

# INSTRUCTION MANUAL

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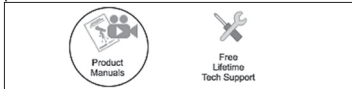


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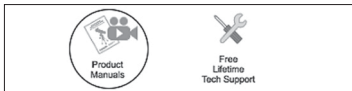


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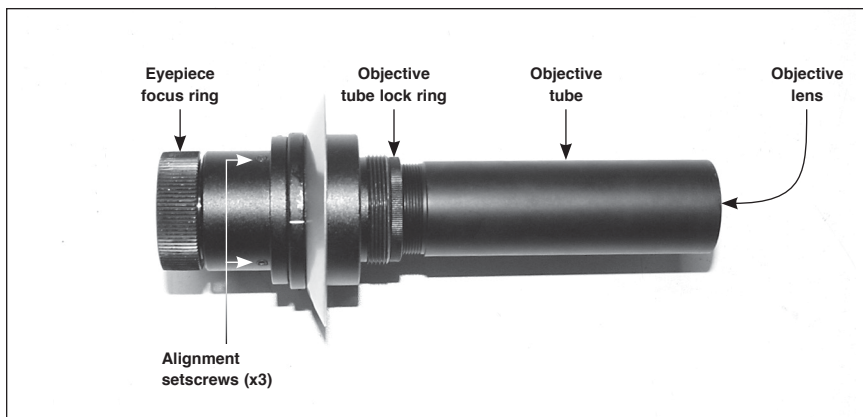
## Orion Polar Axis Scope for Atlas EQ-G, Atlas Pro AZ/EQ-G, and SkyView Pro Mounts #7330



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**Figure 1.** Parts of the Polar Axis Finder Scope

This polar axis scope is compatible with select Orion equatorial mounts and is designed to provide quick, accurate polar alignment of the mount to the Earth's rotational axis for observing or imaging applications. The polar scope is compatible with Orion Atlas Pro, Atlas EQ-G, and SkyView Pro mounts.

Familiarize yourself with the various parts of the polar scope by referring to **Figure 1**.

To install the polar scope, insert it into the hole in the back of the RA axis housing and thread the polar scope into the housing until tight. Make sure the cap on the front of the mount, on the Declination axis housing, is removed and the telescope is rotated about the Declination axis so that the through-hole in the Declination shaft is facing forward.

### **The Polar Scope Reticle**

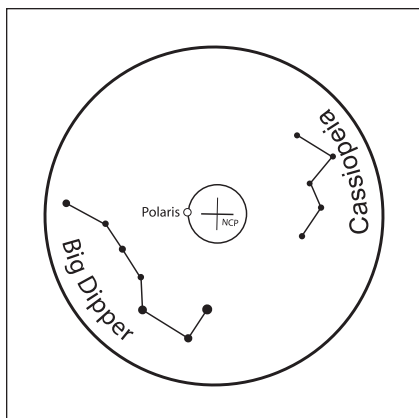
When you look into the polar scope you will see a star pattern, which is printed on a transparent reticle inside the scope (**Figure 2**). The reticle has representations of the Big Dipper, Cassiopeia, and the north celestial pole (NCP). The circle around the cross represents the offset of the North Star, Polaris, from the actual North Celestial Pole.

If the reticle image appears blurry, rotate the knurled eyepiece (reticle) focusing ring of the polar scope's eyepiece to focus it.

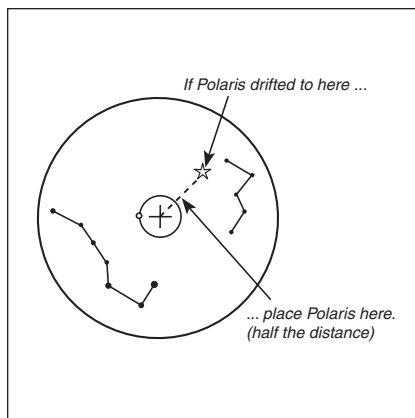
### **Alignment of the Polar Scope**

Before you use the polar scope for polar alignment, it is important to make sure it is aligned with the mechanical axis of the telescope's R.A. axis.

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



**Figure 2.** The reticle's graphic shows you where to place Polaris relative to the North Celestial Pole (NCP) at any given time of night.



**Figure 3.** If Polaris doesn't stay centered when the R.A. axis is rotated 180 degrees, adjust the three small Allen setscrews to move it halfway back to center.

1. Choose a fixed object (Polaris at night, or a far-away object in daytime). Move the tripod and use the two azimuth adjustment knobs and the latitude jackscrew to point the mount so that the object is centered on the cross in the middle of the reticle. Since you're going to be rotating the mount 180°, you might want to start with the counterweight shaft oriented horizontally (parallel to the ground). For best results, make sure your tripod is level.
2. Now loosen the R.A. clutch lever and rotate the mount 180° about the R.A. axis as you view through the polar scope. It may be convenient to remove the counterweights and optical tube before doing this. Then re-tighten the R.A. clutch lever.
3. If the object remained at the center of the crosshairs after the rotation, then no further adjustment is necessary. If it arced in a circle and landed off of the crosshair center, then you will need to adjust the three alignment setscrews (see **Figure 1**) with the supplied 1.5mm Allen key. Your goal is to move the star or object HALFWAY back toward the center of the cross (**Figure 3**).

**NOTE:** When adjusting the Allen screws, loosen one screw only  $\frac{1}{4}$  of a turn, and then lightly tighten the other two. If the star or object didn't move in the desired direction, try loosening a different setscrew. Each time you loosen one setscrew, make sure to tighten one or both of the others.

Do not over-tighten the setscrews; it might damage the reticle plate in the polar scope. Do not loosen one setscrew completely or loosen more than one setscrew at a time; otherwise, the pattern plate in the polar scope may become disengaged and further adjustment will be impossible. If the reticle plate does disengage, remove the polar scope's eyepiece by turning the knurled ring counterclockwise, and then engage the reticle plate again.

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4. Now re-center the object on the crosshairs as you did in Step 1, then repeat Steps 2 and 3.
  5. Repeat this procedure as needed until the star or object does not rotate off-center when the mount is rotated in R.A. The polar axis finder scope is then ready to use for polar alignment. When not in use, replace the plastic cover over the polar scope (if your mount has such a cover) to prevent it from getting bumped out of alignment.

### **Polar Alignment Using the Polar Scope**

To polar-align the mount using the polar axis finder scope, follow these steps:

1. Move the tripod so the telescope tube and right ascension axis point roughly at Polaris. If you cannot see Polaris directly from your observing site, consult a compass and rotate the tripod so the telescope points north.
2. Remove the cap on the front opening of the equatorial mount. Now, sight Polaris in the polar axis finder scope. Polaris will probably be somewhere within the field of view. If not, move the tripod left-to-right, and adjust the latitude up and down until Polaris appears the field of view. Polaris will be the brightest star in its immediate vicinity.
3. Note the constellation Cassiopeia and the Big Dipper in the reticle of the polar axis finder scope. They do not appear in scale, but they indicate the general positions of Cassiopeia and the Big Dipper relative to the north celestial pole. Rotate the reticle so the constellations depicted match their current orientation in the sky when viewed with the naked eye. To do this, release the R.A. lock lever and rotate the main telescope around the R.A. axis until the reticle is oriented with sky. For larger optical tubes you may need to remove the tube from the mount to prevent it from bumping into the mount. Once the reticle is correctly oriented, use the R.A. lock lever to secure the mount's position.
4. Now use the mount's azimuth adjustment knobs and the latitude adjustment jackscrew to position Polaris inside the tiny circle marked "Polaris" on the finder's reticle. You must first loosen – very slightly only -- the knob underneath the equatorial mount on the center support shaft so that the mount can rotate.

Once Polaris is properly positioned within the reticle, you are precisely polar aligned. Retighten the knob underneath the equatorial mount. If you do not have a clear view of Polaris from your observing site, you will not be able to use the polar scope to precisely polar align the telescope.

**NOTE:** From this point on in your observing or imaging session, you should not make any further adjustments to the azimuth or the latitude of the mount, nor should you move the tripod. Doing so will undo the polar alignment. The telescope should be moved only about its right ascension and declination axes.

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## Additional Note Regarding Focusing the Polar Scope

The polar axis finder scope is normally focused by simple rotation of the eyepiece focus ring. However, if after adjusting the focus ring you find that the image of the reticle is sharp but the stars are out of focus, then you must adjust the position of the polar scope's objective lens. To do this:

1. First remove the polar scope from the mount.
2. Look through it at a star (at night) or distant object at least 1/4 mile away (during daylight). Use the eyepiece focus ring to bring the reticle into sharp focus.
3. Now loosen the objective tube lock ring (see **Figure 1**) a turn or two by turning it counterclockwise. This will allow you to rotate the objective tube inward or outward until "infinity" focus is achieved and the distant object appears sharp. (You may have to loosen the lock ring even more in the process.) Then just retighten the lock ring. Once the polar axis finder's objective lens is focused, it should not need to be adjusted again.

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