Feather Touch Focuser Instructions

For 2.5” / 3” / True 3” Focusers

Thank you for your purchase of a Starlight Instruments Feather Touch Focuser. It is our goal to provide the best focusing experience possible and allow you to get the most out of your telescope. With that in mind, these instructions are intended to explain the functions of all aspects of your new focuser, allowing you to use it to its fullest capacity. The following instructions will refer to parts of the focuser pointed out in the “Focuser Nomenclature” section on the next page, as well as explain their function and intended use.

Focuser Nomenclature

FOCUSER 2 1/2, 3, True 3 inch

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Focuser Anatomy

Focuser Housing

The focuser housing constitutes the main body of the focuser which the drawtube will move in and out of.

Drawtube Tension Nut

The drawtube tension nut provides a way to control the tension or drag of the drawtube as it moves in and out. This is the primary way to adjust this aspect of the focusers function and may be adjusted with with a 3/16 hex key. At minimum, light tension should be kept on the drawtube to prevent drawtube tilt / image shift.

Another drawtube tension nut is concealed by the adapter and is secured with thread locker. The setting of this tension point should not be adjusted and acts as a factory set control.

Finderscope Bracket Mounting Holes

The focuser housing is designed with 2 sets of mounting holes for the attachment of a finderscope base and bracket (sold separately). Filler screws are installed in these holes and may be removed for use. The holes are #8-32 UNC thread. If installing 3rd party finderscope bases, care should be taken to select mounting screws that are not too long; **failure to do so may result in damage to the drawtube**.

Drawtube

The drawtube is the moving component of the focuser that allows the user to achieve focus with their selected eyepiece or camera. A millimeter scale is provided on the side for convenience and repeatability. Our product line offers focusers with drawtube travel lengths of 1.5” to 4.5”, depending on the focuser size.

Rack

The rack is one half of the driving mechanism of the drawtube movement (the other being the pinion) and is located on the underside of the drawtube. Feather Touch Focusers utilize a helical rack and pinion system which provides smoother operation, increased carry loads, and virtually zero backlash. The focuser ships with a thin film of grease applied to the rack and pinion system, no further lubrication is necessary.

Pinion Assembly

The Pinion assembly, located on the underside of the focuser, houses the geared pinion shaft, brake mechanism and the 10:1 reduction assembly.

Reduction Assembly

Our friction-based reduction assembly is a planetary “gearbox” design consisting of a stainless steel housing, high grade stainless steel ball bearings contained in a brass cage, and a tool steel reduction pin. This system translates approximately 10 rotations of the gold fine focus knob into 1 rotation of the black coarse focus knobs. The tight tolerances of this assembly creates smooth, virtually zero backlash operation. The focus knobs may be removed (for instance when installing a motor drive) with a 1/16 hex key. Great care should be taken to avoid contamination of the inner workings once the knobs are removed. The reduction assembly is lubricated during assembly and requires no further lubrication.

Brake Thumbscrew

The brake thumbscrew, located on the underside of the pinion assembly, provides a locking mechanism to prevent unwanted drawtube movement. Minor adjustments to focus via the fine focus knob may be made after locking the focuser. However, **prolonged use of the focuser with the brake mechanism engaged may result in premature wear of the internal brake component**.

Tube Adapter

The tube adapter connects the focuser to the telescope and allows for 360-degree rotation of the focuser to the desired orientation. The tube adapter is PTFE lined and contains a nylon ring the focuser rests against. The gold thumbscrews are nylon tipped to prevent damage to the focuser housing when tightened. In the event that the nylon tipped thumbscrews do not provide a secure enough hold to prevent focuser rotation (such as when larger asymmetrical loads like heavy motor drives are installed), stainless steel tipped thumbscrews are available for purchase.

Endcap

The endcap provides the necessary connection from the focuser to your desired accessories. The most common connection is the 2” compression ring used for the connection of 2” eyepieces or accessories. However, a wide array of threaded endcaps are available for a more secure connection of reducers, cameras, and various other accessories. Most available endcaps are designed with 3 set screws to allow for collimation adjustments. You may do so by loosening the 3 set screws located on the face of the endcap with a 1/16 hex key, unscrewing the endcap approximately ¼ turn to allow for play then adjust the tilt and secure the endcap using the same set screws.

Installation Instructions

It is advised to first separate the tube adapter from the focuser for ease of installation; simply loosen the 3 gold thumbscrews located around the circumference of the adapter and lift the focuser out. It is not necessary to completely remove the thumbscrews.

After removing the telescope's stock focuser (refer to the manufacturer if necessary), simply attach the Feather Touch Focuser tube adapter to the telescope; in most cases the adapter simply screws in place, however in certain circumstances (such as telescopes with carbon fiber tubes) the adapter is secured with screws.

After the tube adapter is securely attached, you may reinsert the Feather Touch Focuser into the adapter, rotate into the desired orientation and lock it in place by tightening all 3 gold thumbscrews.

At this point, you may collimate the focuser via the collimation screws on the endcap if necessary.