

Focusing and Connection of Guiding Cameras

The Rack and Pinion Focusers of the FlexiSpeed Guidesopes allow high focus accuracy. A focusing stroke scale is convenient to find and record the focus position.

Most common guiding cameras can simply be inserted into the focuser. We recommend to bring them roughly in focus in daytime already. Therefore, point the guide scope to a very distant object (at least several hundred meters). Insert the camera and connect it to your imaging software. Use the video stream to focus. Note the position of the focuser or use the locking screw on the focuser. In the evening or night, you can then do the fine focusing. Therefore, point the guide scope to a bright star so you have enough signal for the video stream again.

You do not have to focus your guiding camera perfectly. If you have a sensitive sensor, you might be able to reach exposure times below 0.5 seconds. In this case, a slightly defocused image can even help. That is because atmospheric seeing can displace stars on the sensor. This could be "misunderstood" as tracking errors, so that unnecessary corrections are carried out. A slightly defocused star will not suffer from seeing as much as a perfectly focused star.

If focusing is impossible, there are two reasons and solutions:

1. The camera sensor is **inward** of the focusing plane → You have to slide the camera away from the objective. This can often be reached by simply not inserting the camera fully. Be careful, you should at least insert a guiding camera 20mm wide into the focuser. It is also possible to use a 1.25mm or T2 extension tube.
2. The camera sensor is **outward** of the focusing plane → You have to move it nearer to the objective. To achieve this, you can disassemble the tube because it consists of one 70mm and one or two 50mm long segments. These parts are threaded together. Take out one 50mm segments and you should be fine. Sometimes the camera sensor might now end up being inward of the focus. In this case just proceed like above.

If you want to use the guidescope with an eyepiece, **as a finder scope**, you can make use of the segments as well: With only an eyepiece attached in straight line, you should be able to focus out of the box. If not, or if you want to use a star diagonal, simply take out one or two segments as well.

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