

Orion® 2" Crayford Focuser for Newtonian Reflectors

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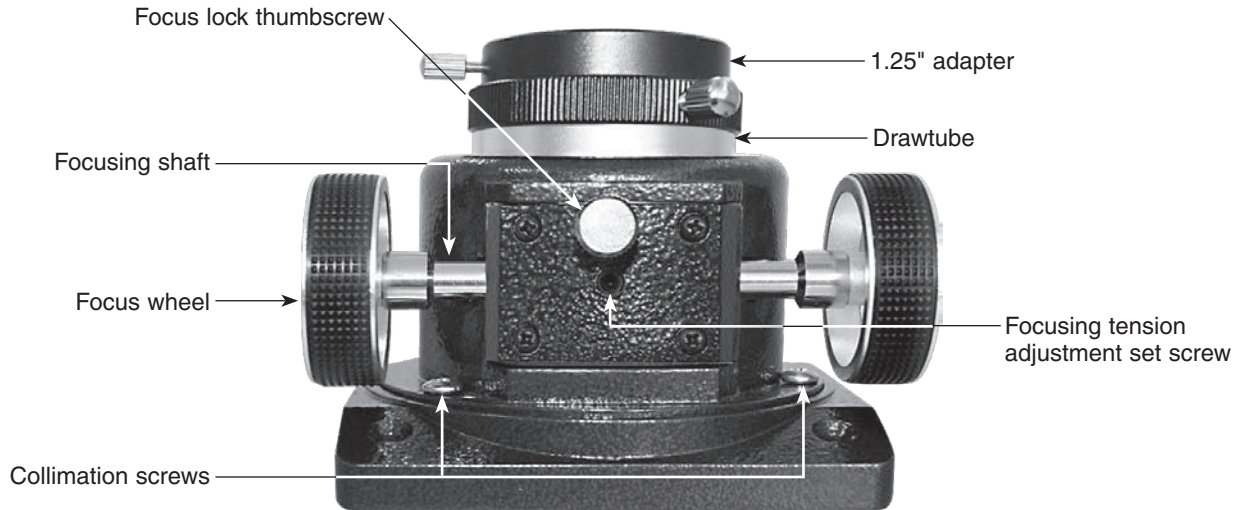


Figure 1. The Orion 2" Crayford focuser for Newtonian reflectors.

Congratulations on your purchase of a quality Orion 2" Crayford focuser. This focuser is intended for use with Newtonian reflectors. If you do not have a Newtonian reflector, the focuser may not be appropriate for your telescope.

Crayford focusers generally perform better than rack-and-pinion models because the design reduces "focus shift". Focus shift is when an image moves position in the eyepiece when it is being focused. This is very hard to eliminate in rack-and-pinion focusers due to slight gear and tolerance imperfections which cause the drawtube to move slightly left or right when focusing. For the Crayford design, the drawtube is constantly tensioned (by the focusing shaft and four "roller bearings") so the drawtube cannot move perpendicular to the desired motion.

Installation

This focuser was designed to be a "drop-in" replacement for the 2" rack-and-pinion focuser that comes standard on Orion reflectors greater than 6" in aperture, including IntelliScope and Classic Dobsonians. If you have one of these telescopes, installing the 2" Crayford will be extremely easy. You will need a Phillips head screwdriver and an adjustable crescent wrench or pliers. Use the procedure outlined below:

Note: *The SkyQuest XT8 Classic, or any size Classic style XT Dobsonian manufactured before June 2002, are*

not compatible with this focuser as a "drop-in" replacement. If you have one of these telescopes please skip to the paragraph following step 7.

1. Position your Newtonian reflector optical tube so it is horizontal. This will prevent any screws or nuts from falling onto the primary mirror.
2. From the inside of the tube, secure one of the four focuser securing nuts with the wrench or pliers.
3. Use the screwdriver to completely unthread the focuser attachment screw from the securing nut currently being held by the wrench or pliers.
4. Repeat this for the other three nut and screw pairs.
5. Remove the 2" rack-and-pinion focuser from the tube.
6. Place the 2" Crayford focuser where the rack-and-pinion focuser was previously. Orient the focuser the same as the removed one was. The through holes in the base of the focuser should line up with the holes in the telescope tube.
7. Reinstall the four screw and nut pairs using the wrench or pliers and screwdriver. Tighten the screws firmly.

If the focuser does not match the mounting holes on your optical tube you will need to modify your tube so the focuser will fit. This will require drilling four holes into the tube for

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the mounting screws. Use a 3/16" drill bit to do this. Use the base of the focuser as a template when drilling these holes. You may also need to cut a larger hole (3.65" diameter) in the telescope for the bottom of the focuser. Be careful not to cut your fingers on any sharp tube edges when attempting to do this. Keep in mind that the minimum focus height for the 2" Crayford focuser is approximately 70mm (without the 1.25" eyepiece adapter attached), so if your eyepieces reach focus closer to the tube than this, additional modifications to the telescope may be required.

Usage

Using the 2" Crayford focuser is very straightforward. Place your 2" eyepiece in the focuser drawtube, and secure it in place with the two thumbscrews. To focus, simply rotate one of the focus wheels.

The large focus lock thumbscrew near the focusing shaft (see Figure 1) locks the drawtube into position once focus has been achieved. This is especially useful when using a camera or heavy eyepiece in the focuser. Be sure this thumbscrew is loosened when focusing.

The socket head set screw below the focus lock thumbscrew adjusts drawtube focusing tension (see Figure 1). If a heavy eyepiece causes the drawtube to move inward by itself (drawtube tension too loose), or the focus wheels are difficult to turn (drawtube tension too tight), then you will want to adjust this set screw. This requires the 3mm hex key.

The 1.25" Eyepiece Adapter

In order to use a 1.25" eyepiece in the focuser, you must first install the 1.25" adapter. Place this adapter into the drawtube like a 2" eyepiece, and secure it with the two thumbscrews on the drawtube. Insert a 1.25" eyepiece into the adapter, and secure the eyepiece with the thumbscrew on the adapter.

Collimation

The focuser has three pairs of socket head set screws and socket head cap screws located on the base of the focuser (see Figure 1). These "push-pull" screw pairs can be used to tilt the focuser relative to the telescope tube for optical collimation purposes. While these generally need no adjustment, they are provided for extra convenience in case the need should arise.

Optional Accessories

Some Newtonian reflectors, specifically Orion's 8-inch f/4.9 or 10-inch f/4.7 reflector telescopes, will require a longer 2" eyepiece adapter for visual use with the Crayford focuser. Without this optional adapter, you will not be able to reach focus with eyepieces in these telescopes

To attach a SLR camera or digital imager featuring T-threads directly to your focuser, an optional camera adapter is available from Orion.

You can also add convenient and precise electronic control to your Crayford focuser with the Orion AccuFocus electronic focuser.

Contact Orion Customer Service for ordering information.

Specifications

Focuser design:	Crayford, accepts 2" eyepieces and 1.25" eyepieces with included adapter
Minimum focus height:	70mm without 1.25" adapter, 80mm with 1.25" adapter
Focus travel:	40mm
Other features:	Focus lock, drawtube focusing tension adjustments, collimation adjustments

One-Year Limited Warranty

This Orion 2" Crayford Focuser for Newtonian Reflectors 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.