

# Operating Instructions

## Meade Zero Image-Shift Microfocuser

For use with LS, LX85, LX200, LX600 and LX850 Telescopes

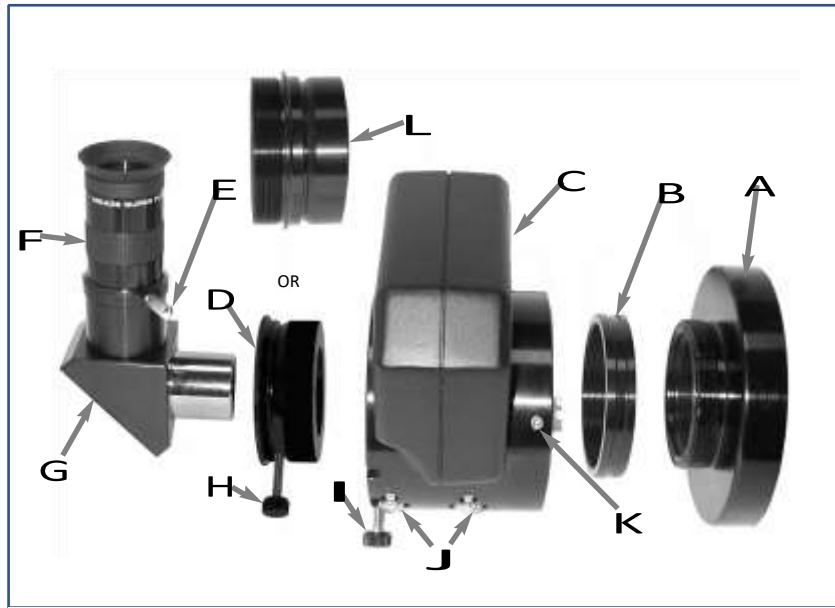
### Introduction

The **Meade Zero Image-Shift Microfocuser** allows precise, vibration-free image focus during visual, CCD, and astrophotographic applications. It also allows you to achieve focus without causing a viewed object to move out of position in the field of view.

The microfocuser maintains precise image centering on even the smallest CCD chips. The microfocuser operates at four speeds: Fine to fast.

### To Attach the Microfocuser to the Telescope

1. Remove the dust cap from the rear cell port of your telescope. Thread the microfocuser adapter (**B, Fig. 1**) onto the rear cell port thread (**A, Fig. 1**). Slide the microfocuser (**C, Fig. 1**) over the microfocuser adapter and tighten the three set screws (**K, Fig. 1**) using the provided hex key.
- 2a. **1.25" Diagonal Prism Users:** Slide the 1.25" adapter (**D, Fig. 1**) into the microfocuser. Line up the thumbscrew (**H, Fig. 1**) into the groove in the microfocuser (**Fig. 2a and 2b**). Tighten the microfocuser thumbscrews (**I, Fig. 1**) to a firm feel only. Slide the 1.25" diagonal prism into the adapter (**D, Fig. 1**). Tighten the accessory adapter thumbscrew to a firm feel only.
- 2b. **SC Optional Accessory Users:** If using any of the Meade Schmidt-Cassegrain optional accessories, slide the supplied SC accessory adapter (**L, Fig. 1**) into the microfocuser. Line up the groove on the side of the adapter with either of the microfocuser thumbscrews (**Fig. 3a and 3b**) and tighten the thumbscrew to a firm feel only. Attach the optional accessory into the accessory adapter.
- 2c. **2.0" Diagonal Mirror Users:** Slide the 2.0" diagonal mirror directly into the microfocuser. The adapters are not required. Tighten the thumbscrews (**I, Fig. 1**) to a firm feel only.
3. **Plug in the Microfocuser:** Plug the coiled cord attached to the microfocuser into the Focus port located on the Computer Control Panel.



**Fig. 1:** Microfocuser and eyepiece assembly. **(A)** Rear cell of telescope (shown separate from the telescope assembly for the sake of clarity); **(B)** Microfocuser adapter; **(C)** Microfocuser; **(D)** 1.25" accessory adapter. SC accessory adapter (**L**) may be used in this position instead if Schmidt-Cassegrain accessories are being used. Do not use either adapter if using a 2" diagonal mirror; **(E)** Diagonal Prism holder thumbscrew; **(F)** Eyepiece; **(G)** 1.25" Diagonal Prism. 2" diagonal mirror may also be used in this position (12" models); **(H)** Adapter thumbscrew; **(I)** Microfocuser thumbscrews; **(J)** Microfocuser bearings; **(K)** Set screws.



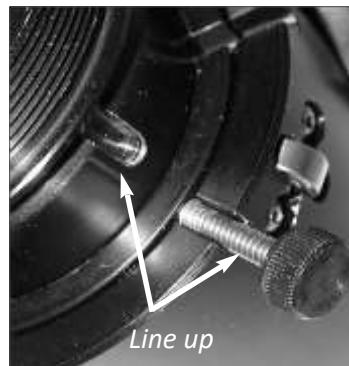
**Fig. 2a:** Microfocuser groove.



**Fig. 2b:** Microfocuser 1.25" adapter thumbscrew in groove.



**Fig. 3a:** SC adapter groove.



**Fig. 3b:** Line up SC adapter groove with microfocuser thumbscrew.

## Maintenance

The microfocuser is carefully adjusted at the factory. If it becomes necessary to adjust the microfocuser ball bearings (see **Fig. 5**), it must be performed by factory trained technicians. If the microfocuser is improperly adjusted, performance will degrade and damage will result. Damage due to improper adjustments not authorized by the factory will not be covered under warranty.

**Note:** *If you wish to mount a camera directly to the microfocuser, you need to attach an optional T-Adapter to the microfocuser. For more information about Meade optional accessories, see the Meade Product Catalogue or contact your local Meade dealer.*

## To Focus Using the Microfocuser

1. Perform this part of the procedure during the daytime, without the eyepiece assembly (eyepiece, diagonal, etc.) attached to the microfocuser. On the AutoStar II press the Focus button and then the Up and Down Arrow keys. Observe the microfocuser drawtube as it travels in and out. When the drawtube reaches the furthest extension of its travel, listen for a change in the pitch of the motor. Notice that the drawtube's maximum extension is about a half-inch out from the microfocuser. Set the drawtube so that it extends about a quarter-inch (about halfway).
2. When you begin your viewing session, attach the eyepiece assembly.
3. Make sure that the microfocuser is plugged into the computer control panel focus port.
4. Point the telescope at a bright star.
5. Rotate the mirror lock knob towards the “unlock” position until it feels loose. Use the coarse focus control to achieve a rough focus of the star (see **Fig. 4**).
6. Rotate the mirror lock knob towards the “lock” position and adjust the tension to a firm feel; this action serves to lock in the coarse focus.

**Important Note:** *Do not use or bump the coarse focus knob once you have set the coarse focus. If you do so, repeat steps 5 and 6 above to reset the coarse focus.*

7. Press the Focus key (Number key “4”). “Focus Control: Speed: Fast” displays. Press the Up or Down Scroll keys to cycle through the four speed options. Press ENTER to select the desired speed. Or press one of the following Number keys after pressing the Focus key to change the speed:

Key #	Speed	Key #	Speed
1 or 2	Fine	6 or 7	Medium
3, 4 or 5	Slow	8 or 9	Fastest

8. Use the Arrow keys to bring the star into fine focus.
9. You may need to repeat this procedure when you change eyepieces.

## Use with Meade De-Rotater

When using a Meade de-rotater, it is important to attach the microfocuser so that it is backed off slightly from the de-rotater. If the microfocuser is flush against the de-rotater, the assembly will not work properly. This is true also with other accessories that may attach flush against the de-rotater housing.

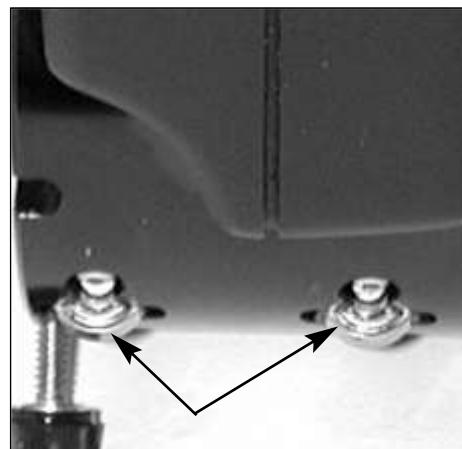
## To Attach the Microfocuser to the De-rotater

Refer to **Fig. 1**. Perform this assembly on a flat surface (such as a desk or a table) before you attach the de-rotater and microfocuser to the telescope.

1. With the de-rotater on a flat surface, thread on the adapter ring until it just touches the housing; then back off the adapter ring (i.e., turn it counter-clockwise) one full revolution as shown in **Fig. 6**.
2. Place the microfocuser over the ring with the "hump" of the microfocuser in the 12:00 position as shown in **Fig. 7**.
3. Using the provided hex key, tighten to a firm feel one of the three microfocuser set screws against the adapter ring as shown in **Fig. 8**. Take care not to tighten or loosen the adapter ring as you position and tighten the microfocuser in place.
4. Tighten to a firm feel the other two microfocuser set screws.
5. Attach the de-rotater to the rear cell of the telescope.



**Fig. 4:** Microfocuser and 1.25" diagonal prism with eyepiece completely assembled. Microfocuser shown attached to a Meade LX200 telescope.



**Fig. 5:** Microfocuser ball bearings.



**Fig. 6:** Back off the adapter ring one full revolution.



**Fig. 7:** Place the microfocuser over the adapter ring. Notice the orientation of the microfocuser.



**Fig. 8:** Tighten the three microfocuser set screws to a firm feel.

If you have a question concerning use of the **Meade Zero Image-Shift Microfocuser**, call the Meade Instruments Customer Service Department at (800) 626-3233. Customer Service hours are 7:00 AM to 6:00 PM, Pacific Time, Monday through Friday.



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