

Equatorial mount TSEQ25

User manual



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WARNING!

Never look at the sun with a telescope or any other optical device. Permanent and irreversible damage would be done to your eyes, which could lead to blindness.

For solar observation, there are special solar filters that are mounted in front of the front lens of the telescope. Please also consider the small finder scope, which must also be covered or equipped with a solar filter.

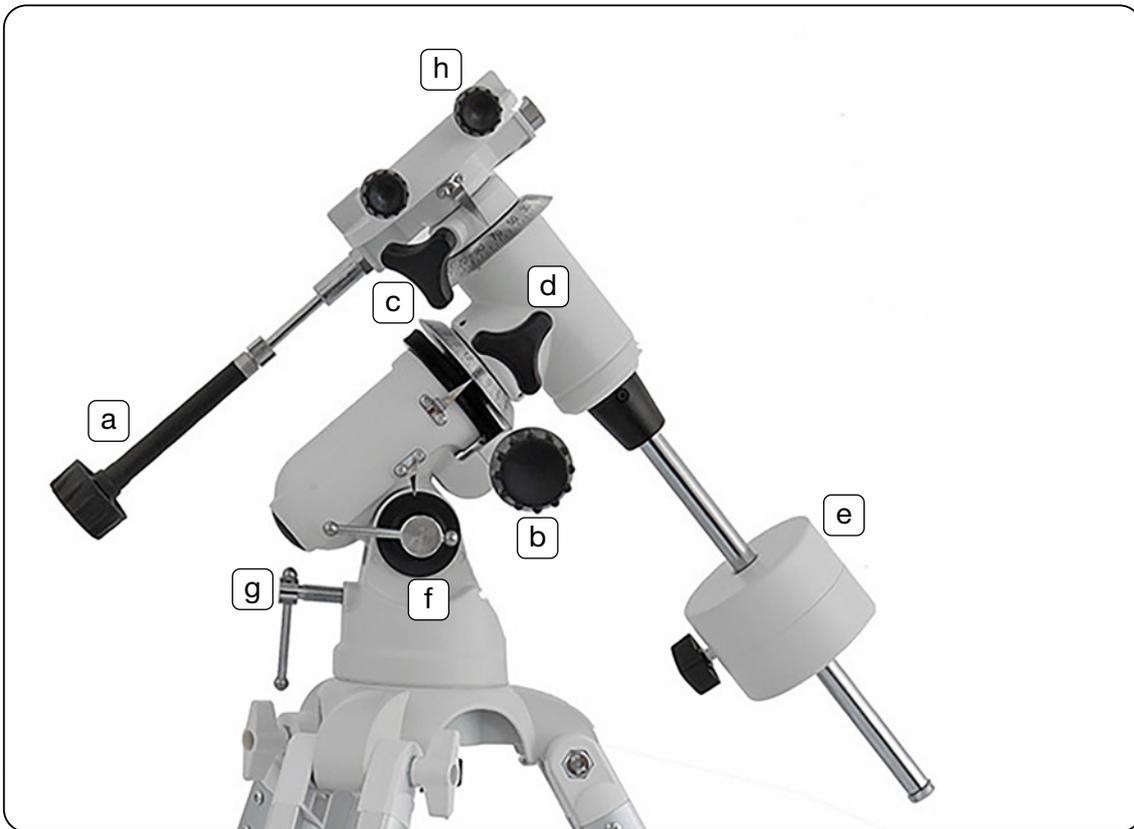
Do not use eyepiece solar filters, as they may crack and cause you to lose your eyesight.

Also, please do not use the telescope for solar projection. The heat generated inside may destroy the telescope/eyepiece.

Never leave the telescope unattended, especially when children are around. They could endanger themselves and others through lack of knowledge.

Only use the telescope for the type of observation described in these instructions.

Overview



- a. Declination fine adjustment*
- b. Right ascension fine adjustment*
- c. Clamping of the declination axis*
- d. Clamping of the right ascension axis*
- e. Counterweight*
- f. Clamping pole height adjustment*
- g. Pole height adjustment*
- h. Dovetail clamp for telescope*

Note: Some images in this manual show a different mount.

Assembling the tripod

Unpack all parts and place them ready for assembly.

Adjust the tripod legs to a comfortable (working) height for you and make sure that the adjusted length/height of the legs is the same.



Attach the tripod legs to the tripod head using the screws provided.

Make sure that the holders for the storage plate face inwards.

Plug the storage plate and holder together as shown in the picture and lock the connection by turning the storage plate by 60°.



Installing the mount head

Place the mount head on the tripod, insert the retaining screw from below through the hole in the Tripod Head and tighten the mount head. Hold it in position until the screw is fully tightened.

Attachment of counterweight rod, counterweight and shafts

Attach the counterweight rod and turn the mount head so that the rod points downwards.

Then lock both axes with the clamping screws. Then remove the knurled screw at the lower end of the counterweight rod.

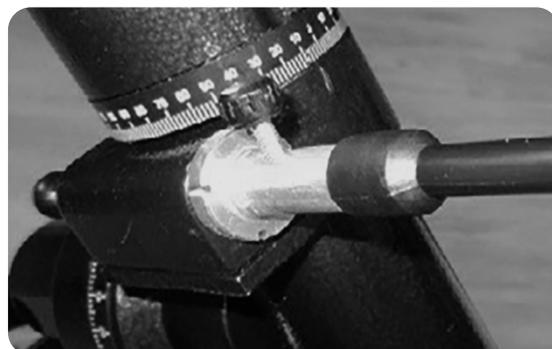
Slide the counterweight onto the rod and fix it with the clamping screw. Then reinsert the knurled screw.

Attention: Make sure to check if the clamping screw of the weight is tightened properly before releasing the weight! Risk of injury!



Next, attach the two flexible shafts to the mount. To do this, remove the protective rubber caps from the shaft axles of the mount, if present.

Loosen the clamping screw of each shaft and slide the shaft onto the axis so that the clamping screw is on the flattened side of the axis.



Adjusting the latitude

Set the latitude of the mount to the latitude of your observation site.

To do this, loosen the toggle screw **f** and use the screw **g** to set the correct polar height.

Tighten the toggle screw **f**.



Balancing telescope and mount

In order to minimize the load on the mount and to be able to move the telescope as easily as possible, all parts on the mount (counterweight, tube with accessories on the eyepiece side, etc.) should be balanced, i.e. brought into equilibrium.

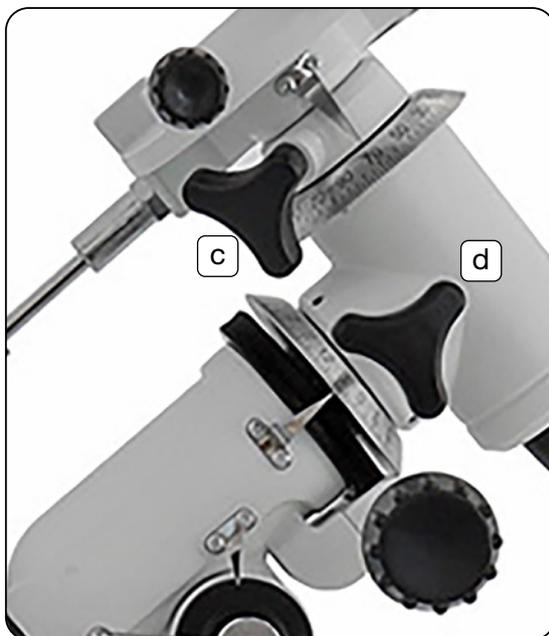
To do this, set up the telescope with the mount so that you have enough space to slew the telescope without the tube hitting objects in the vicinity.

Now first open the clamping screw on the upper axis (Dec axis, **c**).

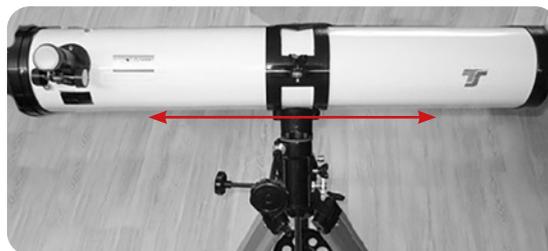
Move the counterweight to the lower end of the counterweight rod and clamp it there.

Turn the RA axis so that the counterweight is at the lowest position and clamp the axis in this position.

Loosen the clamp of the upper axis (Dec axis, **c**), bring the telescope tube into the horizontal position and check whether the tube remains in this position or moves to one side due to an imbalance.



If the tube is not in balance, first clamp the Dec axis with the tube in a horizontal position. Slightly loosen the clamping screw(s) of the tube clamp. Move the tube to compensate for the imbalance. To check, loosen the Dec axis again and again while holding the tube to prevent unintentional swiveling. Tighten the clamping screw of the tube clamp(s) when the tube is balanced.



Now slew the tube to the position shown in the adjacent picture (parallel to the RA axis). The inclination may differ from that shown in the image.



Make sure that the Dec axis (clamping screw c) is locked and open the clamping screw of the RA axis (d).

Loosen the clamping screw of the counterweight. Swivel the telescope until the Dec-axis is horizontal. Hold the counterweight to prevent it from slipping on the rod.

Find the counterweight position where the weight and telescope are balanced and clamp the weight at this position. It should no longer be possible to move it. Return the telescope to the position shown in the first image on this page and clamp the RA axis.

Your telescope is now balanced on the mount.



Polar Alignment

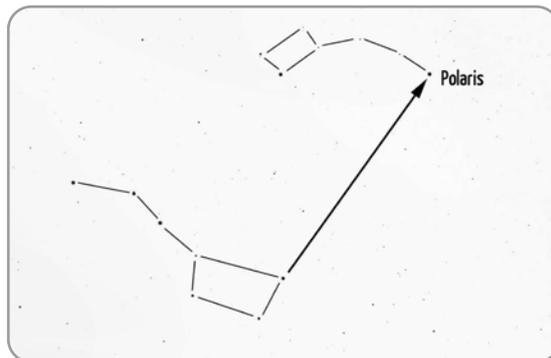
A parallactic mount is set up so that the RA axis is parallel to the Earth's axis. With correct alignment, the apparent motion of the celestial bodies caused by the Earth's rotation can be compensated by moving only the RA axis.

Set up the tripod with the mount so that the right ascension axis points as exactly as possible to the north. A compass facilitates the alignment.

Look for the constellation „Big Dipper“ in the night sky. The imaginary connecting line of the two rear stars points to the North Star („Polaris“).

The northern celestial pole is in the immediate proximity of this star.

When doing this, the tripod should be as level as possible (tripod head level). If the ground is uneven, you can extend the tripod legs to different lengths to compensate for the unevenness.



Be careful when setting the latitude as well as the alignment to north, because the more precise the alignment is, the longer you can track the telescope to an object only by moving the RA axis.

Look along the Dec axis. If this axis points to Polaris, you have aligned your mount accurately enough for visual observing. You can now loosen the axis clamps and slew the telescope to the desired object. Then lock the axes. Now you can fine tune with the two flexible shafts and then use only the RA shaft to track the telescope.

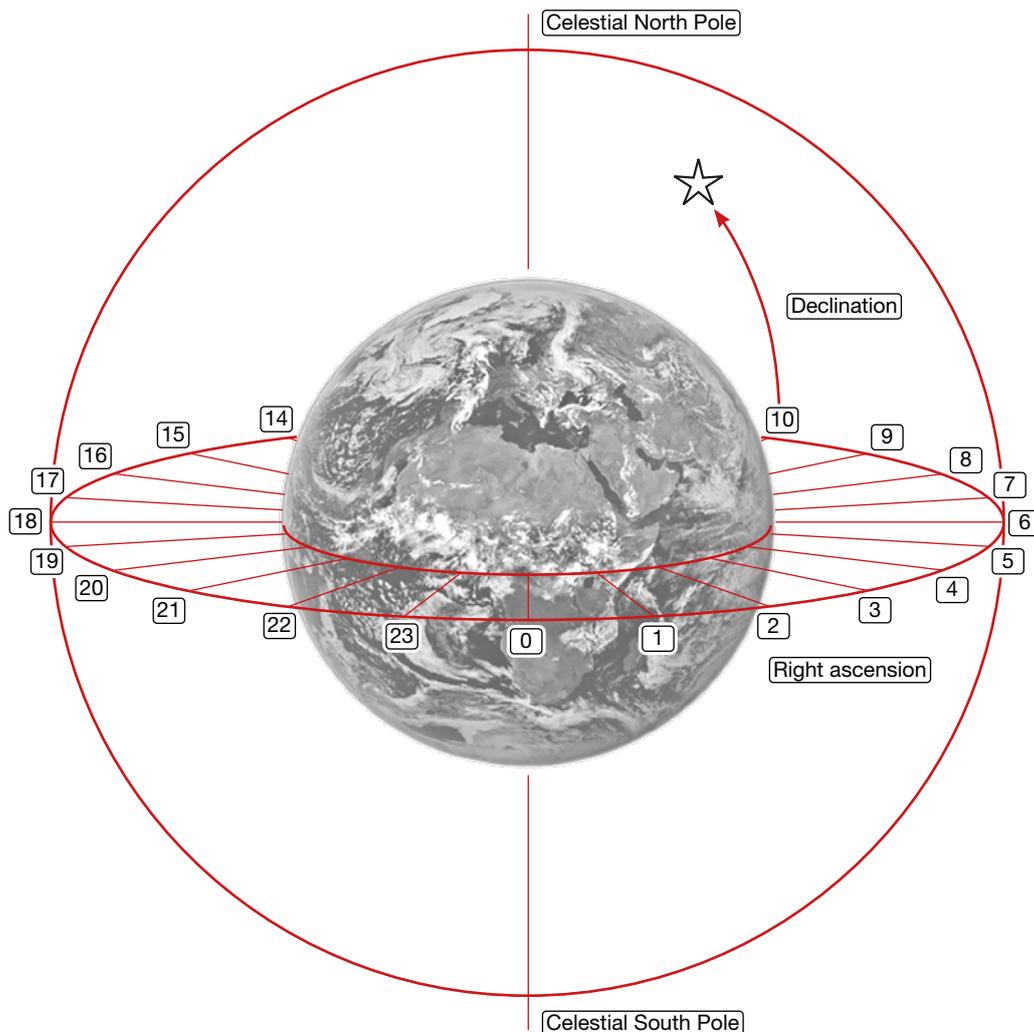
Celestial coordinates

On Earth, we have a coordinate system that can be used to accurately describe any location on Earth using two coordinates. These are latitude (north or south angular distance from the equator) and longitude (east or west angular distance from the prime meridian).

In the sky, declination corresponds to latitude. Thereby „+“ stands for the northern, „-“ for the southern hemisphere. The longitude is represented by the right ascension.

However, there is no value for east and west, but a continuous count in hours and minutes indicated (0 to 24 hours). You will find these values on the pitch circles of your mount.

You can - assuming a precise setup and alignment of the mount - locate objects approximately based on the coordinates or use star charts exclusively.



Tracking motor (sold separately)

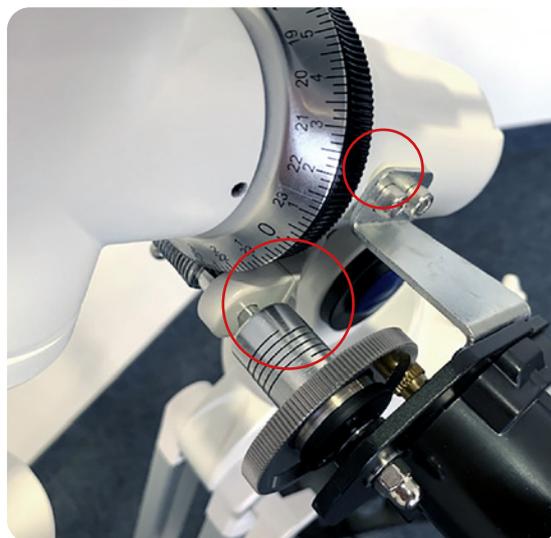
The apparent motion of celestial objects results from the Earth's rotation. To compensate for this motion and to keep the observed object in the telescope's field of view, the mount must be tracked during observation.

A motor set consisting of a tracking motor and a manual control is available for the TSEQ25. The motor is mounted on the RA axis and does the tracking.

Mounting the tracking motor

The motor set includes all the parts you need for mounting. The assembly is done in a few minutes. Proceed as follows.

1. Remove the flexible shaft of the RA axis.
2. unscrew the grub screws in the flexible coupling until they no longer protrude into the axial bore.
3. Remove the two allen screws next to the worm wheel of the RA axis.
4. Slide the flexible coupling onto the worm shaft, making sure that the grub screw is positioned over the flattened side of the shaft. Carefully tighten the grub screw.



5. Slide the motor shaft onto the flexible coupling and rotate the motor unit so that the holes of the holder are located over the threaded holes below the worm wheel.
6. Fasten the holder to the mount with the two hexagon socket screws.
7. Carefully tighten the grub screw on the motor side of the flexible coupling.
8. Connect the manual control to the motor and to the power supply.

Using the tracking motor

- 1) Roughly point the telescope at the object to be observed as usual (loosening the axis clamps, manual slewing, locking the axes).
2. Switch on the manual control. When the voltage is sufficient, the operation LED lights up.
3. Set the desired tracking direction (northern or southern hemisphere).

The motor will now track the mount.

4. To center the target object in the eyepiece, use the manual drive in the declination axis.

The RA axis is moved with the four keys of the manual control. You can use these to move the axis in both directions. Two speeds are available in each case.

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