Instructions Manual

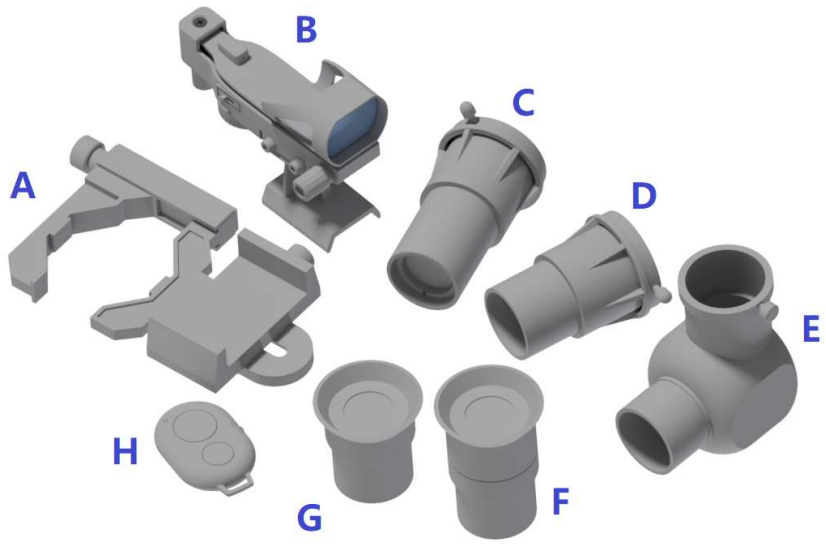
Omegon® Horizon CR 70/700 AZ Bellavista

English version 11.2025 Rev A Art. Nr 80892

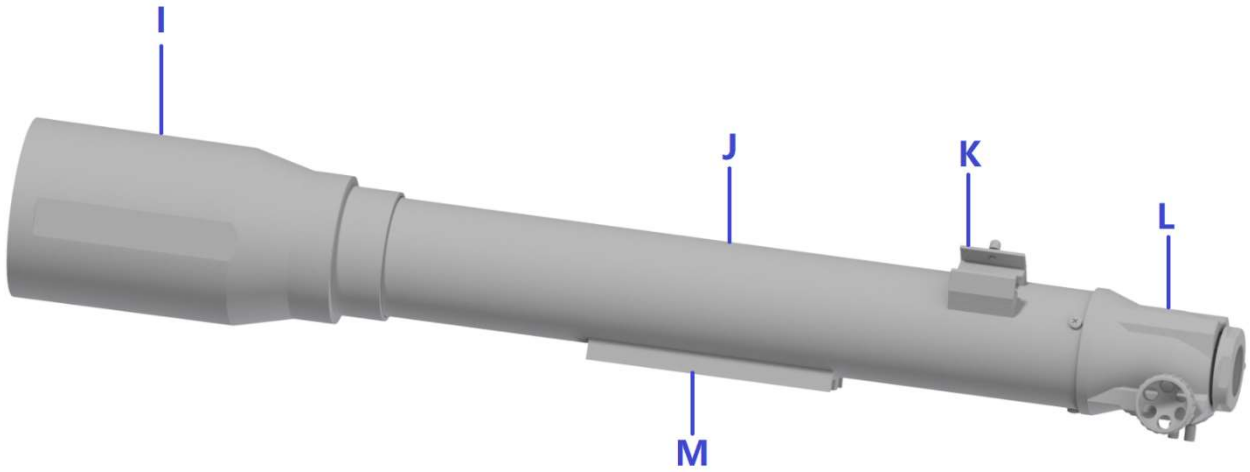
Congratulations on the purchase of the new Omegon® Horizon CR 70/700 AZ Bellavista telescope. This telescope, with its all-metal mount, is ideal for both landscape and astronomical observation. It also offers an unique patented Crayford focuser for smooth focusing.
Paired with its stainless steel tripod, this stable observation platform, for the most demanding users, offers precise fine adjustment controls on both axis. Furthermore, the big clutch knob, on the altitude axel, allows for quickly adjusting friction, for manual pointing.

Included accessories

A - Smartphone adapter;
B - Finderscope;
C - Barlow Lens 2x;
D - Extender;
E - Amici Prism;
F - 25mm Plössl eyepiece;
G - 10mm Plössl eyepiece;
H - Bluetooth Remote Shooter;

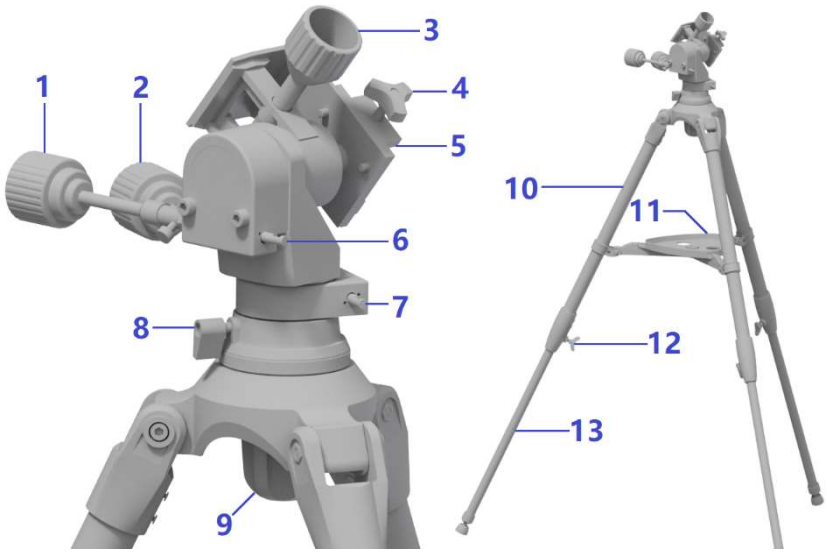


Optical tube (OTA)



I - Dew Shield;
J - Optical tube;
K - Finderscope shoe;
L - Focuser;
M - Dovetail;

Bellavista Alt-Az mount



1 - Altitude fine-adjustment hand control;
2 - Azimuth fine-adjustment hand control;
3 - Altitude Clutch;
4 - Dovetail locking knob;
5 - Dovetail holder;
6 - Altitude axel;
7 - Azimuth axel;
8 - Azimuth clutch;
9 - Mount locking knob;
10 - Top leg (tripod);
11 - Accessory tray;
12 - Fixing hand screw (tripod);
13 - Bottom leg (tripod).

1. Getting Started.

1.1. What is an Alt-Az mount? It is the part of the telescope that allows pointing a telescope's optical tube (also known as OTA) to an object. That object can be, a terrestrial (land) or celestial object. For this, the mount provides movements on two axis, a left-right movement (also called Az – short for Azimuth) and an up-down movement (also called Altitude). Thus the name Alt-Az as a contraption of both Altitude and Azimuth.

Alt-Az mounts are especially useful for visual use. Because of their simple basic movements. By releasing both axis clutches, it allows to quickly and easily point to any object by hand, while providing a comfortable observing position. For precision or fine pointing adjustments, engaging the clutches and using the fine-adjustment hand controls allows to centre objects very easily.

This mount is able to hold optical tubes up to 4kg in weight (using the supplied L-Bracket) and it is especially useful for short OTA.

Did you know?
Professional modern telescopes use a similar Alt-Az mount design even for giant telescopes. These mount allow to point the OTA, with motors and computer aid, to point to celestial objects.

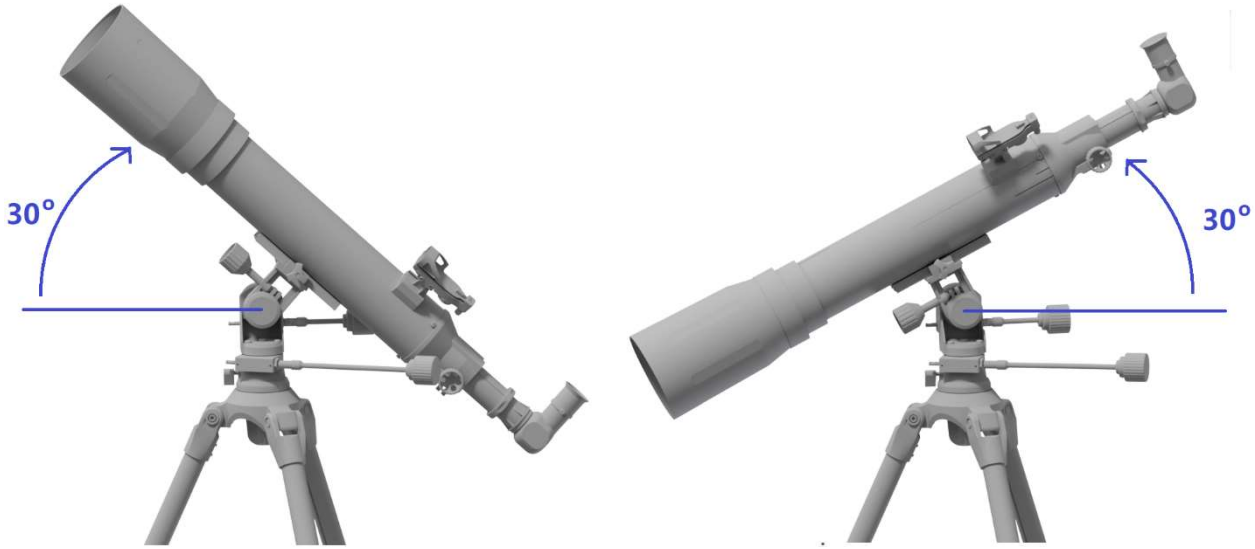
2. "Bellavista. One mount, two modes."

2.1. Landscape use.

The Landscape mode, allows observing, as the name suggests, landscape or land objects.
For this mode, the mount (supplied from the factory already pre-assembled), requires no modifications.
In this mode, recommended for balcony use of landscape objects, the OTA can easily point down or up 30 degrees (of course this depends on the size and weight of the OTA as some balancing constrains may arise).

2.2. What limitations does the Landscape mode have?

Objects in Landscape mode are close to the horizon, such as boats, mountains or cities. In Landscape mode, the OTA remains in a position close to the horizontal. It moves up and down within a range of 30 degrees above and below (actually a total of 60 degrees). This is a safe configuration, meaning that the tube is never pointing totally up (Zenith) or down (ground).



Altitude limit. This range, of around -30 to +30 degrees, allows the OTA to remain more or less balanced to the mount, even if the centre of gravity is a bit off.

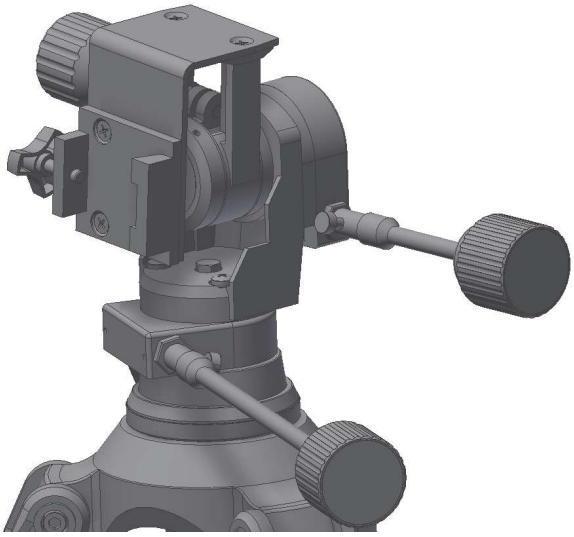
Landscape mode: Use caution when pointing up (or down) with a limit of maximum of *30 degrees!!*

This mode is ideal for terrestrial observing. For astronomy, however, there is another observation mode, which is highly recommended, even for landscape use.

3. Astronomy mode.

The included L-bracket allows a more solid and smoother use in the landscape and astronomy mode. In this mode, the OTA's centre of gravity remains aligned with the mount's Altitude axis.

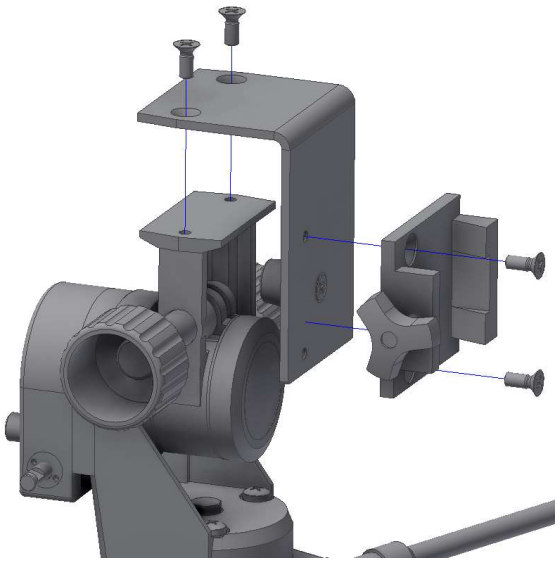
Start by mounting the L-Bracket to the mount as shown below.



4. Mounting the L-Bracket.

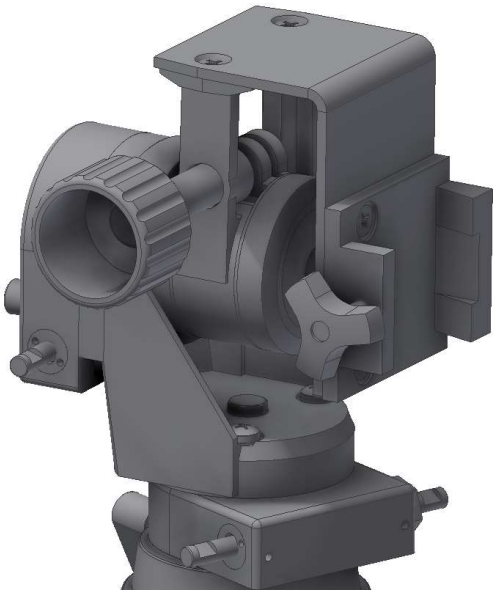
1st. Start by removing the dovetail holder #2 using a screwdriver (not included).
2nd. Place the L-Bracket as shown in the figure and use the supplied screws to fix it to the mount.
3rd. Proceed with fixing the dovetail holder #2 to the bracket.

A screw driver is needed (not supplied).



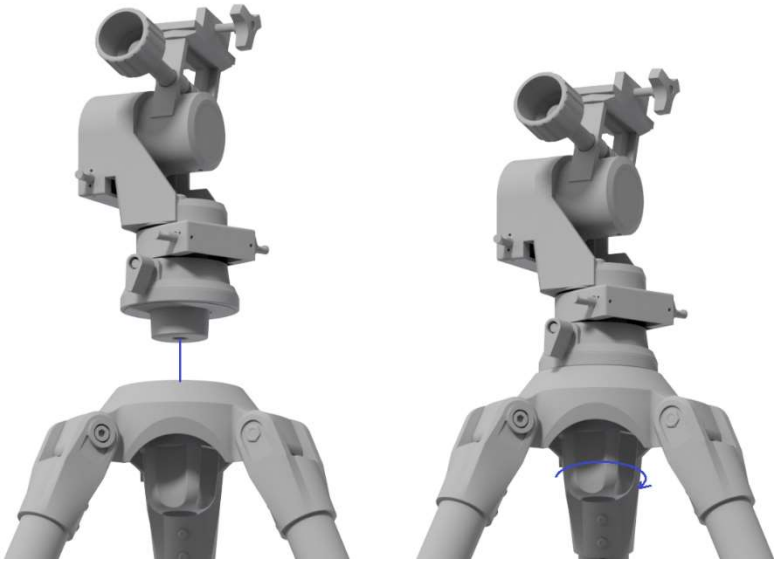
4.1. L-Bracket assembled.

We recommend keeping the L-Bracket mounted at all times (unless pointing below the horizon is required).
The final product should look like in the figure.



5.1. Setting the mount to the tripod.

Align the mount to the tripod's head, as shown, and lock by tightening the mount's locking knob #9.

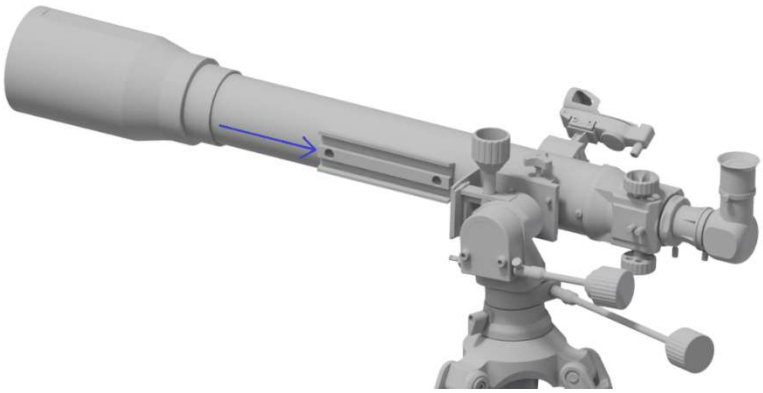


5.2. Extending the tripod.

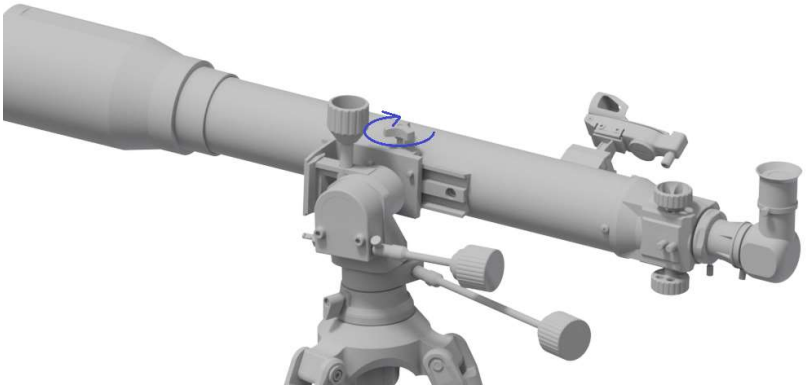
Fully extend the tripod by pulling out the three bottom-legs #13. Use the three Fixing hand screw (tripod) #12 to firmly secure the bottom-legs #13 in position.
Make sure the three legs have the same extension length so that the tripod base is more or less horizontal.

5.3. Installing the OTA.

Release the Dovetail locking knob #4 and slide the OTA as shown. Align the Dovetail #M with the dovetail holder #5 and slide it in.

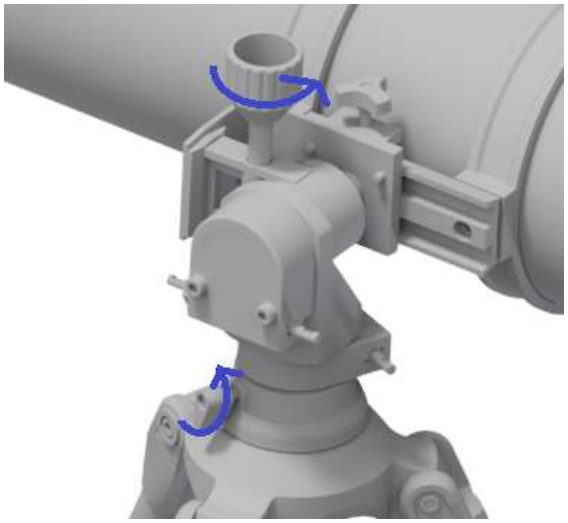


5.3. Fixing the OTA to the mount. Lock the OTA in place by firmly tightening the Dovetail locking knob #5.



5.5. Releasing the clutches

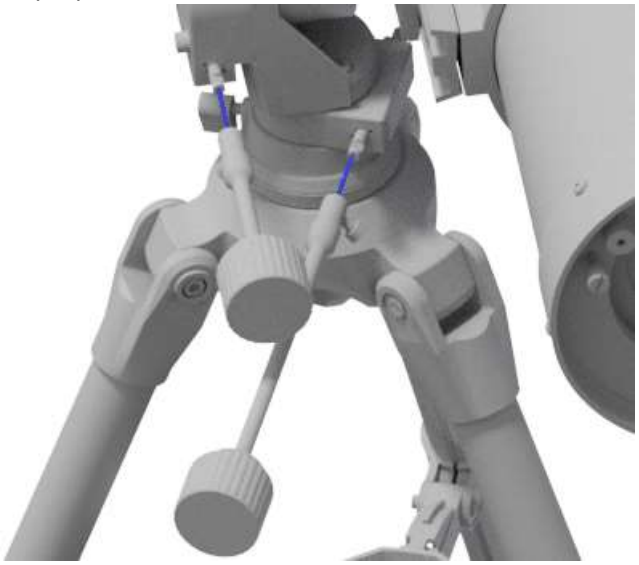
Release both the altitude clutch #3 and azimuth clutch #8. The OTA is now free to tilt up and down and move left-right. This will show you how you can point the OTA to any point in the sky quickly and easily. Observe if the OTA tilts to the front or the back. Keep that in mind! Adjust the dovetail position as necessary to avoid tilting.
Adjusting the friction with the clutches allows to regulate how smoothly the two axis will be.

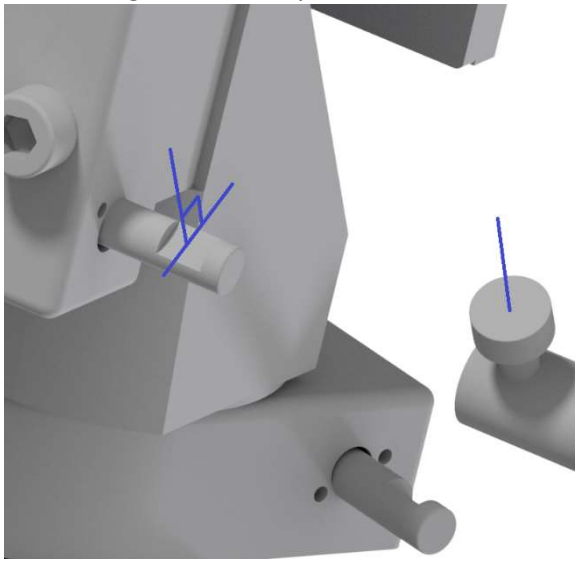


Make sure to retighten both Clutches before proceeding!

5.7. Installing the fine-adjustment hand controls #1 and #2

Install the fine-adjustment hand controls #1 and #2 as shown. Make sure that the locking thumbscrews are perpendicular the small axel slit. This will ensure that it will not get loose easily.

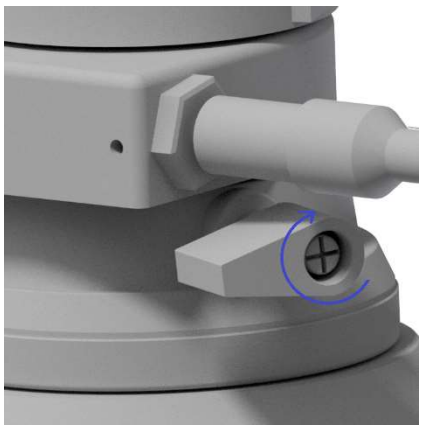




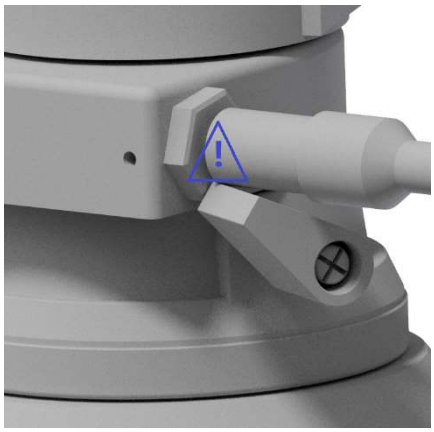
5.8. Testing the mount.

1st. Make sure both the altitude clutch #3 and azimuth clutch #8 are engaged (tightened).
2nd. Turn the fine-adjustment hand controls #1 and #2 clockwise and counter clockwise. If the clutches are engaged, you will see the OTA gently moving in both directions.
3rd. Release the clutches and check if the OTA tilts. Adjust balance if necessary.

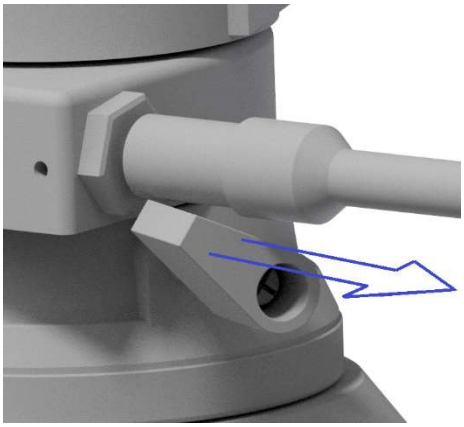
5.9. Clutch adjustment



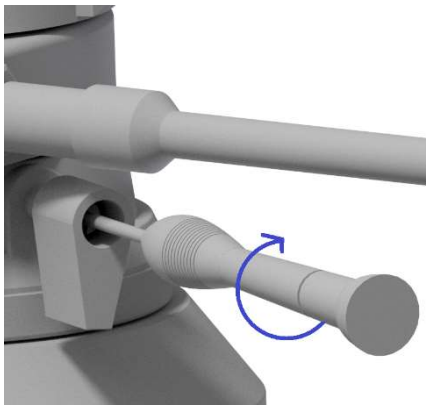
Engage the azimuth clutch.



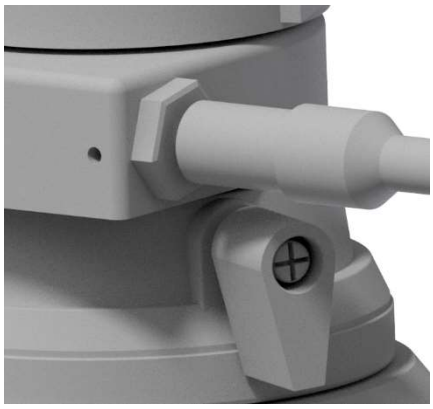
If the clutch hits some part of the mount it means that it needs to be adjusted.



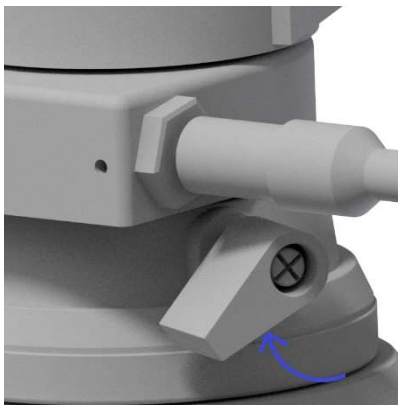
Pull-out the plastic handle.



While pulled-out, use a screwdriver (Philips-type) and tighten the inner screw.



Release the plastic handle in a vertical position as shown.



Now, when engaging the clutch, the plastic handle will only move a few degrees and will not hit any part.

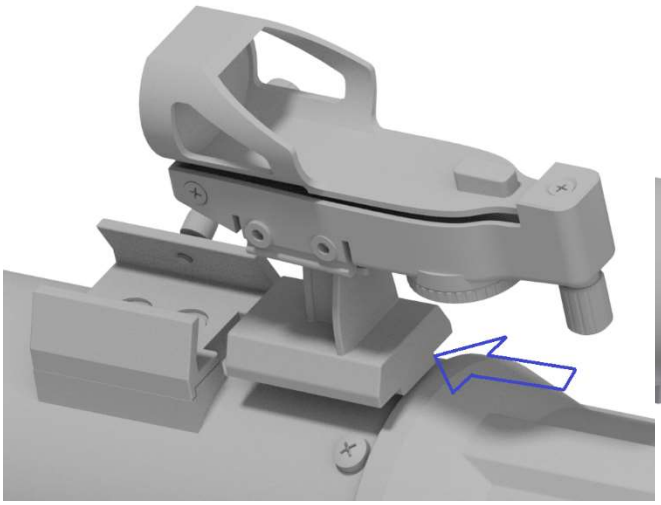
6. Recommended Half-Pillar (not included and optional)

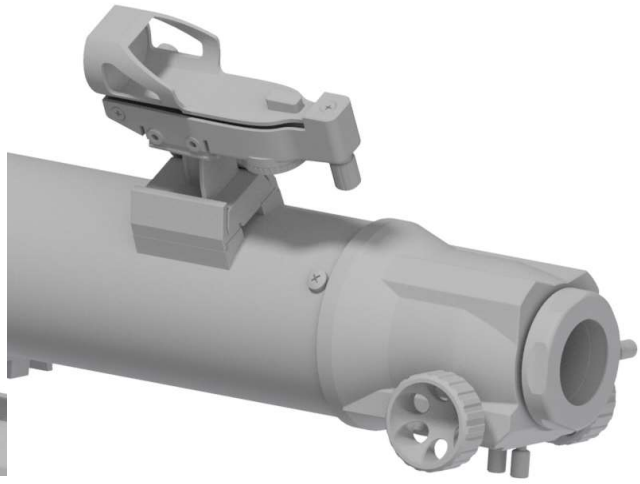
The half-pillar, article #87986, increases the height of the mount by 20cm which allows more distance, from the eyepiece position, to the ground. This is particularly important for long refractor telescopes or tall users and avoids needing to bend over to look through the eyepiece.
It also allows a better experience when pointing to object near the Zenith.

7. FINDERSCOPE

7. 1. Installing and aligning the Finderscope #B

Slide the finderscope #B into the finderscope shoe #K. Secure using the side thumbscrew.

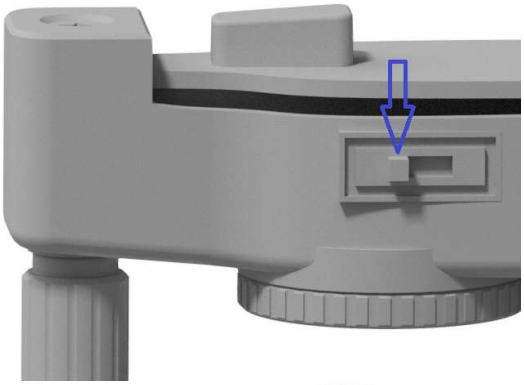


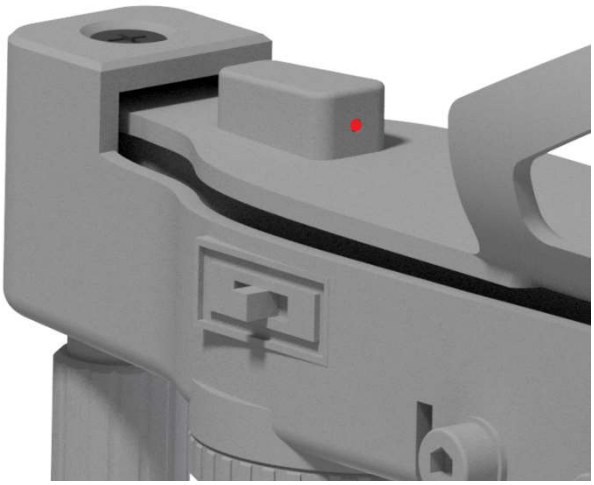


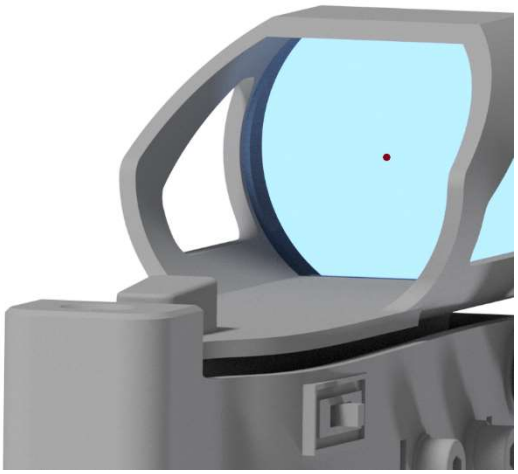
Make sure to the finderscope is pointing to the opposite direction of the focuser #L as shown above.

7.2. On/Off and Intensity Switch

Locate the side Switch. There are three positions.
Off (as shown in the figure) and On, with two intensity positions. The two intensity positions project a tiny red point (Red-dot) on the Finderscope optical window as show.



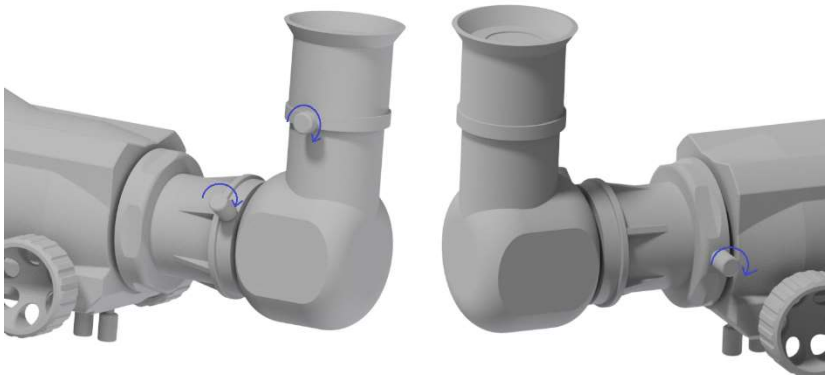




7.3. Aligning the Red-Dot to the telescope

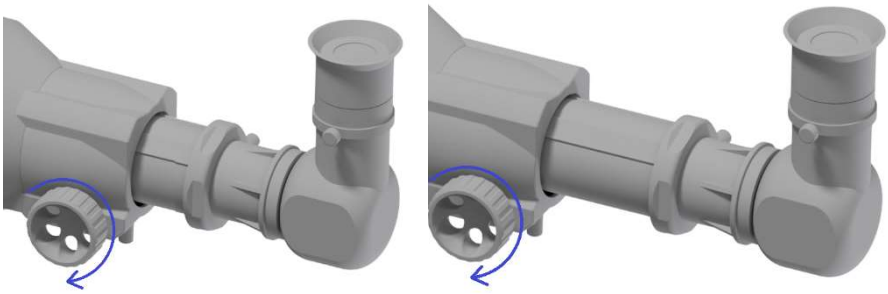
7.3.1. Installing the telescope accessories.

Install the Extender #D, the Amici Prism #E and the 25mm Plössl Eyepiece #F (as shown)
Make sure that the accessories are firmly secured by tightening the side thumbscrews as shown.



7.3.2. Focusing a distant object.

Now that the Amici Prism #E is installed to the focuser proceed as follows.
During the day, point the OTA at a distant distinctive landmark. Rack the focuser all-in. Start by slowly racking the focuser out, while peeking through the eyepiece.

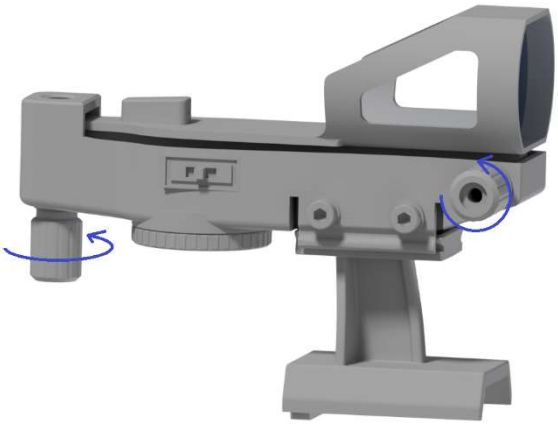


An image starts to form on the eyepiece.
Focus this image using the focuser knobs until a sharp image appears. You are now ready to match that image with the Finderscope's red-dot. By aiming the telescope and looking at where the red-dot is overlapping one knows what can be seen through the eyepiece. The same target bug magnified.

It is very important to correctly align the finderscope's red-dot to the center of the image, as seen through the eyepiece.

7.3.3. Understanding how the Red-Dot works

The two thumbscrews allow adjusting the Red-dot position in relation to the eyepiece field of view (FOV).
The principle is that the Red-Dot must be at the centre of the FOV as seen through the eyepiece.



The thumbscrew on the back adjusts the Red-dot "up/down", also called altitude, while the one on the front to the "left/right" also called azimuth.

7.3.4. Finding a distant land-object.

A distant object is centred at the telescope's field of view. In this example, we have a house with a chimney. The chimney is the reference point to place at the centre of the field of view. We first look through the telescope with the lowest magnification possible (the supplied eyepiece with longer focal length), so we have the widest field of view possible.

7.3.5. Understanding aligning.

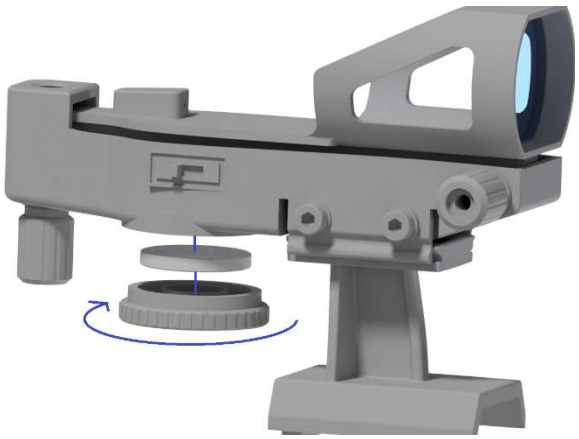
Looking through the finderscope (it should be powered ON) we see the same building, but in this case the red dot and chimney are not centered. We adjust the finderscope using the two altitude and azimuth knobs so that the finderscope red point moves slightly until it matches the chimney. This is enough to correct the objects position in the finderscope. Trial and error is required to get a satisfactory result.

7.3.6. Matching the red-dot.

After playing with the two findercope thumbscrews and some trial and error, we get the finderscope red dot close to the center (in this case the chimney). The finderscope is now ready to use!

7.4. Replacing the battery.

The red-dot needs to be bright enough to be seen during the observation. After some hours of use the brightness may dim until it no longer can be seen. The button battery (CR2032) needs to be replaced. Turn the switch to OFF. Now remove the battery cap and the battery from the battery compartment and replace with a new battery. Place the plastic battery cap back to protect the battery. Turn the switch to ON and check if the red-dot is brighter now. When not in use, the finderscope should always be powered OFF to prolong the battery's life.



8. What can I see with a telescope?

Below you will find some examples of what you can expect to see when using this telescope.

8.1.
The Moon is one of the most spectular objects to be seen through a telescope. Even a small telescope will reveal high detail of the Moon's surface. You will be able to see the craters on the Moon's surface and other features like the Marea. The moon is a very bright object. It is better to observe it when the Moon is not full. Try the crescent Moon and look for features along the terminator (between illuminated and dark surfaces).

8.2. Jupiter is the biggest planet of our solar system. It is also one of the favorite targets for beginners. Galileo was able to discover that the four tiny dots that turn around the planet were in fact part of Jupiters system of moons. With this telescope you will not only be able to see Jupiter's planet disc with its two major discernible bands, but also its biggest moons, Io, Europa, Ganymedes and Callisto.

8.3. The "lord of the rings" of the night skies, Saturn is by far the most popular target for small telescopes. Saturn's rings are discernible even at 60x magnification. In a very good night you will be able to see the Cassini's division (the darker band on the Saturn's rings).

9.1. Using the accessories, a bit of math to understand how all it works.

Using the accessories is easy and fun. To change magnification simply swap eyepieces. To get more magnification simply use the included Barlow lens 2x #C. But how does all of this work?

Your telescope has a focal length of 700mm. This is approximately the distance between the telescope lens and its focal point (very similar to the distance between the focus point of a loupe and the loupe lens). This is a very important feature, that allows to determine several interesting facts such as magnification.
The telescope's focal length and the used eyepiece determine the magnification. You probably noticed that the two supplied eyepieces are 25mm Plössl Eyepiece #F and 10mm Plössl Eyepiece #G. This means that the first has a 25mm focal length second a 10mm focal length.
To determine the magnification just divide the telescope's focal length by the eyepiece's focal length.

Telescope focal length 700mm
25mm Plössl Eyepiece
Magnification (Power) = Telescope focal length / Eyepiece focal length
Power = 700/25 = 28x

This means that the 25mm Plössl eyepiece provides a 28x power (magnification). This may seem low, but when you try it, you will see a bright image with some (very good) details, especially on the Moon and Planets.

9.2. Barlow Lens 2x

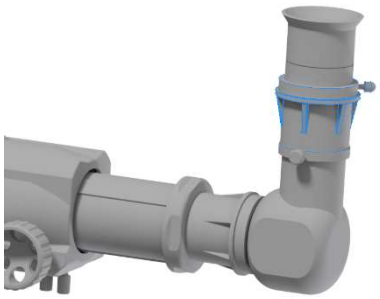
The Barlow lens 2x #C is a very interesting device. It is a negative lens, that multiplies the telescope's focal length by two time. So, a 2x Barlow multiplies the original focal length by a factor of two, in this case $700mm\ x\ 2 = 1400mm.$
A 3x Barlow lens multiplies by 3x, etc.. Your telescope, however, is supplied with a 2x Barlow lens. When used with the 25mm Plössl Eyepiece you get 2x the power obtained with the eyepiece alone.

	Terrestrial View	**Moon**	**Deep Sky**	**Jupiter and Saturn**
Barlow Lens 2x				Yes
25mm Plössl Eyepiece			Yes	
10mm Plössl Eyepiece		Yes		Yes
Power	*Does not apply*	70x	*28x*	*140x*

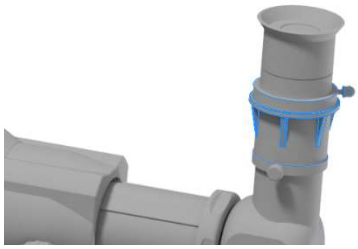
ATTENTION! Never look at the Sun through a telescope.
Concentrated Sun light may cause serious eye injury.
Children should use only with adult supervision

10. How to install the Barlow lens?

10.1. The most usual way of using a Barlow lens is by placing it immediately below the eyepiece. The light, coming from the telescope's OTA passes through the Amici Prism, the Barlow and finally the eyepiece until reaching the observers eye. In this position, the barlow magnification is 2X.

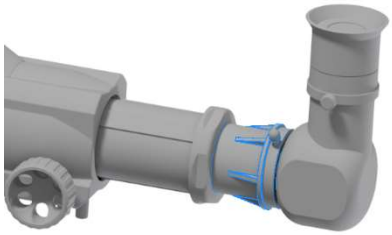


10.2. Removing the Extender. For Astronomical use, the Extender is not required and can be removed. Only for Landscape object is the extender required. The Extender is an important accessory when additional distance is needed.



10.3. Placing the Barlow further away from the eyepiece.

The Barlow can be placed as shown in the figure, in front of the Amici Prism. This increases the distance between the Barlow and the Eyepiece and increasing the magnification factor from 2x to approximately 3x. We recommend using this with caution and only with the 25mm Plössl Eyepiece.



When using the Barlow bear in mind that:
The maximum magnification (power) for a telescope is around 2x its aperture im mm.
In this case, the aperture is 70mm which means that 140x would theoretically be possible in a very calm and stable night while pointing near the Zenith. However, in reality it is not frequent to realistic achieve this number.

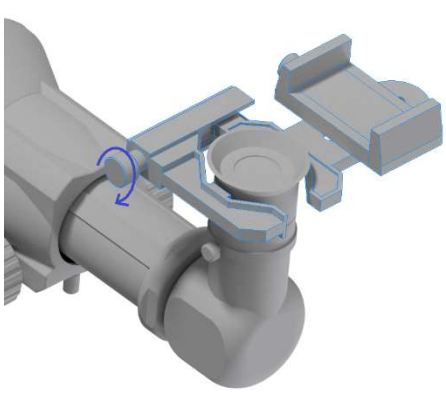
11. How does the Focuser #L work?

The focuser, as described before, allows displacing the eyepiece and reaching focus (a sharp image).
The two highlighted thumbscrews (as shown in the figure) are used for different purposes.

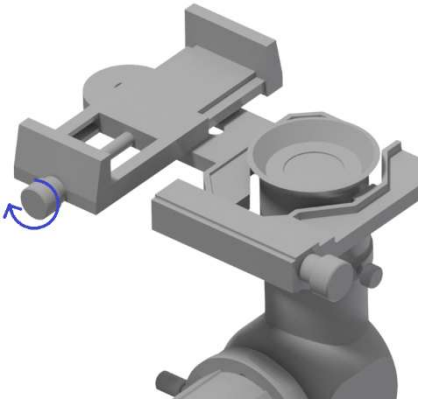
11.1 Top thumbscrew. The top thumbscrew is a locking screw. It is used to lock the focuser in position. When it is engaged, the focuser's drawtube no longer moves, even when rotating the focuser knobs.

11.2. Bottom thumbscrew. This thumbscrew allows to adjust the friction of the focuser. Tightening makes the focuser stiffer to movement, while releasing it makes the movement smoother.
The stiffer it gets the more weight it can hold. Do not overtighten as it may damage the focuser.

12. Using the Smartphone adapter to take photos.



Place the smartphone adapter as shown. Make sure that the clamp is applying good pressure on the eyepiece metal barrel.



Release the smartphone holder clamp, as shown, so there is enough width to place the smartphone.

Place the smartphone as shown. The camera to the eyepiece side.

Fix the smartphone firmly, using the side thumbscrew.

Release the bottom thumbscrew so that the previous smartphone assembly can rotate and slide freely.

Rotate sideways and slide to the front and back as necessary so that the smartphone camera is centered with the eyepiece.

Open your favourite photography app and set it to macro mode. Use zoom if necessary. You are now ready to take photos of the Moon and the Planets.

Telescope Specifications

Aperture: 70mm
Focal Length: 700mm
Focuser: Crayford 1.25”
Dovetail: Vixen-Style
Tripod: Stainless steel 1.25”
Accessories: 25 & 10mm Plössl Eyepiece; Achromatic 2x Barlow; 1.25” Extender; 1.25” Amici Prism; BT shooter; Smartphone adapter; LED Finderscope Vixen-Style shoe.