

Orbit Diagonal



Version 1.0

VERSION HISTORY

Version #	Implemented By	Revision Date	Reason
1.0	George Karantzalos	01/05/2026	Initial document

TABLE OF CONTENTS

TABLE OF CONTENTS.....	3
INTRODUCTION.....	4
IN THE BOX.....	4
DEVICE DESCRIPTION & INSTALLATION.....	5
Orbit Diagonal Basic Edition.....	5
Key Features.....	6
Assembly and Installation.....	7
Orbit Diagonal SCT 2" Edition.....	8
Key features.....	10
Assembly and Installation.....	10
Orbit Diagonal SCT Edge Edition.....	12
Key features.....	12
Assembly and Installation.....	13
DEVICE CARE.....	17
CLEANING THE OPTICS.....	17
RETURNS AND SERVICE POLICY.....	18

INTRODUCTION

Thank you for purchasing Pegasus Astro Orbit Diagonal.

The PegasusAstro Orbit is our new modular 1.25" rotating diagonal, specifically designed for optical systems with extremely limited backfocus, such as the SmartEye unit.

It features dual-axis rotation, allowing for ergonomic viewing regardless of your telescope's orientation.

SmartEye can be attached directly by using the provided (in box) M54M to M48M. The 1.25 filter thread and short backfocus allow you to use smaller filters with SmartEye without vignetting.

IN THE BOX

There are three editions of the Orbit Diagonal. The box of each edition contains the following items:

Orbit Diagonal Basic edition (PEG-ORBIT)

- Orbit Diagonal
- 1.25" Nosepiece
- 2x silicone protective caps
- M54M-M48F Adapter

Orbit Diagonal SCT 2-Inch Edition (PEG-ORBIT-SCT2INCH)

- Orbit Diagonal
- 2x silicone protective caps
- M54M-M48F Adapter
- Compression Ring
- SCT 2-INCH NECK & LOCK

Orbit Diagonal SCT EDGE Edition (PEG-ORBIT-EDGE)

- Orbit Diagonal
- 2x silicone protective caps
- M54M-M48F Adapter
- Compression Ring
- SCT EDGE Variable Adapter
- 3.25 INCH - M68M Adapter

DEVICE DESCRIPTION & INSTALLATION

Orbit Diagonal Basic Edition

The Orbit Diagonal Basic Edition is a precision-engineered optical accessory designed for versatility and ease of use. It features dual-axis rotation, allowing for ergonomic viewing regardless of your telescope's orientation.



Key Features

Main Diagonal Body: Houses the internal mirror and rotation mechanisms.

Mirror: BK7 1st-Surf. , $\lambda/10$ @ 633nm, Enhanced Aluminum with Protective Overcoat , $R_{avg} \geq 92\%$ (450-650nm) @ 45° AOI.

1.25" Nosepiece: The interface for connecting the diagonal to your telescope.

Dual Thumb Screws: Tactile adjustment screws for independent rotation of the nosepiece and the SmartEye.

Universal Threading (Both Sides): Both the telescope-side and the SmartEye-side of the diagonal feature a dual-thread design:

- M48 Male Thread
- M42 Female Thread

This configuration offers high versatility, allowing you to bypass standard nosepieces and thread the diagonal directly to various spacers, cameras, or custom adapters.

Optimized backfocus: The total backfocus distance from the M48F to M48F thread base is only 58mm.

Integrated Filter Thread: Located on the top side. This internal thread allows you to securely screw in standard 1.25" filters.



Assembly and Installation

Step 1: Attaching the SmartEye

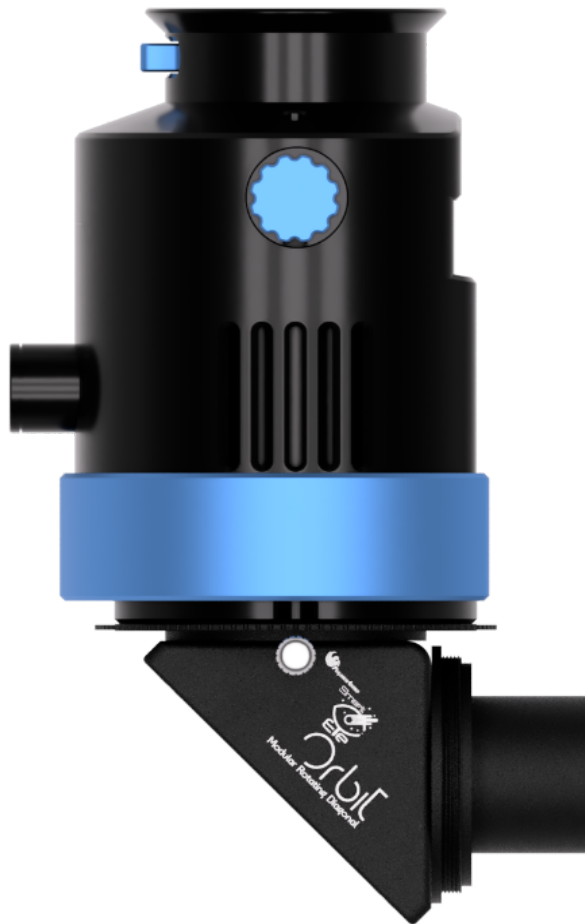
To secure the SmartEye to the diagonal, follow these steps:

Locate the provided M54M to M48F adapter.

Thread the adapter onto the SmartEye side of the diagonal until snug.



Thread the SmartEye into the adapter until fully seated.



Step 2: Adjusting Rotation

The diagonal features a dual-thumbscrew system to customize your setup:

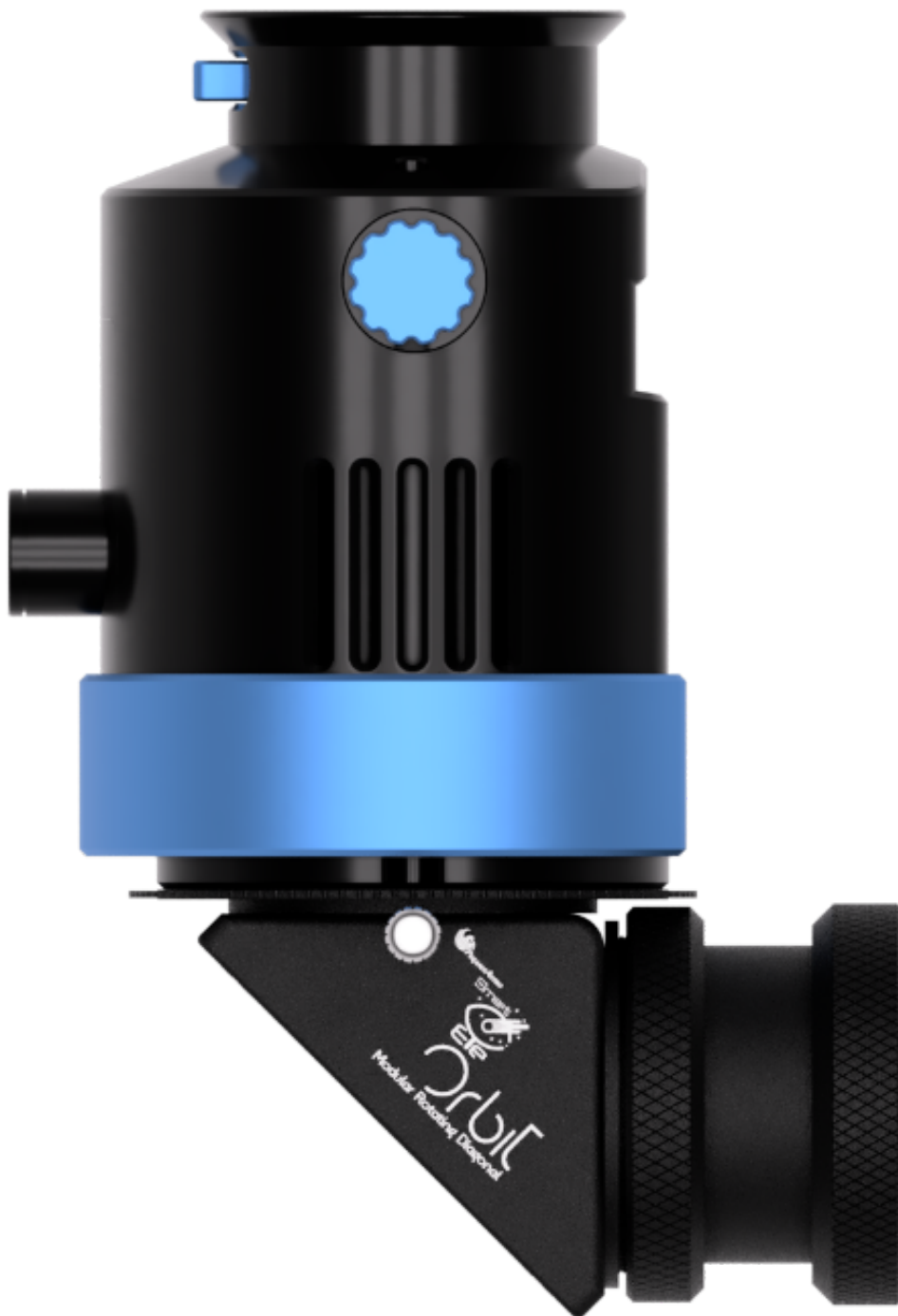
SmartEye Orientation (Right Thumb Screw): Loosen the screw on the right side of the diagonal body to rotate the SmartEye to a comfortable viewing position. Tighten the screw to lock it in place.

Nosepiece Orientation (Left Thumb Screw): Loosen the screw on the left side to rotate the 1.25" nosepiece relative to the telescope. Tighten to secure.

Pro Tip: Only loosen the thumb screws enough to allow for smooth rotation. Over-loosening may cause the components to shift unexpectedly.

Orbit Diagonal SCT 2" Edition

The Orbit Diagonal SCT 2" Edition is compatible with SCT telescopes and Reducers/Correctors with a SCT 2" optical end.



Key features

Direct SCT Coupling: Specifically designed for telescopes and optical accessories with a standard 2" SCT threaded visual back (e.g., Celestron or Meade Schmidt-Cassegrain telescopes, Celestron 0.63 Reducer).

Optimized Backfocus: Engineered to help you achieve the perfect 105mm backfocus requirement—critical for maintaining flat fields and optimal star shapes when using focal reducers or corrected optics.

High-Load Stability: The 2-inch threaded connection provides a rigid, tilt-free attachment.

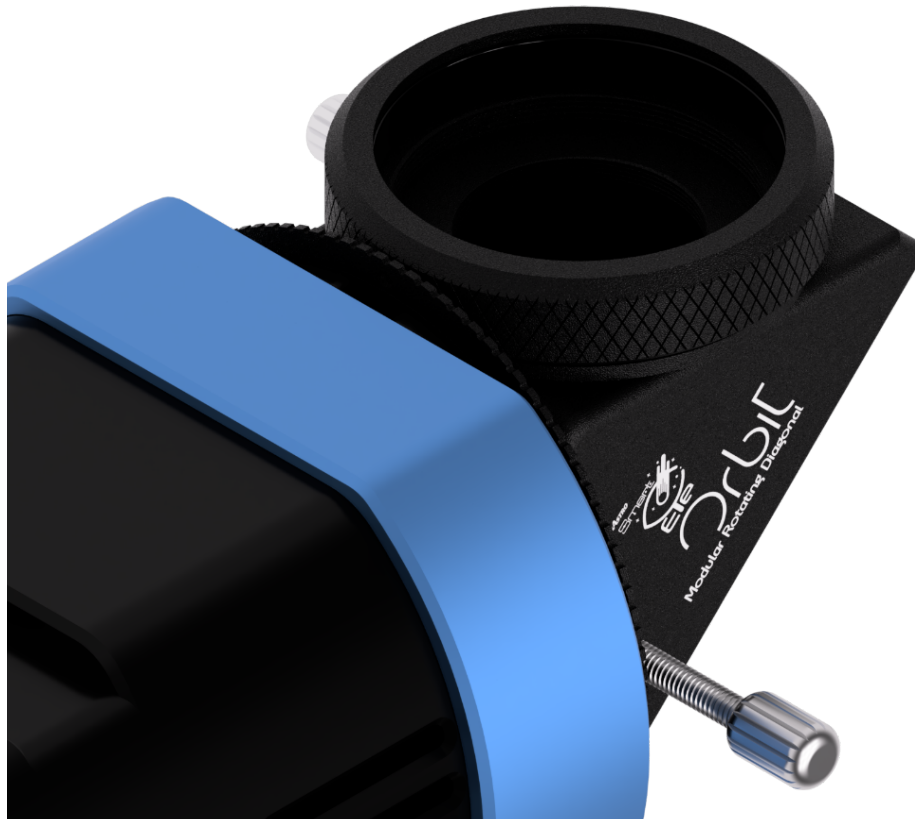
Universal Threading: Retains the M48 Male / M42 Female versatility on the SmartEye side for maximum compatibility.

Assembly and Installation

Step 1: Attaching the Compression ring

Locate the provided Compression ring.

Partially thread the Compression ring onto the diagonal top side M48M thread.



Step 2: Attaching the SCT 2" NECK & LOCK

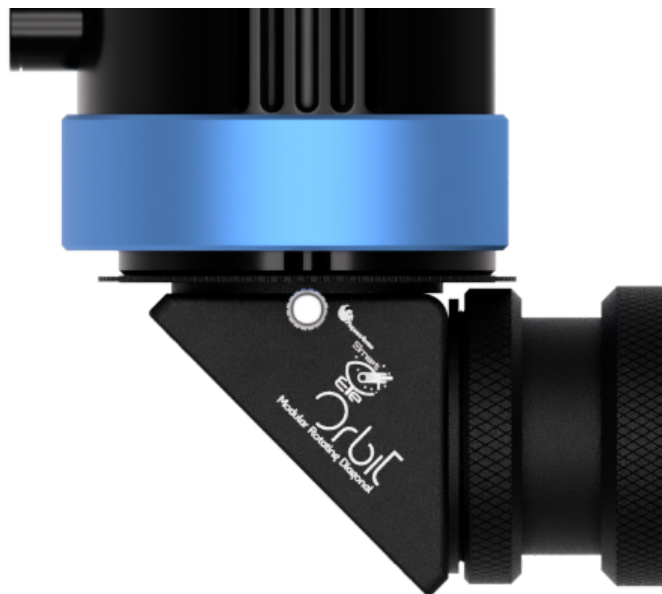
Thread the SCT 2INCH Neck on the top side.



Screw the Compression ring to secure the SCT 2" neck and secure it from rotating.

Step 3: Attaching to the telescope end

Thread the 2" Lock to the telescope optical end.



Orbit Diagonal SCT Edge Edition

The SmartEye Diagonal SCT Edge Edition is compatible with SCT Celestron Edge telescopes and optical accessories with a 3.25" optical end.



Key features

Direct SCT EDGE Coupling: Specifically designed for telescopes with a 3.25" threaded visual back (e.g. Celestron Schmidt-Cassegrain telescopes, Celestron 0.7 Reducer).

Precision Variable Neck: Features an integrated adjustable neck with a 20mm travel range. This allows you to fine-tune your optical path length without the need for multiple fixed-length spacers.

Locking Mechanism: Once the desired length is achieved the neck can be securely locked to maintain a rigid, repeatable optical distance.

Optimized Backfocus: Engineered to help you achieve the perfect 146mm backfocus requirement—critical for maintaining flat fields and optimal star shapes when using focal reducers or corrected optics.

High-Load Stability: The 3.25 inch threaded connection provides a rigid, tilt-free attachment.

Universal Threading: Retains the M48 Male / M42 Female versatility on the SmartEye side for maximum compatibility.

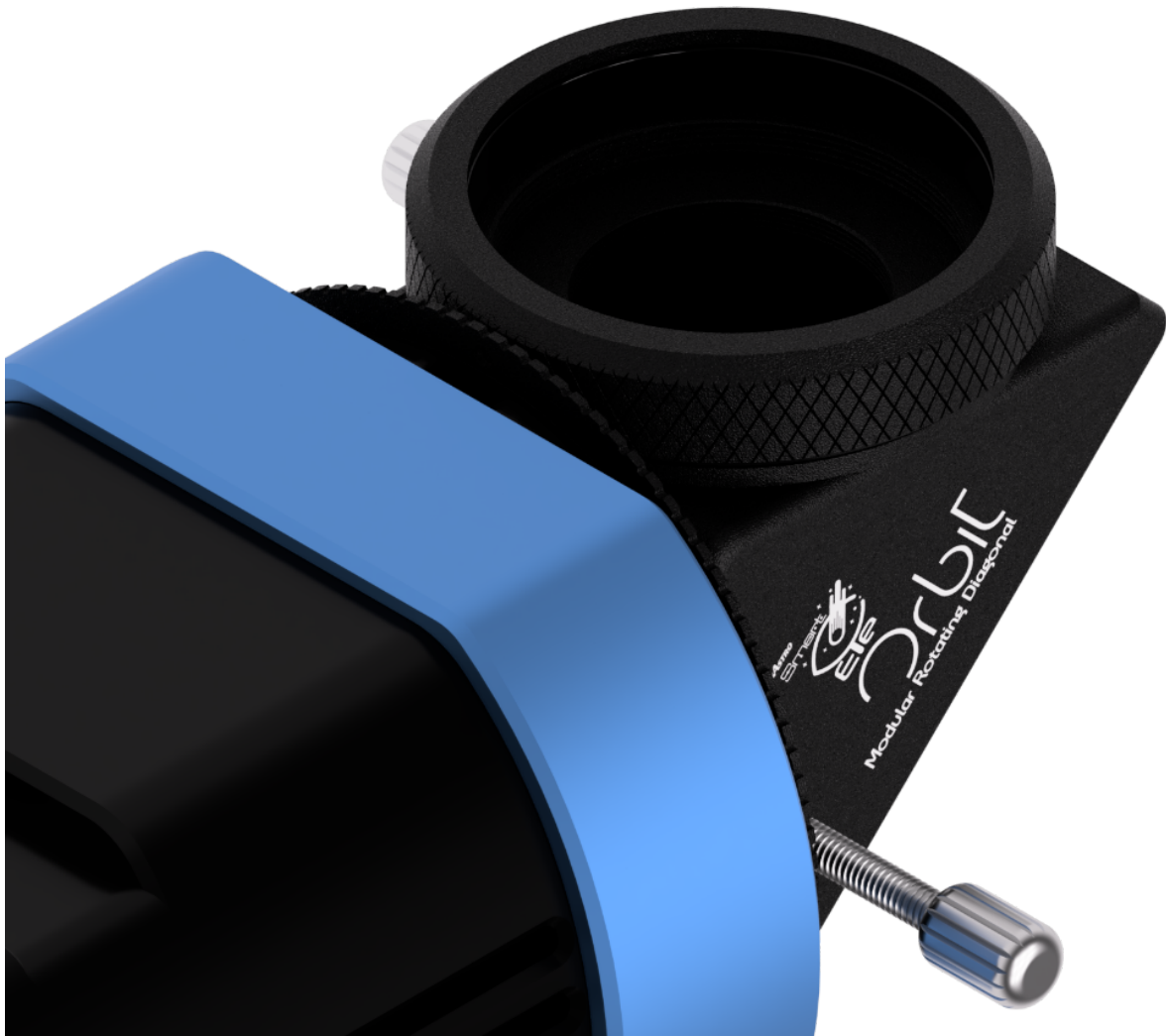
Assembly and Installation

Step 1: Telescope Interface

Thread the 3.25" to M68M adapter directly onto the rear optical cell (the "visual back") of your telescope or reducer.

Step 2: Preparing the Compression Ring

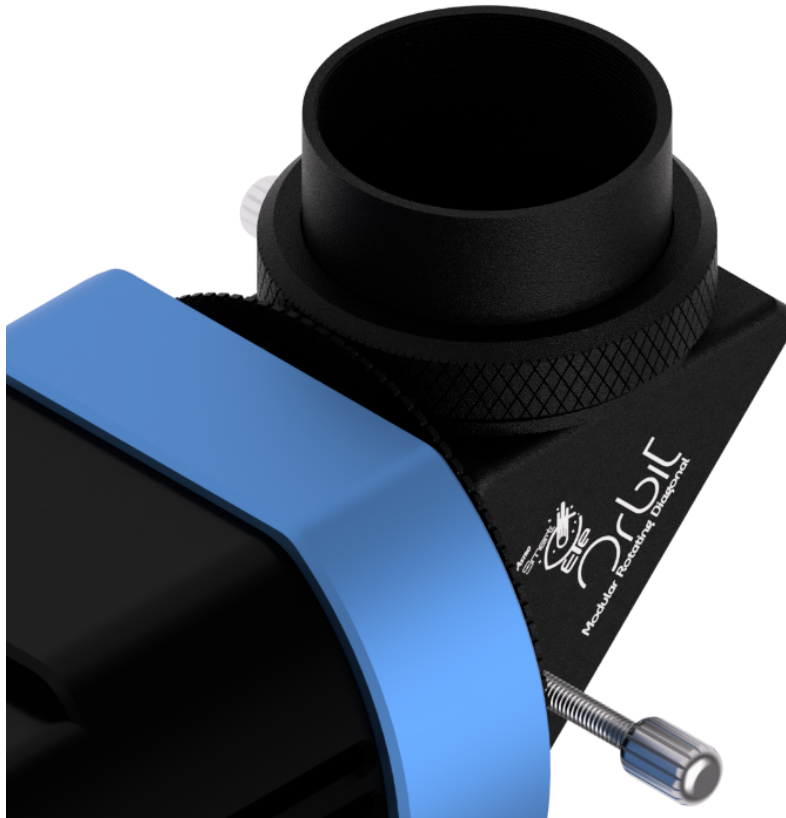
Locate the provided Compression Ring. Partially thread it onto the M48M thread on the top side of the diagonal body.



Note: Do not tighten it fully yet; it needs to remain loose enough to accept the neck.

Step 3: Attaching the SCT Edge Variable Neck

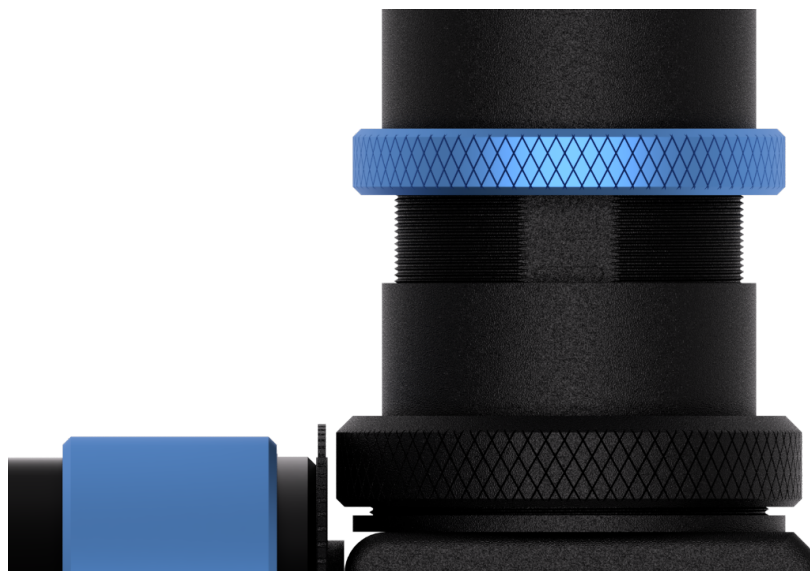
Thread the SCT Edge Variable Neck bottom part into the top side of the diagonal.



Once seated, tighten the Compression Ring against the base of the neck. This secures the assembly and prevents the neck from rotating independently of the diagonal body.

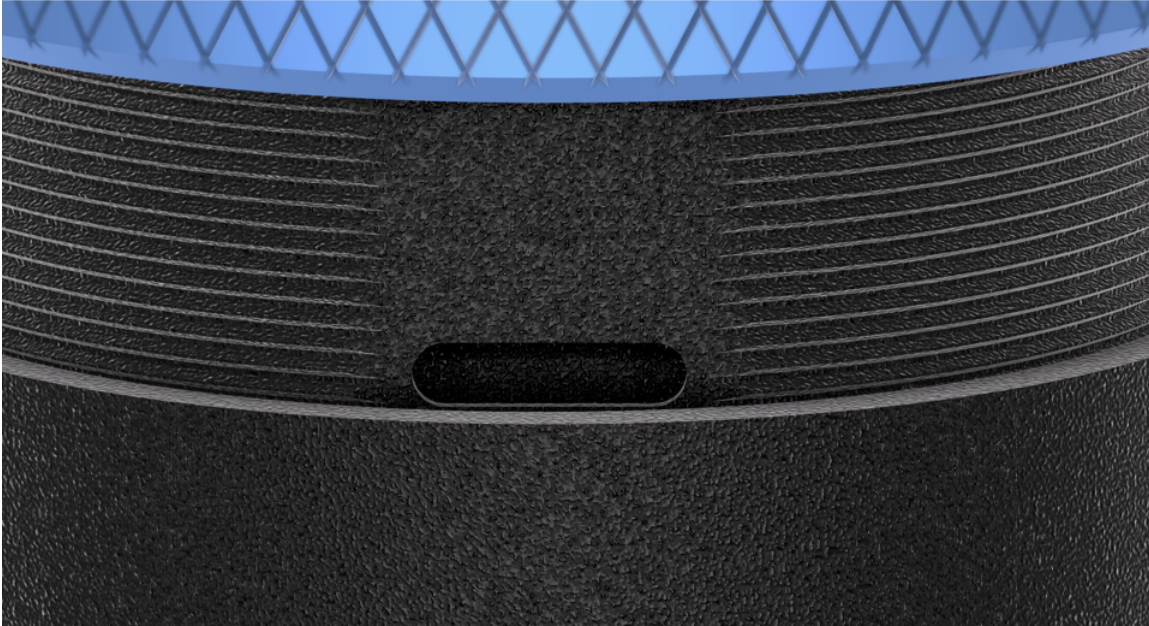
Step 4: Adjusting to 146mm Backfocus

Thread the SCT Edge Variable Neck top part into the variable neck bottom part. Keep the Lock Ring at the top.



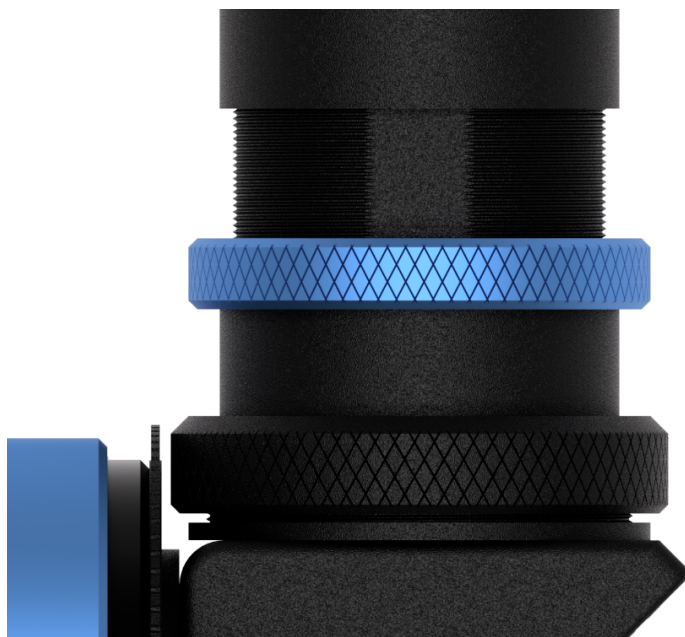
The Variable Neck features a precision-etched slot that marks the 146mm backfocus distance for accuracy.

Rotate the upper section of the Variable Neck while monitoring the slot.



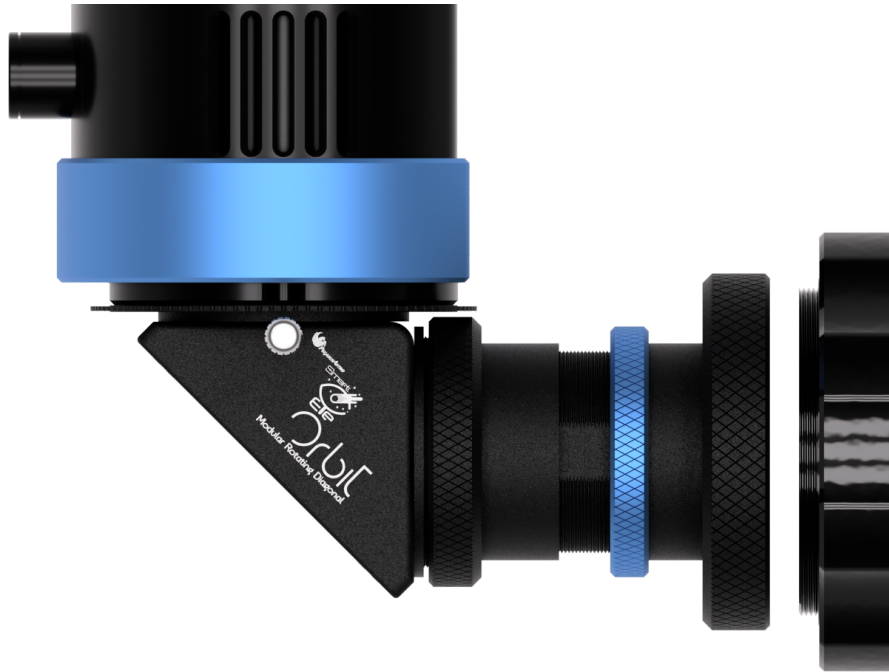
Step 5: Locking the Calibration

Once the 146mm mark is reached, thread the Lock Ring firmly against the adjustment threads. This "jams" the threads into place, ensuring your backfocus distance does not shift during the night or when switching orientation.



Step 6: Final Mounting

Thread the M68F end of the Variable Neck onto the 3.25" - M68M adapter previously installed on your telescope (from Step 1).



Step 7: Final Orientation

To customize your viewing or cabling angle, use the two integrated thumb screws:

- Left Thumb Screw: Adjusts the Diagonal body orientation.
- Right Thumb Screw: Adjusts the SmartEye orientation.



Tighten both securely once the desired angles are achieved.

DEVICE CARE

The device optics are housed in a precision-machined, black anodized enclosure crafted from 6061 aircraft-grade aluminum alloy. While this material offers superior corrosion resistance, the following care instructions must be followed to ensure long-term performance:

Moisture Protection: The device is moisture-resistant but not waterproof. Always operate and store the unit in a clean, dry environment.

Corrosion Prevention: Prolonged exposure to high humidity or standing water can erode the finish and damage internal components.

Chemical Sensitivity: Do not allow solvents, harsh chemicals, or abrasive cleaners to contact the device. These substances can degrade the anodized finish and compromise optical functionality.

Long-Term Storage: When not in use for extended periods, store the device indoors in a climate-controlled, dry environment.

CLEANING THE OPTICS

 **IMPORTANT:** We generally do not recommend cleaning the mirror unless it is absolutely necessary. Small amounts of dust on the mirror surface typically have no measurable effect on image quality. Frequent or improper cleaning can lead to permanent "sleeks" (micro-scratches) that degrade contrast over time. To maintain peak visual clarity and prevent permanent damage to mirror coatings, follow these cleaning protocols. Never use paper towels, tissues, or shirts, as these contain abrasive fibers that can scratch the optical glass.

Step 1: Housing Disassembly

Using the appropriate hex key or driver, remove the four bolts holding the diagonal lid in place. Carefully lift the lid to gain access to the internal mirror. Place the bolts in a secure container to prevent loss.

Step 2: Debris Removal

Before wiping the surface, use a manual air blower or a soft-bristled optical brush to remove loose dust and grit. This prevents particles from being "dragged" across the lens, which causes micro-scratches.

Step 3: Apply Cleaning Fluid

If smudges or fingerprints persist, apply a small amount of specialized optical lens cleaner to a clean microfiber cloth.

 **Note:** Never spray cleaner directly onto the mirror. Liquid can seep past the seals of the aluminum housing and onto the internal elements.

Step 4: Gentle Wipe

Using the dampened cloth, wipe the mirror in a gentle circular motion, starting from the center and moving outward toward the aluminum edge.

Step 5: Reassembly

Once the optics are dry and streak-free, replace the diagonal lid. Reinstall the four bolts, tightening them in a "cross pattern" to ensure even pressure across the seal of the aluminum enclosure.

RETURNS AND SERVICE POLICY

The device is covered by two (2) years warranty.

For detailed information on returns and service policy, follow the link below

<https://pegasusastro.com/returns/>

Designed and assembled in Greece

For any questions, feedback, and support please contact: support@pegasusastro.com