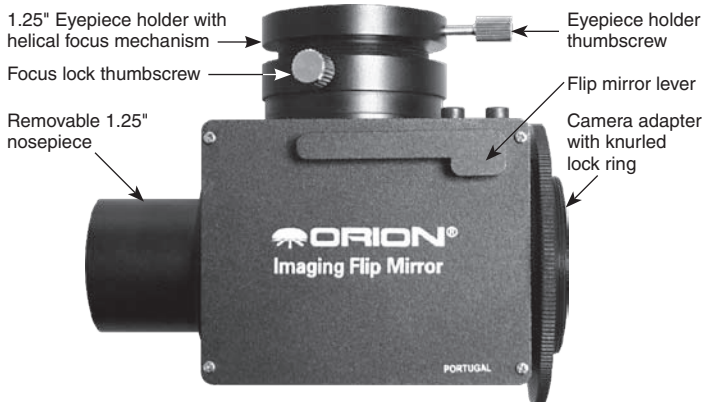


# Orion® Imaging Flip Mirror

#5523



**Figure 1.** The Imaging Flip Mirror and its components

Congratulations on your purchase of the Orion® Imaging Flip Mirror. Your Imaging Flip Mirror enables easy object acquisition, centering, and focusing for your CCD camera. Easily switch your telescope's light path from your CCD camera to your eyepiece, and visa-versa, without removing your camera or disrupting its focus and orientation.

## Parts List

### Flip Mirror body, includes:

- 1.25" Eyepiece holder with helical focus mechanism
- 1.25" Nosepiece
- Camera adapter with knurled lock ring
- Camera adapter metal dust cap

## Setting Up the Imaging Flip Mirror

The Imaging Flip Mirror is designed to accommodate your CCD camera and eyepiece using the same telescope focuser. The Imaging Flip Mirror comes fully assembled and ready to attach to your telescope and CCD camera.

### Attaching the Imaging Flip Mirror to a Telescope

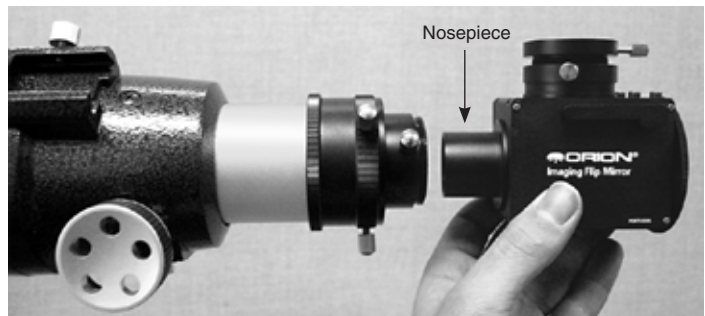
The Flip Mirror is equipped with a standard removable 1.25" nosepiece and female T-threads, ready to attach to most telescopes.

### Using the 1.25" Nosepiece

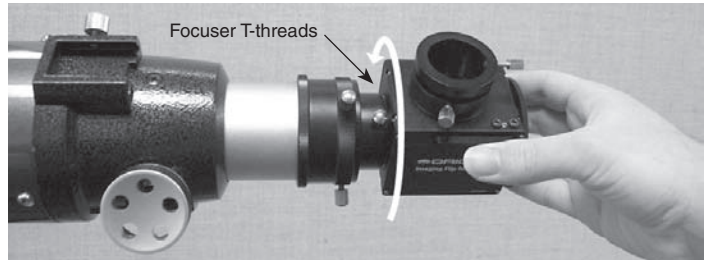
If your telescope features a 1.25" focuser or adapter, the easiest way to attach the Imaging Flip Mirror is by using the included 1.25" nosepiece. Simply insert the nosepiece into your telescope's 1.25" eyepiece adapter and secure it by tightening the thumbscrew (Figure 2).

### Using T-threads

Some Orion telescopes feature focus adapters with exterior T-threads. If you are using such a telescope, you can attach the flip mirror body directly to the T-threads without using the 1.25" nosepiece. Remove the 1.25" nosepiece. Then carefully attach the flip mirror body to the T-threads. (Figure 3).



**Figure 2.** Insert the Imaging Flip Mirror nosepiece into your telescope's 1.25" adapter.



**Figure 3.** Attach the flip mirror body directly to the focuser T-threads by first removing the nosepiece.



**Figure 4.** Use the knurled lock ring to secure the camera orientation.

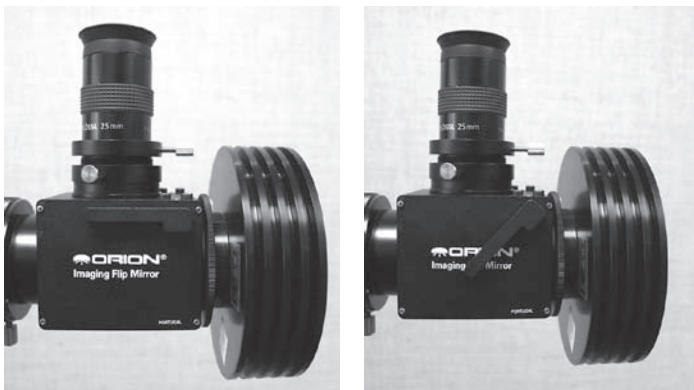
### Attaching a CCD Camera to the Imaging Flip Mirror

All Orion StarShoot™ cameras, and most commercial CCD cameras, have accessible T-threads which attach directly to the rear side of the flip mirror body. Remove the nosepiece of your CCD camera to reveal the T-threads. Attach the camera body to the flip mirror body by rotating the camera clockwise until tight.

To change the camera orientation, unthread the camera counter-clockwise only until you have reached the desired camera orientation. Then turn the knurled lock ring counter-clockwise (when facing the back of the camera) against the camera body until the camera fits snug against the ring (Figure 4).

### Eyepiece Use

The Imaging Flip Mirror should reach focus with nearly all 1.25" eyepieces. Simply insert your eyepiece into the 1.25" eyepiece holder and secure it with the eyepiece holder thumbscrew.



**Figure 5.1.** Lever up directs the light path to the CCD camera.

**Figure 5.2.** Lever down directs the light path to the eyepiece.

## Using the Imaging Flip Mirror

Keep the flip mirror lever in the “up” position (Figure 5.1) to let the telescope focus on the camera. Flip the mirror to the “down” position to let the telescope focus on the eyepiece (Figure 5.2).

With the flip mirror lever in the “up” position, focus your CCD camera using your telescope’s focuser. Then, flip the mirror to the “down” position to switch the light path to your eyepiece. Focus the eyepiece using the helical focus mechanism, making sure not to disrupt the telescope’s focuser. When your eyepiece is focused, lock the helical focus mechanism by tightening the focus lock thumbscrew.

## Other Adjustments

The flip mirror lever tension and stop angle are factory set. However, if needed, adjustments can be made to change the lever tension and stop angle.

### Adjusting the Lever Tension

Locate the two silver socket head set screws (one on each side) located above the lever (Figure 6).

Using the provided 1.5mm hex key, loosen or tighten the set screws as needed to reach the desired lever tension.

### Adjusting the Flip Mirror Stop Angle

Check if any adjustment is necessary first. The Imaging Flip Mirror stop angle is factory-set and typically does not require adjustment. Center the image subject in your CCD camera. Then flip the mirror down to bring the light path to the eyepiece. The subject should be centered in the eyepiece. If the subject is not centered in the eyepiece as it was in the CCD camera, you need to adjust the mirror stop angle.

To adjust the flip mirror stop angle:

1. Locate the socket head set screw on the bottom of the flip mirror body (Figure 7).
2. If the subject is above the center of the field of view (when facing the rear of the flip mirror), turn the set screw clockwise



**Figure 6.** (above) The two silver socket head screws located above the lever adjust the lever tension.



**Figure 7.** (right) The socket head set screw located beneath the flip mirror body adjusts the mirror stop angle.

(using the provided 2.5mm hex key). If the subject is below the center of the field of view, turn the set screw counter-clockwise.

3. Check your adjustment by comparing the CCD camera view with the eyepiece view. The subject should be centered in both views.

## Care and Storage

The mirror surface should only be cleaned on a minimal bases. Small dust particles will not effect the optical performance. You can occasionally remove dust with compressed air or a blower bulb. If you need to clean the mirror surface, first unthread the 1.25” eyepiece holder from the flip mirror body to allow easy access to the mirror. Use a cotton Q-tip with a drop of isopropyl alcohol or lens cleaning solution. Lightly drag the Q-tip across the surface of the mirror. Replace the Q-tip frequently while cleaning to ensure you do not smear particles across the mirror. Use caution, as scratching or stripping the delicate aluminum surface can easily occur.

To avoid excessive dust buildup, be sure to attach the dust caps prior to storing, and use a foam-lined accessory case. The foam-lined box your Imaging Flip Mirror arrives in also acts as a convenient storage container. Store in a dry place away from direct sunlight.

## One-Year Limited Warranty

This Orion Imaging Flip Mirror 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, mishandled, 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.

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