



## Feather Touch® Focuser Mounting Instructions

### NEWTONIAN APPLICATIONS:

If you have purchased a focuser to be used on a Newtonian type telescope please follow the directions for attaching the focuser to the telescope tube.

1. If you are replacing an old focuser remove the focuser and check the bolt hole pattern that is in the telescope tube. Our bolt pattern is square and measures 2.75 inches on each side. We have supplied (4) 8-32 x .75 lg Stainless Steel Socket Head Cap screws with nuts and washers. If the tube is thicker, please contact us and we can send you some longer screws.
2. Check the opening for the draw tube. If the opening of the draw tube is less than 2 5/8<sup>th</sup> inches you will need to increase the diameter so that the drawtube will enter through the hole. We recommend a drum sander attachment that can be used with an electric hand drill. These are available in most hardware stores and consist of a rubber wheel on a 1/4 inch mandrel. This can be purchased in different sizes and a 1 1/4 inch model will do fine. Get a few sanding belts along with this and increase the opening as needed. Other methods may also be used but in my opinion may be more difficult.
3. If new holes are needed for the mounting screws, use the base as the template to locate the holes. The base can easily be removed by loosening the (2) 6-32 set screws located on opposing edges of the base. A 1/16 Allen wrench will be needed. Drill (4) 3/16<sup>th</sup> holes and attach the base to the telescope with the supplied hardware.
4. You can now attach the focuser back onto the base by rotating the focuser to the desired position and tightening the (2) set-screws. Finger tight will be sufficient to hold the focuser securely in place. If the focuser needs to be repositioned at any time feel free to do so. The set-screws will leave a mark on the inside of the focuser housing but this is unavoidable and was designed this way.
5. For both flat and curved base plates, either a 1/8 inch hex key or slotted screw driver is required to adjust leveling screws.

### SCHMIDT-CASSEGRAIN APPLICATIONS:

If you have purchased a focuser to be used on a Schmidt-Cassegrain (SCT) type telescope please follow the directions for attaching the focuser to the telescope.

1. Remove any threaded collars from the end of the telescope to expose the threads that are to be used with the adapter.
2. Remove the threaded adapter from the focuser by loosening the (3) 6-32 set screws. These can be seen on the top of the adapter opposite the large thread. No need to remove them, two turns will be enough to pull the focuser from the adapter.
3. Screw the adapter onto the threaded end of the SCT.
4. Re-attach the focuser to the threaded adapter. Finger tight will be sufficient to hold the focuser securely in place. If the focuser needs to be repositioned at any time feel free to do so. The set-screws will leave a mark on the inside of the focuser housing but this is unavoidable and was designed this way.

### REFRACTOR APPLICATIONS: (VIXEN AND 3"/4" CNC FOCUSERS)

For refractor type telescopes please follow the directions for attaching the focuser to the telescope.

#### 3"/4" CNC Focusers

1. Remove the end cap or attachments to the telescope focuser draw tube so that the threads are exposed.
2. Remove the threaded adapter from the focuser by loosening the (3) 6-32 set screws. These can be seen on the top of the adapter opposite the large thread. No need to remove them, two turns will be enough to pull the focuser from the adapter.
3. Screw the adapter onto the threaded end of the focuser draw tube.
4. Re-attach the focuser to the threaded adapter. Finger tight will be sufficient to hold the focuser securely in place. If the focuser needs to be repositioned at any time feel free to do so. The set-screws will leave a mark on the inside of the focuser housing but this is unavoidable and was designed this way.

#### Vixen

1. For Vixen tubes remove the existing focuser by removing the 3 Phillips head screws that hold the focuser to the telescope tube.
2. Remove the adapter from the focuser by loosening the (3) 6-32 set screws. These can be seen on the top of the adapter opposite the large thread. No need to remove them, two turns will be enough to pull the focuser from the adapter.
3. Attach the adapter with the (3) supplied Stainless Steel Button Head Cap Screws. The original equipment is metric and will not fit the adapter threads. Re-attach the focuser to the threaded adapter. Finger tight will be sufficient to hold the focuser securely in place. If the focuser needs to be repositioned at any time feel free to do so. The set-screws will leave a mark on the inside of the focuser housing but this is unavoidable and was designed this way.

### HINTS AND TIPS

#### 1.25" to 2" Eyepiece Adapter

If your *Feather Touch® Focuser* was ordered with a low profile adapter several points should be noted. Our adapter uses a slightly different design than has been customarily used. The intent of this design was to use an adapter that has as low of a profile as possible. Normally 1 1/4 inch adapters use a flange on the end of the adapter so that there is room for a locking thumbscrew for the eyepiece. However this extra distance that the flange takes up, brings the short focal length eyepieces further from the focal point. It also decreases the amount of in-travel for 1 1/4 inch eyepieces where the extra in-travel is generally required. Our adapters provide a solution to these problems.

There are two thumb screws on the draw tube that are opposed at 120 degrees. If the 1 1/4 inch adapter is used you only need to tighten one of these thumb screws. There are two half moon cuts on the face of the draw tube, these are used to position the adapter so that the same thumb screw that is normally used for 2 inch eyepieces can be used with the 1 1/4 inch adapter. There is a brass guide in the adapter and a transfer plug. This plug is pushed in by the thumb screw and in-turn presses onto the brass collar of the 1 1/4 inch adapter. In order for you to capture the position of this transfer plug a key needed to be provided on the 1 1/4 inch adapter. That's the reason for the two half moons. The screw on the face of the adapter will key into the half moon thereby orientating the adapter so that the transfer plug is in line. The 1 1/4 adapter should always be keyed into a position opposite the thumb screw that is to be used. They can of course be switched for left handed use.



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### Cleaning

Your *Feather Touch® Focuser* needs very little maintenance. An occasional cleaning of the rails and friction plate can be done using a cotton swab to remove dirt from their surfaces. The bearings can also be cleaned by holding the cotton swab lightly between the rail and the bearing while pushing the draw tube in and out. If too much pressure is used on the cotton swab some of the fibers may get caught between these surfaces. Just reverse the directions and remove the fibers if this happens.

We have used a damping grease on the adjustment thumb screws which is very sticky. This prevents the screws from vibrating out during transportation of the telescope and also provides a better feel when using the thumbscrews. In the event that some of this grease gets on the focuser surfaces where it does not belong, a little WD-40 on a rag will easily remove it. To clean the focuser's outside surfaces, we have found that a liquid car wax on an old cotton cloth works best. Use the wax very sparingly and wipe off. It will make it look like new.

### Focusers with the Brake Option

When using our focuser in applications other than Newtonian telescopes where the motion of the draw tube is not in a horizontal direction and in a more vertical direction we have developed a Brake version that will adjust the tension of the pinion. This is necessary because our focusers are so smooth and move so freely. The Brake consists of a lever arrangement internal to the pinion block. By adjusting the thumb screw on the pinion block this lever presses a friction pad onto the pinion thereby increasing the torque that is needed to turn the focus knobs. If the thumb screw is turned all the way in the pinion shaft and the draw tube will be locked. Opposite this thumb screw is a small set screw that is adjusted during the assembly of the focuser. Please do not make any adjustments to this. It is used to set the proper distance of the brake to the pinion shaft. If it is tightened too much damage to the brake can result. We use a thread locking compound on this set screw to prevent it from moving.

### Left Hand / Right Hand Use

While we do not recommend that users do this themselves because of the risk of voiding the warranty, if you *really must* reverse the pinion housing and do not wish to have us do it, this can be done by following the instructions given below, **carefully**:

1. Remove the focuser and set it on a clean and level surface so that you can easily work on it.
2. There are two Socket Head Cap Screws in line on the pinion housing. We have used LockTight to secure these screws.
3. Remove the bottom screw first, this is the one that is closest to the base of the focuser and then remove the opposite screw.
4. Remove the pinion housing assembly and reverse the orientation.
5. Reattach the top and bottom screws. Tighten the top screw first. No need to over tighten, finger tight will be fine. If too much torque is used you could strip the threads and that would be a real problem.
6. Then tighten the bottom screw until you feel that it is snug. Now back this screw out by about 20 degrees. If the focuser action feels too tight, loosen the bottom screw a bit more. If the draw tube slips, the screw is too loose and you will need to snug it a little more.
7. If you have problems give us a call.

### Draw Tube Filter

On our 2.0" focuser draw tubes, there is a 52 mm functional thread. This can be used to attach a minus violet filter for some refractors if desired. If required, a nebula filter or light pollution filter can also be attached here but if you are using 48 mm filters you will need to a reducer.

### Warning:

We have done everything that we can do provide you with a product that will last a lifetime but a few words of caution. If the brass knob side is struck or bumped by a sharp blow it can result in damage to the fine focus reduction assemble. This can of course also happen if it is dropped. If this happens please return it to us for repair. *Please do not attempt to disassemble focuser and try to repair yourself.* Doing so could void your warranty. Please see below.

#### WARRANTY

We offer a Limited Lifetime Warranty to the original owner. If during this time any part of the focuser fails or wears out prematurely we will replace it free of charge. The warranty on our products is voided if for any reason they are disassembled, tampered with, misused, accidentally damaged, and/or modified or altered in any way, or by the addition of after-market products not approved by Starlight Instruments.

There are many adjustments to the internal parts that are factory set and these should not be tampered with or adjusted by the customer. If warranty work is requested we will require proof of purchase.

From our experience it is unlikely that you will need this service - That has always been our goal.