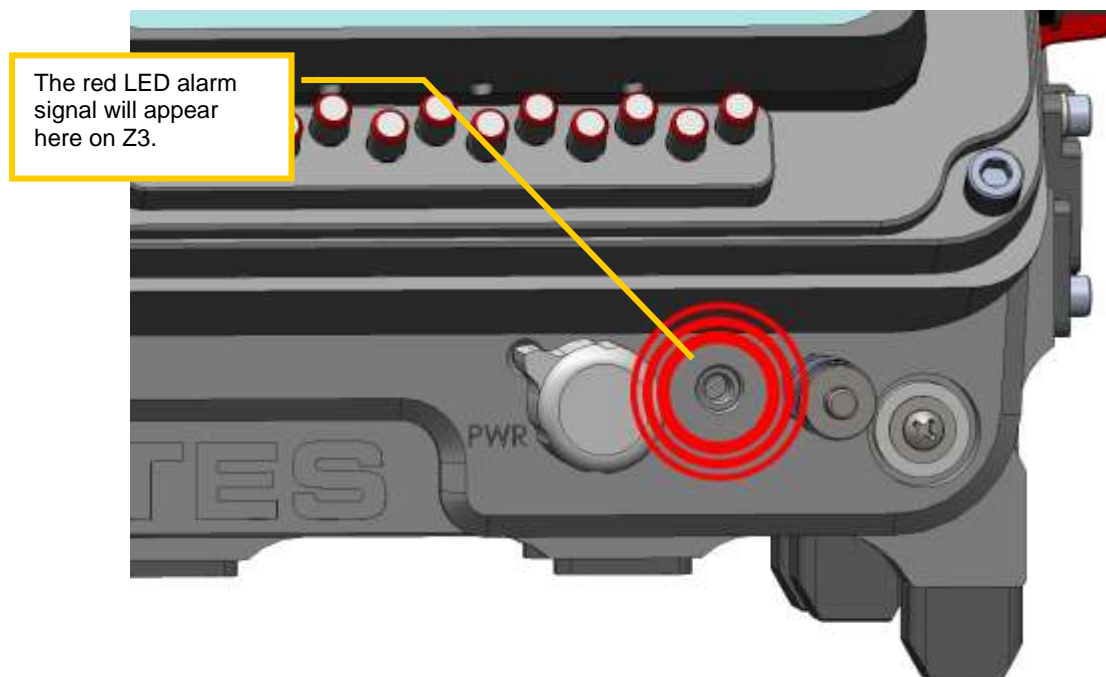
Condition	LED	Siren
New Battery (Insertion)	Bright Intense blink while siren plays	Ascending tones played 4 times
Water Intrusion	Bright Intense Blink	Grating Warble sound. Alarm will sound for duration of detection.
Low Battery	Low Intensity fast blink	Descending tones played 8 times pausing approx.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

The alarm can be tested anytime by shorting the detection contacts that lead to the water alarm transducer. The water detection condition will activate for 6 seconds. If the battery is drained the low battery condition will sound.

The water alarm requires a single 6V battery type A544.

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

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

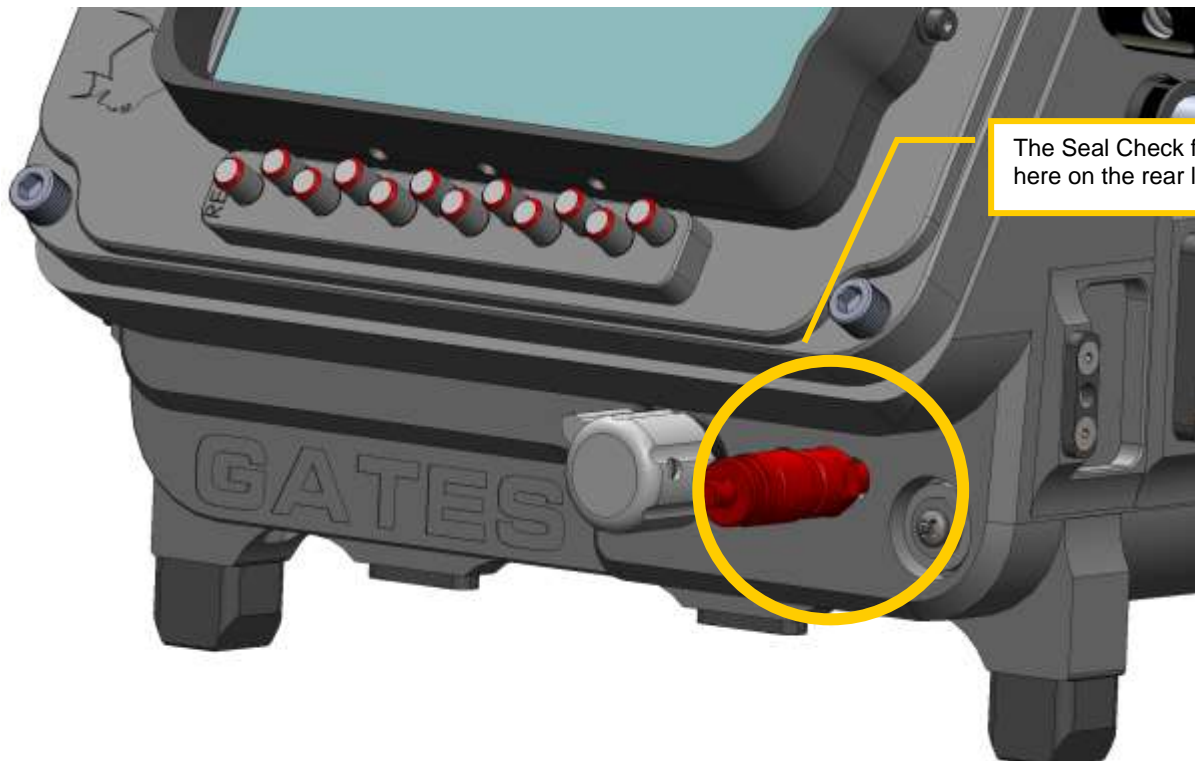


Seal Check

- ✓ **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 Z3. More vacuum can inhibit the transfer of heat away from the housing.
- ✓ **Note that Seal Check Lite** – included with Z3 – requires about 80 cycles hand pumping to reach 100 millibars (3 in Hg) vacuum.
- ✓ **CAUTION:** ensure the Seal Check plug is installed and secure before diving.

Final Checks

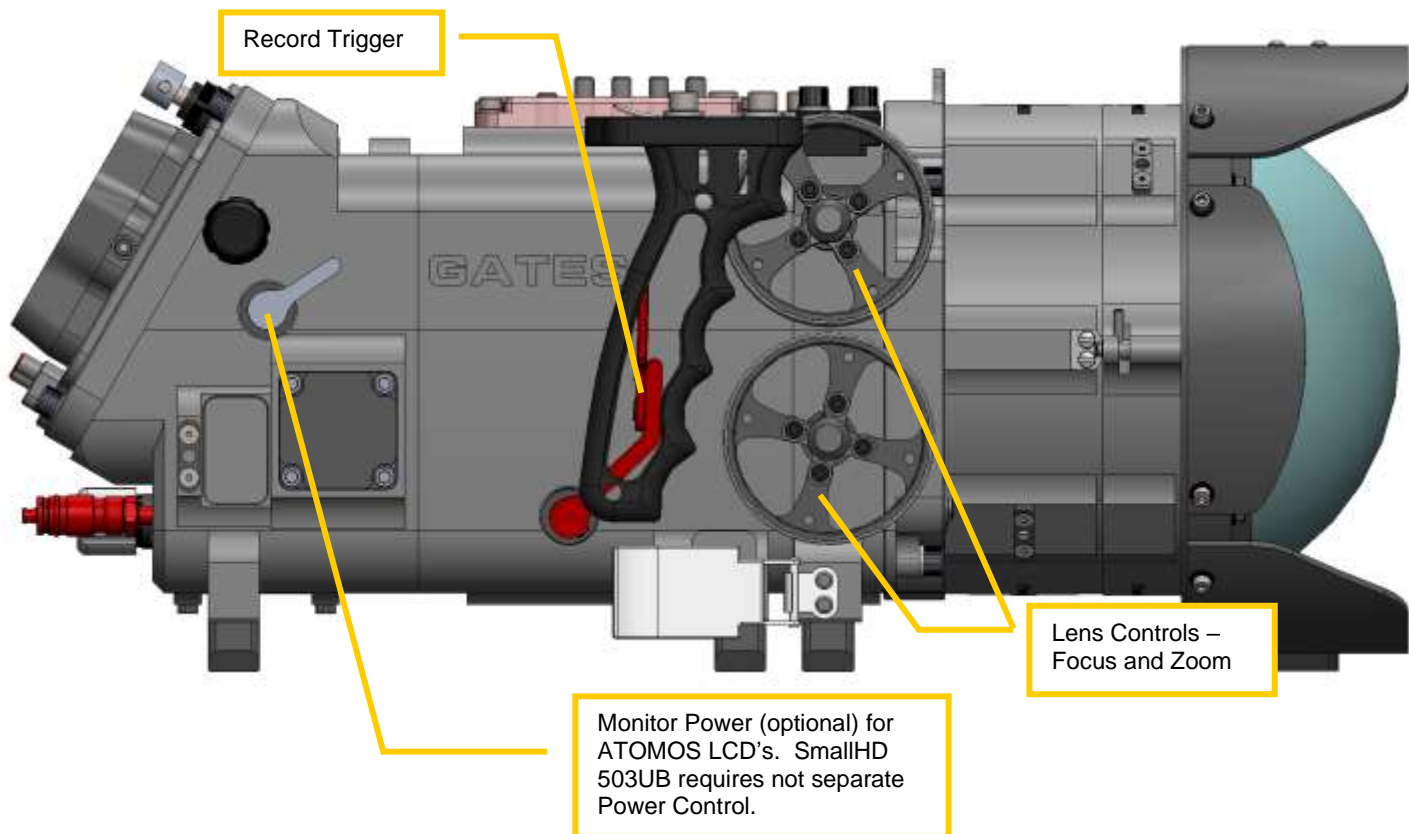
- ✓ **Visual Inspection.** Look closely at all seal mates – Port, SPR's, and main Housing seal – for gaps. Look over the housing one final time.
- ✓ **Verify operation.** As a final check, power on the camera and verify all controls are functioning normally.



3: Z3 Operation

Right Side Controls

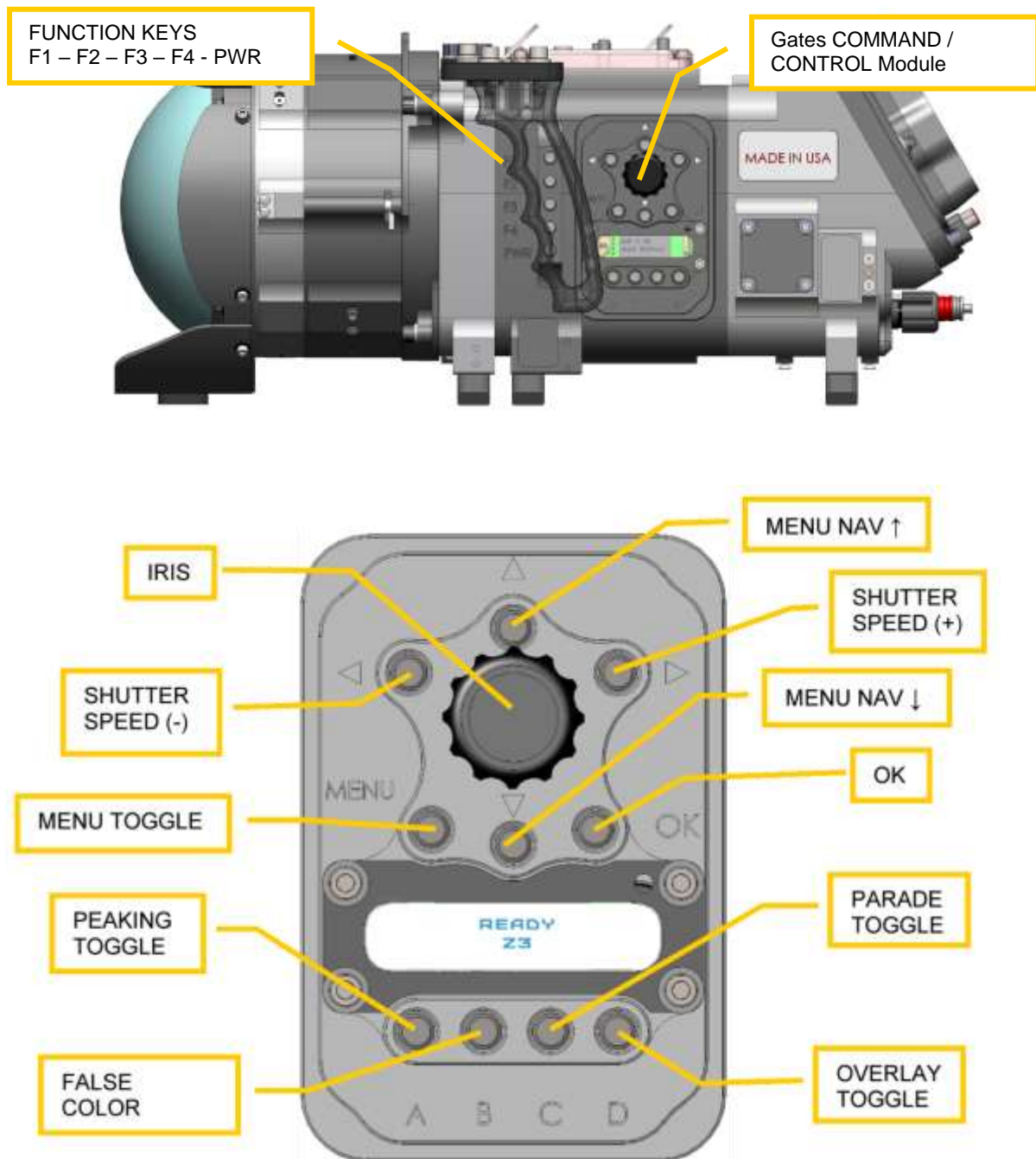
- ✓ **Record Trigger.** Activates record start / stop on all cameras.
- ✓ **Lens Control.** These two mechanical controls can be mapped to a DSLR or compact PL lens for focus, iris or zoom.
- ✓ **Monitor Power.** ATOMOS SHINOBI SDI LCD requires the additional step to press the power-on button with this control.



Left Side *FUNCTION* & GCC Control

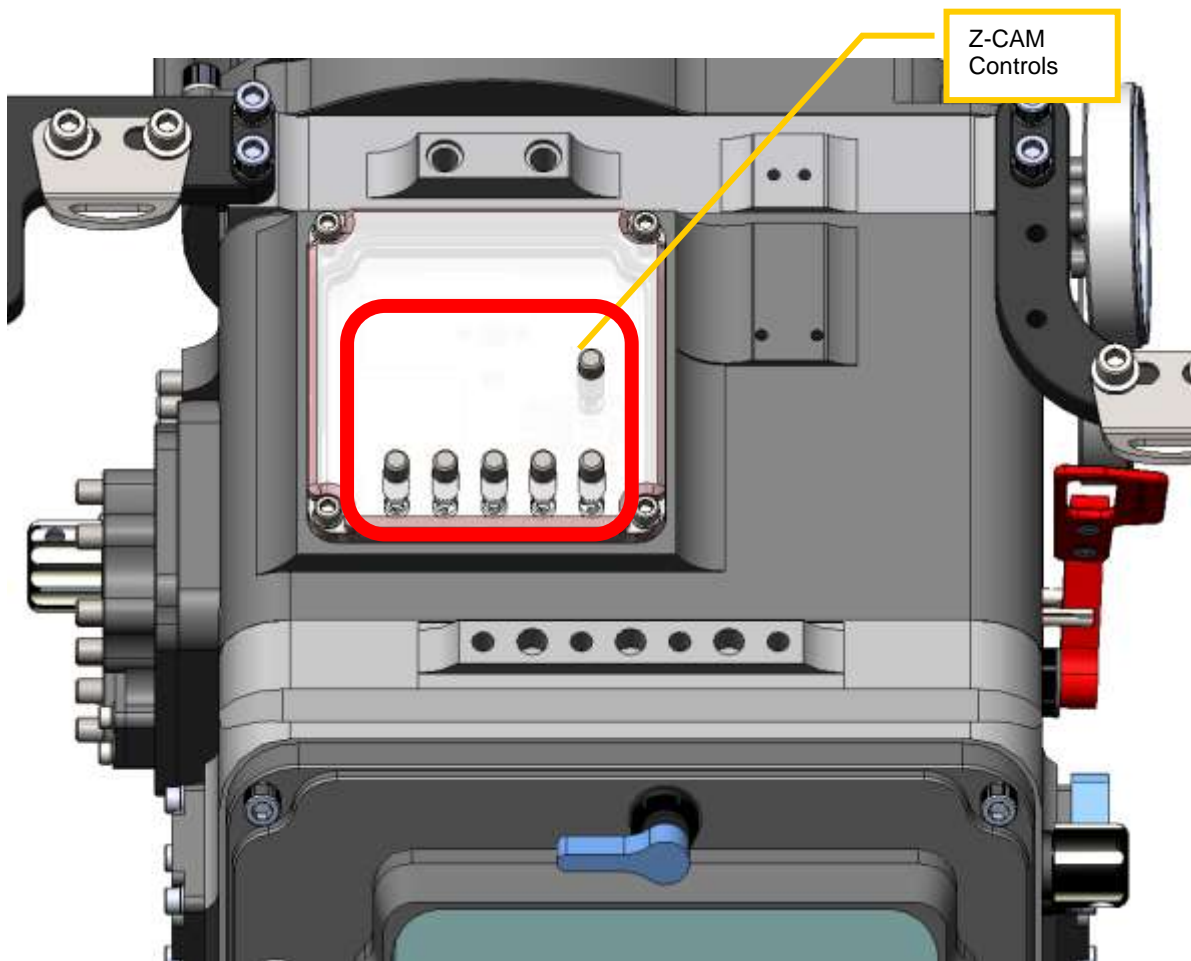
- ✓ FUNCTION buttons are directly accessible F1 – F2 – F3 – F4 – PWR on the camera.
- ✓ **Gates COMMAND / CONTROL Module (GCC).** Provides direct camera control of iris (DSLR and Mirrorless lenses), ISO, shutter speed and 4 assignables.

At this writing, the GCC controls are assigned specific functions, mapped below. Future updates to RED Z-CAM firmware will result in more features and control enhancements. Visit GatesHousings.com for GCC firmware upgrades and installation procedure.



Top Controls

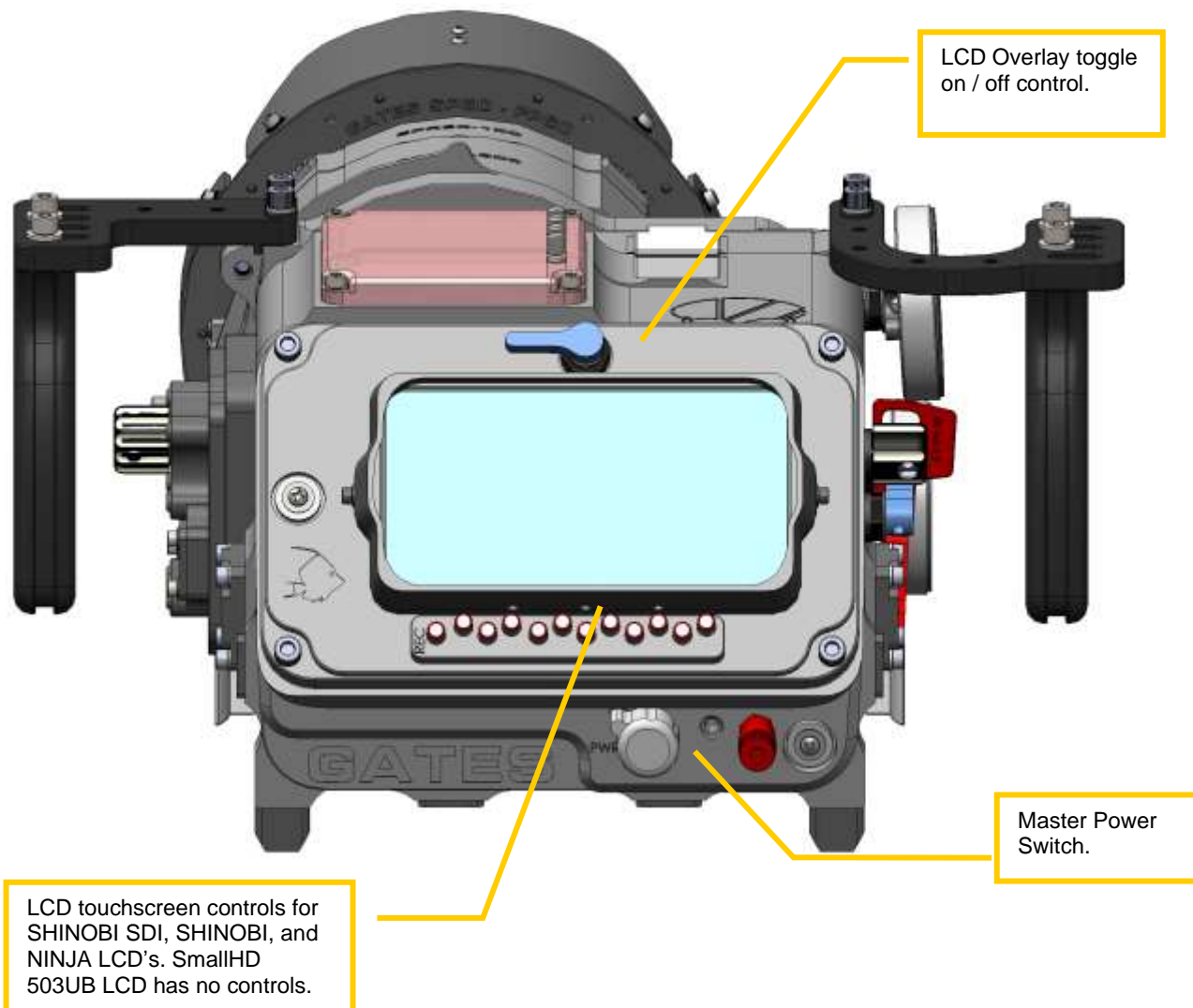
- ✓ **Five controls in the top window** directly access Z-CAM navigation buttons: **MENU**, **FN**, **▲**, **▼**, **OK**, and **RECORD**.



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 Z-CAM camera overlay.
- ✓ **Master Power Switch.** Rotate the control into position and press to turn on system power.

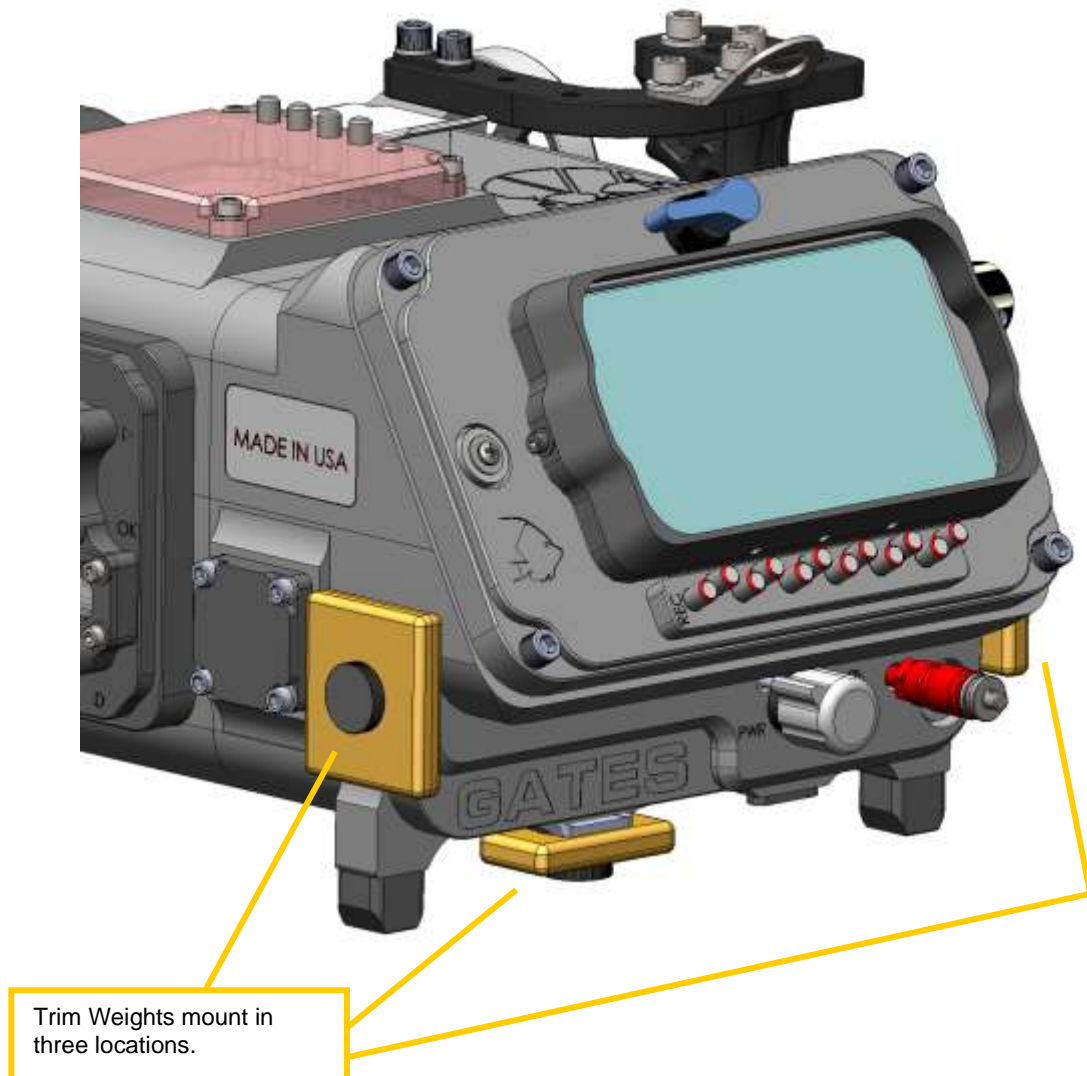
NOTE: SHINOBI SDI LCD requires turning on power with the separate power control on the right side.



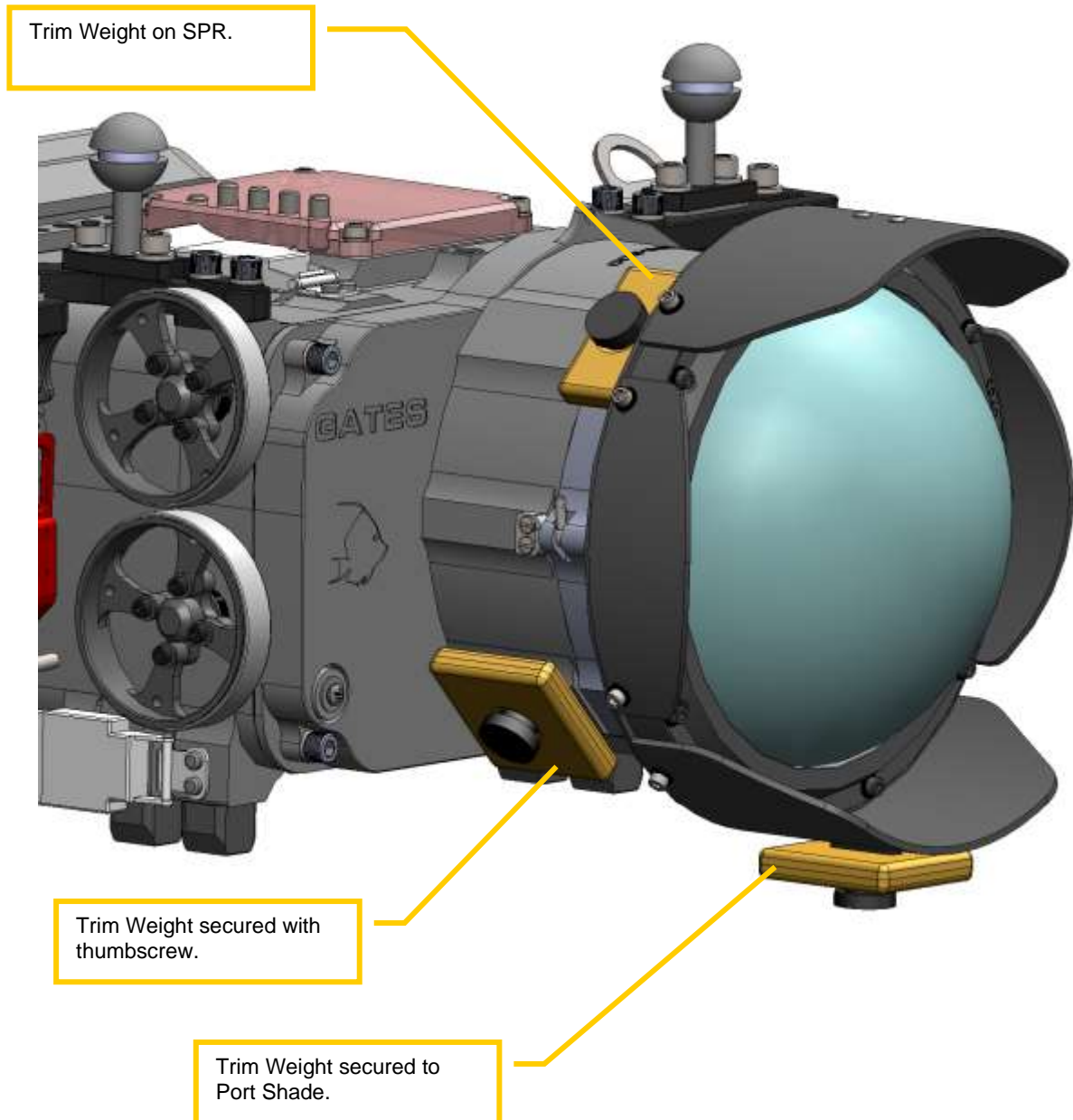
Buoyancy / Trim

Z3 has a trim weight system for establishing perfect neutral / trim buoyancy underwater. There are two general locations for trim weights.

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



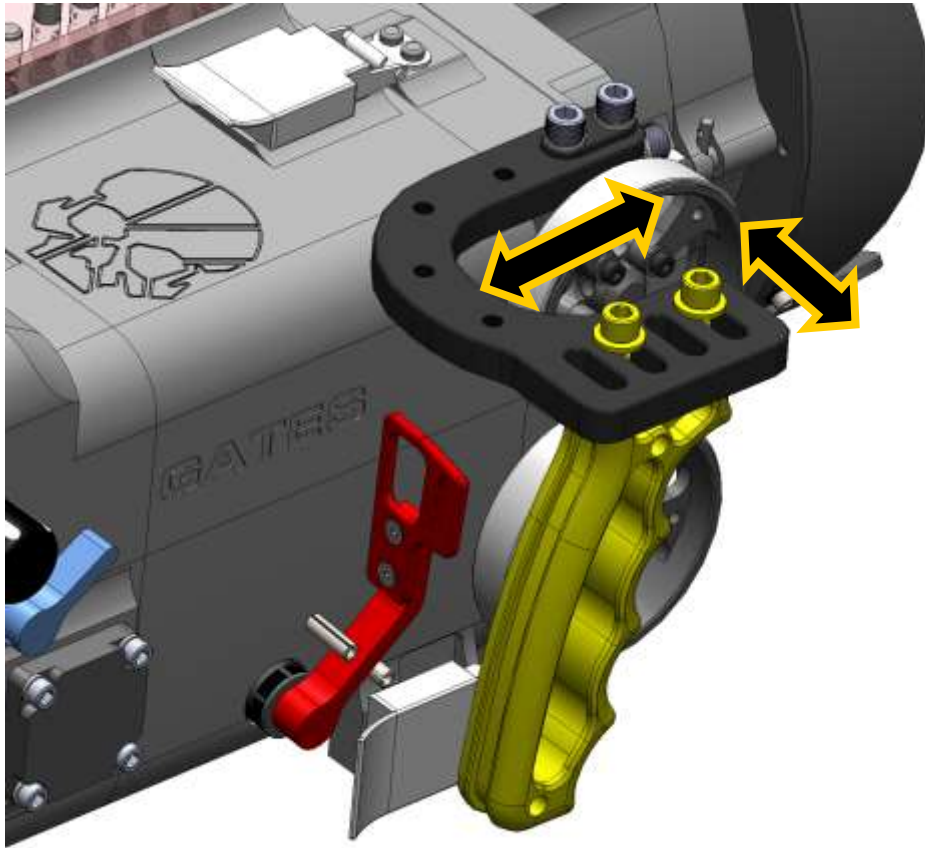
- ✓ **Stackable Port Rings.** Trim weights can also be secured to the SPRs and Port Shades, as shown.



Adjustable Handles

Z3 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.

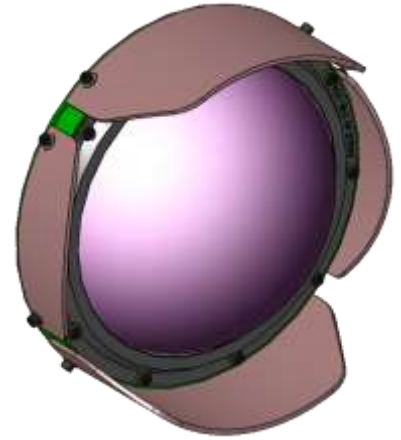


Port Options

At this publication a Dome and Flat Port options are available for Z3: When choosing a Port consider the following tradeoffs and limitations.

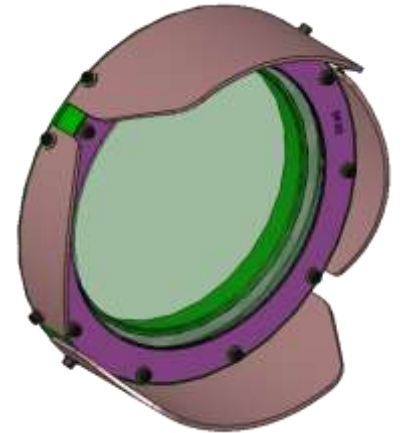
Dome Port

- ✓ **Optical material:** Anti-reflective coated glass or acrylic.
- ✓ **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%.



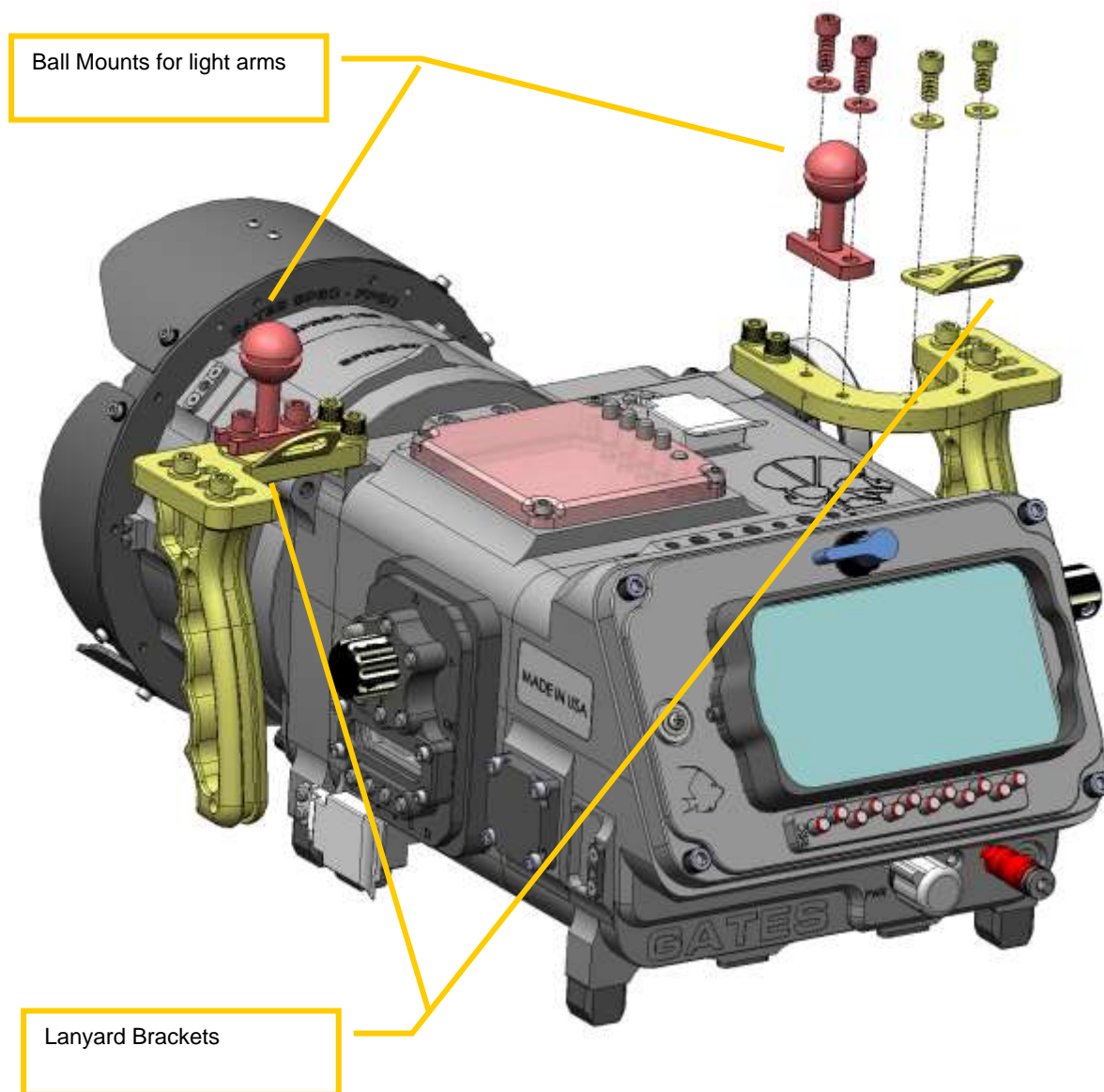
- ▶ **Note:** The optical interaction between any given lens and a Dome or Flat Port is largely predictable, however distortions and aberrations can occur with either Port. As such, Gates does not warrant optical performance or image quality.

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)

Z3 has provisions to utilize a variety of lighting systems. Strong, secure ball mounts for the light arms can be 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.



Lighting Systems (optional)

Z3 pairs well with Gates Lighting Systems like the GT14's. A powerful 14,000 lumens of light at a high quality -- 90 CRI 5000°K color temperature. Mirrored indicators show light level and time remaining on both sides of the light. Several safety features and long burn time -- 30 minutes -- at full power.

Contact Gates for more information.



Travel / Transport

Z3 requires several considerations for travel.

- ✓ **Camera.** It is OK to transport the camera / lens inside Z3 *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 Z3 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: Z3 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 and 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 large 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!

5: Customer Support

Should you have any questions about Z3 and its operation, please contact Gates at the numbers below.

Email: Customer.srv@GatesHousings.com

Web: www.GatesHousings.com

Phone: 858.391.0052

Fax: 858.391.0053