Manual for Z'Tilter

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Back Focus & Tilt Adjuster for ZWO's ASI2600 Series

IMPORTANT: Even though you may be tempted to skip reading this documentation, installing and using a tilt adjuster is a delicate process that requires knowledge, patience, and understanding of what you are doing.

Consider this:

- Installing the Z'Tilter incorrectly can damage your camera, void your warranty, and worsen your optics.
  Learn how to install your Z'Tilter properly.

OGMA designed and built the Z'Tilter to help owners of ZWO's ASI2600 cameras. If you have an OGMA camera, you should use the O'Tilter instead.

Introduction

Z'Tilter Back Focus and Tilt Adjuster for ZWO ASI2600 Series

The Z'Tilter by OGMA is a precision accessory designed to fine-tune back focus and correct optical tilt in ZWO ASI2600 series cameras. Unlike other tilt adjusters, the Z'Tilter maintains the original back focus distance of 17.5 mm, ensuring optimal performance without compromising your imaging setup.

Key Features

- **Maintained Back Focus:** Installing the Z'Tilter preserves the camera's original back focus distance of 17.5 mm, eliminating the need for additional adjustments in your imaging train.
- **Rear Access to Adjustment Screws:** The tilt-adjusting screws are accessible from the rear of the camera, providing convenient adjustments without disassembling your setup.
- **Configurable Screw Pairs:** The Z'Tilter can be configured to operate with either three or four pairs of pull-push screws, allowing customization based on user preference.
- **Compatibility:** This adjuster is specifically designed for ZWO ASI2600 series cameras, and it is incompatible with other camera brands or models.

How to install the Z'Tilter

Video

Step-by-step Instructions

Step 1: Unbox the Z'Tilter

- Open the Z'Tilter package and carefully remove the components.
- Set the Z'Tilter and all provided screws on a clean surface.

Step 2: Prepare for Installation

- Use a light-torque electric screwdriver or the provided Allen key.
  - **Note:** Be gentle to avoid damaging the screw threads.
- Remove the four pre-installed pull screws from the Z'Tilter. These screws hold the Z'Tilter ring to the disk.
- Detach the disk from the Z'Tilter ring and set it aside.

Step 3: Remove the Camera's Front Disk

- Remove the three screws securing the front disk of the ZWO ASI2600 camera.
  - If you've already removed one screw, detach the remaining two screws.
- Gently lift the front disk, exposing the protective glass of the sensor chamber.

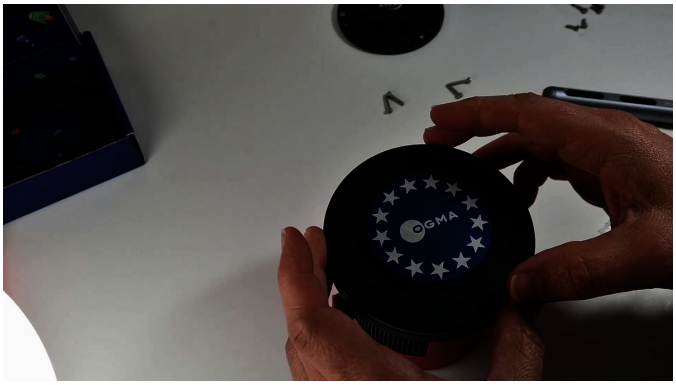
Step 4: Remove Protective Glass Screws

- **Important:** Hold the top of the camera securely to prevent dust from entering the sensor chamber when the screws are removed.
- Carefully unscrew the six screws securing the protective glass.

- Avoid touching the protective glass or dropping screws onto it to prevent damage.

Step 5: Attach the Z'Tilter Ring

- Determine if your camera needs shims.
- Position the Z'Tilter ring onto the front of the camera.
- Ensure the ring is correctly oriented so the surface fits flush with the camera body.
- Use the six screws provided with the Z'Tilter to secure the ring.
  - Tighten gently to avoid stripping the threads.



Step 6: Attach the Z'Tilter Disk

- Flip the camera to access the rear section.
- Position the Z'Tilter disk onto the back of the camera.
- Use the four screws removed earlier to attach the disk.
  - Optionally, configure the Z'Tilter with three or four sets of screws, depending on preference:
    - **Four screws:** Recommended for software like NINA to measure tilt on all four corners of the sensor.
    - **Three screws:** Preferred for defining a stable plane with minimal adjustments.

Step 7: Save Removed Part

Store the removed screws and the front plate of the camera in a safe place for future use.

- These will be needed if you wish to revert the camera to its original configuration.

Completion

Your Z'Tilter is now installed and ready to use. You can attach additional devices to the front of the camera and adjust tilt using the screws on the back.

You may want to read about using a pre-gap on your Z'Tilter.

Thank you for choosing OGMA!

To Shim or Not to Shim

If your camera is a Duo, you definitely have to use the shims (skip to the section: *Where to Place the Shims?*)

If your camera isn't a Duo, you have to determine whether the shims are needed.

There are two body versions used across the ZWO 2600 and 6200 series. Some units share the same body design as the Duo cameras, and depending on the version, the Z'Tilter installation may require the included shims.

How to know if your installation requires shims?

Measure approximately the gap highlighted with the question mark (?) in the image below. Depending on your camera, the measurement should be approximately 4.5mm or 7.5mm.

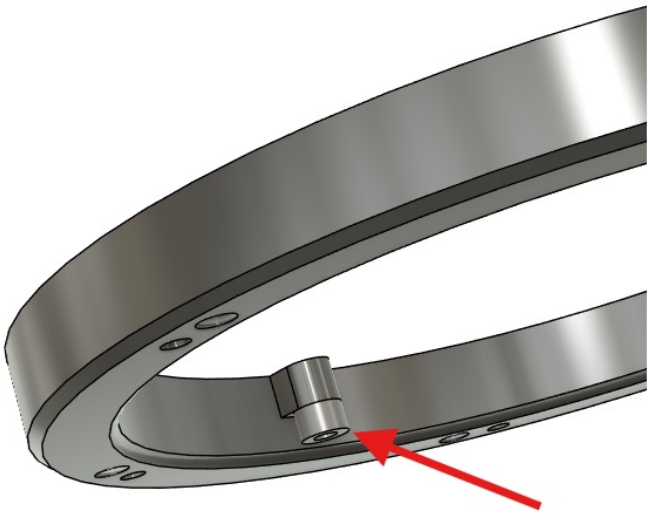
Here is how to decide:

- If the measurement is approximately 4.5mm, don't use the shims.
- If the measurement is approximately 7.5mm, use the shims.

If you don't have an instrument to measure in mm, you can compare the height of the gap with the height of the tabs inside the ring. This can give you an idea of whether the shims are needed to completely fill up the space in the image above.

Where to Place the Shims?

The shims should sit inside the recessed slots on the camera face. When placed correctly, the top of the shim ring will sit flush with the camera surface.



The image above shows the correct placement of a shim below the tab inside the mounting ring. When mounted this way, the top of the ring will be flush with the front face of the camera.

The process for installing with shims is basically the same as in the video, with the only difference that you have to place the shims in the gaps before attaching the ring.

After that, you will mount the front plate according to the instructions near the end of the YouTube

video.

Pre-gap or Not Pre-gap

Pre-gapping is the practice of introducing a small, controlled gap between the tilter plates before making fine tilt adjustments. This is done by temporarily inserting thin spacers (such as guitar picks or thin plastic shims) during initial setup. A stiff material that you can pull without damaging the surface will be fine. A pre-gap of 0.5 to 0.9 mm may be all that's needed.

The purpose of pre-gapping is to allow the adjustment screws to work in both directions, pushing and pulling. Without a pre-gap, the plates start in full contact, which means the screws can only push the plate away. That’s perfectly acceptable if the required correction happens to be in that direction, but it limits your range of adjustment.

By introducing a small initial gap, you give yourself a symmetric adjustment range. This generally makes dialing in tilt easier, more predictable, and less iterative, especially when correcting tilt maps that require movement in multiple directions.

Pre-gapping is not strictly required, but it can be advantageous in many setups.

What to keep in mind about the gap:

- When you install the Z’Tilter plate, you will see a **small gap (0.5 to 1 mm)** — this is normal and expected
- That gap is necessary so the adjustment screws can move the plate in both directions
- The soft band between the plate and the camera seals the gap against light and dust

If there is **no gap**, the mechanism can only push in one direction, which limits adjustment.

Here is a video of another OGMA product, showing how to create a pre-gap:
https://youtu.be/MYEZp_HA5aI?si=YgFbpltwTqogcjl6&t=281