Instruction manual

Omegon® Advanced 5” & 6” EQ-320

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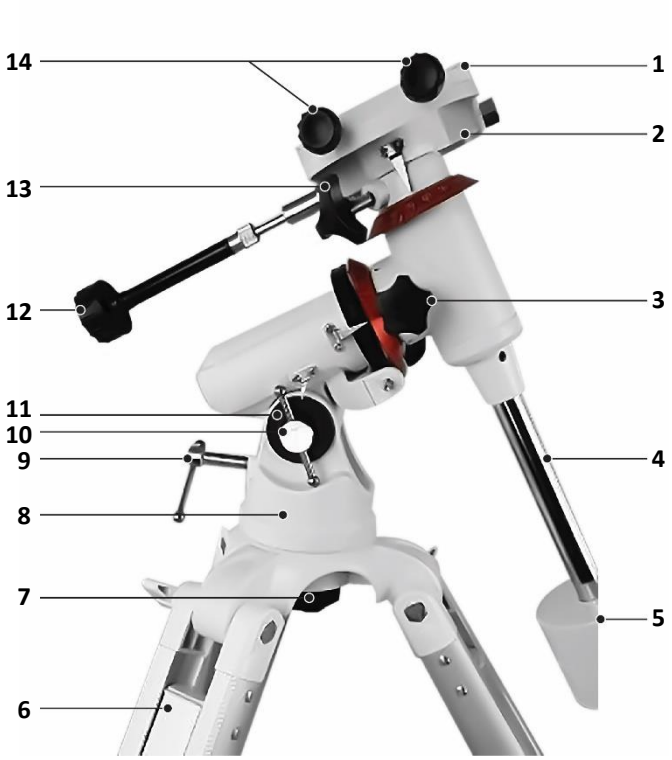
Omegon® Advanced 5” & 6” EQ-320

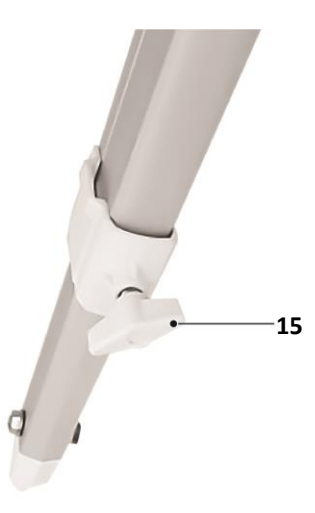
Thank you for choosing our “EQ-320” mount. Please read this manual carefully so that you can implement the relatively simple handling without errors.
Omegon EQ-320 is a parallactic, or equatorial, telescope mount. Its advantage is that the system can be aligned with the celestial pole and thus essentially only has to be adjusted in the right ascension (hour axis). The first steps towards short-exposure astrophotography are therefore possible. This means that the Moon, Jupiter and Saturn can be tracked. The mount sits on an extendable aluminium tripod and provides a very stable support for smaller telescopes.

1. Mount and tripod.

1.1. What’s included?

1. Prism mount for telescope;
2. Declination (elevation axis);
3. Right ascension clamping screw;
4. Counterweight rod;
5. Counterweight;
6. Tripod;
7. Tripod centre screw;
8. Polar wedge;
9. Polar height adjustment;
10. Polar height clamping lever;
11. Polar height/latitude scale;
12. Manual declination fine focus adjustment knob;
13. Declination clamping screw;
14. Clamping screw for telescope;
15. Tripod screw;
16. Tripod spreader;
17. Tripod tray.



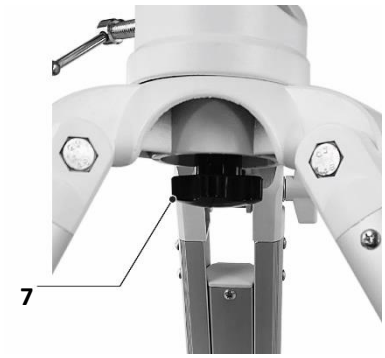


1.2. Setup and alignment.

1.2.1. Setting up the tripod.

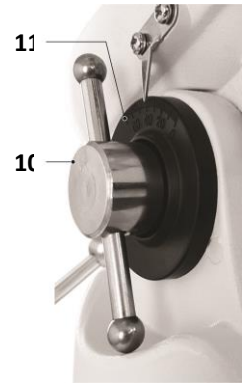
First check that all the necessary parts are present against the list of control elements. Remove the tripod (6), loosen the tripod screws (15) for the extendable tripod legs and pull them out to the desired length. Now tighten the tripod screws again so that the extended tripod legs are securely clamped. Do not overtighten, as this could damage the construction. Please ensure adequate levelling. Now place the tripod tray (17) onto the middle of the tripod spreader (16) and twist until it engages.

The Omegon EQ-320 mount can now be fitted to the tripod. Use the tripod centre screw (7) to secure the mount to the tripod.



1.2.2. Polar height adjustment.

Now screw the counterweight rod (4) into the rear part of the elevation axis (2) facing the ground until it is firmly seated. Before you push the counterweight (5) onto the counterweight rod (4), the polar height, i.e. the latitude from which you are viewing, has to be set. To do this, loosen the clamping lever screw (10) and adjust the inclination of the mount with the polar height adjustment screw (9) until the pointer for the angle graduations is aligned with the latitude from which you are viewing. *(This is naturally not an exactly-determined value, but is absolutely sufficient for visual observations)*



1.2.3. Attaching the counterweight.

The counterweight (5) can now be pushed onto the counterweight rod (4). To do this, first remove the locking screw at the end of the counterweight rod, push on the counterweight and lock it with the wing bolt on the counterweight rod near the locking screw. A flexible shaft is available for both axes for control of the manual fine focus adjustment knobs.

These flexible shafts are simply pushed onto the respective screw shaft and secured with the union nuts.

Attention:

Never fit the optical tube assembly beforehand. Without a counterweight, the balance in the axis would be missing and the optical tube assembly could collide with the tripod. The optics are always the last part to be fitted during the assembly of a telescope system and the first part to be removed during dismantling.

2. Balancing the optical tube assembly (OTA).

In order to reduce the wear on the worm gears in the mount, it is important that the loads that the mount has to support, in particular the optical tube assembly and the counterweights, are well balanced. Balancing should always be repeated or checked before each observation.

2.1. The right ascension axis.

Start by balancing the right ascension (RA) axis, also referred to as the 'hour axis'. To do this, bring the counterweight rod into the horizontal position. Counterweights and optical tube assembly are now facing one another horizontally. Now carefully release the clamp of the RA, holding the counterweight rod firmly in your hand. Now carefully release the counterweight rod and observe whether everything remains horizontal – the ideal situation – or in which direction the RA moves. If the optical tube assembly drops down, the counterweights on the counterweight rod must be pushed further outwards until the system remains horizontal. If the counterweights drop down, they are too heavy and have to be pushed further inwards on the counterweight rod, i.e. in the direction of the optical tube assembly. The aim here is also to ensure that the axis remains horizontal.

2.2. The optical tube assembly (OTA).

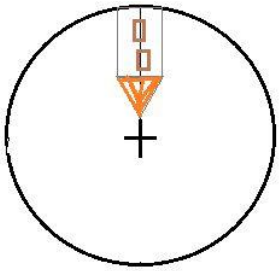
Proceed in the same way to balance the telescope tube. The optical tubes are naturally heavier at the end in which the optics are mounted, i.e. either the main mirror in reflector telescopes or the lens group in refracting telescopes. To do this, leave the telescope system in the same position as when balancing the RA. For the sake of safety, hold the optical tube assembly firmly here so that it cannot collide with anything when the DEC clamp is released. Now carefully release the clamp of the elevation axis (declination = DEC). If the optical tube assembly remains horizontal, everything is perfect. If it tilts to one side, however, it is too heavy on that side and must be moved in the tube clamps towards the lighter side. In this case, the clamping screws of the tube clamps have to be loosened slightly.

3. Adjustment of the viewfinder.

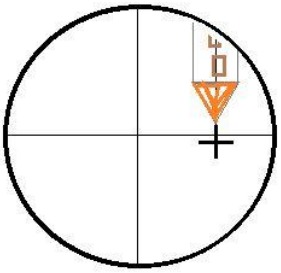
The viewfinder, whether optical with crosshairs or as a red dot finder, naturally has to be aimed at the same point in the sky as the telescope itself, otherwise the objects in the sky cannot be found. Proceed as follows:

- Set up the telescope on a bright day in such a way that you can aim the telescope at a very distant object, such as a church spire, electricity pylon or something similar.
- There should be a good few kilometres between the object and your telescope.
- Install the eyepiece with the longest focal length available into the focuser of the telescope. Now release the axis clamps – after all, the system is balanced – and aim the telescope at the chosen distant object.
- To do this, simply take a bearing with your eye along the tube and as soon as the prominent point in the landscape appears to contact the upper edge of the tube, clamp the axes again.

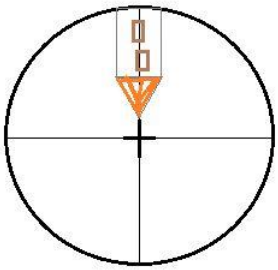
Please never fasten too tightly. Now position the object in the middle of the eyepiece field of view using the manual fine focus adjustment knobs. This all takes place without the use of any possible motorised tracking. With a red dot finder, a red dot is visible and not the crosshairs. With a red dot finder, the image is not upside down, as it has only a transparent projection surface and no lenses.



View through the eyepiece after alignment of the telescope.



View through the optical viewfinder before adjustment.



Viewfinder and telescope are now aligned.

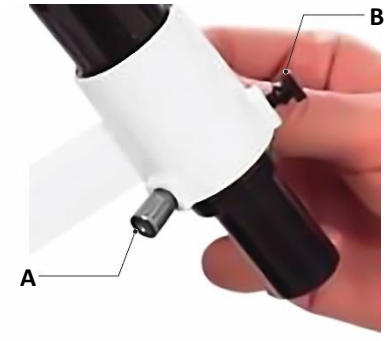
3.1. Optical finder.

Most optical finderscopes have a permanent compression spring (A) and two adjustment screws (B). Adjustment is completed within seconds.

3.2. Red dot finder.

At the front of the red dot finder is the adjustment wheel (E) for the horizontal adjustment, i.e. the azimuth. At the rear end is an identical adjustment wheel for the elevation axis (D). These allow the red dot finder to be adjusted precisely.

(C in this case ON/OFF switch and dimmer)



Attention:

Never use the telescope to look at the Sun! Concentrated sunlight causes serious eye damage. Children may only use the telescope under adult supervision.