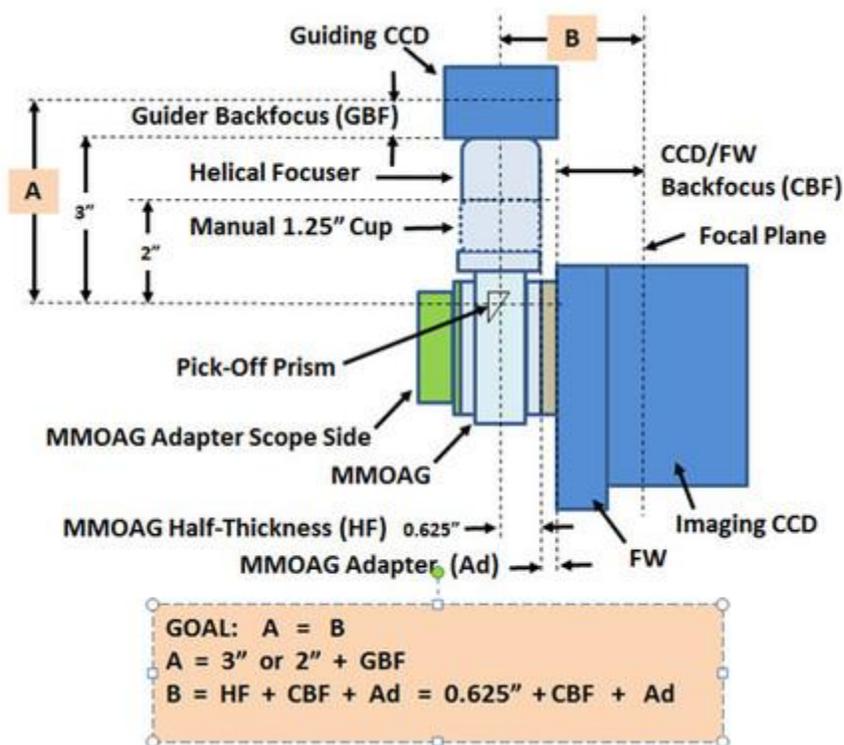




Optical Configuration MonsterMOAG Mega MOAG



You will need to balance the following distances for your optical system. These constraints are interconnected. **PLEASE** attempt to make these calculations prior to contacting Astrodon or any of our resellers. Of course we are available to help you finalize your choices, but making the calculations in advance will expedite the process and increase your confidence that the overall system will work for you.

Balancing Distances

- Focal plane distance of the imaging CCD to the back of your scope, such as from field correctors or reducers. This can be adjusted with scope-side adapters or extension tubes.

- Distance from the MMOAG prism to the focal plane of the imaging CCD (distance B below)
- Distance from the center of the prism to the focal plane of the guider CCD (distance A below)
- A must equal B to reach focus for the guide camera

Steps

1. Select MMOAG camera side adapter (backfocus/thickness = Ad)
2. Determine $B = 0.625" + CBF + Ad$
3. Match A to B by using the Helical Focuser, as supplied with the MMOAG or replacing it with the provided shorter 1.25" manual nose cup
4. For the Helical Focuser, $A = 3" + GBF$, or
5. For the short 1.25" cup, $A = 2" + GBF$

Camera-Side Adapters from Astrodon to Determine Ad

SBIG STL (dovetail to 2.156" male)

- MMOAG-STL-S (Ad = 0.1"), MMOAG-STL-L (0.75")

SBIG ST (dovetail to t-threads - 42 mm male)

- MMOAG-ST-S (0.1"), MMOAG-ST-L (0.75")

SBIG STX, Apogee U16M/9000, FLI Proline (dovetail to 3" male)

- MMOAG-CFW (included, 0.1"), MMOAG-CFW-A (0.2"), MMOAG-3-L (0.75")

Some Camera + Filter Wheel Backfocus CBF (please verify with your vendor)

- SBIG STL/FW5 1.6"
- SBIG STL/FW8 1.95"
- SBIG ST/FW 1.65"
- SBIG STXL/CFW7 1.76"

- SBIG STXL/CFW with Guider 2.44"
- STT/FWG8 2.16"
- Apogee U16M/FW-7S/9R 2.15"
- Apogee U16M/FW-10S 2.25"
- Apogee U16M/FW-7S/9R (deep cooling) 2.53"
- Apogee U16M/FW-10S (deep cooling) 2.63"
- FLI Proline/CFW 1.73"
- FLI Proline/CenterlineFW 1.98"

Some Guide Camera Backfocus GBF

- SBIG RGH, ST-402 0.69"
- SBIG ST-i -0.5" (guider inserted into helical focuser)*
- Starlight XPress Lodestar -0.5" (guider inserted into helical focuser)*

* This means if the ST-i or Lodestar is inserted down into the helical focuser by 0.5, the focal plane will be at the top of the helical focuser. So, decrease 3" by the insertion depth of 0.5" = 2.5" and then ADD back the 0.5" recess of the detector $2.5" + 0.5" = 3"$, for example.

An Example Calculation - Apogee U16M/7-PositionFW and SBIG ST-402 Guider

We will use the MMOAG-CFW-A (0.2"). CBF for the Apogee system with the 10-slot FW is 2.25". Therefore, B becomes $0.625" + 0.2" + 2.25" = 3.075"$.

With the helical focuser (3") and ST-402, A becomes $3" + 0.7" = 3.7"$. Therefore the guider focal plane will be $3.7 - 3.075" = 0.675"$ above the focus determined from B.

So, we can either ADD 0.75" between the MMOAG and U16M with the MMOAG-3-L. Or, if we want to keep the distance between the MMOAG and imaging focal plane as short as possible (my choice), we can replace the helical focuser with the included short, manual nose cup. In this case, A becomes $2" + 0.7" = 2.7"$. All you need to do is slide the ST-402 up 0.3" using its 1.25" nose piece and it will be close to focus. You can fine tune the focus with star images. This process takes only a few minutes and once locked down, the focus does not change. It is a little less convenient than the helical focuser, but provides this important option for configuring your system.

- Please note that camera manufactures often specify the MECHANICAL back focus of their products. 3 mm thick filters will ADD 1 mm (0.04") to that mechanical backfocus as measured from the telescope or from the MonsterMOAG prism. The camera window, often 3 mm thick will add another 1

mm (0.04"). So, You may have to add 2 mm (0.09") to the mechanical backfocus.

- There may be some confusion as camera manufacturers measure backfocus from the focal plane of the CCD to the outer surface of the camera. When they account for the thickness of the filters, the SUBTRACT the 0.04", which is correct as measured from the CCD. However, most people measure backfocus from the back of their scope or from a corrector, and then add/subtract spacers to arrive at the correct backfocus. In this case, as measured from the scope, the 0.04" must be ADDED. A subtle point, but does get people in trouble from time to time.
- Also, please note that different filter wheels from the same manufacturer may have different backfocus, as indicated in the list above.

SBIG ST-i or SX Lodestar

These guiders are 1.25" cylinders with the focal plane recessed about 0.5" up from the end. So for the example considered above where **B** = 3.075", you can use the helical focuser. So, by inserting either guider ~0.5" down into the top of the helical focuser brings the focal plane of the guider to the TOP of the helical focuser. **A** = 3" - 0.5" insertion distance + 0.5" internal backfocus = 3". The +/-0.2" travel of the helical focuser allows you to reach optimum focus.