

NGF Focuser Installation and Operation

Congratulations on your purchase of the NGF-XTn (3"), NGF-DX (2") or NGF-mini (1.25") focuser (U.S. Patent No. 5,303,090). A great amount of time and money has gone into the research and development of this focuser. We can assure you that the Next Generation Focuser is a tool you can be proud to have on your telescope.

Installation

The first step in installing your new NGF is to remove the old focuser. If you believe that the old focuser is aligned properly, then it is helpful to collimate your telescope before removing it. This will assist in the alignment of your NGF by matching the focuser to the collimation already established. The optical performance of your telescope is greatly affected by the alignment of the focusing drawtube with the optical path. For this reason, leveling setscrews are provided on the base, and we encourage you to make every effort to ensure the focuser is properly aligned and that your telescope is properly collimated.

Next, drill four mounting holes using the focuser base as a template. Using the four mounting screws and nuts, attach the focuser loosely enough to allow adjustment with the leveling setscrews. An optional backup plate (NGFPLATE) is available from JMI for mounting a 1.25" or 2" NGF on a cardboard sonotube. This plate will add stability and strength to the mounting surface (an additional backup plate may also be used on the inside of the sonotube). This plate can also be used to cover mounting holes left over from previous focusers. When the focuser has been properly aligned with the optical path and centered directly above the secondary mirror, tighten the mounting screws to secure this position. Installation is now complete.

Operation

When operating the optional motor, the drawtube is moved in or out by pressing one of the two red buttons on the hand unit. Holding one of these buttons down for two seconds will cause the motor to automatically switch to fast-speed mode. A multi-position switch adjusts the rate of the slow-speed mode from high (left) to low (right). The hand unit operates with one 9-volt battery (included). To replace the battery (every 12 to 24 months), remove the screws holding the back of the hand unit. Some telescope drive systems will support a DC focus motor and should operate an NGF focuser. You may find, however, that the included hand unit gives better control over the motor speed and electronic braking.

Your NGF utilizes a modified "Crayford" design to achieve its outstanding performance and stability. The focuser is driven by the friction that results when a great amount of pressure is applied by the drive shaft against the drawtube, which in turn is pressed against the drawtube post bearings. Because of this enormous pressure, it is normal for a "track" to become apparent on the surface of the drawtube with use. However, it is very important to keep the roller and friction drive surfaces clean. A cotton swab or soft cloth should be used periodically to remove dirt and other foreign particles from these areas. If necessary, moisten sparingly with isopropyl (rubbing) alcohol. It is possible for the drawtube surface to become pitted if not properly maintained, thus reducing performance.

The drawtube should only be moved in or out by use of the manual focus knob or motor. Because it is hard anodized, directly pushing on the drawtube can wear a flat into the stainless steel drive shaft resulting in uneven travel. Also, the manual focus knob should not be forced and use of the motor should not continue when the end of travel has been reached, as excessive wearing of the stainless steel shaft and drawtube may occur. **Damage resulting from the above actions is not covered under warranty.**

A 1.25" focuser is supplied with both metal and nylon screws. The nylon screws are for those who do not wish to take any chances of marring their equipment. The metal screws, however, will do a much better job of securely holding accessories.

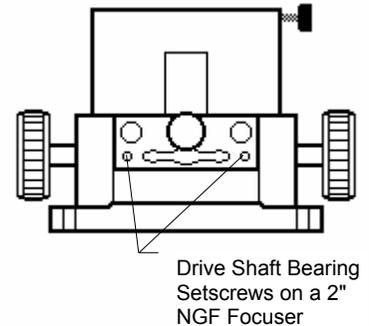
The large nylon thumbscrew above the drive shaft (present in all non-motorized versions) is designed to provide additional friction against the drawtube in order to prevent any change in focus when using a camera or heavy eyepiece. When not needed, this thumbscrew should be "backed off" a few turns to maintain smooth and complete travel along the drawtube flat.

To use manual operation when a motor has been installed, you must disengage the motor by loosening the small nylon screw (on the left) holding the motor cover. It is only necessary to back the screw off a few turns to disengage the gears. **Attempting to force a manual adjustment with the motor engaged will damage the focuser.**

Adjustments

The NGF focuser is carefully adjusted and tested at the factory and should remain so for the life of the focuser. If it becomes necessary to adjust the focuser, it must be done with extreme care. If the focuser is adjusted improperly, performance will degrade and damage may result. **Damage due to improper adjustments by anyone other than factory trained technicians, will not be covered under warranty.**

The tension might need some minor adjustments after time. This is achieved by evenly and slightly tightening the two setscrews that push against the drive shaft bearings, as shown in the diagram at right (not applicable to the NGF-XTn). Provide only enough pressure to lift normal accessories. It is highly recommended that no other adjustments, such as drawtube bearings or pusher bearings, be made by the customer. Pusher bearing adjustments (between the drive shaft bearings on NGF-XTn, NGF-DX1 and NGF-DX2 models only) are extremely critical.



Almost all focuser damage is caused by one or more unnecessary and improper adjustments. If kept clean, your focuser should give you a lifetime of use without the necessity of any adjustments.

Accessories and Options

With 2" and 3" versions of the NGF, a threaded output adapter (ADPT2THREAD or ADPT3THREAD) is available for individuals who wish to use Celestron or Meade SCT accessories. For 1.25" and 2" focusers, shorter and longer drawtubes are available, as well as extension tubes for a greater "racked out" height.

Other options include Smart Focus, DRO and DFC. Smart Focus is a combination of hardware and software for precise remote control of JMI's motorized focusers through a personal computer's serial port. Digital Read Out (DRO) gives precise measuring of drawtube movement using a hand unit with electronic digital read out. Digital Focus Counter (DFC) is a more economical mechanical counter (not available for the NGF-XTn). Smart Focus or DRO is a must for CCD use because it allows you to return to a previous position by using the computer screen or digital display.

JMI Telescopes