

## Manual of the OGMA Off-Axis Guider (OAG)

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#### Learn how to install an OAG

This manual is a work in progress. Please send your questions and suggestions, and we will add them.

Although we wrote these instructions specifically for the OGMA OAGs, most of the information provided here should apply to other OAGs, regardless of their brand or manufacturer.



## Introduction

Thank you for choosing the OGMA Off-Axis Guider (OAG). An OAG is a critical tool for astrophotography, enabling you to guide your mount using the same optical path as your primary imaging camera. Instead of using a separate guide scope, the OAG diverts a small portion of the light through a pick-off prism into a guide camera, resulting in more accurate tracking and eliminating common issues like differential flexure.

For optimal performance, it is essential to maintain the same backfocus distance between the imaging and guiding cameras. Matching these distances ensures that both cameras can reach focus without strain or compromise to your optical train.

A good focusing process involves two steps:

1. First, achieve perfect focus with your primary imaging camera.
2. Then, adjust the guide camera position along its helical until the guide stars appear sharp.

Never adjust the focus of your primary imaging camera after the guide camera is focused—always focus the primary camera first.

Because the OAG uses only a small section of the light cone, proper positioning of the prism is crucial and must be adjusted carefully to ensure optimal guiding performance:

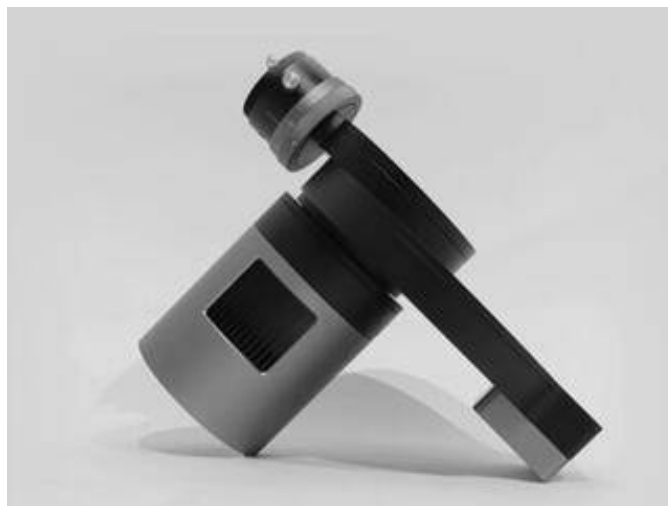
- **Ideal position:** The prism is inserted close enough to the primary imaging sensor to capture guide stars while staying clear of the imaging sensor's field of view.
- **Too far from the center of the light path:** The prism may capture distorted stars with coma near the edge.
- **Too close to the sensor:** The prism may cast a shadow on the primary imaging sensor.

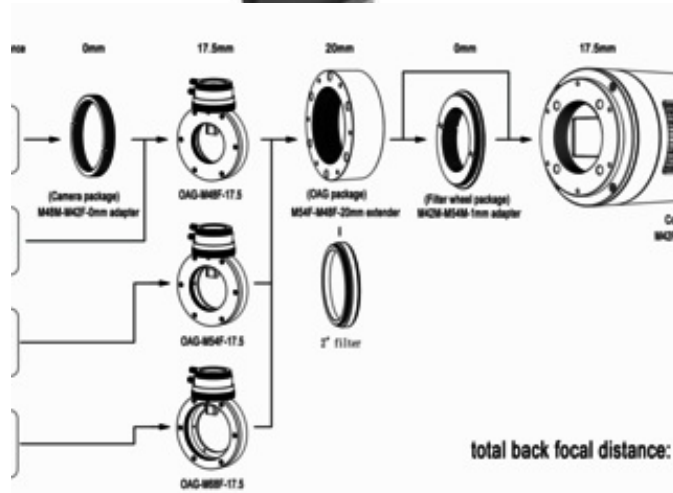
The OGMA OAG allows you to fine-tune the prism height to achieve this balance and maximize performance with your setup.

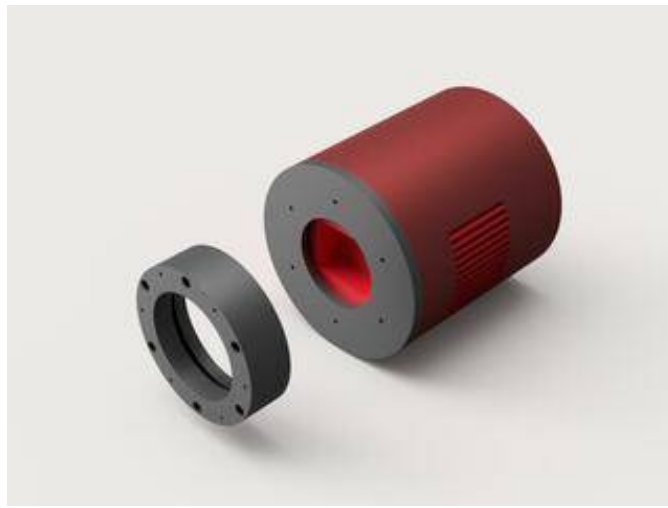
In the following sections, this manual will guide you step-by-step through the installation process to achieve optimal results.

## Installation Graphics and Photos

Click the images to see how the OAG can be connected to a dedicated astronomy camera.







## Screws vs Threads

### Why Most OAGs Are Connected with Screws Instead of Threads

Most Off-Axis Guiders (OAGs) are designed to be bolted to a filter wheel, a filter drawer or an adapter, on the camera side rather than attached via threaded connections. This is intentional and important for several reasons:

#### 1. Precise Prism Alignment

- The prism inside the OAG must be carefully positioned relative to the primary sensor, capturing light from just outside the optical axis without casting a shadow on the image.
- Bolting the OAG ensures that the prism is always in the correct orientation relative to the primary camera sensor.
- Threaded connections rotate the OAG as you tighten, making the final prism position unpredictable.

#### 2. Mechanical Stability

- Bolt connections create a rigid, flexure-free assembly between the OAG and the camera.
- Threaded connections can introduce slight mechanical play or loosening over time, especially as temperature changes during a night of imaging.

#### 3. Repeatable and Reliable Setup

- With bolts, you can always reinstall the OAG in the exact same position after disassembly or maintenance.
- Threading cannot guarantee repeatable alignment, leading to variations in guiding performance.

#### 4. Optimized Backfocus Control

- Bolting allows the OAG to sit in the correct optical train spacing without introducing unnecessary thread length, which could impact the required backfocus distance.
- Many camera and filter wheel manufacturers design their mounting plates specifically to bolt OAGs at the correct optical spacing.

#### Note:

For flexibility, some OAGs include a 20mm adapter with an internal M48x0.75 thread, allowing you to connect the OAG to a camera with a threaded interface if needed.

However, for best performance, especially when guiding precision is critical, we recommend bolting the OAG directly whenever possible.

Always check the product information to determine whether a 20mm adapter/spacer is included.

### Video: Install NO Filter Wheel

## Video of Installation

**IMPORTANT:** This method is not ideal. Use this method only when you don't have a filter wheel or a filter drawer.

For best results, we recommend using the [OGMA Universal Filter Drawer](#) in place of the filter wheel. It is the easiest way to ensure that the OAG's prism will be placed correctly.

### Video: Install With Filter Wheel

## Video of Installation

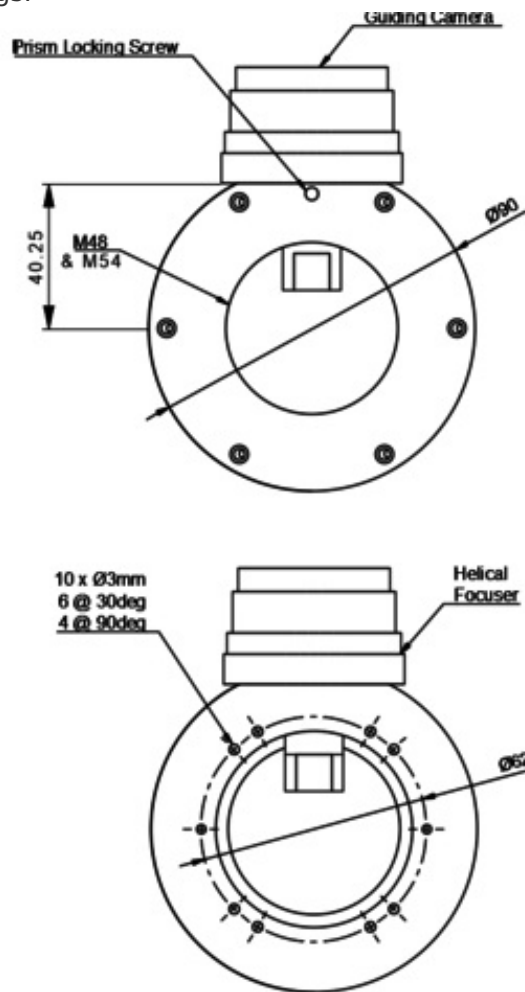
In the last part of this video, you can see how the OAG is connected to a filter wheel.

**If you don't have a filter wheel** and want to use the OAG, we recommend using the [OGMA Universal Filter Drawer](#) in place of the filter wheel. It is the easiest way to ensure that the OAG's prism will be

placed correctly.

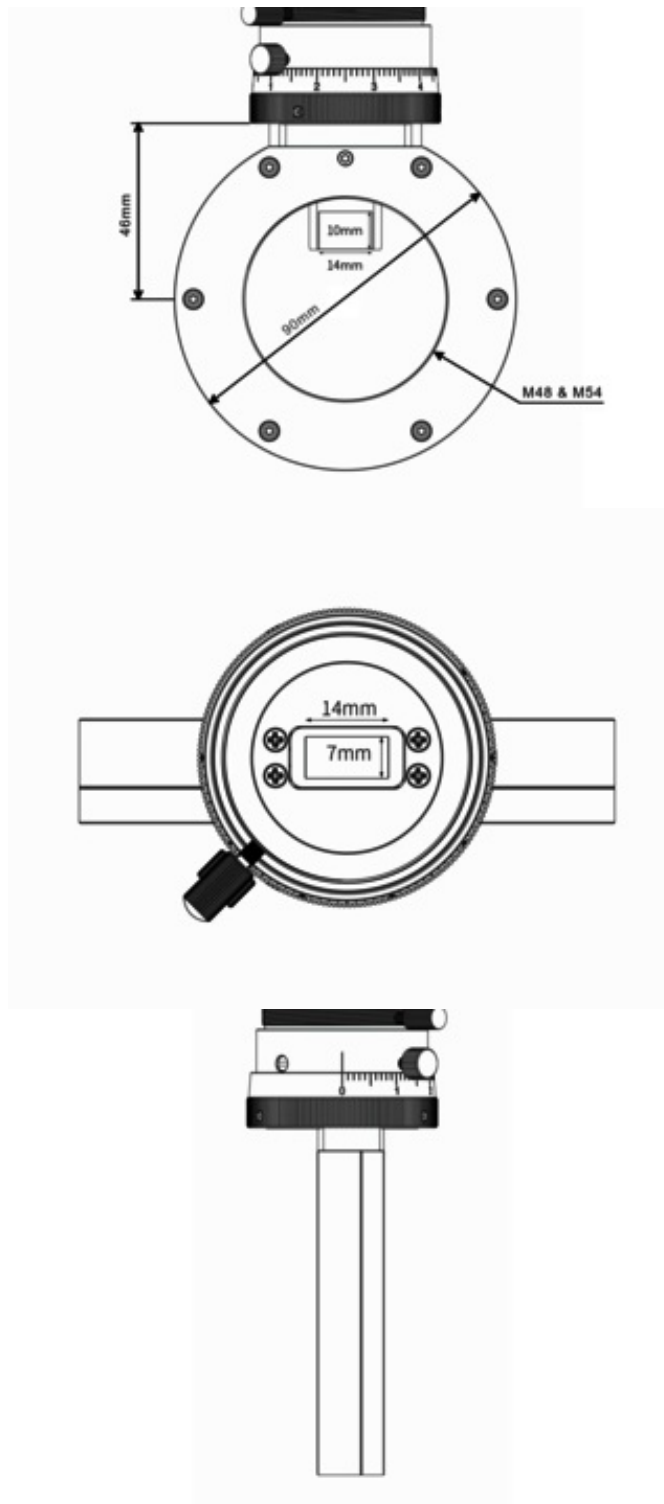
## OAG M48 Mechanical Drawings

Click to enlarge the drawings.



## OAG XL Mechanical Drawings

Click to enlarge the drawings.



## 20mm OAG Adapter/Extender

If you don't use a filter wheel or filter holder, you can use a 20mm adapter or extender between the OAG and the camera to achieve the correct back focus for both the guiding and main cameras.

You won't need this adapter if you use a filter wheel or a filter holder.

The preferred method for connecting this adapter is by using the provided screws to bolt it to the front of the camera. Then, bolt the OAG to the adapter.

For cameras that do not have the six threaded holes in the front, this adapter features an M54(f) thread on the camera's side and an M48(f) thread on the OAG's side.

