

Instruction Manual

omegon



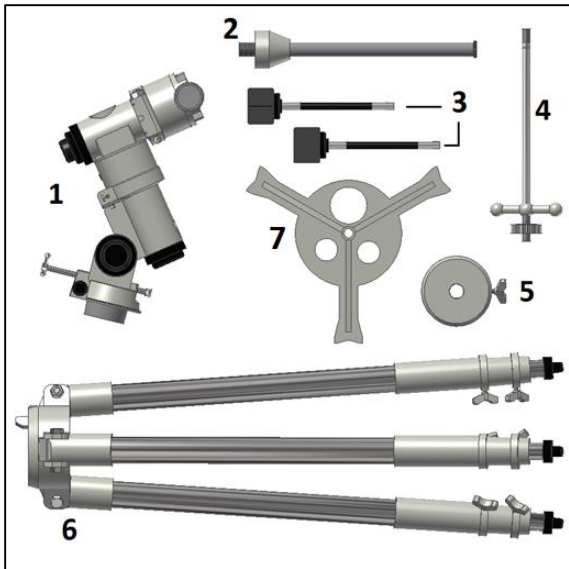
Omegon® EQ-300 Equatorial Mount

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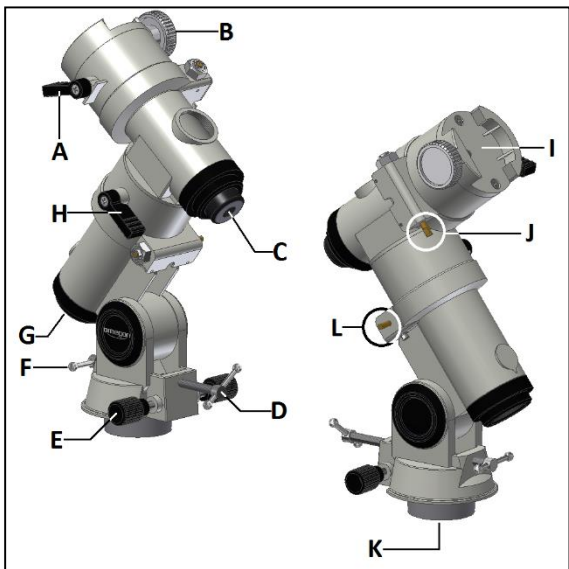
Instruction Manual

Omegon® EQ-300 Equatorial Mount

Congratulations on the purchase of the new Omegon® EQ-300 Equatorial Mount. This is a heavy platform for telescope tubes up to 8" in aperture or 9kg of weight. This heavy-duty equatorial mount is compatible with the Omegon® RA Motor EQ-300 motor set for precise celestial tracking and it also takes the Omegon® EQ-300 illuminated polar finder for precise polar alignment (both optional and not included). The mount is compatible with Vixen-style dovetail-equipped optical tubes.



Parts List.



Mount head features (see page 6).

1. What is included?

1. mount's equatorial head;
2. counter-weight shaft;
3. manual hand controllers;
4. tripod's central shaft;
5. counter-weight;
6. tripod;
7. accessory tray.

2. Getting started

Remove all parts from the boxes. Some boxes may be empty as they are used for packaging purposes only. Start by identifying the mount's features for ease of assembly (see page 6). We recommend to place all parts on a clean flat surface.

3. Assembly.

Start by opening the tripod and extending the 3 tripod legs (Figure 1 and 2). Use the hand knobs to release, extend, and then fix the tripod legs. The tripod should look like in figure 2 with the legs fully extended and well tightened. The tripod's central shaft (Figure 3) is used to fix the accessory tray and to give stability to the tripod. It is only necessary to proceed with the following assembly once. Slide the accessory tray as shown in figure 4. The flat surface should face up, as shown. Insert the supplied washer (figure 5). Please notice that the washer should be placed so that the larger hole diameter faces down (square - detail in figure 5 square). Insert this pre-assembled set in the tripod's central through-hole – letter M (Figure 6 and Figure 7). Fit the supplied locking washer to the shaft slot (Figure 8). A set of pliers is required (not included). When in place it should look like Figure 9. This prevents the full set – tripod's central shaft + accessory tray sliding and falling.

You will not need to repeat this procedure in the future.

3.1. How does the mount work? The mount's equatorial head has two clutches on each axis (Figure 10). Releasing a clutch makes the mount to rotate freely that clutches axis. Place the mount in an up-right position as shown in figure 11. Check if the clutches are tightened - so that mount does not rotate. The two hand-knobs (marked with a circle – Figure 12) should be removed so that when placing the

equatorial head on top of the tripod, the protruding mount post (marked N - Figure 7) is centred to their respective positions. Use the tripod's central shaft to fix the equatorial head to the tripod (Figure 6). Make sure the connection between tripod and mount's equatorial head is solid.

Thread the counter-weight shaft to the mount as shown in Figure 14. Unthread and remove the counter-weight foot-saver (Figure 15) and slide the counterweight as shown in figure 16. Make sure to re-tighten the counter-weight locking knob. Thread the foot saver (at the end of the shaft). Place the manual hand control extensions to both mounts axis (Figure 18). Release the dovetail hand-knob (B – Mount features) and place the optical tube on the slot (optical tube not supplied). Make sure to retighten the dovetail hand knob. You are now ready to use the mount!

The foot-saver is important to avoid the counterweight from slipping down and hitting the ground (check figure 15)!

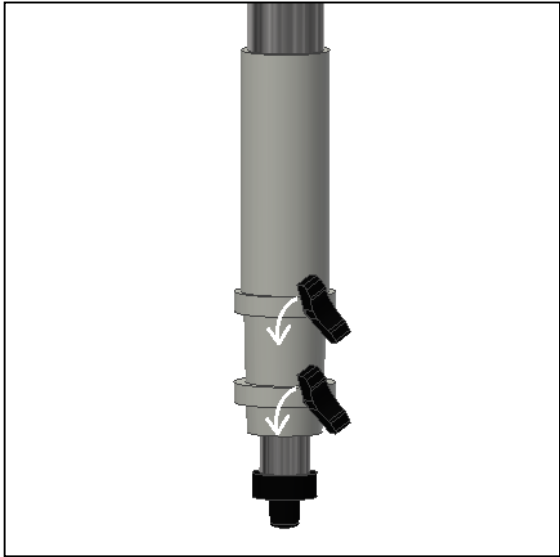


Figure 1. Extend the tripod's legs.



Figure 2. Tripod open legs fully extended.



Figure 3. Identify the tripod's central shaft.



Figure 4. Slide accessory tray.

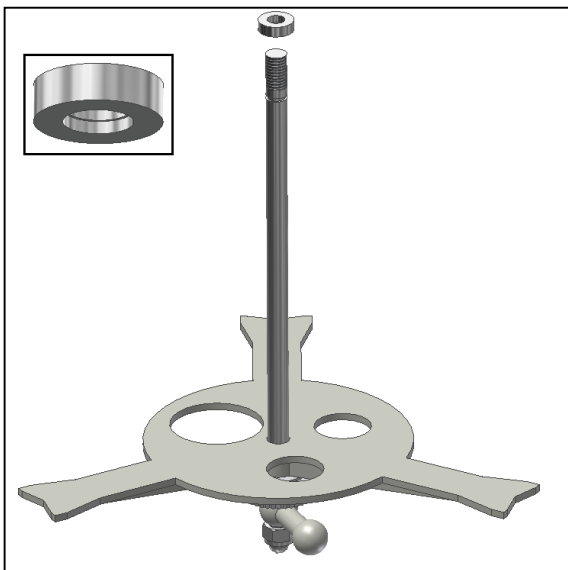


Figure 5. Slide supplied washer in the right direction.

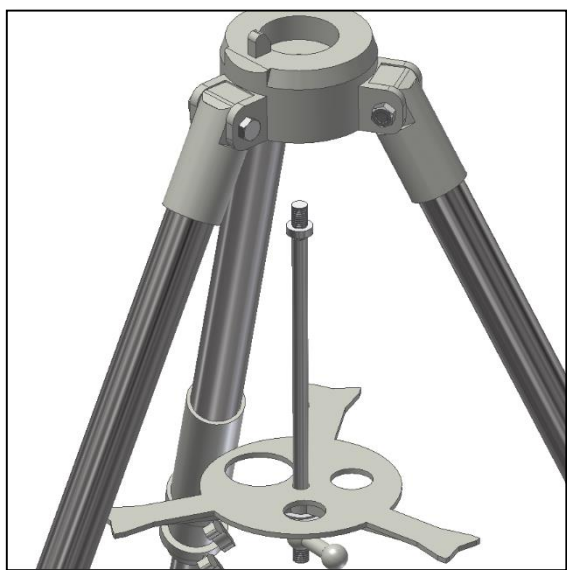


Figure 6. Insert pre-assembled set.

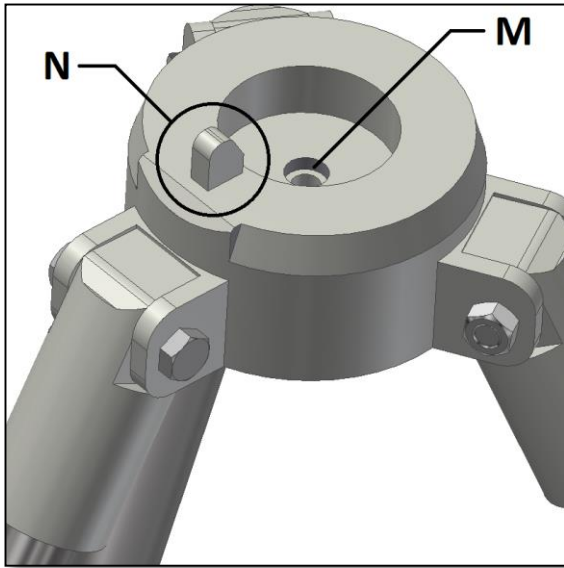


Figure 7. Tripod central hole and post.

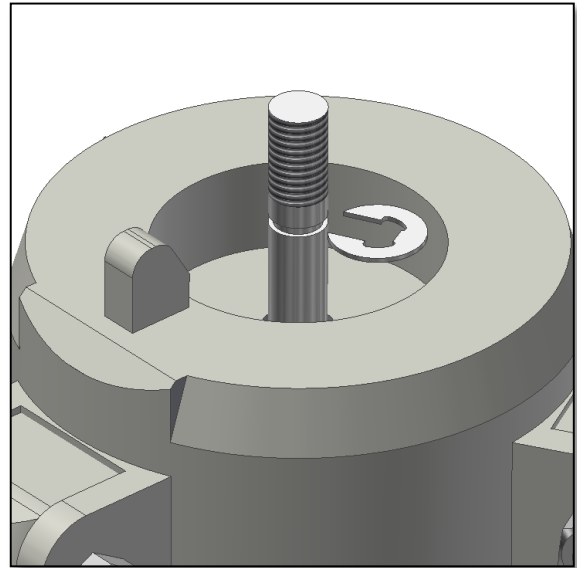


Figure 8. Insert locking washer in the slot.

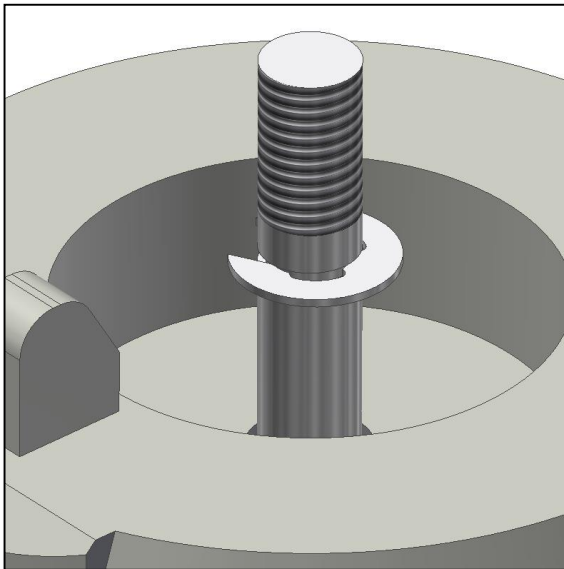


Figure 9. Use a set of pliers if required.



Figure 10. Clutches.



Figure 11. Mount in up-right position.

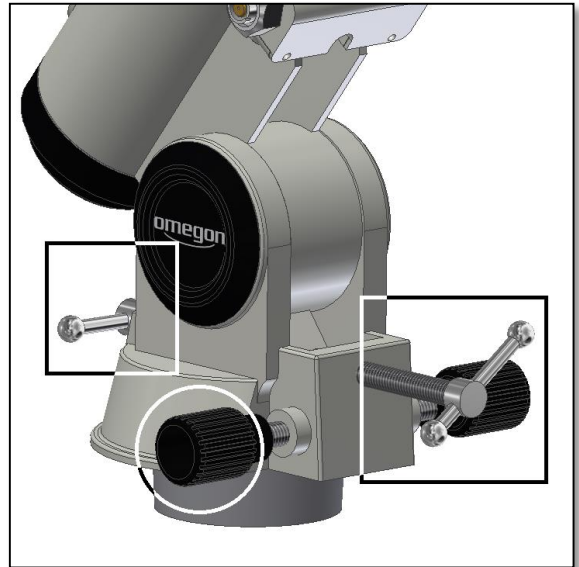


Figure 12. Altitude and azimuth hand-knobs.



Figure 13. Align mount and tripod post.

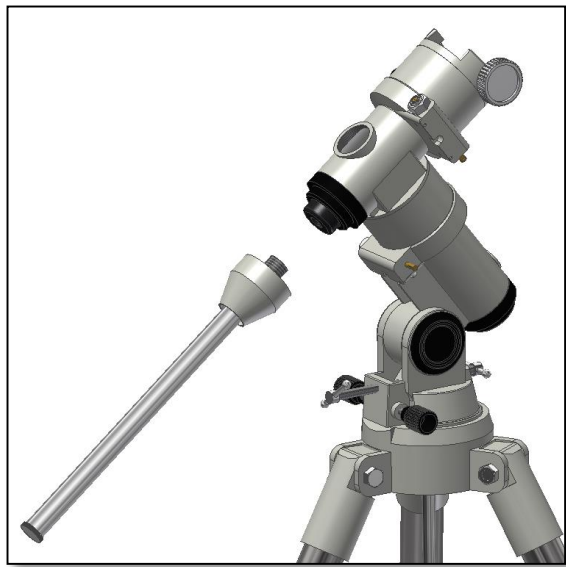


Figure 14. Thread Counter-weight shaft.



Figure 15. Remove foot saver to slide Counter-weight.

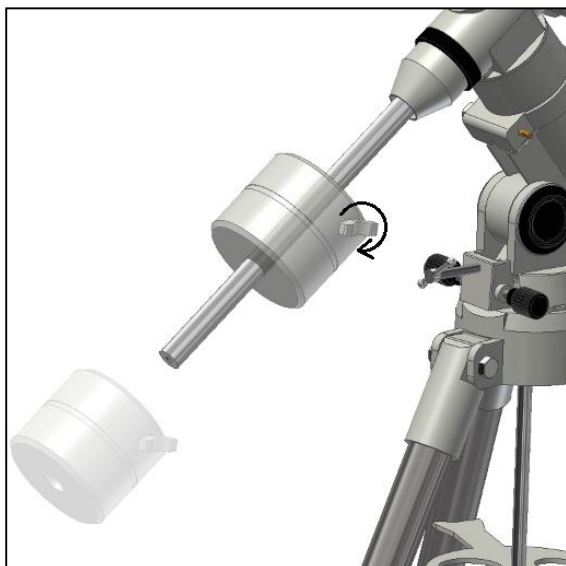


Figure 16. Slide in Counter-weight and thread foot-saver.

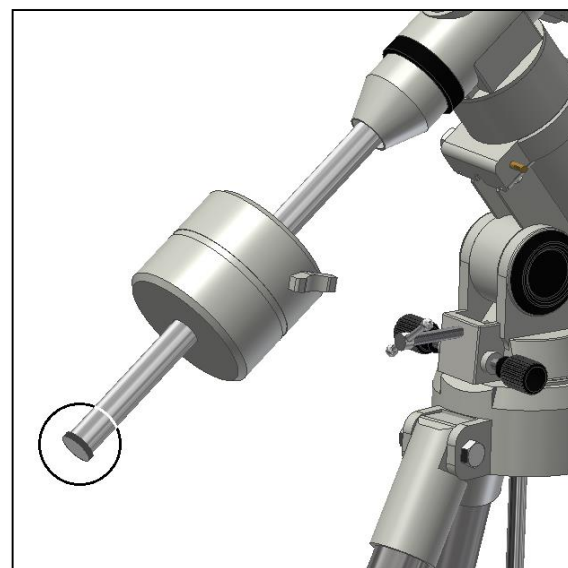


Figure 17. Place both hand controls.



Figure 18. Use the safety locking thumbscrew.

3.1. Mount Features

- A- Dec. clutch locker;
- C- counter-weight shaft thread;
- E- azimuth hand knob;
- G- polar axis;
- I- dovetail slot;
- K- mount base to fit to tripod;

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- M- tripod's central through;

- B- dovetail hand knob;
- D- altitude hand knob (front);
- F- altitude hand knob (back);
- H- R.A. clutch;
- J- Dec axis shaft;
- L- R.A. shaft;

- N- post.

3.2. Balancing the Optical tube (OTA).

To reduce the wear of the mount's worm-and-gear system, it is important to balance the mount. Balancing should be done for every observing session. Start by balancing the R.A. axis (figure 19). Place the counterweight shaft close to a horizontal position by gently releasing the R.A. clutch. Make sure to re-tighten as soon as this position is reached. Make sure the Dec. clutch is locked! If either one of the telescope's tube or counterweight tip to one side of the mount, it means that the mount is out of balance for the RA axis. Release the R.A. clutch slowly and slide the counter-weight on the counterweight's shaft so that it counter-balance the tube's weight. When the R.A. clutch is released a balanced telescope does not tilt to either side of the mount. Proceed in the same way but now for the telescope's tube. Is the tube balanced? Keep the counterweight shaft in the horizontal position and tube as well. Release slowly the Dec. clutch. Observe to which side the tube tilts (front or back?). Slide the tube to balance it (either by releasing the tube's



Figure 19. Balancing the R.A. axis.

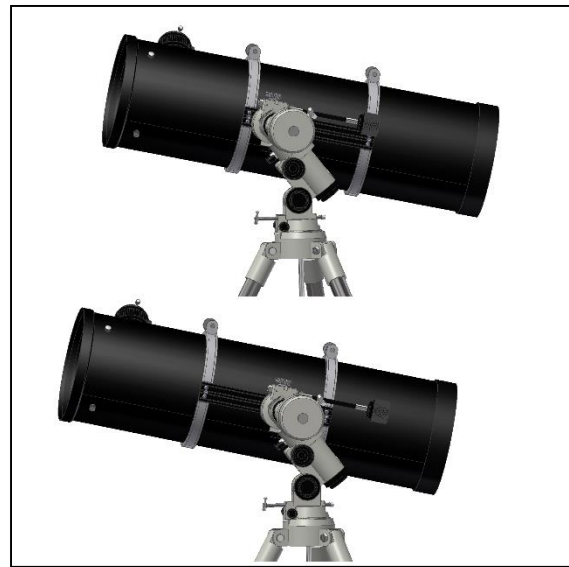


Figure 20. Balancing the telescope tube. rings or sliding the tube's dovetail). For advanced use refined balance is always.

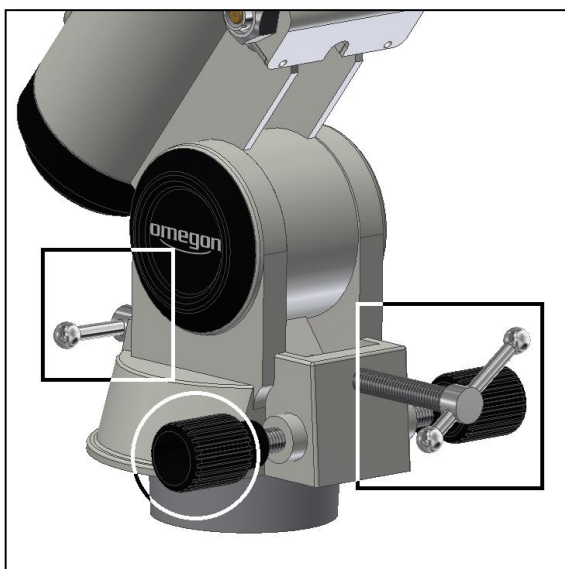


Figure 21. Correct use of the latitude and azimuth hand-knobs.

3.3. Adjusting Latitude and Azimuth

The mount has two sets of hand-knobs to adjust and fix the latitude and azimuth positions. **It is important that these hand-knobs are used for this purpose only and not to center an object in the field of view of the telescope. They should only be used without tube and counterweight!** The mount post (N - Figure 7) should be between the two azimuth hand-knobs positions. Thread the hand knobs so that they push against the post. The post should also be aligned to the North. The azimuth hand knobs are used to make fine azimuth adjustments if necessary, they are also used to fix the position of the mount's azimuth for observations. For the latitude, the other set of hand-knobs is used (square - Figure 21). Always release one and tighten the other! Do so until the required latitude is reached. Tighten both to lock in position. Adjust both azimuth and latitude axis so that the mount's polar axis is roughly aligned with the Earth's polar axis. If necessary rotate the Dec. axis to get an unobstructed view through the mount's polar axis. You should

be able to peek through the back of the mount and see a portion of the sky. Peek at the back of the mount through the central polar axis, the Polar Star should be in the field of view. For polar alignment, using a polar finder is recommended. Precise polar alignment is only necessary for deep sky astrophotography and is not required for visual or planetary astrophotography (more detailed instructions are included in a separate instruction manual for the dedicated EQ-300 polar finder – please check on-line).

3.4. How to use the mount?

As mentioned before, the clutches fix or release both axis. If the mount is correctly polar aligned it is only necessary to release the R.A. and Dec. clutches so that the optical tube is free to point to any direction. **Make sure you only release on clutch at a time!** Release one clutch first and then the other and point to an object (we recommend that you do this during the day), and make sure to lock both clutches. Use the two hand controls (3 from features list) for fine adjustments.

They only work if both clutches are locked. Once the object is centered in the telescope's field of view (a star for example) it will only be necessary (in theory) to use the R.A. hand control to track the object – track is to follow. Once in a while, the Dec. control may also be needed to center the object into the field of view. The same principle applies when using the motorization set. Usually a motor is working continuously to track an object (R.A. motor) while the other (Dec. motor) is stopped and only is activated if the user needs to center the object. In that case pressing one of the Dec. buttons on the motor's hand controller is enough to adjust the object to center it in the field of view. Sometimes it is also necessary to proceed with some corrections in the R.A. axis. If frequent corrections are necessary in both axis (to track a star) it means that the mount is poorly polar aligned.



Questions? Visit our website www.omegon.eu.