



Thank you for your recent purchase of the ASG Photon Cage. Your new cage offers you fine adjustment of your tilt as well as independent backfocus adjustment. Below is a quick start guide, but we are continually changing and updating our methods to the latest, so please check our website for more detailed and up to date videos and instructions.

Quick Start Guide

Assembly

The Photon Cage will come assembled as a unit. If you have filter sliders or other accessories, you may need to mount those as necessary.

Camera Installation

Important to follow these steps to get a good reference starting point.

1. Loosen all the lock screws on tilt & backfocus system. (Important step!)
2. Loosen both clamp rings for tilt & backfocus plates.
3. Slide the camera all the way in until it bottoms out. If you need, slightly spread the rings to accommodate the camera. It should go in easy.
4. Loosen all tilt and backfocus adjusters. Small set screws and adjusters.
5. Lock down all the lock screws on the tilt & backfocus system. Bottom everything out.
6. Lock down both clamp rings for tilt & backfocus system to your camera body.
7. Adjust all tilt and backfocus adjusters clockwise until they touch bottom. If there was no room to tighten, loosen and relock the lock screws.

At this point, the entire system should be bottomed out completely. Flip photon cage over and camera should be as low and tight as it can get. Backfocus here is 3mm for cage + camera backfocus length.

Initial Tilt Plate Adjustment

We recommend 1mm of initial tilt adjustment be added so you have room to adjust the camera around.

1. Unlock all 4 tilt plate lock screws completely.
2. Turn the fine thread tilt adjusters 5 full turns clockwise. Each full turn is equivalent to .2mm.
3. Lock all 4 tilt plate lock screws. Do not overtighten... just snug.

You now have 1mm of backfocus spacing added to your system and room to tilt. Backfocus here is 3mm for cage + 1mm for tilt + camera backfocus length.

Gasket & O'ring Installation

You can optionally add either an o'ring provided OR 1 gasket to your system to prevent light leaking between the tilt plates. The o'ring is designed to compress slightly, while the 3D printed versions will sit flush in a bottomed out cage.

1. Unlock all 4 tilt plate lock screws completely.
2. Slide 1 o'ring OR 1 plastic gasket onto your camera body.
3. Re-install all 4 tilt plate lock screws. Do not overtighten... just snug.



Initial Backfocus Adjustment

We recommend 1mm of initial backfocus adjustment be added so you have room to adjust the camera around.

1. Unlock all 3 backfocus plate lock screws 1 ¼ turns.
2. Unlock the bottom tilt plate camera clamp bolt so camera can slide.
3. Turn the small backfocus adjusters 1 ¼ turns clockwise. Each full turn is equivalent to .7mm.
4. Lock the bottom tilt plate camera clamp bolt. (Easy to forget this one!)
5. Lock all 3 backfocus plate lock screws or they should be tight as they are also .7mm thread.

You now have 1mm of backfocus spacing and your camera should have backed out around 1mm. You can flip the camera over and use calipers to verify if needed. Backfocus here is 3mm for cage + 2mm (1mm for tilt, 1mm for backfocus) + camera backfocus length. Note this value and assemble to your telescope with proper spacers and accessories as needed.

Ready to Go!!!

You should now have the cage accurately installed. 3mm for photon cage + 1mm for tilt adjustment + 1mm for backfocus adjustment + your cameras backfocus... now you have a set reference and starting value from the cage back.

Tilt Adjustment

Using software such as ASTAP, NINA, or CCD Inspector, you will take a picture and review star roundness in corners. While ASTAP and CCD Inspector are great tools to review, we have found NINA and the Hocus Focus plugin to be optimal as it measures corners across a focusing curve using multiple images. This will give you relative measurements for faster adjustments.

1. To adjust tilt, you start by unlocking 2 locking bolts at a time.
2. Then, you adjust tilt using the push screws a given adjustment distance.
3. Lastly, re-lock the tilt by tightening the 2 locking bolts. Do not overtighten... just snug.
4. Retake measurements and adjust until you are happy with results and stars are round.

[We have a full video guide on our website on how to utilize NINA and Hocus Focus for best results!](#)

Note: Do not overtighten anything on the device, these are fine adjustment screws, and everything requires just a snug approach.

While these quick start steps are all you need to get started, we recommend you review our online videos for RASA, SCT, Refractor, and other telescopes online as they will contain our latest and more in-depth information.

Visit Website: www.asgastronomy.com

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