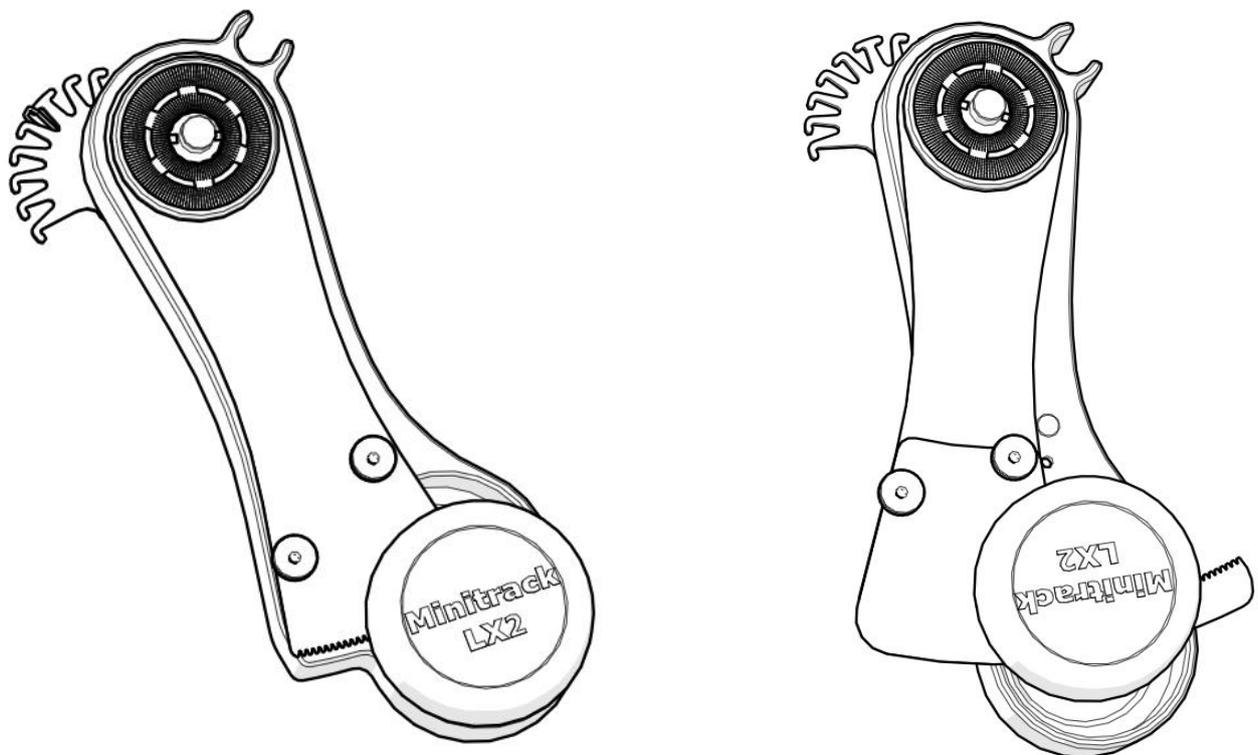


Instruction Manual

omegon



Northern Hemisphere & Southern Hemisphere

Omegon® MiniTrack LX2 NS

English Version 1.2019 Rev. A, Art.-Nr. 57993, 60258

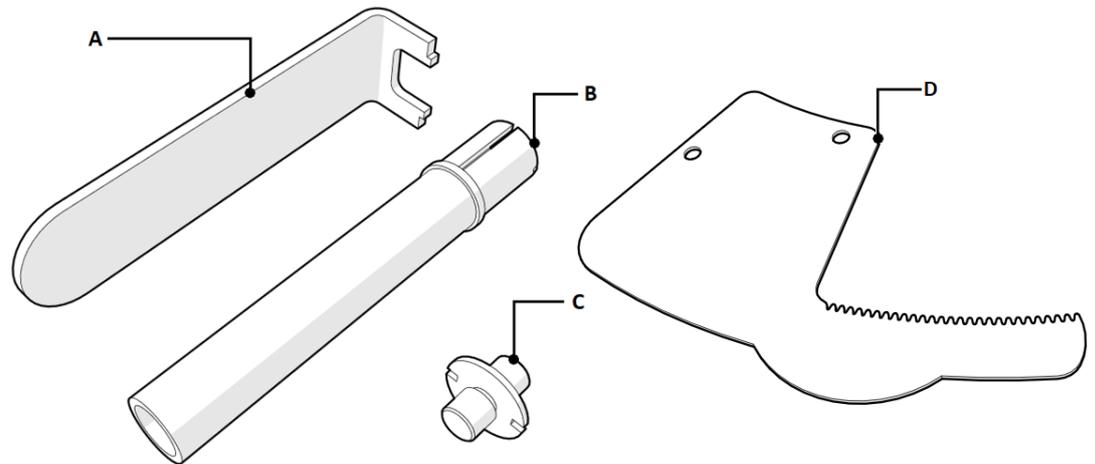
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The Omegon® MiniTrack LX2 NS

Congratulations on the purchase of the Omegon® MiniTrack LX2 NS. This mechanical mount will give you hours of fun. It is the ideal companion for the beginner, intermediate and advanced amateur who is looking for a compact and carry-on mount solution. It's simple design and mechanical quality makes the MiniTrack LX2 NS a unique tool for wide-field astrophotography. It can work everywhere on the planet, i.e. both in the north and southern hemispheres.

1. What's included?

A- Adapter Key;
 B- Polar finder;
 C- ¼" to ¼" adapter;
 D- South arm (unmounted) and shown as #7 component Side A (below).

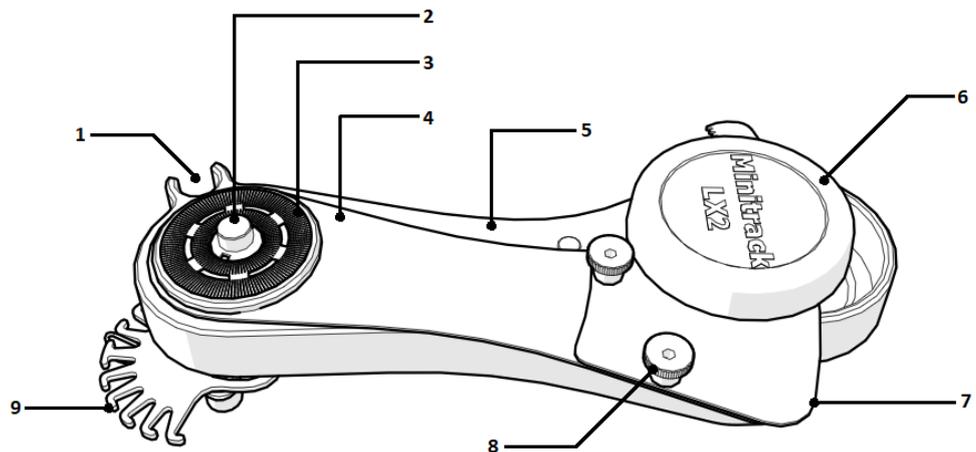


2. MiniTrack's features.

We recommend knowing the different MiniTrack's LX2 NS features.

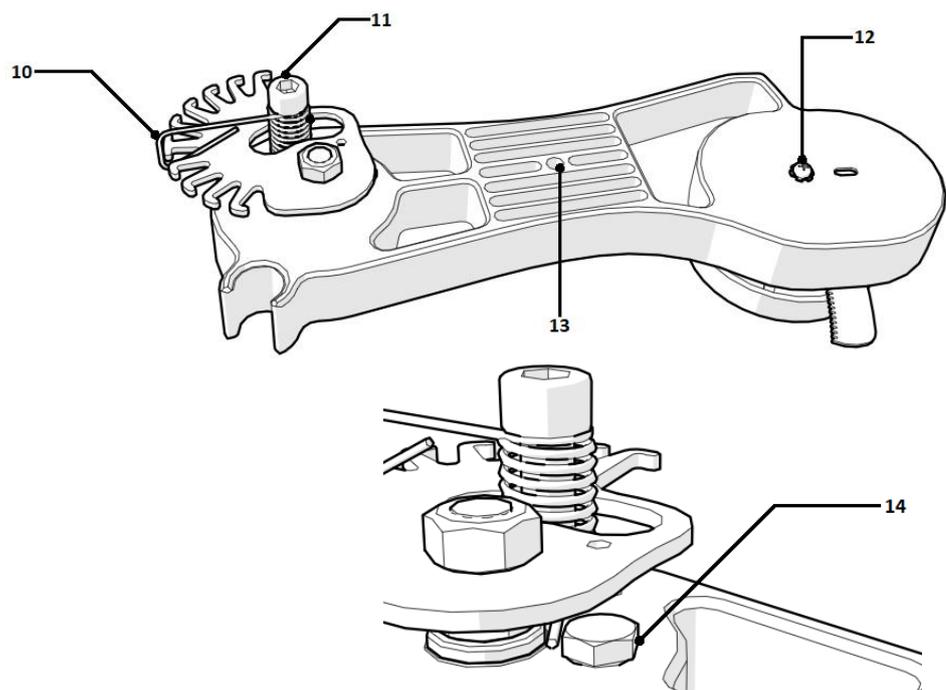
Side A components:

1- Polar finder holder;
 2- Ball-head adapter;
 3- Platform;
 4- Arm;
 5- Body;
 6- Winding-knob;
 7- South arm;
 8- Thumbnut (two);
 9- Spring retainer.



Side B components:

10- Spring;
 11- Spring post;
 12- Timer screw with washer;
 13- ¼" thread for tripod;
 14- Spring blocker.

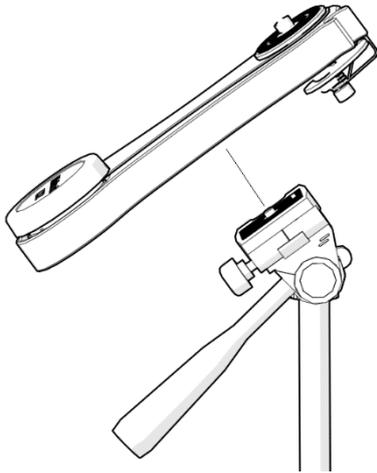


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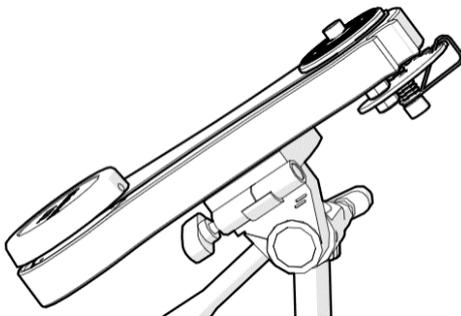
3. How does the MiniTrack LX2 NS mount work? The MiniTrack LX2 NS “follows” i.e. tracks the apparent movement of the night sky. The NS stands for Northern and Southern Hemisphere as the mount is capable of tracking the sky on both earth’s hemispheres. The sky “rotates” roughly around Polaris – the northern Star – in the northern hemisphere and around the South Celestial Pole (or SCP) in the southern hemisphere. In order to successfully track, the mount must point either to Polaris or to the SCP. This is called setting the mount in station. The mount sits on a tripod head allowing a certain degree of inclination. Usually the inclination corresponds to the latitude of the user’s location. Besides that, a ball head is required so that the camera can be easily pointed to the desired object. Then wind-up the built-in timer and you are ready to go!

4. How to mount the MiniTrack LX2 NS?

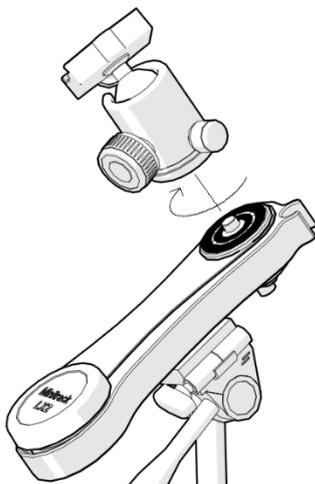
4.1. The MiniTrack LX2 NS is compatible with any 1/4” tripod plate (#9 Side B). Set the mount to the tripod’s plate (not supplied) as shown. Make sure that the mounts set so the inclination can be adjusted.

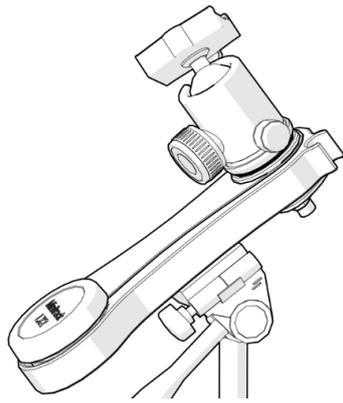


4.2. Make sure the mount is parallel to the adapter base. This is important because the inclination needs to be fine-tuned to set the mount in station.

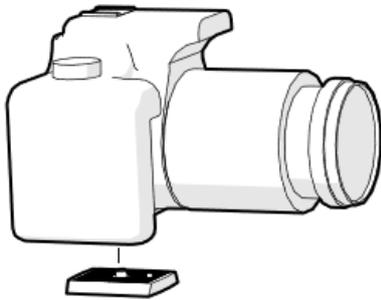


4.3. We recommend using a ball-head to operate the MiniTrack LX2 NS. It already has a pre-installed 3/8” thread adapter (factory assembled). If you already have a 3/8” ball-head and wish to use it just thread it to the adapter (#2 Side A). You can also use 1/4”-20 ball-heads. For that you need to remove the pre-installed 3/8” ball-head adapter and replace it by the 1/4”-20 adapter (C). Use the supplied adapter key (A).

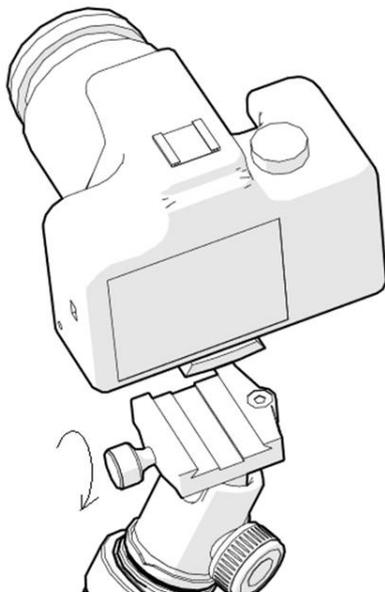




4.4. The ball-head must be securely fixed. Make sure to tighten it well. All the weight from the camera will rest on the ball-head. Besides that, a well-fixed ball-head ensures that there will be no slippage during long-exposures. At this point, it is important that the ball-head knobs are also tight. This prevents movement when installing the camera.

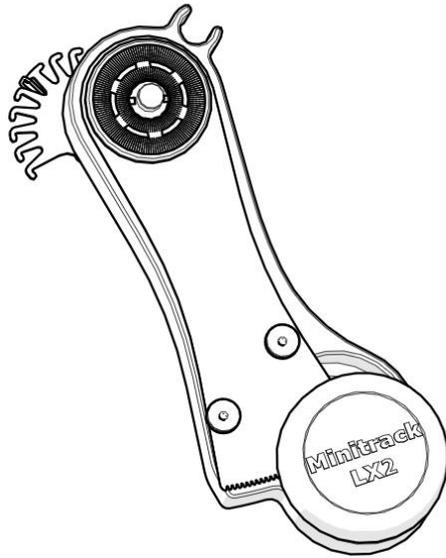


4.5. Install the tripod plate (included only with the ball-head version) to the camera. Make sure the adapter is square to the camera base and well tighten.



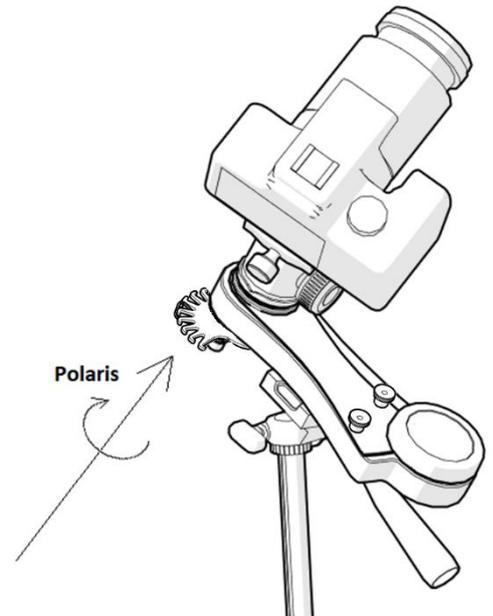
4.6. Set the camera (with the adapter) to the ball's-head base. Make sure to tighten it well. Please notice that the ball-head has two additional knobs. One fixes the ball's-head position in azimuth (360 deg) while the other fixes the ball's-head pointing direction (in altitude). These two degrees of orientation allows the user to point to any desired object in the sky. Make sure both are well tighten before installing the camera. Release the knobs – just slightly – to allow pointing the camera to different directions.

5. Northern hemisphere configuration

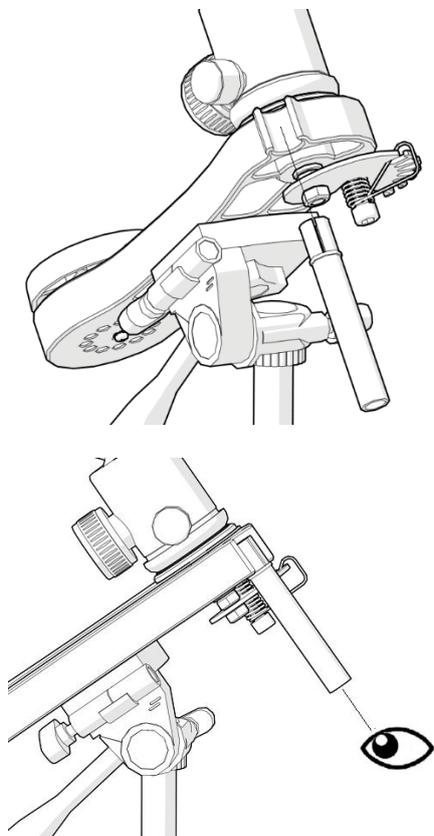


5.1. Alignment with Polaris

Point the mount to the Polaris. It is not important to be exactly aligned with the Polaris– a rough alignment is fine. Upon installing the supplied polar finder (B) we will look in more detail on how to have the star in the centre of the polar finder (B) field of view.

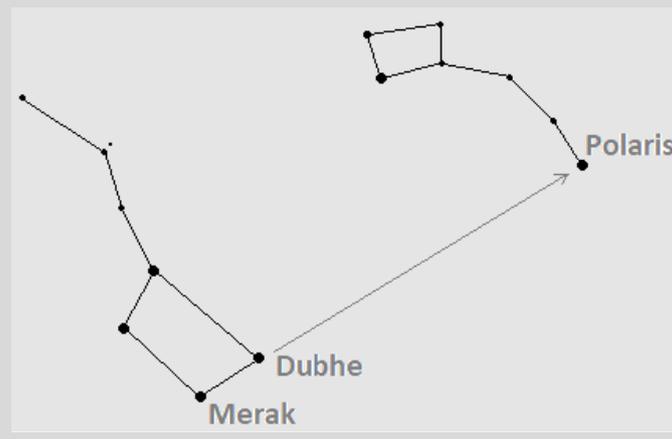


5.2. To align the mount to Polaris with more precision slide the polar finder (B) to the polar finder holder (#1 Side A).



How to identify Polaris?

Polaris is not the brightest star on the sky but still easy to identify. Look up to north and try to find the Big Dipper (constellation). This is a very recognisable constellation. Polaris is about six times the distance and direction of two of its brightest stars – Merak and Duhbe.

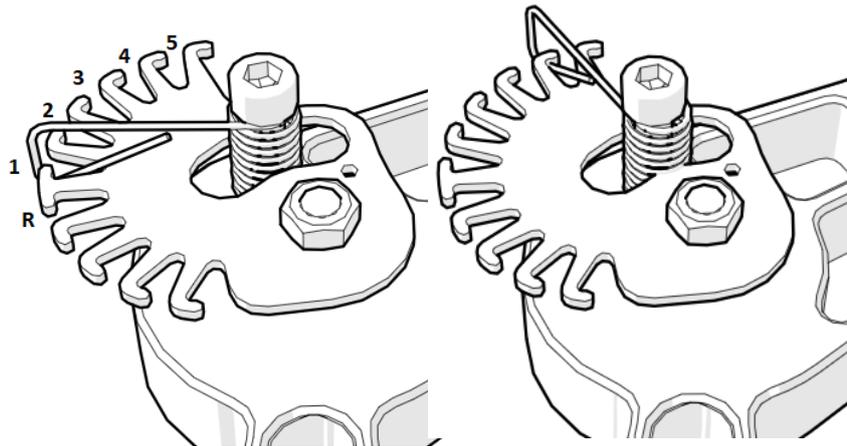


5.3. Peek through the polar finder (B) and centre Polaris in the visual field. Turn the tripod's fine-adjustment levelers to do so. Please read the following section for more details on how to correctly use the MiniTrack LX2 NS and the importance of correct balance.

6. Balancing the MiniTrack LX 2 NS on the East hemisphere (applies only for Northern hemisphere configuration).

The built-in timer pushes the photo setup to track the night sky. If the setup's centre of mass is slightly off to the West side of the hemisphere, the generated arm-moment helps the timer to track the objects, this is good.

However, the opposite, i.e. if the setup is more off-balanced to east side it may happen that the timer will have difficulties to push and track conveniently. For that reason the built-in spring system acts as a counterweight and gives an extra help to the timer by adding additional push force.



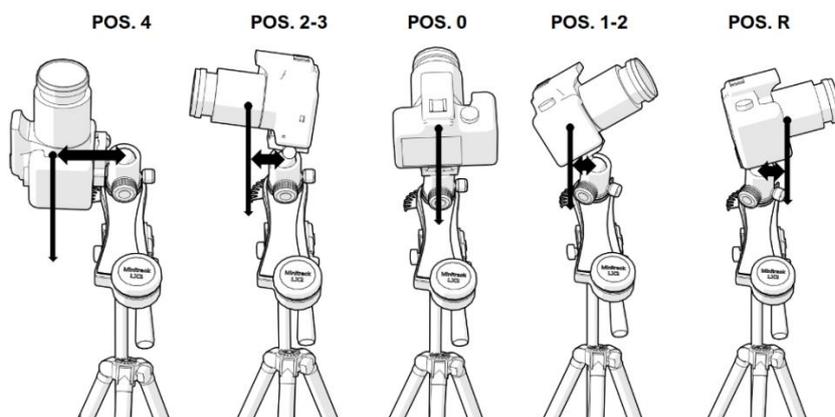
How to determine if the timer is not able to push the setup?

Listen to the timer ticking without any load. Compare that sound to when the setup is assembled. Is there a huge sound difference? – i.e. the timer is not as loud as it should be – then the spring tension must be adjusted.

6.1. Tensioning the spring.

For setups, slightly off-balance use the first positions as shown (image above). You can feel that the spring is not under a lot of tension. Use the spring at its highest tension only for heavy setups and strong unbalance. See below how to choose the spring's position.

Please avoid unnecessary spring tension as this might alter the timer's clock tracking rate!

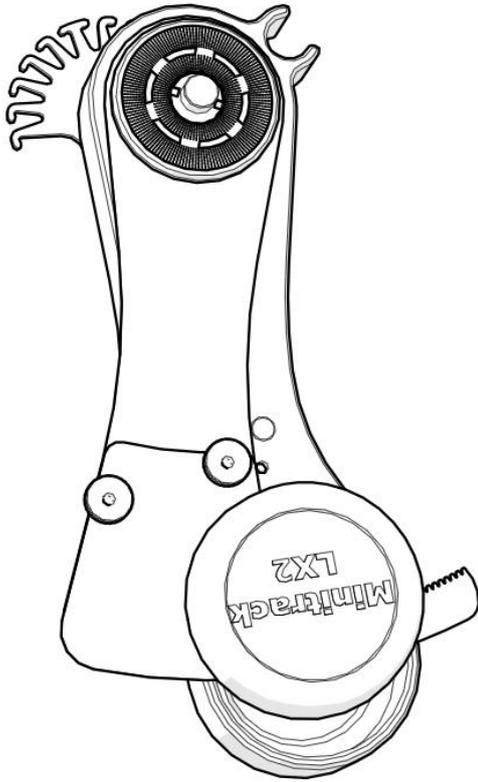


6.2. Pointing East. When the weight of the camera setup tends to rotate the ball-head in an anti-clockwise direction, the spring should be tensioned to one of the numbered teeth, based on how strong the imbalance is. By tensioning the spring in position 5 (worst case scenario) a weight of up to 2kg can be balanced – i.e. pointing to the Zenith with the camera body towards the east in respect to the ball-head.

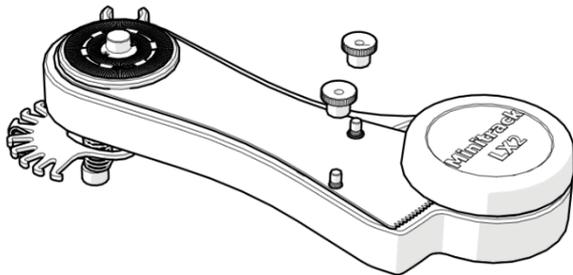
6.3. Pointing South. The spring can be completely disengaged (position "0") or let it work at idle (position "1").

6.4. Pointing West. Aiming towards West, especially if there is a strong imbalance, it could happen that the timer "accelerates" because of the load in favour of the movement, for which the "R" tooth has been added, which allows to compensate also this unbalancing type, by braking the rotation motion (last figure on the right – top).

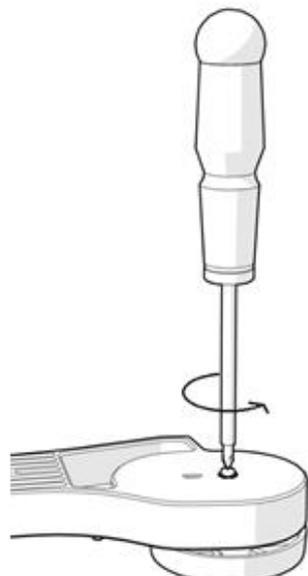
7. Southern Hemisphere configuration



The south hemisphere configuration is to be used below the equator. In the southern hemisphere, the sky “rotates” on the opposite direction, i.e. from West to East. For that reason, it is necessary to add an additional arm (D) to the mount and invert the sense of the timer’s movement.

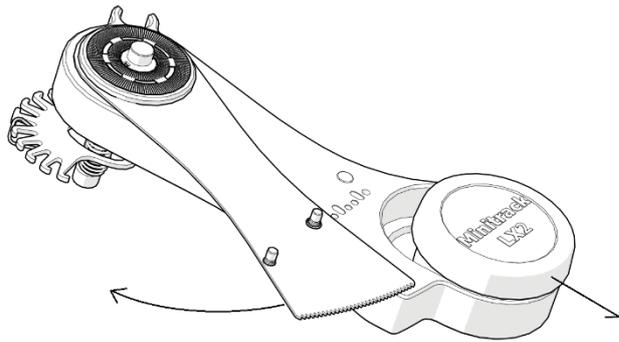


7.1. Release and remove the two thumbnuts (#8 Side A).

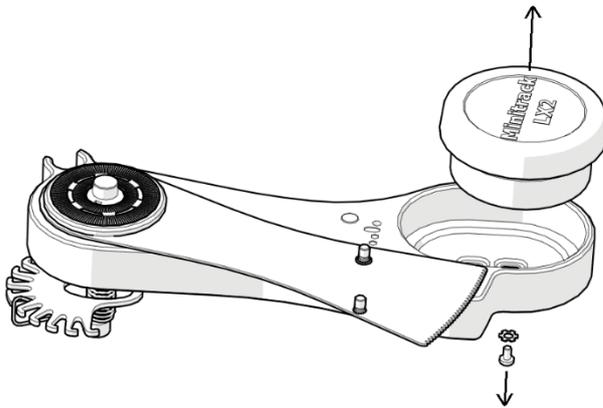


7.2. Release and unscrew the timer screw with washer (#12 Side B) using a Philips-style screwdriver (not included).

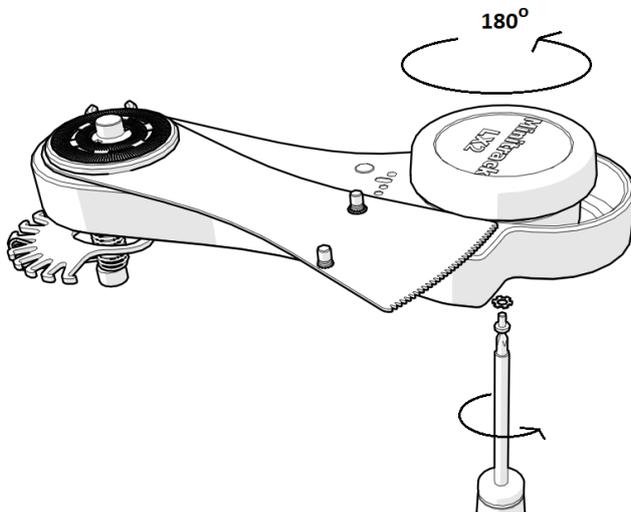
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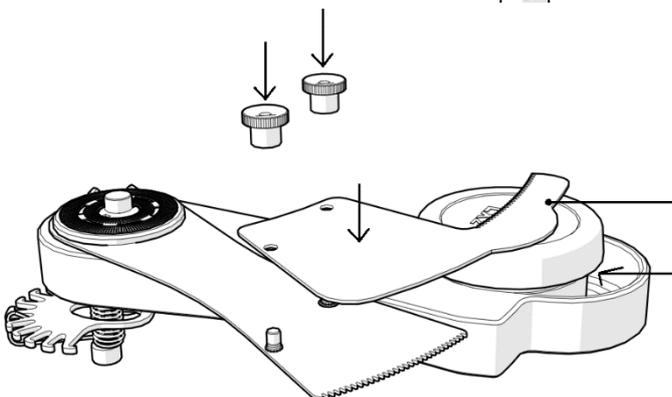
7.3. Push the winding knob (#6 Side A) away from the arm (#4 Side A) in order slide the arm to the left – please push it slightly only and make sure the spring (#10 Side B) is not impeding this movement.



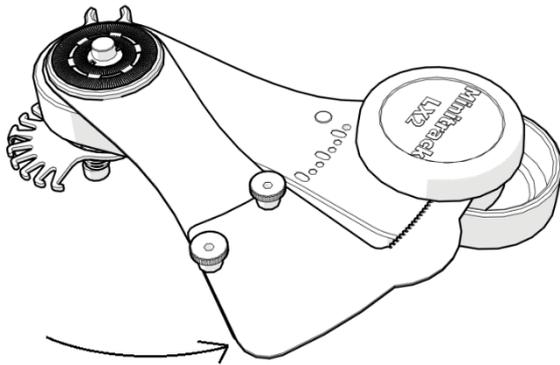
7.4. Remove the winding knob (#6 Side A) and the timer screw and washer (#12 Side B) as shown.



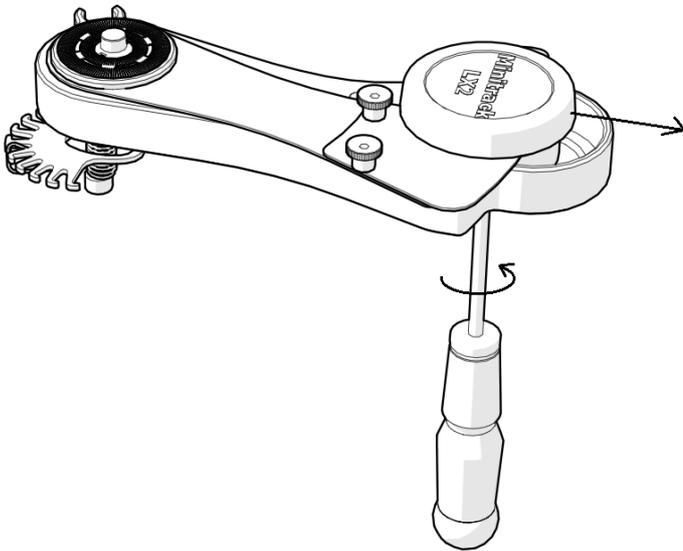
7.5. Turn the winding knob (#6 Side A) 180 degrees from its original position (up-side down) and screw back the timer screw and washer (#12 Side B) but **do not tighten it yet!**



7.6. Place the South arm (#7 Side A) and adjust it to the arm (#4 Side A) so that it is placed between the winding knob and the timer. Make also sure that the two protruding studs and the arm's thru holes are aligned. The Winding knob should move freely and be easily adjustable to the South arm's teeth.



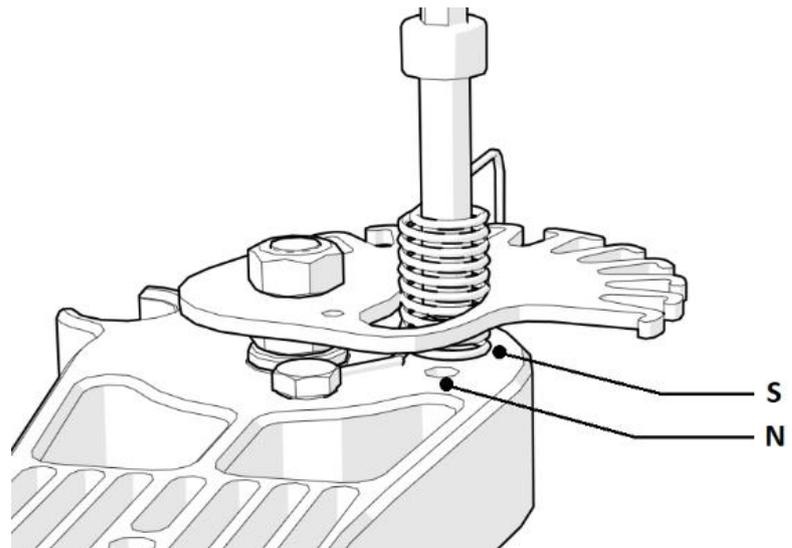
7.7. Push the assembled arm back to it's original position. Make sure to keep the winding knob remains "up-side down".

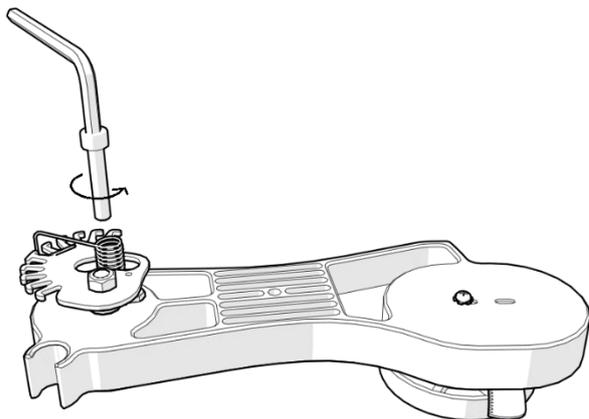


7.8. Push the arm to the timer and the winding knob against the teeth. Use a Philips-style screwdriver (not supplied) to fix it in place. It is important to not overtighten the screw as it may damage the timer and its performance.

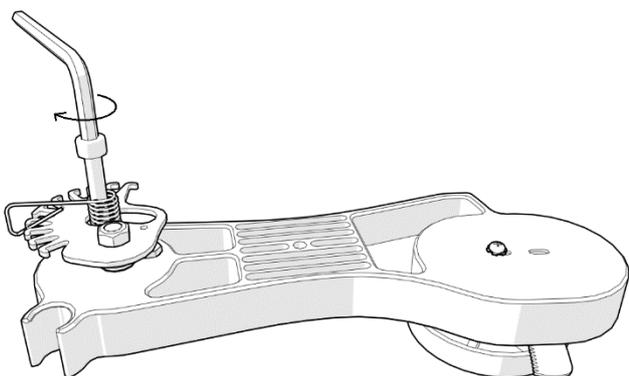
8. Adjust the spring post (#11 Side B) to the south position.

There are two possible spring post positions each used respectively for the Northern and Southern configuration. As mentioned before the mount is already prepared, out of the box for use in the northern Hemisphere configuration. In order to use it south of the equator, i.e. in the southern hemisphere the spring post needs to be moved to the south position.





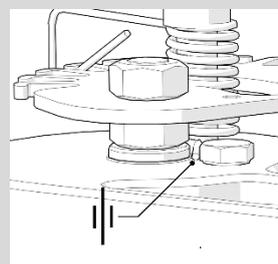
8.1. Release and Remove the post using an 4mm Allen-key (not included).



8.2. Move and align the Spring to the adjacent position. Insert the Spring post and re-tighten it with the Allen-key (not included). Exert caution, do not overtighten it.

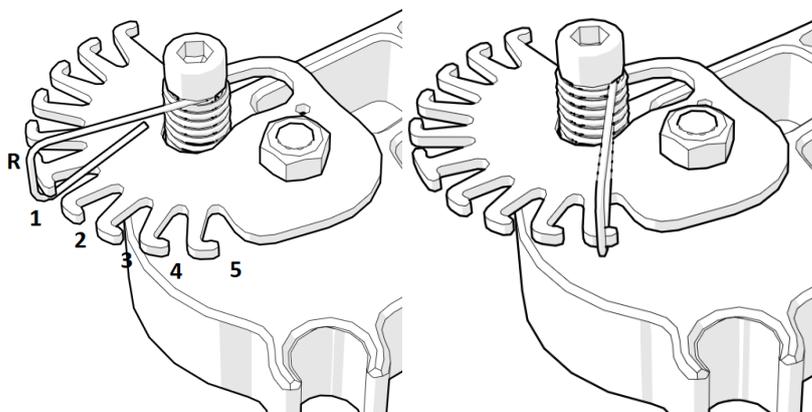
Important!

When installing the Spring to the south position please make sure to keep the spring's tip trapped in-between the spring blocker (#14 Side B) and the main axis. Only this way can the spring work correctly and add the necessary tension.



9. Balancing the MiniTrack LX 2 NS on the West hemisphere (applies to the southern hemisphere configuration only).

The built-in timer pushes the photo setup to track the night sky. If the setup's centre of mass is slightly off to the East side of the hemisphere, the generated arm-moment helps the timer to track the objects, this is good. However, the opposite, i.e. if the setup is more off-balanced to west side it may happen that the timer will have difficulties to push and track conveniently. For that reason the built-in spring system acts as a counterweight and gives an extra help to the timer by adding additional push force.



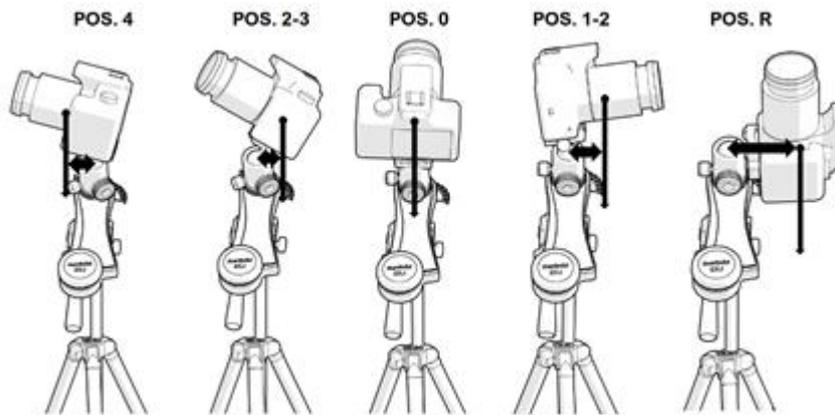
How to determine if the timer is not able to push the setup?

Listen to the timer ticking without any load. Compare that sound to when the setup is assembled. Is there a huge sound difference? – i.e. the timer is not as loud as it should be – then the spring tension must be adjusted.

9.1. Tensioning the spring.

For setups, slightly off-balance use the first positions as shown (image to the left). You can feel that the spring is not under a lot of tension. Use the spring at its highest tension only for heavy setups and strong unbalance. See below how to choose the spring's position.

Please avoid unnecessary spring tension as this might alter the timer's clock tracking rate!



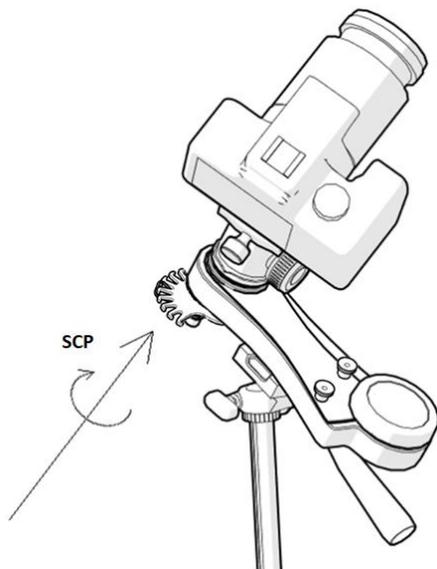
9.2. Pointing West. When the weight of the camera setup tends to rotate the ball-head in a clockwise direction, the spring should be tensioned to one of the numbered teeth, based on how strong the imbalance is. By tensioning the spring in position 5 (worst case scenario) a weight of up to 2kg can be balanced – i.e. pointing to the Zenith with the camera body towards the west in respect to the ball-head.

9.3. Pointing North. The spring can be completely disengaged (position "0") or let it work at idle (position "1").

9.4. Pointing West. Aiming towards West, especially if there is a strong imbalance, it could happen that the timer "accelerates" because of the load in favour of the movement, for which the "R" tooth has been added, which allows to compensate also this unbalancing type, by braking the rotation motion (last figure on the right – top).

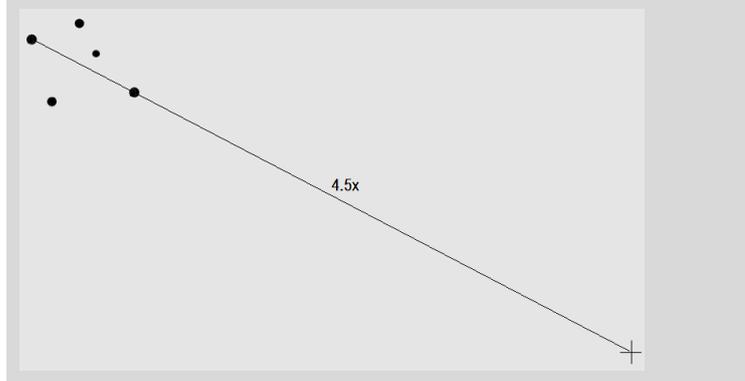
10. Aiming to South Celestial Pole (SCP)

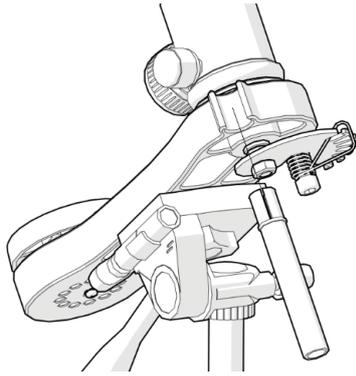
10.1. Identify the Crux constellation near the SCP. Align the stars as shown in the figure and count 4.5x its distance in the same direction to find the SCP. Upon installing the supplied polar finder (B) we will look in more detail on how to have the star in the centre of the polar finder (B) field of view.



How to identify Crux?

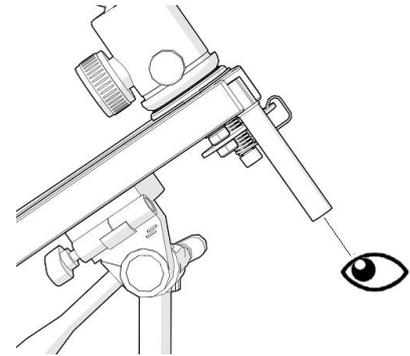
Crux is a constellation with the shape of a kite. If align the head and the tail of the kite and count 4.5x to the tail you get a rough position of the south celestial pole (SCP).





10.2. To align the mount to the SCP with more precision slide the polar finder (B) to the polar finder holder (1 Side A).

10.3. Peek through the polar finder (B) and check if the polar finder is pointing to the region of the sky as shown before. Turn the tripod's fine-adjustment levelers to adjust if necessary. Please read the sections on how to correctly use the MiniTrack LX 2 NS and the importance of correct balance before using the mount.



11. Calculating maximum tracking time. The MiniTrack LX2 NS is designed to carry setups up to 2 kg and track during 60min. This is important to know because setups exceeding this limit may considerably reduce the tracking quality and total tracking time. Something to notice is the objective's focal length. Wide-field objectives (low focal length) allow for more exposure time. Rule of thumb: one can calculate the tracking time without star trailing by using the following formula:

$$\text{Time (min)} = 100 / \text{Objective focal length (mm)}$$

Objective focal length	Maximum recommended exposure
24mm	4 minutes 10sec
50mm	2 minutes
60mm	1min 40sec
100mm	1 min

11.1. Example.

Camera + objective = 1.8 kg; Objective's focal length 50mm.

This is within the specifications of the mount. We should expect to achieve $100 / 50\text{mm} = 2$ minutes of tracking without any problems.

What if the weight exceeds the carrying capacity or if we use more exposure time than the recommended?

Then we will see some star trailing becoming more evident. It may be necessary to try different exposure times to better judge which one better fit each setup.

12. Resources. For more information please refer to on-line content such as videos. There is also a very active facebook group (in Italian) about the MiniTrack LX with hundreds of followers and many contributions. The inventor, Mr. Cristian Fattinanzi is also a member of this group and would gladly give some information and tips on how to use this mount. Main language is however Italian.

13. Features.

Carrying capacity: 2 kg

Balancing: using spring system (no counterweight)

accepts ball heads with 1/4" or 3/8" photo thread.

Ball-head weight: 300g

MiniTrack LX2 weight: 430g

Total tracking time: 60 min

Polar finder: included

Hemisphere: northern and southern (NS version)