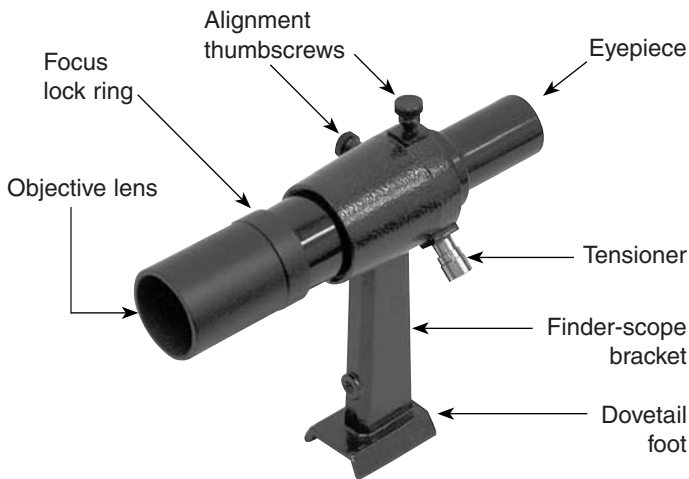


## Orion® Finder Scopes

The finder scope is an invaluable tool for finding objects in the night sky. It is a miniature telescope that mounts onto a larger telescope. Because of its low magnification and wide field of view, it is much easier to first locate and center an object in the finder scope before subsequent viewing through the main telescope. To properly install and use your finder scope, please read this instruction sheet. Be aware, however, that these instructions cover a variety of different finder scope designs and not all sections may apply to the finder scope you have purchased.



**Figure 1.** The Orion 6x30 finder scope.

### The Finder Scope

Orion finder scopes have a two number designation, such as 6x30, 8x40, or 9x50. The first number indicates the finder's magnification. For example, a "6" means it magnifies 6 times. The second number is the aperture (diameter of the objective lens) in millimeters. For example a "30" indicates the finder scope has an aperture of 30mm.

In a standard finder scope, the view will be rotated 180°. If your finder is a "correct-image" finder scope, then the image orientation will be the same as seen with the naked eye (Figure 2).

### Installing the Finder Scope in the Bracket

The Orion Right-Angle Correct-Image finder scopes come pre-installed in their bracket. Other finder scopes may not come with a bracket. For all Orion finder scopes that come with a bracket and require installation, use the following instructions.

Remove the O-ring from the bracket and place it over the body of the finder scope until it seats in the groove in the middle of the finder. Unthread the black nylon alignment screws on the bracket until the screw ends are flush with the inside diameter of the bracket.

Slide the eyepiece end (narrow end) of the finder scope into the end of the bracket's cylinder opposite the alignment screws while pulling the chrome, spring-loaded tensioner on the bracket with your fingers (Figure 3). Push the finder scope through the bracket until the O-ring seats just inside the front opening. Release the tensioner and tighten the two black nylon screws a couple of turns each to secure the finder scope in place. The tips of the tensioner and nylon screws should seat into the wide groove on the finder scope's body.



Standard finder scope view



Naked-eye view and correct-image finder scope view

**Figure 2.** The view through a standard finder scope will be rotated 180°. The view through correct-image finders, however, will be oriented the same as seen with the naked eye.



**Figure 3.** Pull the spring-loaded tensioner outward, then insert the finder scope into the finder scope bracket.

### Attaching the Finder Scope to the Telescope

The finder scope bracket will fit into the dovetail holder on Orion telescopes. If your telescope is not an Orion model, you can order an optional dovetail holder from Orion.

To attach the finder scope to the telescope, first loosen the thumbscrew on the dovetail holder, then slide the dovetail foot of the bracket into the holder. Lock the bracket in place by tightening the thumbscrew on the holder.

If your finder scope was purchased without a bracket, you will need to attach it to your telescope using a finder scope bracket you already have or a separately purchased bracket that will attach to your telescope.

### Aligning the Finder Scope

The finder scope has a wide field of view to facilitate the location of objects for subsequent viewing through the main telescope, which has a much narrower field of view. The finder scope and the main telescope must be aligned so they point to exactly the same spot in the sky.

Alignment is easiest to do in daylight hours. First, insert an eyepiece into the main telescope and point the telescope at an object such as the top of a telephone pole or a street sign that is at least a quarter-mile away. Move the telescope so the target object appears in the very center of the field of view when you look into the eyepiece.

Now look through the finder scope. Is the object centered in the finder scope's field of view, i.e., on the crosshairs? If not, hopefully it will be visible somewhere in the field of view, so that only fine adjustment of the finder scope's black nylon alignment screws will be needed to center it on the crosshairs. Otherwise you'll have to make coarser adjustments to the black nylon alignment screws to redirect the aim of the finder scope.

Once the target object is centered on the crosshairs of the finder scope, look again in the telescope's eyepiece and see if it is still centered there as well. If it isn't, repeat the entire process, making sure not to move the telescope while adjusting the alignment of the finder scope. When the target object is centered on the crosshairs of the finder scope and in the telescope's eyepiece, the finder scope is aligned and ready to be used for locating objects.

The finder scope alignment should be checked before every observing session. This can easily be done at night, before viewing through the telescope. Choose any bright star or planet, center the object in the telescope eyepiece, and then adjust the bracket's alignment screws until the star or planet is also centered on the finder's crosshairs.

The finder scope and bracket can be removed from the dovetail holder for storage, and then reinstalled without significantly changing the finder scope's alignment.

### Focusing the Finder Scope

If, when looking through the finder scope, you notice the images appear somewhat out of focus, you will need to refocus the finder scope for your eyes. First loosen the lock ring located behind the objective lens cell on the body of the finder scope (Figure 1). Back the lock ring off by a few turns. Refocus the finder scope on a distant object by threading the objective lens cell in or out of the finder scope body. Once the image appears sharp, retighten the lock ring behind the objective lens cell. The finder scope's focus should not need to be adjusted again.

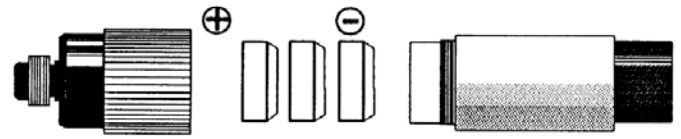
### Adjusting the Finder Scope Crosshairs

Should you feel the need to change the orientation of the finder scope's crosshairs, you can do so by carefully rotating the finder scope in its bracket. Pull on the tensioner and rotate the finder scope tube in the bracket until the crosshairs are oriented the way you want. You should not need to rotate the finder scope tube more than 1/4 of a turn.

For right-angle finder scopes, rotate the eyepiece to re-orient the crosshairs; gently turn the eyepiece until the crosshairs are oriented as you wish. You should not need to rotate the eyepiece more than 1/4 of a turn to do this.

### Illuminated Reticle Finder Scopes

Orion illuminated reticle finder scopes feature a double cross-line reticle etched in optical glass. The double line arrangement allows convenient and precise positioning of a star image either in the tiny square formed by the lines or on the intersection of any two of the lines.



**Figure 4.** Replacing the illuminator batteries.

Orion illuminated finder scopes come with a wireless illuminator. To attach the illuminator to the finder scope, simply thread the LED end into the threaded hole in the side of the finder scope. Turn on the illuminator by rotating the knob clockwise on the exposed end of the illuminator. Brightness is also controlled by the knurled knob. Be sure to turn the illuminator off when it is not in use, otherwise the batteries will drain unnecessarily.

### Replacing or Installing Batteries

The illuminator for Orion illuminated finder scopes takes three SR54 batteries. These are common watch-type batteries that are widely available. The batteries are installed inside the illuminator arm. To replace the batteries, refer to Figure 4. Note that the positive (+) side of the batteries should face the LED end of the illuminator.

### Caring for the Finder Scope

If you give your finder scope reasonable care, it will last a lifetime. Keep the dust caps on the finder when it is not in use. If you plan to move your telescope any significant distance, you should remove the finder scope and bracket in order to prevent them from getting bumped. You can store the finder scope in any small padded case to protect it from damage.

### Cleaning Lenses

Any quality optical lens cleaning tissue and optical lens cleaning fluid specifically designed for multi-coated optics can be used to clean the exposed lenses of your finder scope. Never use regular glass cleaner or cleaning fluid designed for eyeglasses.

Before cleaning with fluid and tissue, blow any loose particles off the lens with a blower bulb or compressed air. Then apply some cleaning fluid to a 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 may be removed using this method. Use caution; rubbing too hard may scratch the lens. For larger lenses, clean only a small area at a time, using a fresh lens tissue on each area. Never re-use tissues.

### One-Year Limited Warranty

This Orion Finder Scope 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 to: Orion Warranty Repair, 89 Hangar Way, Watsonville, CA 95076. If the product is not registered, proof of purchase (such as a copy of the original invoice) is required.

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, and you may also have other rights, which vary from state to state. For further warranty service information, contact: Customer Service Department, Orion Telescopes & Binoculars, 89 Hangar Way, Watsonville, CA 95076; (800) 676-1343.