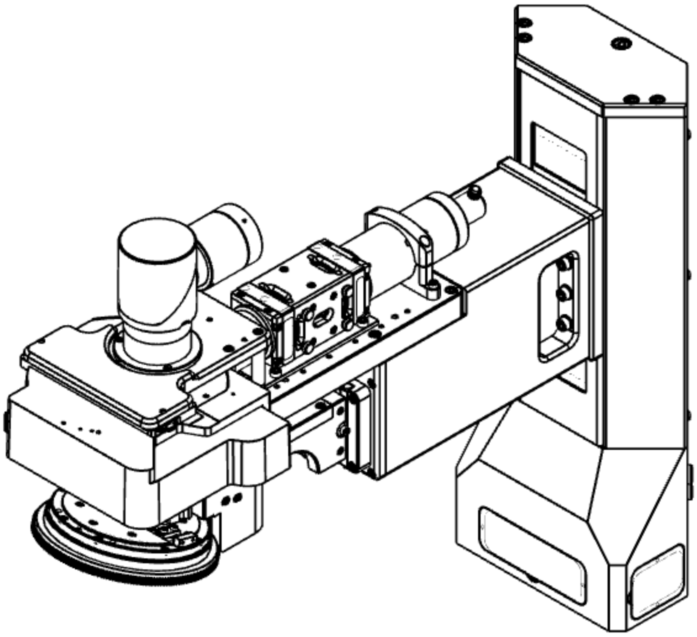
Large Format OpenStand: User Manual



Contents

Safety Information

- Save this manual as it contains important safety information and operating instructions.
- Use only as specified by these operating instructions or the intrinsic protection provided by the unit may be impaired.
- Before using the stage system, please follow and adhere to all warnings, safety and operating instructions located on the product and in this User Manual.
- It is safe for use in an ambient temperature from 5 to 40°C with relative humidity (RH) to 80% up to 31°C decreasing linearly to 50% above 31°C.
- **Do not** expose the product to water or moisture while energized.
- **Do not** expose the product to extreme hot or cold temperatures.
- **Do not** expose the product to open flames.
- **Do not** allow objects to fall on or liquids to spill on the product.
- Make sure the focus cable is located so that it will not be subject to damage.
- Make sure the system is installed so that the focus cable is easily accessible.
- For use in a manner not specified in this manual contact Prior Scientific before any work is done.
- To reduce the risk of damage, do not plug or unplug the product from the controller while it is switched on.
- **Do not** attempt to disassemble the product. Doing so will void the warranty. This product does not contain consumer serviceable components. Service should be performed by Authorized Service Centres.
- Only the exterior of this product should be cleaned using damp lint-free cloth.
- We recommend at least 2 people lifting the system from the packaging. Follow

good lifting practice when doing so.

- Some of our actuators are capable of producing forces in excess of 300N. During active use please ensure body parts are kept away from moving parts. Trap hazards may be formed between our actuators and other items in close proximity which are out of our control. Please be aware to minimize this risk during the installation of our equipment into your wider system.

- If the sample contain hazardous material the user must ensure that Good Laboratory Practice is followed.

This warning sign indicates there is a hazardous voltage.

This warning symbol indicates that there is a strong magnetic field.

This warning sign indicates that there is a potential hazard – read instructions before continuing.

In accordance with The Waste Electrical and Electronic Equipment Regulations, this symbol indicates that the product must not be disposed of as unsorted municipal waste but should be collected separately. Refer to your local authority in the EU for return and/or collection systems available in your country.

Unpacking the System

Carefully unpack the OpenStand and accessories. **Retain the packaging should you need to return the unit.** If it appears to be damaged, immediately return the unit to the factory in its original packaging. Prior Scientific will not assume liability for damage arising from the use of non-approved packaging.

Ensure all items and accessories specified below are present. If not contact either your sales outlet or Prior Scientific directly.

The system includes:

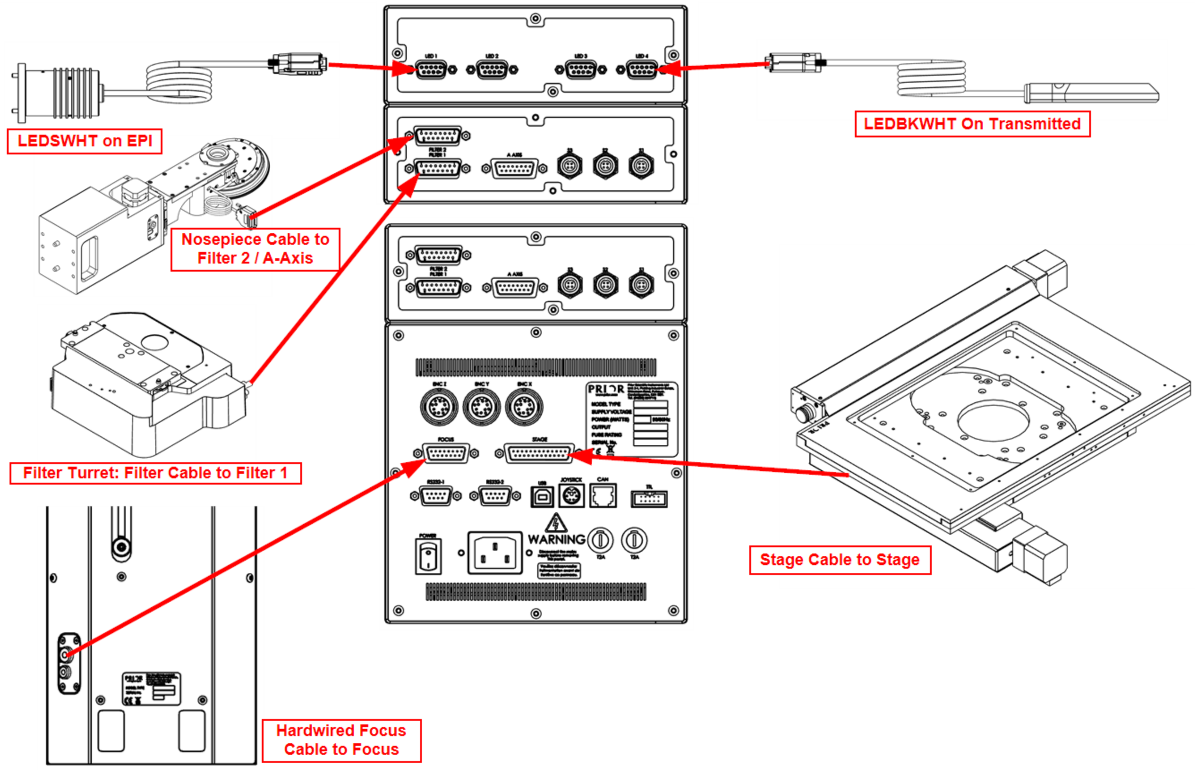
Part Number	Description	Quantity
OpenStand-L	Large Format OpenStand	1
Stage	ProScan Stage	1
ProScan III Controller	Main Controller	1
Joystick	XY Joystick	1
Digipot	Z Digipot	1

⚠ Be careful when transporting the unit.
Lift properly and do not attempt to lift it on your own.

⚠ The unit MUST be positioned close to the controlling PC terminal, such that the operator has a clear and unobstructed view of OpenStand.

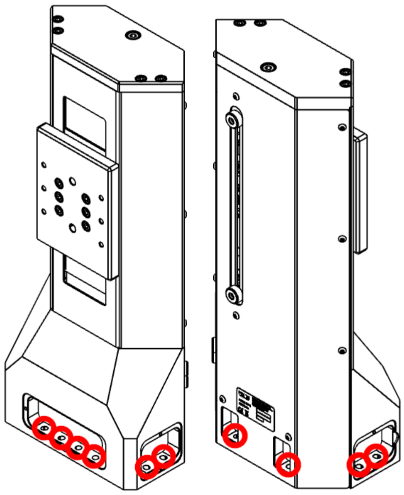
Connections to ProScan III Controller

Please refer to our ProScan III Quick Start Guide before connecting any components.

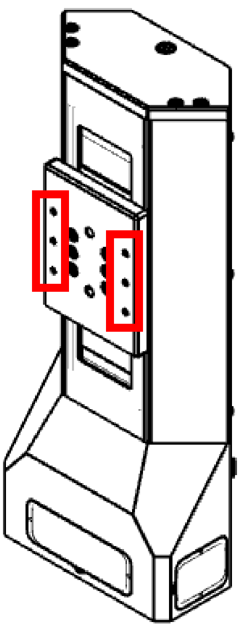


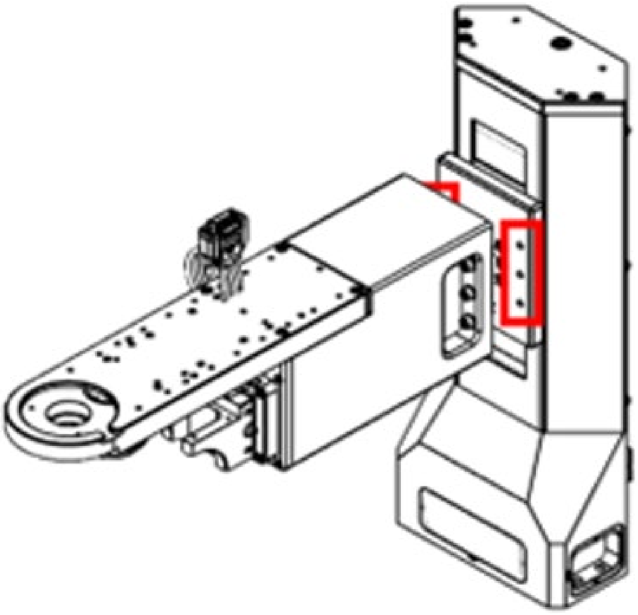
Fitting the Large Format OpenStand

1. Attach the Large Format OpenStand Motorized Tower to your vibration table / compatible surface with the included 10x M6 x 16mm screws with the concealed holes behind the magnetic panels at the bottom of the tower.



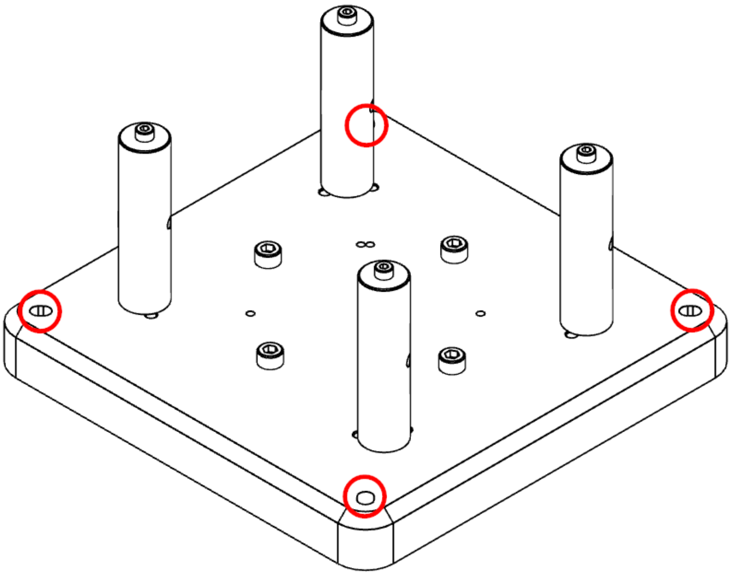
2. Attach the Large Format OpenStand Head by securing the two dowel pins into the non-threaded holes on the tower's front plate, then using the included 6 x M6 x 30mm screws and 6 x M6 plated washers to secure the head into place with the three threaded holes on each side of the mounting plate. If Epi-illumination has been included, it will be installed on the OpenStand binocular arm.



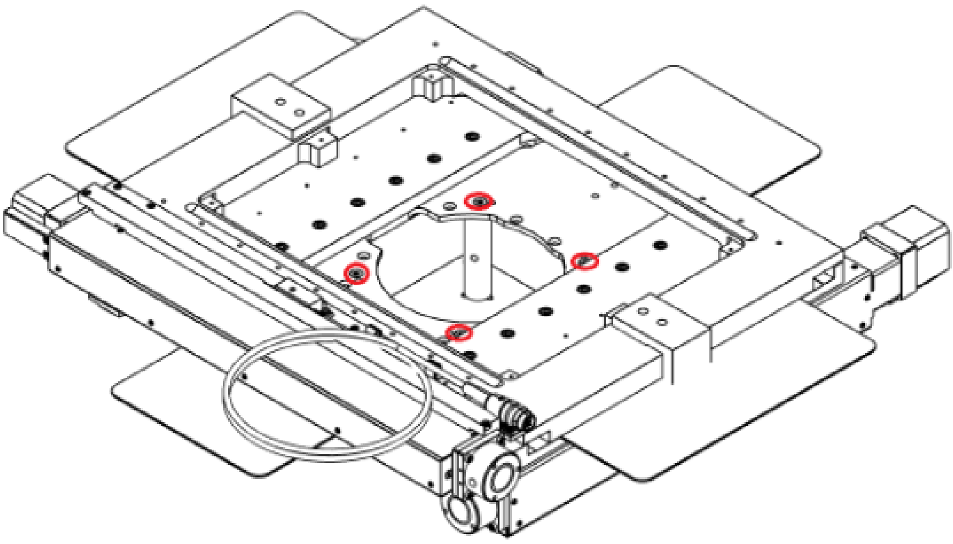


The OpenStand binocular arm and head are very heavy. Having a partner for assistance while mounting the arm is highly recommended.

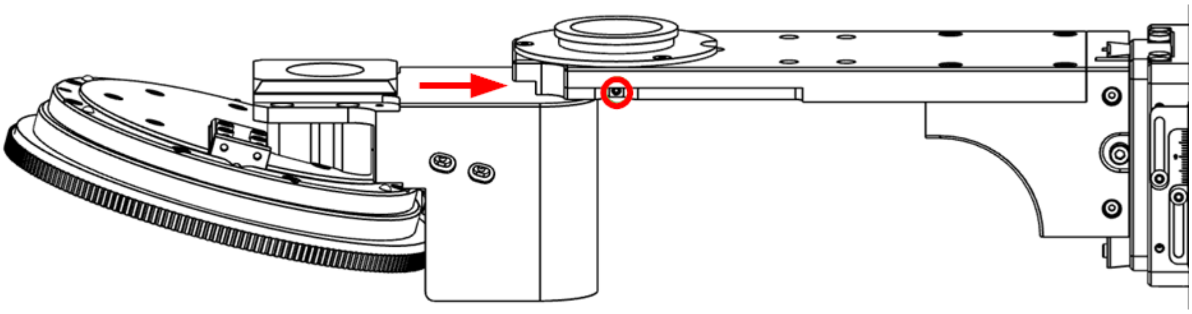
3. Connect the HH531 stage mounting kit to the selected optical table using the included 4x M6 x 30mm screws on each corner hole. Ensure the center of the stage mounting kit is in line with the light path through the system. For a microscopy table with M6 holes and 25mm spacing, there should be 13 holes between the motorized tower and the stage mounting kit.



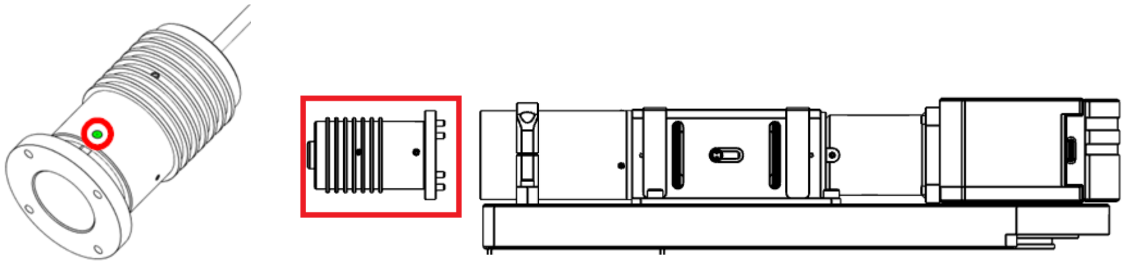
4. Remove the four screws on top of the stage pillars of the HH531 and align the chosen large format stage mounting holes with the pillars. Once aligned, use the 4x M4 x 10mm screws to secure the stage into place tightly.

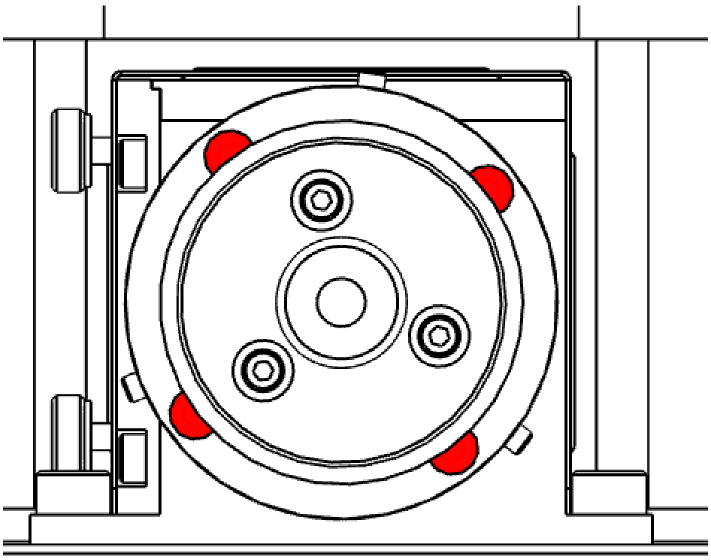


5. Attach the 6-position nosepiece onto the nosepiece dovetail as shown below by sliding it onto the dovetail and then tighten the circled grub screw to secure it in place.

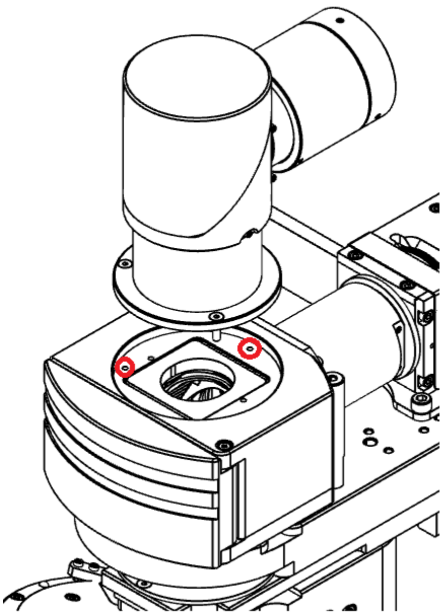


6. Attach the LED light to the Epi module using 4 x M3 x 8mm cap head screws. This may require the LED case to be loosened by releasing the highlighted grub screw and pulled the body towards the rear to allow access to the screws.

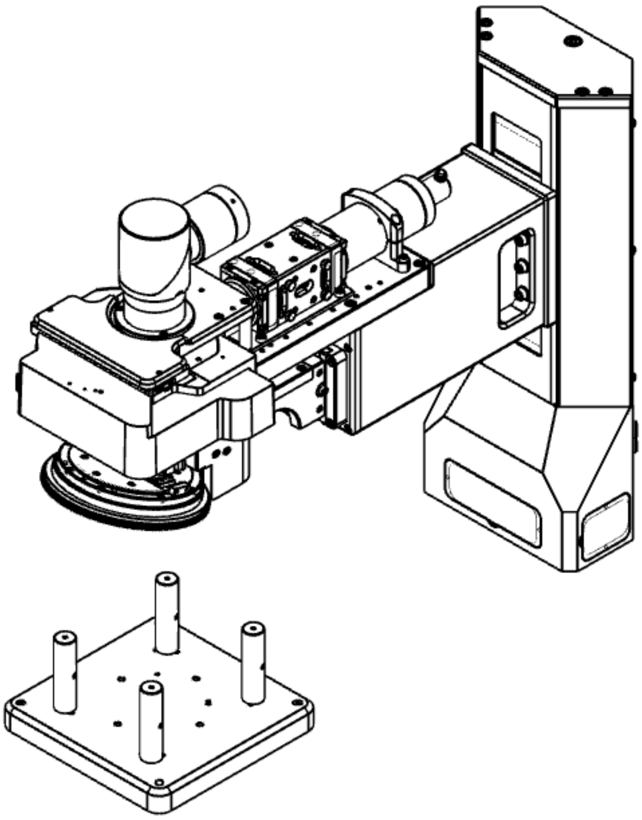




7. Attach the tube lens on top of the EPI module, as shown below using 3x M3 x 12mm countersunk screws.

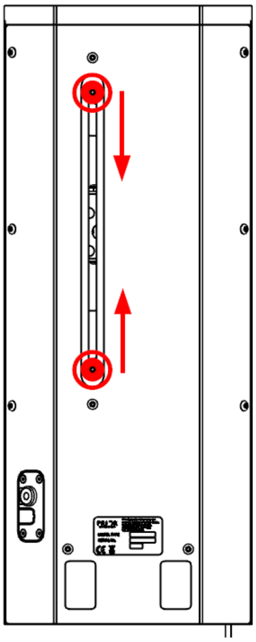


8. An example completed setup of Large Format OpenStand is shown below.



Adjusting the Large Format Limit Switches

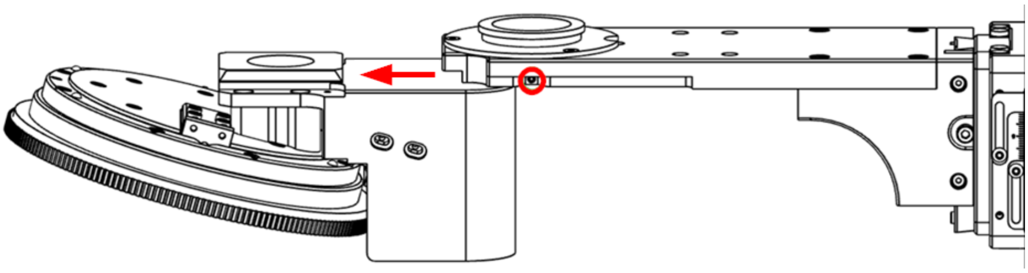
1. The Large Format OpenStand has limit switches on the back of the motorized tower, as shown in the picture below. The limit switches can be adjusted by slightly loosening the circled adjusters and reducing the travel range as desired, then tightening the adjusters again.



Do not fully unscrew these limit switch adjusters or they will become disconnected internally. This can only be resolved with a non-warranty RMA return.

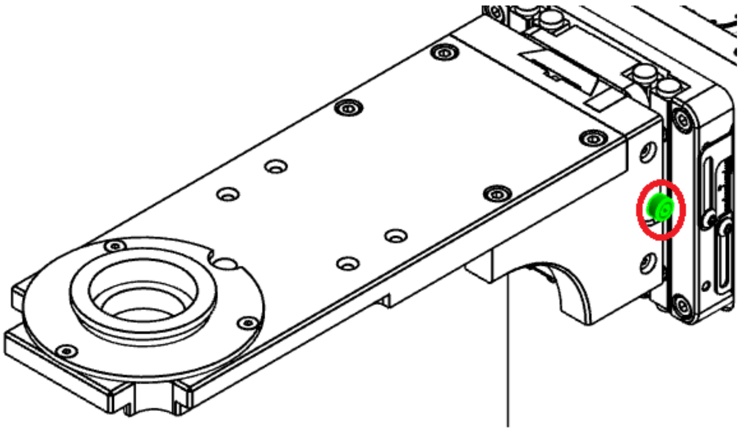
Adjusting the position of the nosepiece arm

1. Remove the objectives from the nosepiece, then remove the nosepiece by unscrewing the circled grub screw and pulling the nosepiece outwards as shown below.

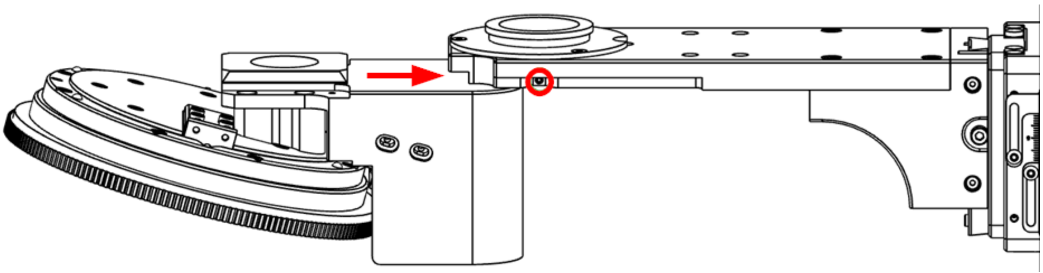


2. To adjust the nosepiece arm dovetail, hold the nosepiece arm with one hand and unscrew highlighted screw slightly. You can slide the nosepiece arm dovetail up or down to the level that you require.

3. Retighten the screw to secure the nosepiece arm dovetail. The nosepiece arm has approximately 15mm range of motion.

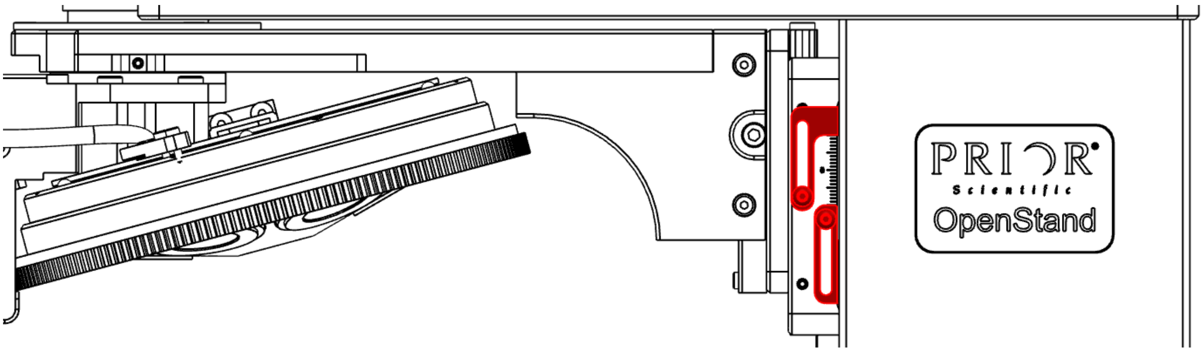


4. Once at the desired height, the nosepiece can be attached to the arm. Slide it in fully and secure it by tightening the grub screw.



Limiting the Z travel range of the Large Format OpenStand nosepiece arm

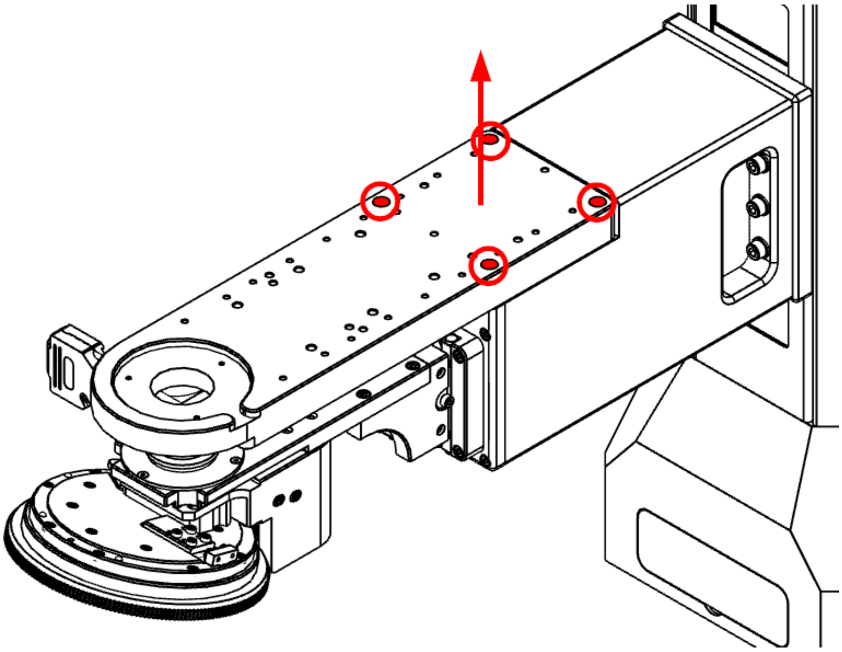
1. The travel range can be adjusted. There are two limit sliders located on the side of the focus block mechanism. You can either limit the travel going up or the travel going down.
2. The focus block has a total travel range of 20mm with a 0 reference in the middle and scaled at a 1mm pitch.
3. Unscrew the limit sliders slightly and move them either up or down to limit your travel range accordingly, then tighten the screw again to secure the chosen limit in place.



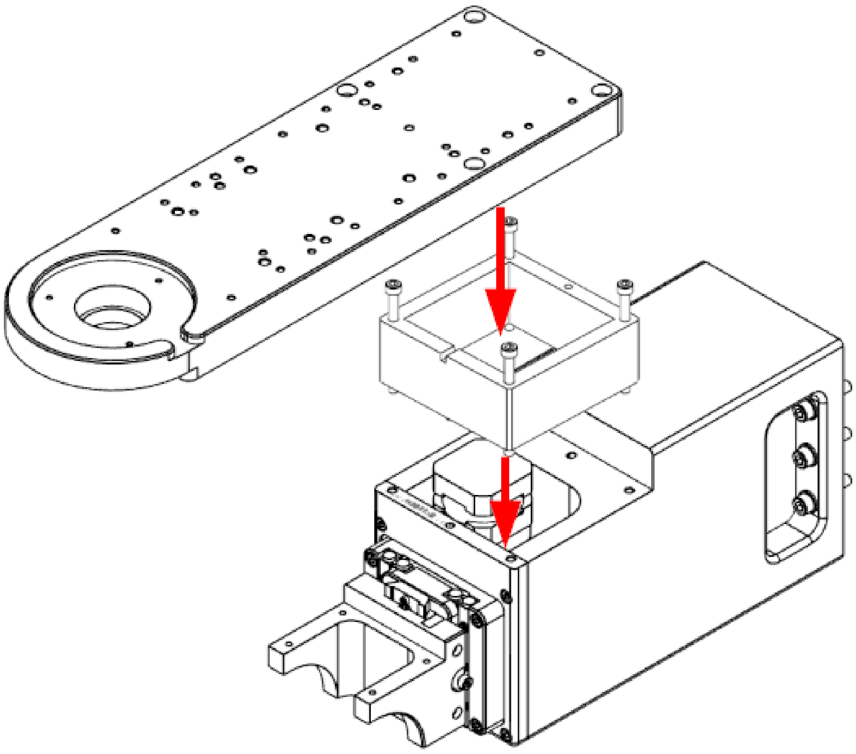
Preparing PureFocus850 Installation on Large Format OpenStand Microscope

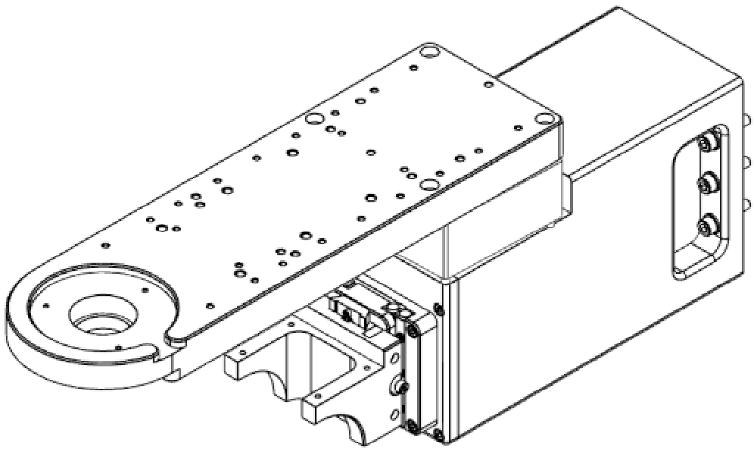
1. Ensure the focus block is moved down to its lowest limit so that there is enough space between the binocular arm and the objective arm.
2. Remove the binocular arm by carefully unscrewing the four screws circled below.

A binocular arm and full illumination setup can be heavy. Having a second person available for assistance is highly recommended.



3. Align the H275UP spacer into the gap between the Large Format Head and the binocular arm, press down to ensure dowel pins are insert properly, and then screw the binocular arm back into position with the included 4x M5 x 70mm socket head screws.

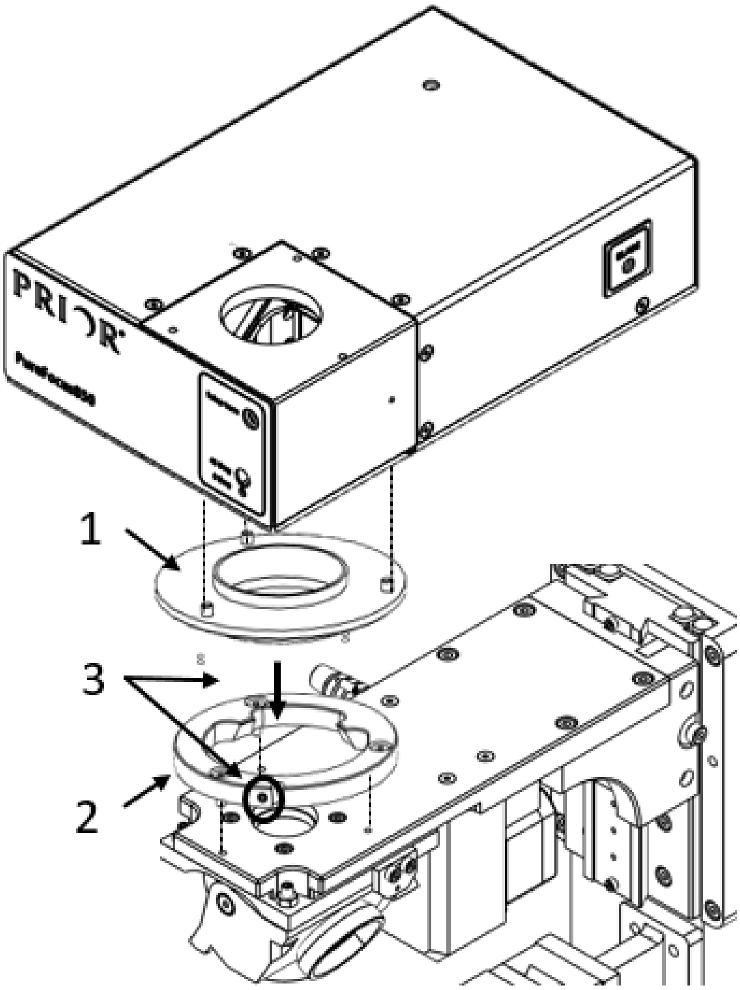




4. Once this is done, the OpenStand is ready for installation of the PF850/PF850M head.

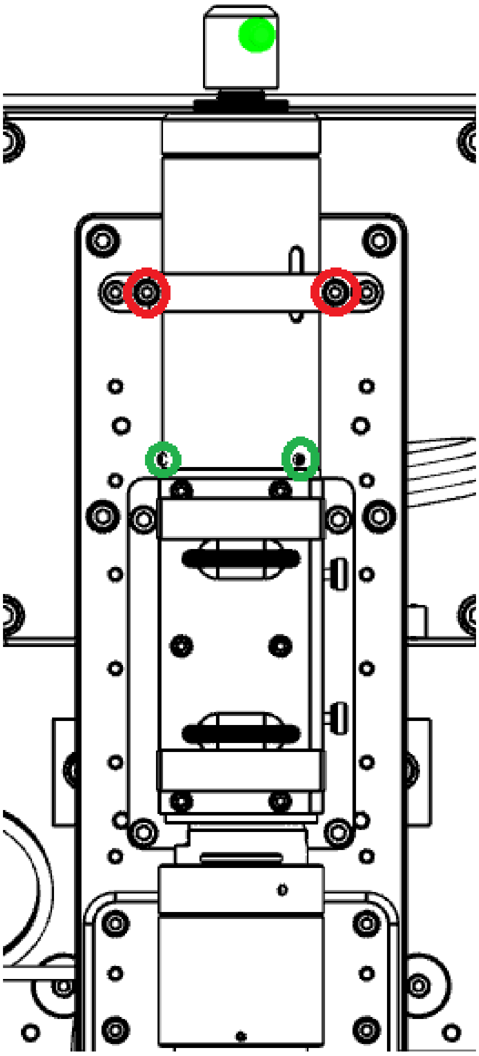
Installing the PF850/PF850M Head onto the Objective Arm of the Large Format OpenStand

1. After the spacer has been installed, per the previous section, attach the lower dovetail onto the bottom of the PF850/PF850M head using 3x M3 x 6mm countersunk screws.
2. Attach the upper dovetail flange to the objective arm using the 3x M3 x 10mm countersunk screws.
3. Secure the PF850/PF850M head by tightening the grub screw on the upper dovetail until the system is secure and does not rotate or bounce when touched.



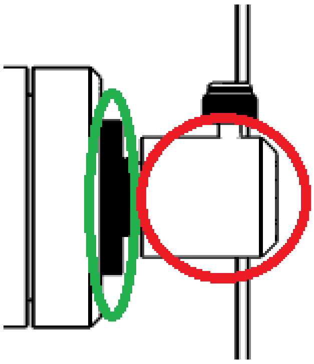
Collimating Liquid Light Guide (required before setting up Kohler Illumination)

1. Remove the 2 screws circled in red. Remove 3 grub screws highlighted in green to remove the collimator from the OpenStand. Two grub screws should be visible on one side and then rotate the tube to reveal the last grub screw.



2. Firmly push the light guide into the aperture until it has reached the end-stop and tighten the thumbscrew (highlighted in green) to secure the light guide.

3. The illumination is collimated by adjusting the collimating optics by screwing the LLG holder (circled in red) and locknut (circled in green) in or out to focus the beam on a nearby flat surface. When the light is in focus screw the locknut fully to fix this position (circled in green).

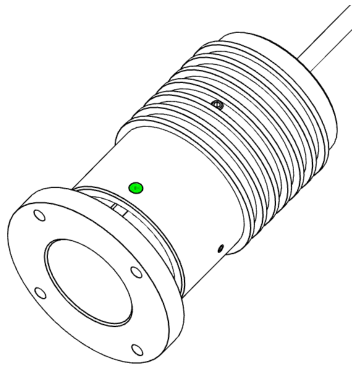


4. An example of LLG uncollimated (above, top) and collimated LLG (above, bottom) are shown. You should be able to see the edges of the light guide clearly.

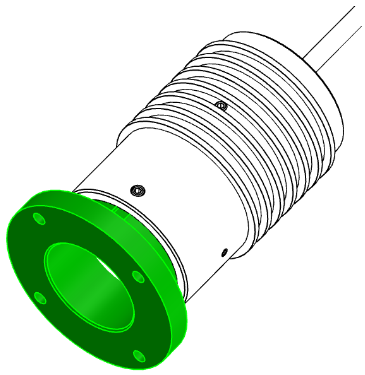
5. Reattach the collimator back onto the EPI using the 3 grub screws.
6. The field stops and aperture stops will need to be optimized for Kohler illumination. Please follow the instructions below to set up the Kohler illumination.

LED collimation

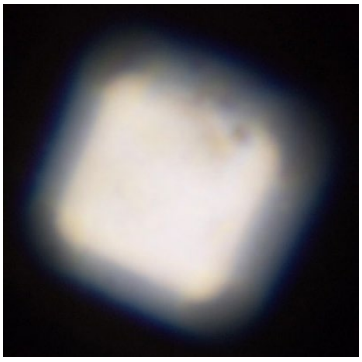
1. Before attaching the LED, connect the LED to the ProScan III controller using Prior terminal or Prior demo software switch on the LED.
2. Darken the room and face the LED to a wall 5 feet away.
3. To collimate the LED, unscrew the grub screw on the LED slightly.

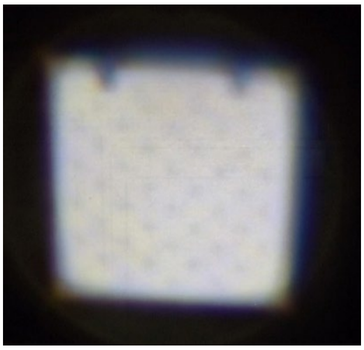


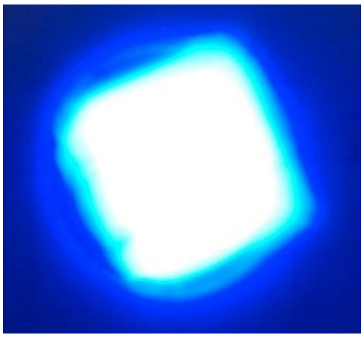
4. Move the sleeve in and out to bring the LED in focus. With a white LED you should be able to see the dots on the LED when the LED is focused.

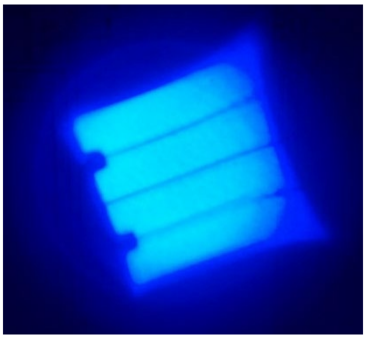


5. Some examples of LED uncollimated LED (below, left) and collimated LED (below, right) are shown.





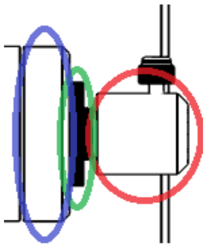




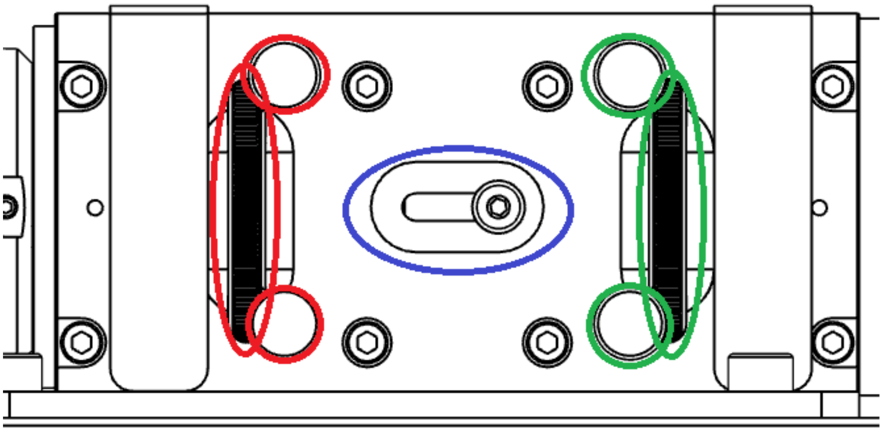
Setting up the Kohler Illumination on EPI

Please ensure the field stop / aperture stop adjustments are facing towards the table not the ceiling unlike upright OpenStand.

1. The liquid light guide illumination may not be centered in the aperture stop. To correct this, slightly release the black locking piece (circled in blue) of the collimator and the silver lock ring (circled in green). Now the silver lock ring can slide around and be used to center the illumination. Once finished, relock the two parts, being careful not to move the alignment.



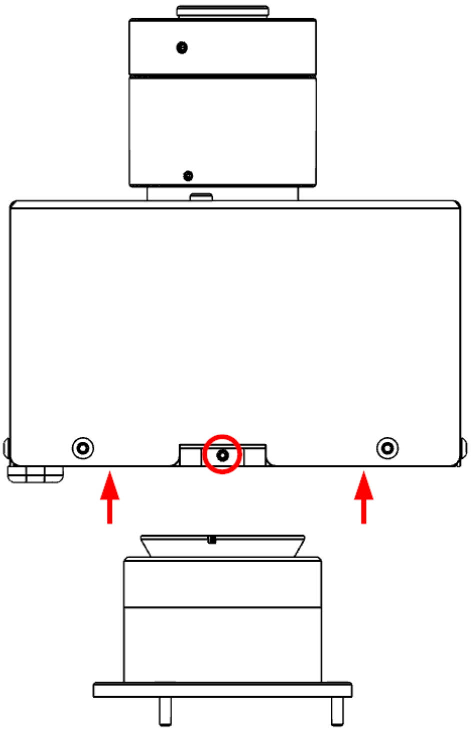
2. To adjust the aperture, stop (circled in green) you will need to see the back focal plane of the objective.



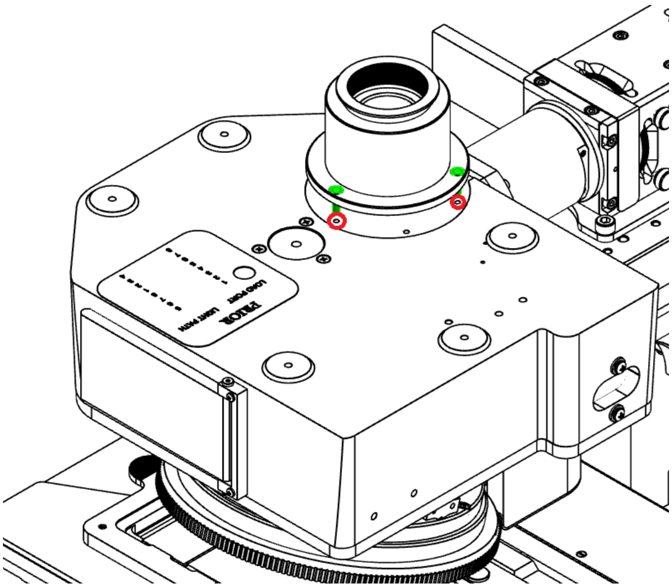
3. Remove one of your objectives and place a tissue paper or a target at the nosepiece aperture.
4. Adjust the aperture iris and center using two grub screws adjacent to the thumbscrew (circled in green).
5. If the aperture iris is not in focus, use the slider (circled in blue) to focus the iris.
6. Open the iris to 80% of the full aperture to give a contrast to the image.
7. Focus on the sample with the objective.
8. When in focus, adjust the field iris (circled in red). Stop down the iris using the adjusting ring so that the leaves of the iris are in view. Check that the iris aperture is centered.
9. If not, use the two-thumbscrew adjacent to the adjusting ring (circled in red) to center the iris in the field of view. Once centered open the iris until the leaves are just out of the field of view.
10. Kohlering has completed. Replace the objective.

Fitting and aligning the camera changer

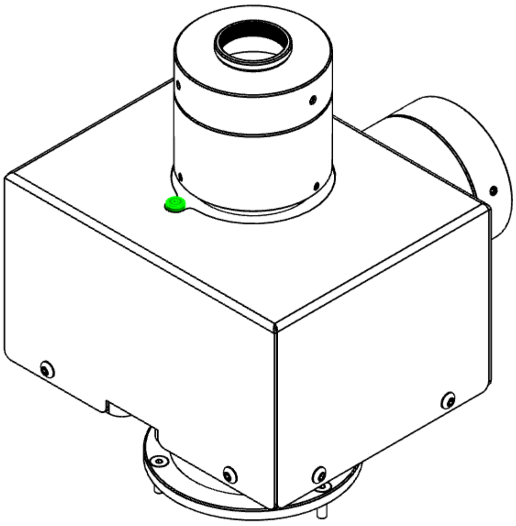
1. To fit the camera changer onto the OpenStand frame, unscrew the grub screw and lift the camera changer.



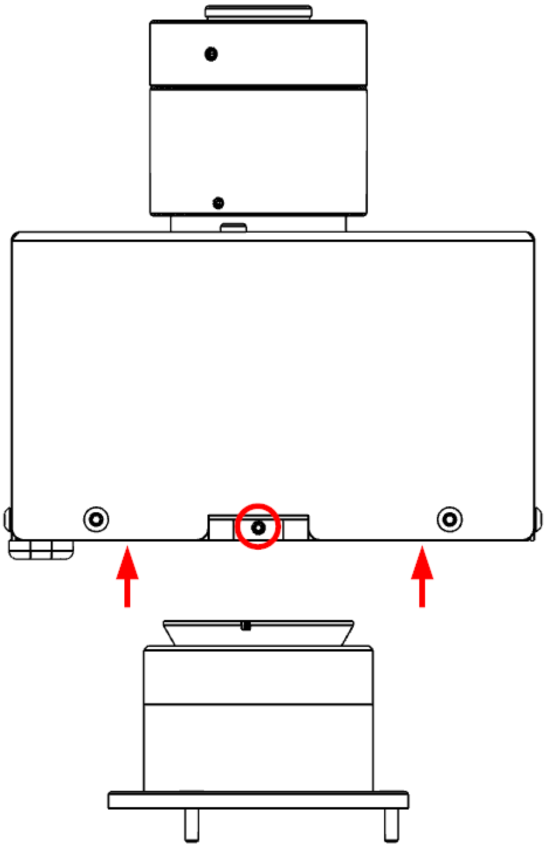
2. Fit the tube lens onto the OpenStand using 3 x M3 x 12mm countersunk screws.



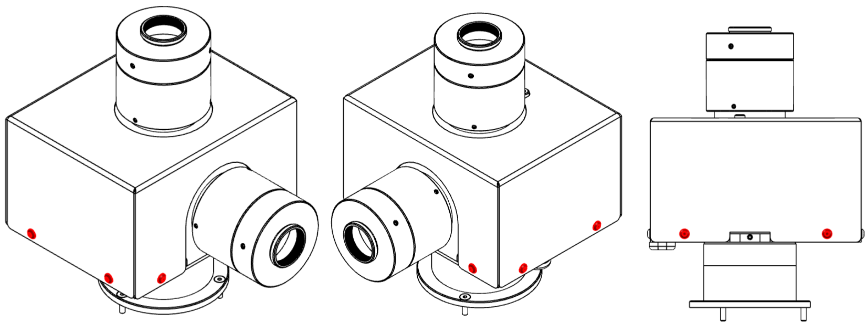
3. Unscrew the transit bolt on the camera changer (highlighted in green).



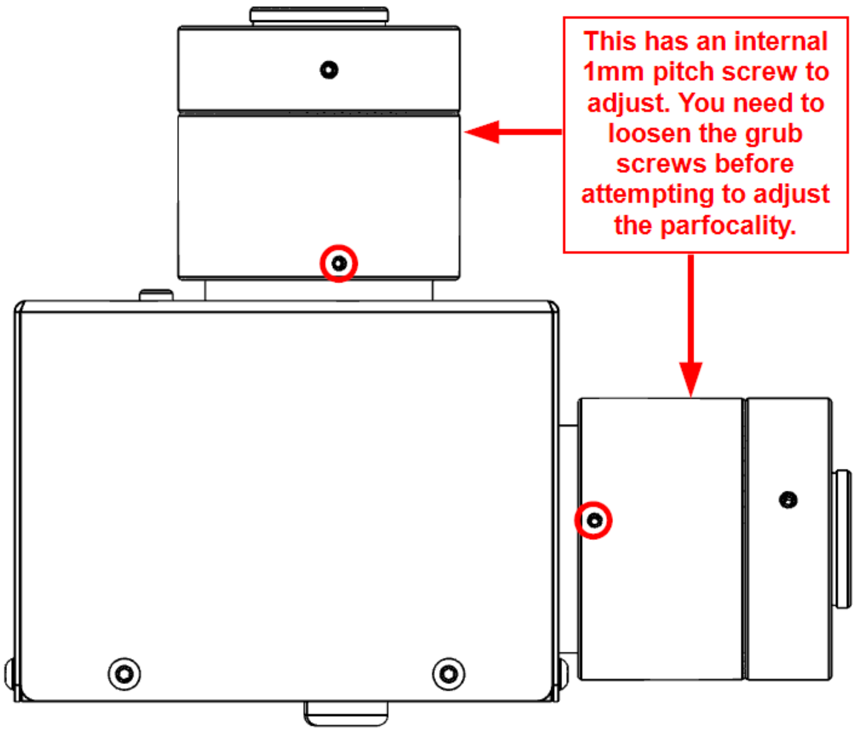
4. Fit the camera changer on top of the tube lens holder as shown in the picture below and tighten the grub screw (circled in red) to hold the camera changer in place.

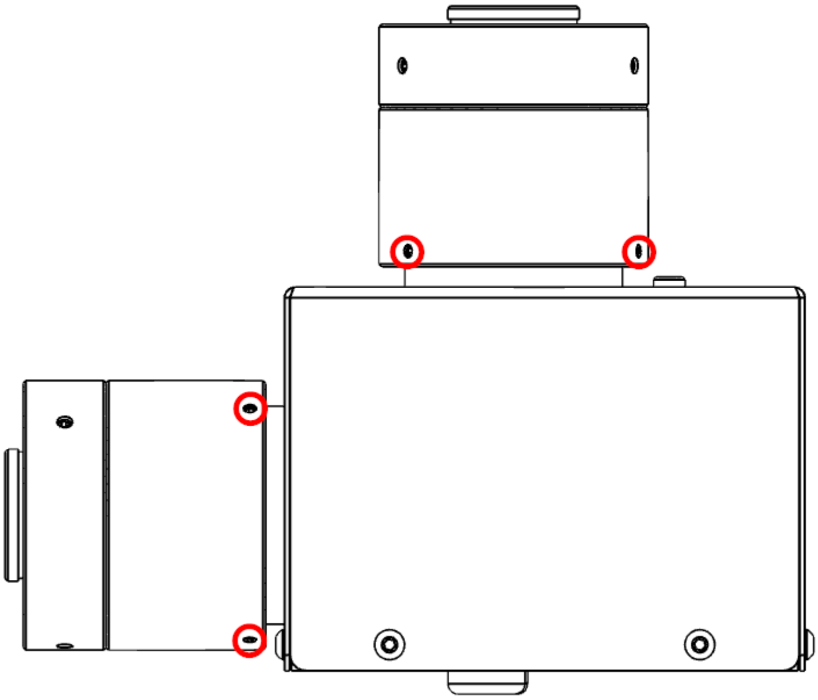


5. Before attaching the cameras remove the 8 screws around the camera changer as highlighted in the pictures below. Once the cover is off, attach the camera.

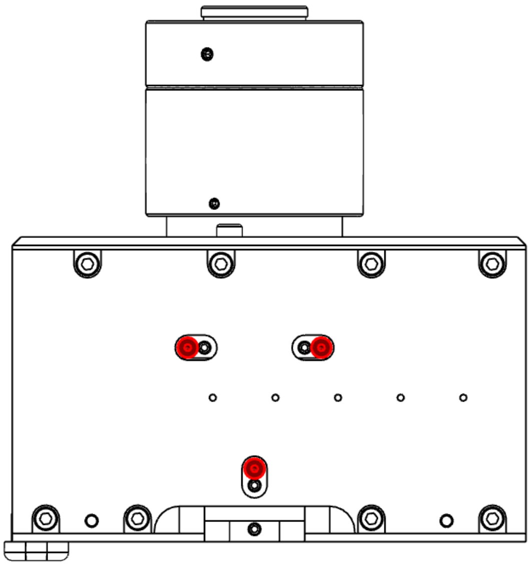


6. To adjust the cameras for parfocality, unscrew the 3 grub screws around the C-mount (circled in red) in the pictures below. Using the threaded pieces, you can adjust both the camera and screw the grub screw to secure it in place.

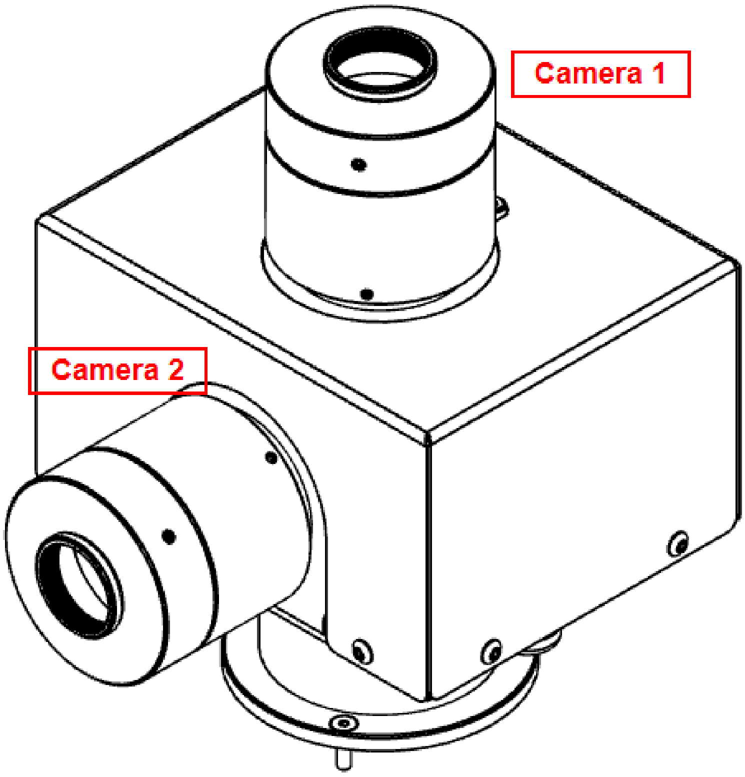




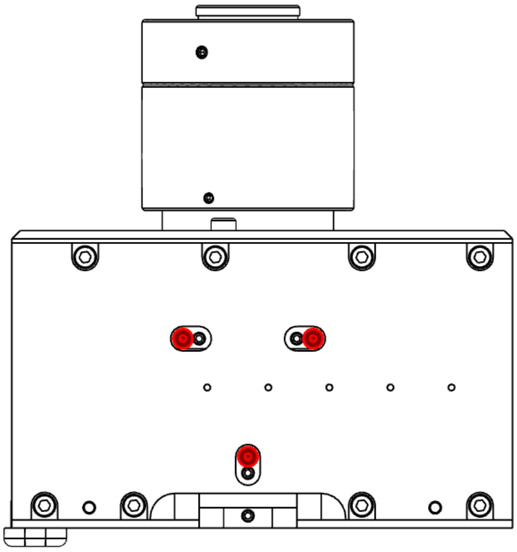
7. The 3 small black grub screws are used to adjust the cameras, so they are coaxial to each other. This procedure has been carried out in the factory, but it may require slight adjustments to suit your choice of cameras. We recommend using calibration slides, Graticule slides, or similar to aid the camera alignments.



8. Choose the camera at the top (Camera 1). It is position 1 on the Camera changer.



9. Insert a Graticule slide onto the sample holder and focus on the slide using a 10x or less magnification objective.
10. On the camera application introduce crosshairs on the image. Find a unique reference point on the slide and center the image to the center of the crosshairs.
11. Change the camera changer position from position 1 to position 2. Now this will display an image from the camera at the back.
12. There should be a mirror image of camera 1 not fully aligned on camera 2. Introduce crosshairs on the image.
13. Using the 3 small grub screws adjust the position of the image so that the cameras are coaxial to each other. So that the unique reference point is centered on the crosshairs on Camera 2 similar to Camera 1.



Software Commands

Please refer to ProScan III manual from Page 47 – 56 for commands to control the stage, OpenStand, filter turret, the transmitted LED illumination and the L200S unit. Prior Terminal software is available here (https://www.prior.com/download-category/software) as “64/32 Bit Prior Scientific DLL SDK”.

Please select the download that fits your operating system’s bit and install the Prior software. To integrate the system into your own software please download Prior SDK - 2.0.0 from the website link provided above.

About Prior Scientific

Prior Scientific has manufactured precision optical and electromechanical equipment and instrumentation for over 100 years.

As the leader in the development of systems for precision motion control and microscope automation, we work closely with our partners and customers to develop customized optical and automation systems as well as providing a wide range of standard microscopy components.

We partner with system integrators and OEMs to develop prototypes, custom-built products, and complete imaging system solutions according to individual customer requirements for a variety of applications. Our integrated design and manufacturing facilities enable us to seamlessly transition from concepts to production systems. Typical applications for our products are found in photonics, life science research, material science, nanotechnology, medical devices, metrology, and semiconductor manufacturing.

Our mission

We understand that every problem requires a unique approach. Our team works closely with customers and partners to identify their specific needs and design a cost-effective and tailored solution that meets their unique requirements. We continue to push scientific boundaries and constantly build on and improve our expertise in automated precision optical and mechanical systems.

Technical Support

If you have a technical question, you can contact our expert support team:

Tel: +44 (0) 1223 881711

Email: techsupportUK@prior.com

Visit prior.com and use our online chat

UNITED KINGDOM
Prior Scientific Instruments Ltd.
Units 3-4 Fielding Industrial Estate
Wilbraham Road, Fulbourn
Cambridge, CB21 5ET
United Kingdom
Email: inquiries@prior.com
Phone: +44 (0)1223 881711

U.S.A.
Prior Scientific, Inc.
80 Reservoir Park Drive
Rockland, MA. 02370
U.S.A.
Email: info@prior.com
Phone: +1 781 878 8442

GERMANY
Prior Scientific Instruments GmbH
Maria-Pawlowna-Str. 4
D-07743, Jena, Germany
Email: jena@prior.com
Phone: +49 (0)3641 242 010

JAPAN
Kayabacho 3rd Nagaoka Bldg 10F,
2-7-10, Nihonbashi Kayabacho, Chuo-Ku,
Tokyo103-0025, Japan
Email: info-japan@prior.com
Phone: +81 (0)3 5652 8831

CHINA
Prior Scientific Instruments (Suzhou) Ltd.
Room 118, Meilihua Hemu Park
No. 393 Suhong Middle Road, Suzhou Industrial Park
Suzhou, 215000, China
Email: info-china@prior.com
Phone: +86 (0)512 6617 5866