

INSTRUCTION MANUAL

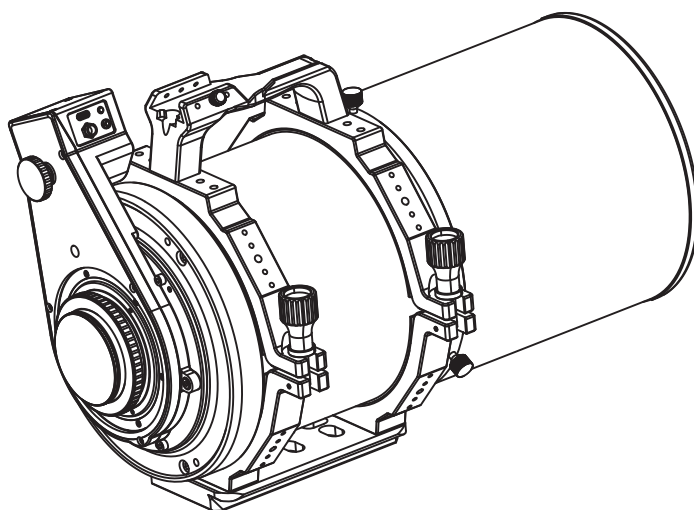
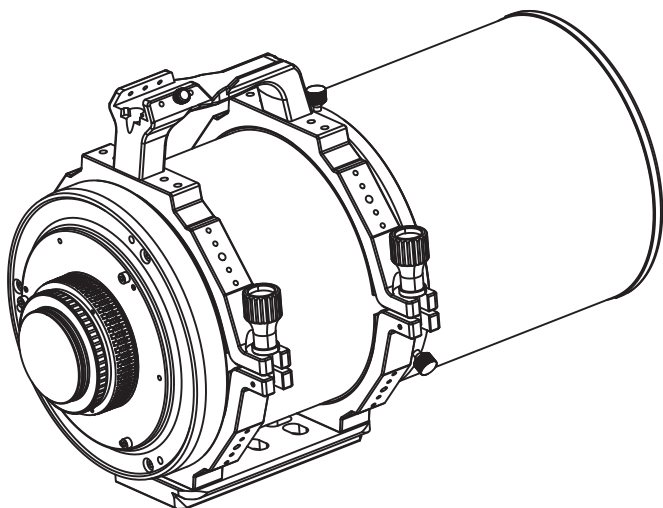


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INTRODUCTION

Take time to read through this manual before embarking on your journey through the Universe. It may take a few observing sessions to become familiar with your telescope, so you should keep this manual handy until you have fully mastered your telescope's operation. The manual gives detailed information regarding each step as well as needed reference material and helpful hints guaranteed to make your observing experience as simple and pleasurable as possible.

Your telescope is designed to give you years of fun and rewarding observations. However, there are a few things to consider before using your telescope that will ensure your safety and protect your equipment.



Warning



⊠ Never look directly at the sun with the naked eye or with a telescope (unless you have the proper solar filter). Permanent and irreversible eye damage may result.

⊠ Never use your telescope to project an image of the sun onto any surface. Internal heat build-up can damage the telescope and any accessories attached to it.

⊠ Never use an eyepiece solar filter or a Herschel wedge. Internal heat build-up inside the telescope can cause these devices to crack or break, allowing unfiltered sunlight to pass through to the eye.

⊠ Never leave the telescope unsupervised, either when children are present or adults who may not be familiar with the correct operating procedures of your telescope.

CARING FOR THE TELESCOPE

⊠ The telescope must be stored correctly to ensure proper functionality and longevity. Always place the dust caps onto the telescope when not in use.

⊠ Cleaning the telescope optics can be done with a lint free cloth. Do not use abrasive materials or aggressive chemicals as these will damage the optical surfaces. Small amounts of dust can collect onto the telescope front lens over time. This will not affect the performance and should only be cleaned if it has accumulated.

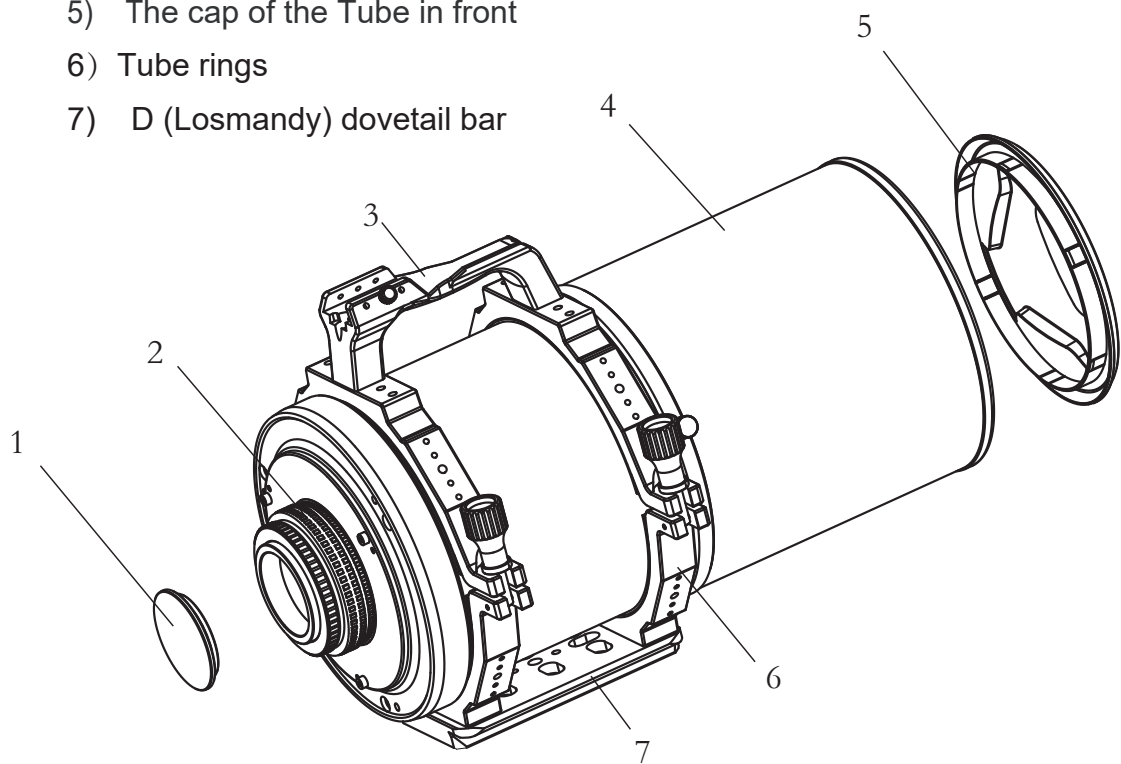
⊠ Avoid touching the front element of the telescope.

⊠ Do not submerge the telescope or any parts in the water.

⊠ Do not dismantle the telescope. There are no user serviceable parts inside this telescope.

Parts description

- 1) the cap of the Tube in back
- 4) M77X0.75 focusing Helicoid ring adapter
- 3) Handle (with the finder mount)
- 4) The telescope with dew cap
- 5) The cap of the Tube in front
- 6) Tube rings
- 7) D (Losmandy) dovetail bar



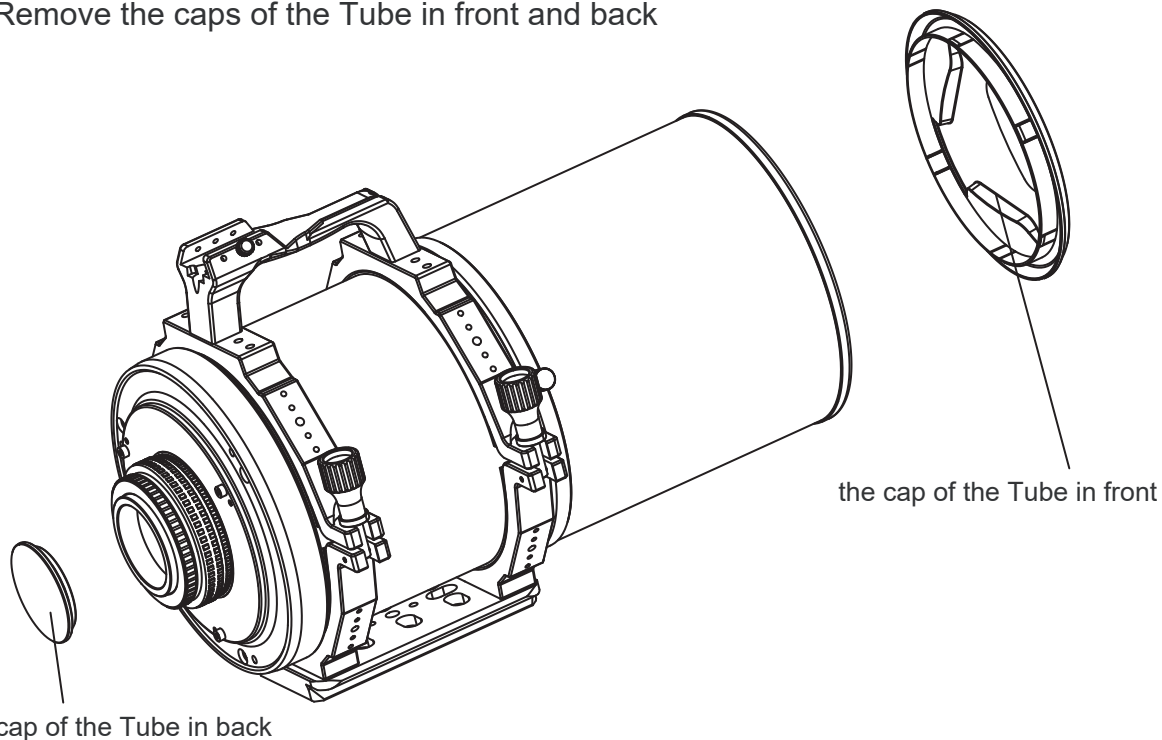
Telescope specifications

Optical Design.....	Catadioptric
Aperture (mm).....	150 mm (5.9 in)
Focal Length	600 mm (23.62 in)
Focal Ratio.....	4
Tube Rings.....	(D Style) dovetail plate
Optical Coatings.....	Fully multi-coated
Fully Illuminated Field	44 mm (1.73 in)
Optical Tube Length(include camera adapter).....	44.5cm (1.75in)
Optical Tube Weight.....	kg(lbs)

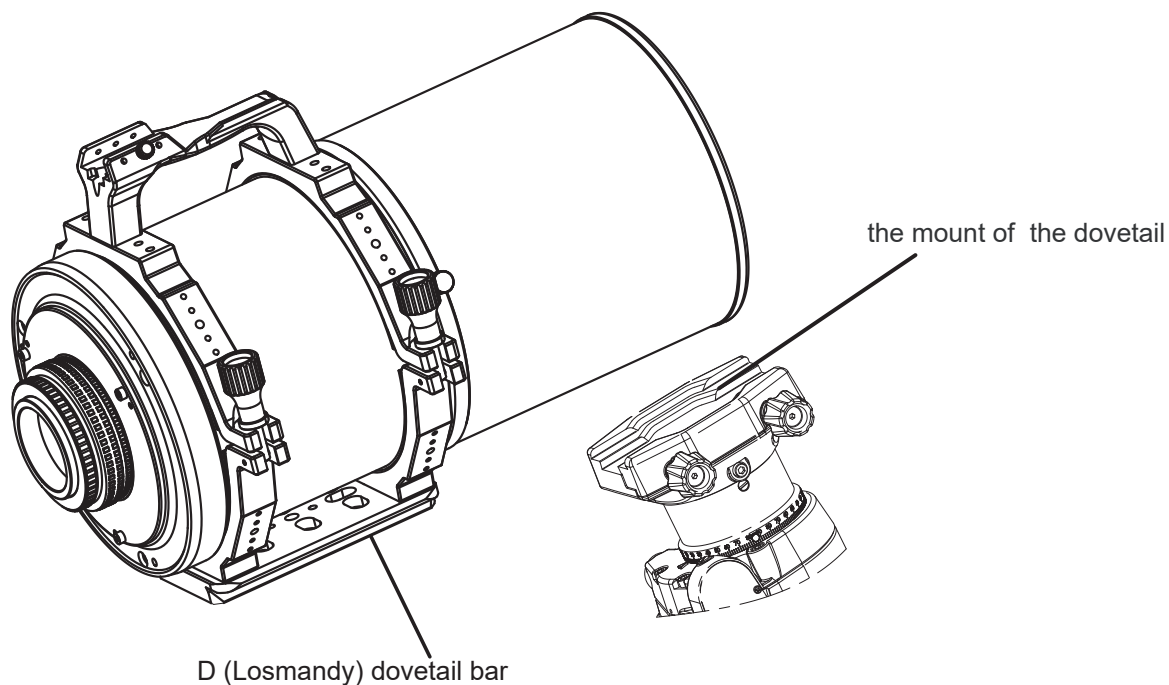
ASSEMBLY

Attaching the Telescope Tube to the Mount

1. Remove the caps of the Tube in front and back



2. Attach the tube assembly to the mount of your choice using either the dovetail or 1/4" threaded hole mounting



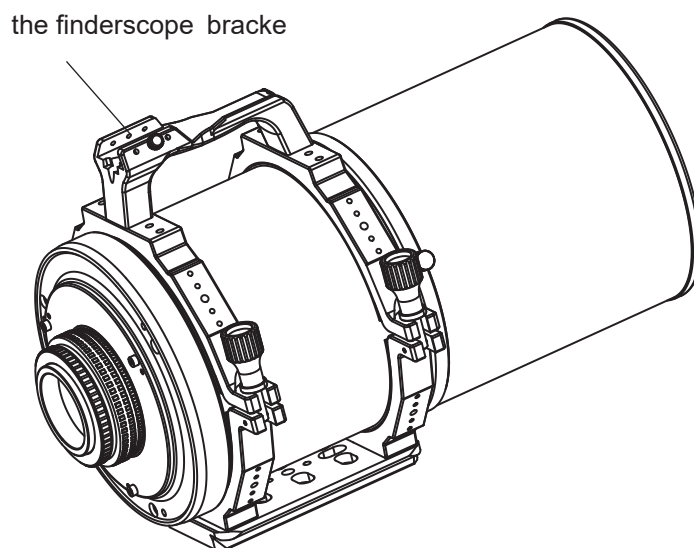
The telescope is equipped with a dovetail mounting bar that is compatible with most telescope mounts. (Sold separately.)

When using a traditional photo tripod, attach the telescope firmly on the photo tripod or photo tripod adapter with its 1/4" screw.

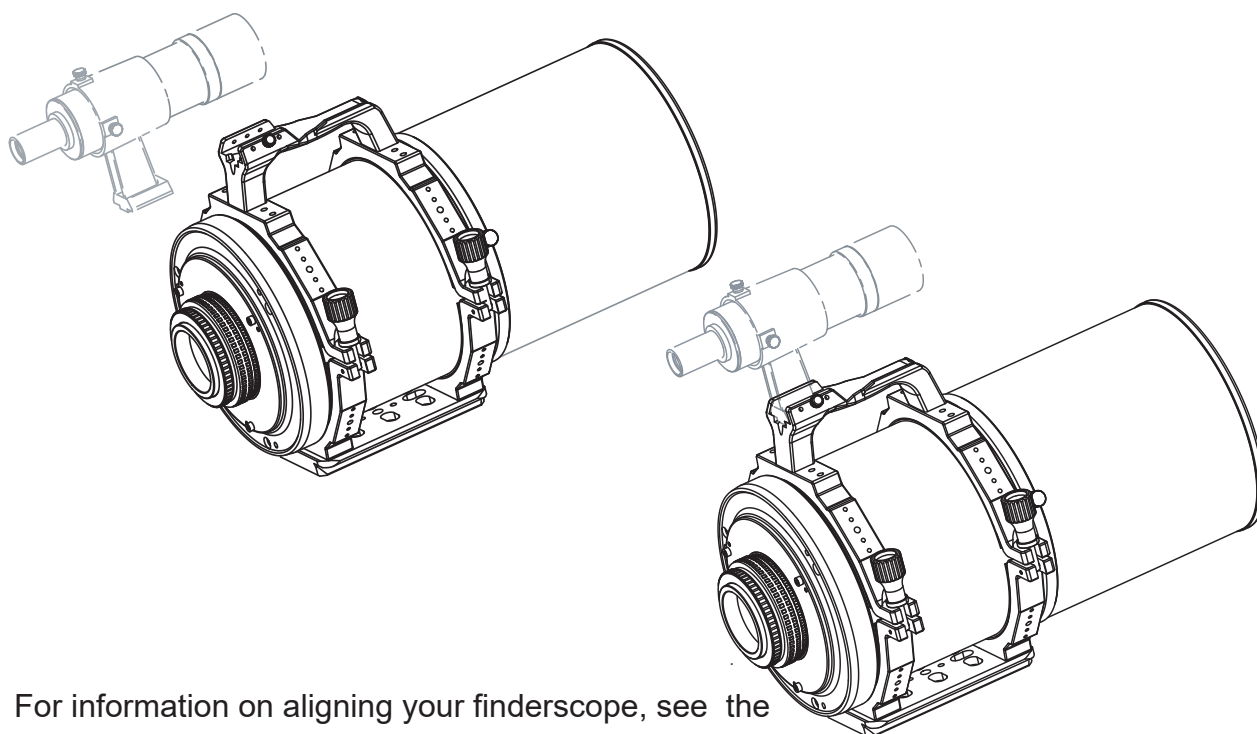
Installing the Finderscope

To install the finderscope onto the telescope you must first mount the finderscope through the finder bracket and then attach it to the telescope.

This product's clamp ring has a finderscope bracket on it. It can be equipped with dovetail bracket there is a small bracket with a set screw in it. This is where the dovetail finderscope bracket will be mounted.



1. Locate the mounting bracket near the front (open) end of the telescope.
2. Loosen the set screw on the mounting bracket on the telescope
3. Slide the finder bracket (attached to the finderscope) into the mounting bracket on the handle.
4. The finderscope bracket will slide in from the back. The finderscope should be oriented so that the objective lens is toward the front (open) end of the telescope.
5. Tighten the set screw on the mounting bracket to hold the finderscope in place.

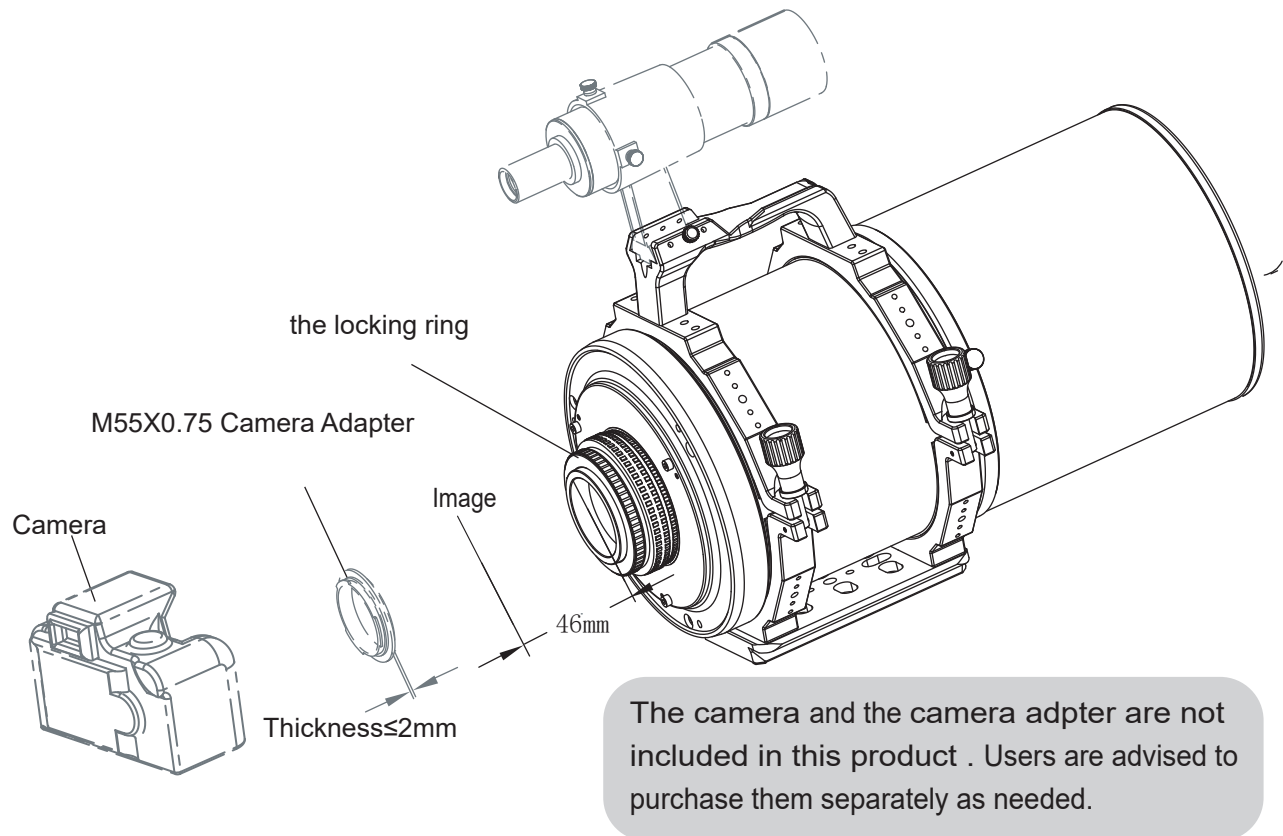


For information on aligning your finderscope, see the instruction of the finderscope

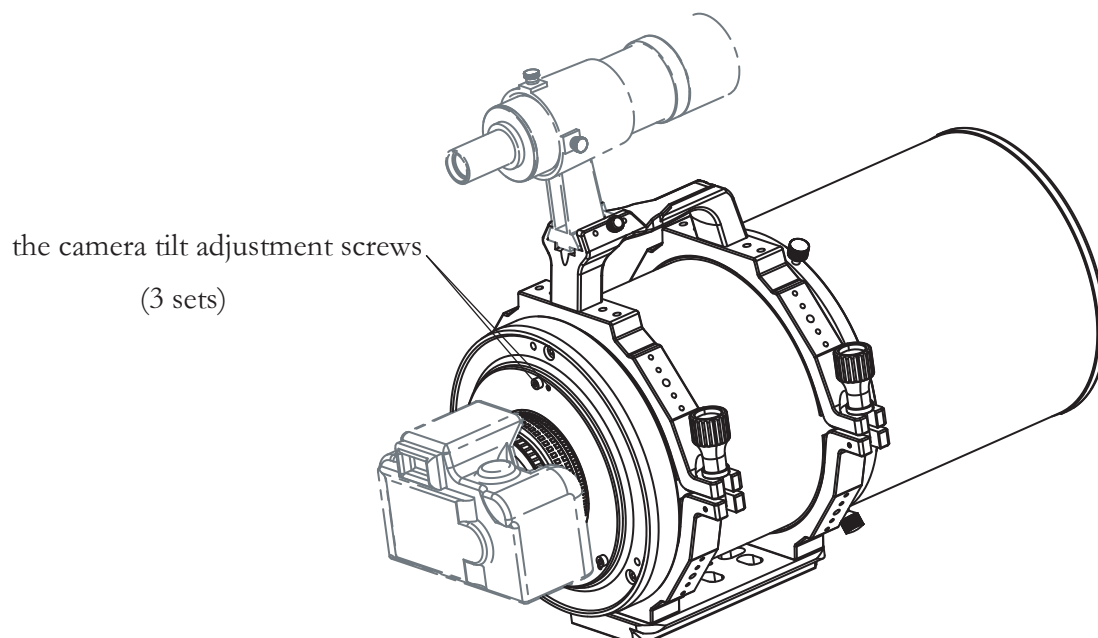
Installing the camera

The interface for installing the camera ring is M55X0.75, with a back focal length of 46mm. A thin M55X0.75 camera ring must be selected

1. Screw the thin M55X0.75 camera mount ring to the connection port
2. Mount the camera on the camera ring
3. If the direction is not the desired one, release the locking ring, adjust the camera position circumferentially to the required direction, and then tighten the locking ring.



4. There are 3 sets of camera tilt adjustment screws on the rear seat. If you need to adjust the camera tilt during shooting, you can do so by turning the 3 sets of screws.

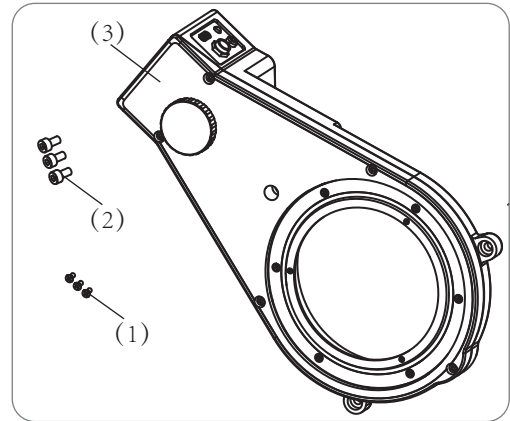


Installing and using the electric focusing component

This section describes the installation and operation of the electric focusing component during the upgrade from manual focusing to electric focusing.

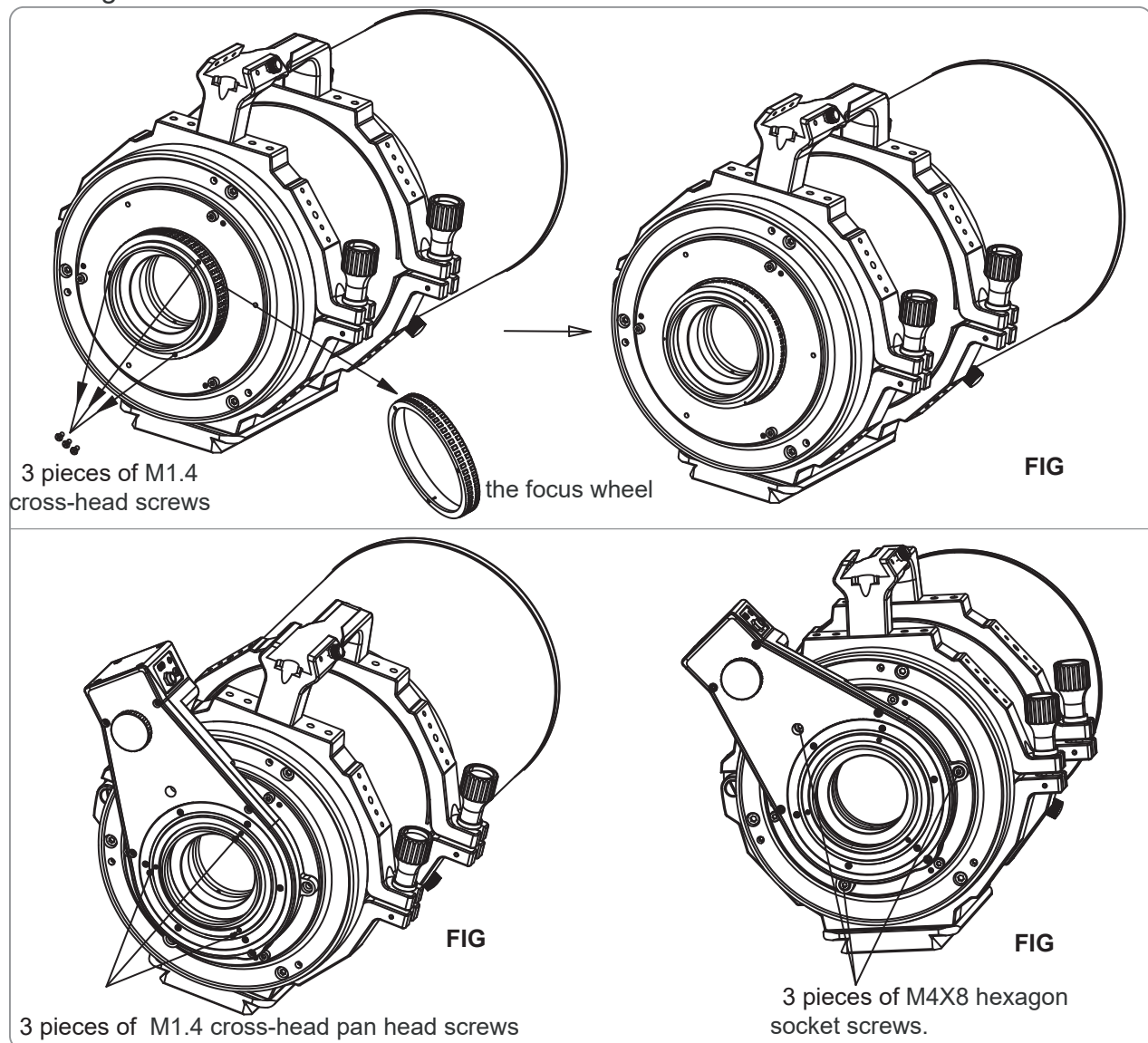
The electric focusing component includes :

- (1) 3 pieces of M1.4 cross countersunk screws,
- (2) 3 pieces of M4X8 hexagon socket screws,
- (3) The electric focusing component.



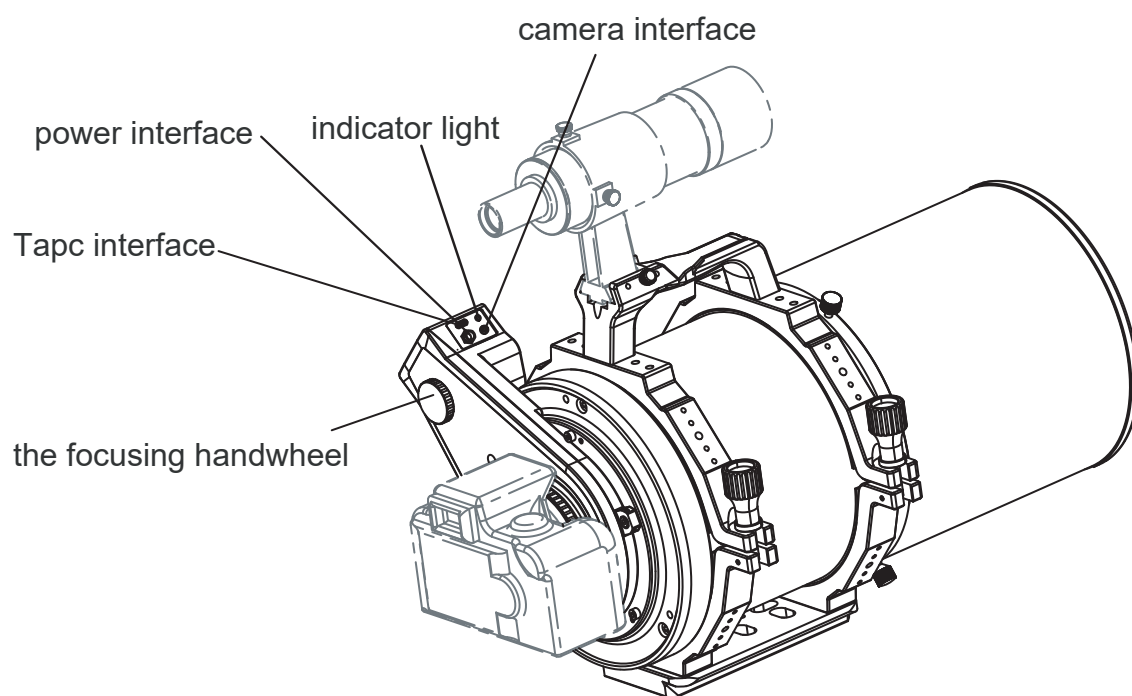
Installing

1. Unscrew 3 pieces of M1.4 cross-head screws on the focusing Helicoid ring adapter
2. Remove the focus wheel
3. Mount the large pulley from the electric focusing component onto the focusing Helicoid ring adapter and secure it with 3 pieces of M1.4 cross-head pan head screws
4. Install the electric focusing mechanism onto the rear seat using 3 pieces of M4X8 hexagon socket screws. Ensure that the clearance between the fixed base and the large pulley is uniform in the circumferential direction, and that the protruding part of the electric focusing mechanism does not obstruct the text on the rear seat



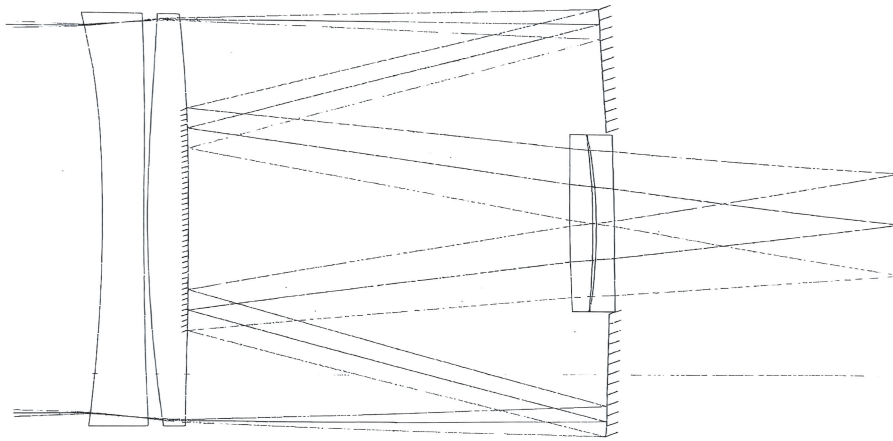
Using

1. The interfaces of the electric focusing component include power interface, Tapc interface, camera interface, and indicator light
2. Use a 12V DC power supply for power supply
3. When the motor is powered on, it cannot be manually adjusted; In the power-off state of the motor, it can be manually adjusted through the focusing handwheel.
4. Control the motor operation through a mobile application.



TELESCOPE BASICS

A telescope is an instrument that collects and focuses light. The nature of the optical design determines how the light is focused. Known as Catadioptric telescope ,It works by lenses and mirrors.



A cut away view of the light path of the refractor optical design

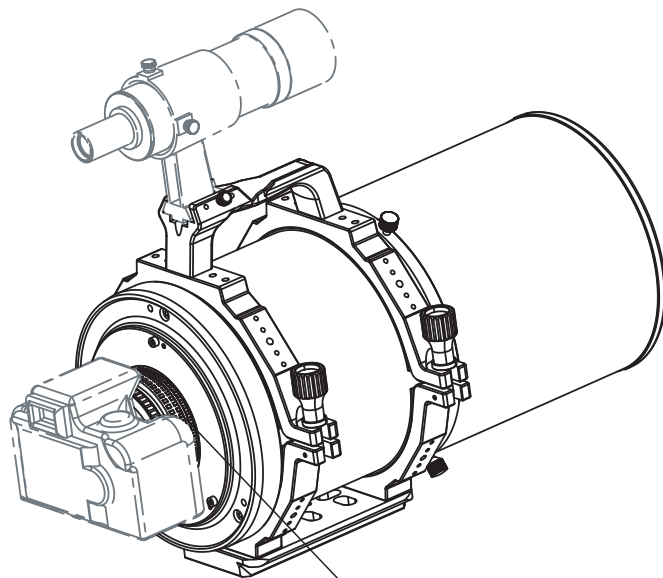
Focusing

To focus your telescope, simply turn the focus knob located back of the tube. Turning the knob clockwise allows you to focus on an object that is farther than the one you are currently observing. Turning the knob counterclockwise from you allows you to focus on an object closer than the one you are currently observing.

This product is available in two configurations: 1.Manual focusing() , 2.Electric focusing()
(In the power-off state of the motor, it can also be manually focused)

Manual focusing

Slowly turn the focus knob of the focusing Helicoid ring adapter one way or the other, until the image is perfectly sharp.

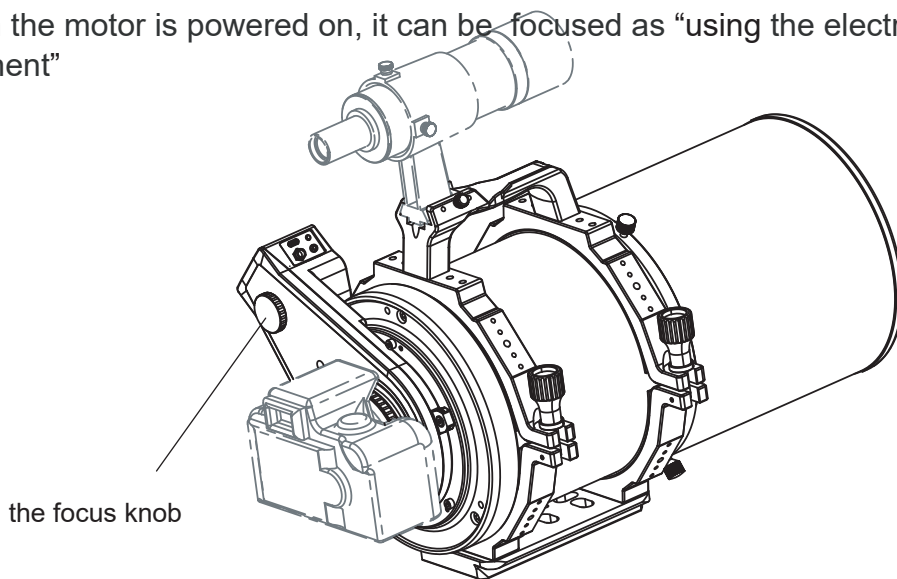


the focusing Helicoid ring adapter

Electric focusing

1. In the power-off state of the motor, it can be manually focused through the focusing handwheel. Slowly turn the focus knob one way or the other, until the image is perfectly sharp.

2. When the motor is powered on, it can be focused as “using the electric focusing component”



The image usually has to be finely refocused over time, due to small variations caused by temperature changes. This often happens when the telescope has not yet reached outside temperature.

Refocusing is almost always necessary when you change any accessory of the telescope.

Calculating Magnification

You can change the power of your telescope just by changing the eyepiece (ocular). To determine the magnification of your telescope, simply divide the focal length of the telescope by the focal length of the eyepiece used. In equation format, the formula looks like this:

$$\text{Magnification} = \frac{\text{Focal Length of Telescope (mm)}}{\text{Focal Length of Eyepiece (mm)}}$$

Let's say, for example, you are using the 20mm eyepiece. To determine the magnification you simply divide the focal length of your telescope (the telescope has a focal length of 400mm) by the focal length of the eyepiece, 20mm. Dividing 400 by 20 yields a magnification of 20 power.

Although the power is variable, each instrument under average skies has a limit to the highest useful magnification. Most observing is done in the range of 20 to 35 power for every inch of aperture.

Cooling the telescope

Telescopes require time to cool down to outside air temperature. This may take longer if there is a big difference between the temperature of the telescope and the outside air. This minimizes heat wave distortion inside telescope tube (tube currents). Your telescope would require at least 20 minutes cooling off to outside conditions. Tip: use this time for planning your session and mount accessories.

General Observing Hints

When working with any optical instrument, there are a few things to remember to ensure you get the best possible image.

- Never look through window glass. Glass found in household windows is optically imperfect, and as a result, may vary in thickness from one part of a window to the next. This inconsistency can and will affect the ability to focus your telescope. In most cases you will not be able to achieve a truly sharp image, while in some cases, you may actually see a double image.
- Never look across or over objects that are producing heat waves. This includes asphalt parking lots on hot summer days or building rooftops.
- Hazy skies, fog, and mist can also make it difficult to focus when viewing terrestrially. The amount of detail seen under these conditions is greatly reduced. Also, when photographing under these conditions, the processed film may come out a little grainier than normal with lower contrast and underexposed.
- If you wear corrective lenses (specifically glasses), you may want to remove them when observing with an eyepiece attached to the telescope. When using a camera, however, you should always wear corrective lenses to ensure the sharpest possible focus. If you have astigmatism, corrective lenses must be worn at all times.

Photographic observations

The conditions described of seeing apply to both visual and photographic observations.

1. Choose suitable weather and location for observation
2. Confirm that the matching camera connector has been installed
3. Choose the target object you want to observe.
4. Choose a suitable camera. This telescope is equipped with a dedicated camera connector: the camera interface is M55X0.75. After installing the camera connector, the rear focal length of the telescope is 44mm and the image height is 44mm. To ensure the imaging quality of the telescope, the selected camera must meet this parameter requirement. Cameras that do not meet this parameter requirement will affect the imaging quality of the telescope and cannot be used.
5. If the camera needs to be adjusted in the circumferential direction after installation, please release the camera locking ring, rotate the camera to the desired position, and then lock the locking ring
6. If the camera requires axial tilt adjustment, please adjust the 3 sets of screws, 3 locking screws, and 3 fixing screws at the back of the lens barrel to adjust them together. Until the requirements are met. Then ensure that the 3 locking screws are in the locked state and the 3 fixing screws are in the tightened state.

Care and Cleaning of the Optics

While your telescope requires little maintenance, there are a few things to remember that will ensure your telescope performs at its best.

Occasionally, dust and/or moisture may build up on the exposed lens of your telescope. Special care should be taken when cleaning any instrument so as not to damage the optics.

If dust has built up on the lens, remove it with a brush (made of camel's hair) or a can of pressurized air. Spray at an angle to the mirror for approximately two to four seconds. Then, use an optical cleaning solution and white tissue paper to remove any remaining debris. Apply the solution to the tissue and then apply the tissue paper to the mirror. Low pressure strokes should go from the center of the mirror to the outer portion. Do NOT rub in circles!

You can use a commercially made lens cleaner or mix your own. A good cleaning solution is isopropyl alcohol mixed with distilled water. The solution should be 60% isopropyl alcohol and 40% distilled water. Or, liquid dish soap diluted with water (a couple of drops per one quart of water) can be used.

To minimize the need to clean your telescope, replace all lens covers once you have finished using it. Since the telescope tube is NOT sealed, the cover should be placed over the opening when not in use. This will prevent contaminants from entering the optical tube

