

INSTRUCTION MANUAL

Orion® 60mm Multi-Use Guide Scope with Helical Focuser

#13008

Congratulations on your purchase of the Orion 60mm Multi-Use Guide Scope with Helical Focuser. It's a smartly designed, versatile guide scope that can also be used as a straight-through finder scope with the addition of a 1.25" eyepiece, sold separately. It features a "non-rotating" helical focuser with a built-in, adjustable extension tube that enables the user to quickly achieve sharp focus of guide stars with your autoguiding camera. The guide scope's 60mm objective lens gathers 44-percent more light than a 50mm guidescope, putting more potential guide stars on your autoguider's CCD sensor! Includes dual-ring mounting bracket with six-point adjustment and Vixen-style dovetail bar.

Parts List

1. 60mm guide scope with precision helical focuser
2. Dual-ring bracket with six nylon-tip screws and dovetail bar
3. Objective lens cover

Assembly

The 60mm Multi-Use Guide Scope comes fully assembled and mounted in the dovetail bracket. Refer to **Figure 1** to familiarize yourself with the features and parts of the guide scope.

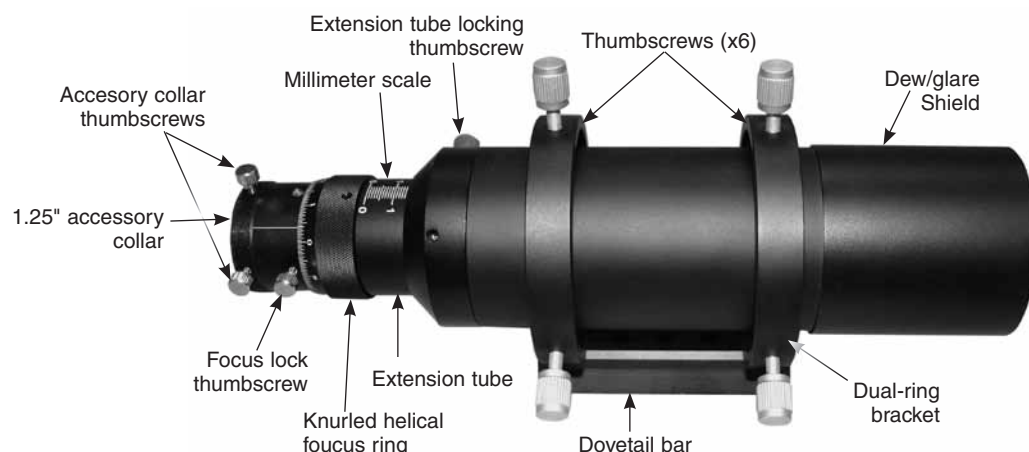


Figure 1. The Orion 60mm Multi-Use Guide Scope with Helical Focuser and included components.

WARNING: *Never look directly at the Sun with the naked eye or with an optical instrument – unless you have a proper solar filter installed over the front of the instrument! Otherwise, permanent, irreversible eye damage may result.*

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Attaching the 60mm Multi-Use Guide Scope

The 60mm Multi-Use Guide Scope's mounting bracket has a Vixen-style dovetail bar that can be mounted to your telescope in different ways. First, it fits the Orion dovetail finder scope base included on many Orion telescopes. Simply slide it into the dovetail base, then tighten the thumbscrew on the base to secure the guide scope in place (**Figure 2**).



Figure 2. The guide scope bracket's dovetail fits Orion dovetail finder scope bases as well as those of some other manufacturers.

Another method of attachment is to bolt the guide scope bracket to an optional universal dovetail plate, which you mount on top of your telescope. The mounting bar has three threaded through-holes: the center hole has 1/4"-20 threads and the two larger holes on either side of center have M8 x 1.25 threads (**Figure 3A**). To attach the guide scope bracket to a universal dovetail plate, one way would be to insert a 1/4"-20 socket head capscrew of proper length up through the dovetail plate and into the center hole of the bracket's dovetail bar, as shown in **Figure 3B**. Tighten the bolt firmly with an Allen wrench. Then install the universal plate onto your telescope's tube rings or radius blocks (**Figure 3C**). Alternatively you could attach the bracket using two M8x1.25 screws in the same manner.

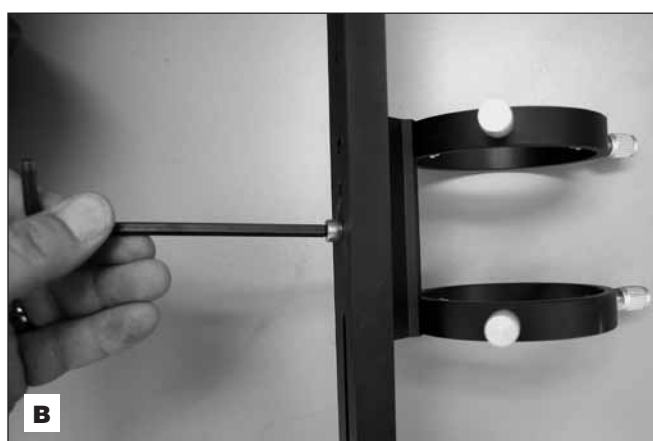
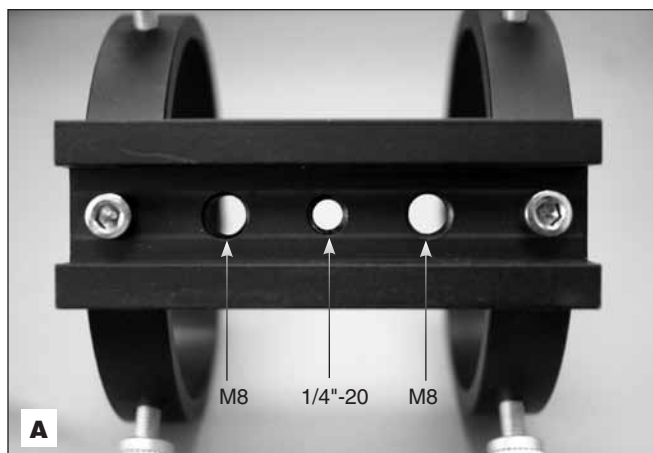


Figure 3. A) The bracket's dovetail bar has one 1/4"-20 (center) and two M8x1.25 threaded holes for attachment to an optional universal dovetail plate (B). In C) the guidescope is mounted on the top plate of an Orion 8" Ritchey-Chretien telescope.

Attaching Your Autoguiding Camera

A guide camera can be coupled to the focuser either by a) inserting the camera's 1.25" nosepiece into the focuser collar and securing it with the two thumbscrews (**Figure 4A**), or b) if your camera is equipped with female T-threads, by threading the camera directly onto the male T-thread flange (M42x0.75) of the focuser. **Figure 4B** shows the Orion StarShoot AutoGuider being threaded onto the T-threads of the helical focuser, and then fully installed (**Figure 4C**). Using the T-threads is the most secure means of camera attachment. **NOTE:** You will likely have to remove the two thumbscrews on the accessory collar to allow an autoguider to thread on all the way.

Focusing the 60mm Multi-Use Guide Scope

The 60mm Multi-Use Guide Scope features a precision helical focuser that makes it easy to focus your guide stars quickly and precisely (**Figure 1**). The focuser, made of machined, anodized aluminum, is the "non-rotating" variety, meaning the guide camera does not rotate when focus is adjusted, but rather moves in or out in fixed orientation, which is important for hassle-free focusing. You don't want stars rotating in the field of view when you're trying to focus! Drawtube travel of the helical focusing mechanism is 10mm and the motion is extremely smooth and fine.

The built-in extension tube can add up to 35mm of additional length, to allow focus to be achieved with most autoguiders available on the market as well as 1.25" eyepieces for use of the 60mm Multi-Use Guide Scope as a visual finder scope. Just loosen the extension tube locking thumbscrew, slide the extension tube out to the desired length, then re-tighten the thumbscrew. When tightened down, you should not notice any flexure in the extension tube; it is remarkably rigid. The top of the extension tube features an engraved millimeter scale to aid in returning to the exact extension tube length needed for critical focus, should you need to switch between eyepieces and autoguider.

Make sure your autoguider is powered on and connected to your laptop computer, and that the software you will use for autoguiding is up and running. Also, make sure the focus lock thumbscrew (see **Figure 4A**) is not tightened down. With the imaging software set to take continuous exposures, rotate the knurled helical focus ring clockwise or counterclockwise while you watch the star images themselves or the reference numbers (e.g., FWHM) from your software on your laptop screen. If you can't see any stars, you likely need to move the extension tube in or out slowly until you see some, then continue with the fine focusing using the helical focuser. When the stars become reasonably sharp, or you've reached the lowest FWHM, you're done!

Once focus is achieved, the focus lock thumbscrew can be lightly tightened to ensure the drawtube remains set at that position, although this may not even be necessary. There's little need to tighten this thumbscrew firmly since most guide cameras are relatively lightweight, and doing so could put sideways pressure on the drawtube that might knock your carefully set focus off a bit.

For best results we recommend focusing the guide camera at the beginning of your imaging session, following the focusing procedures in the imaging software you use for astrophotography, such as MaxIm DL, PHD Guiding, or Images Plus.

Aiming the 60mm Multi-Use Guide Scope

The 60mm Multi-Use Guide Scope is mounted in a dual-ring aluminum bracket that has six nylon-tipped thumbscrews to secure the guide scope in place. Although you may never need to do it in order

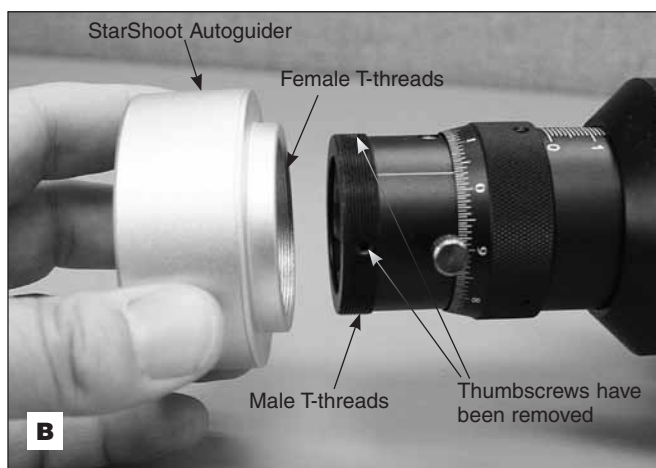


Figure 4. A) The 1.25" nosepiece of an autoguider camera such as the Orion StarShoot AutoGuider Pro shown here locks into the focuser collar with the two thumbscrews.

B) Autoguiders like the StarShoot AutoGuider that have female T-threads install onto the male T-threads on the end of the focuser (thumbscrews on collar have been removed).

C) The T-threads provide the most secure connection between autoguider and guide scope.

to find a guide star, you can adjust the direction the guide scope is pointed within the bracket by alternately loosening and tightening the three thumbscrews on the front or back ring (usually you won't need to make adjustments on both rings). Just make sure that all six thumbscrews are tightened before you begin guiding. Do not over-tighten them, however, or you could strip the screw threads!

Using the 60mm Multi-Use Guide Scope as a Finder Scope

The 60mm Multi-Use Guide Scope conveniently doubles as a 60mm finder scope with the addition of an optional 1.25"-barrel eyepiece inserted into the focuser collar (**Figure 5**). You may need to slide the extension tube out nearly all the way to reach focus with the eyepiece.

The 60mm Multi-Use Guide Scope has a focal length of 240mm, so use of a 25mm eyepiece will yield a finder scope magnification of 9.6x (240 divided by 25).

You will need to align the finder scope with the main telescope before starting your observing or imaging session. You do that by adjusting the three thumbscrews on one or both of the bracket rings until a distant object in the main telescope's eyepiece is also centered in the finder scope's eyepiece. Use of an optional cross-hair eyepiece is helpful in achieving exact centering of an object.

Caring for the 60mm Multi-Use Guide Scope

To keep dust from getting inside the guide scope and from accumulating on the objective lens, keep the front and rear caps installed when the guide scope is not in use. We recommend storing the guide scope in a padded accessory case.

Cleaning the Lens

Although it shouldn't need cleaning very often, you can clean the front lens of the guide scope with any quality optical lens cleaning tissue and optical lens cleaning fluid designed for multi-coated optics. Never use regular glass cleaner or cleaning fluid designed for eyeglasses. Before cleaning with fluid and tissue, eject any loose particles from the lens with a blower bulb, compressed air, or a soft brush such as a LensPen. Then apply some cleaning fluid to a lens tissue, never directly on the optics. Wipe the lens gently in a circular motion, then remove any excess fluid with a fresh lens tissue. Oily fingerprints and smudges can be removed using this method. Use caution, as rubbing too hard may scratch the lens. Never re-use the same tissue.

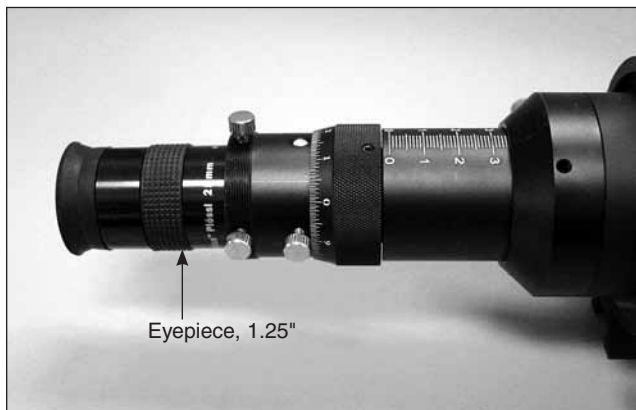


Figure 5. Insert a long-focal-length (e.g., 25mm) 1.25" eyepiece into the 60mm Multi-Use Guide Scope to use it as a finder scope.

Specifications

Aperture:	60mm
Type:	Achromat (doublet)
Focal length:	240mm (f/4)
Lens coatings:	Fully multi-coated
Focuser:	Helical, non-rotating
Focuser material:	Machined aluminum
Focus travel:	10mm
Accessory collar:	1.25", internal compression ring
Extension tube length:	Up to 35mm
Camera attachment:	Via T-threads (M42x0.75) or 1.25" eyepiece holder
Bracket:	Dual ring, nylon-tipped six adjustment screws
Dovetail bar:	Vixen style, 3.5" length, with threaded holes
Dust cover:	Aluminum, included
Length:	10-1/8 inches
Weight:	32.1 oz.

One-Year Limited Warranty

This Orion product is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid. Proof of purchase (such as a copy of the original receipt) is required. This warranty is only valid in the country of purchase.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mis-handled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights. It is not intended to remove or restrict your other legal rights under applicable local consumer law; your state or national statutory consumer rights governing the sale of consumer goods remain fully applicable.

For further warranty information, please visit www.OrionTelescopes.com/warranty.