

# Instructions Manual

omegon



***Omegon® Dobson Advanced 203***

English version 10.2015 Rev A

## The Omegon® Advanced Dobson 203

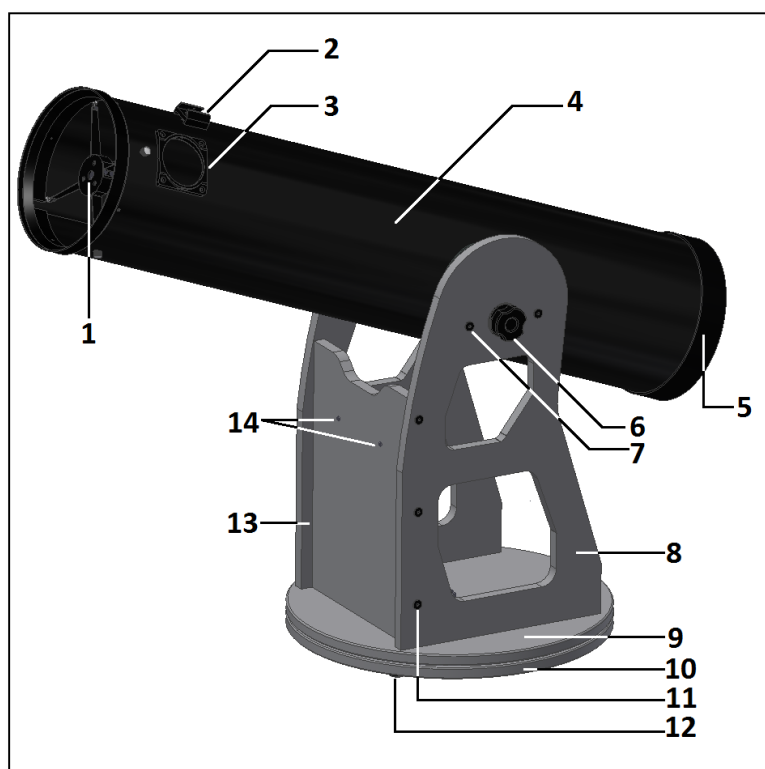


Figure 1. Parts description.

Congratulations on the purchase of the new Omegon® Advanced Dobson 203 telescope. This telescope will give you hours of fun, with its optical glass mirrors and light gathering capability, it is the ideal companion to start in the world of amateur astronomy. With this telescope you will be able to see the craters on the Moon, star clusters, many nebulae, the Jupiter's disc features and its Galilean moons and the rings of Saturn, Mars and Venus and many more objects.

**Included parts.** The telescope is supplied either as a basic set or as a complete set, or as a personalized set (configured at purchase) - please check which version you purchased – the following instructions are valid for basic and complete set. The

basic set does not include any accessories, only the optical tube and base. At the end of this Instruction Manual you will find the available accessory list which includes focuser, eyepieces, finderscope and eyepiece rack for completion of your telescope if necessary

### 1. Knowing your telescope.

- |                              |                            |                            |
|------------------------------|----------------------------|----------------------------|
| 1- Spider (secondary mirror) | 6- Balance adjustment knob | 11- Flat head bolt (point) |
| 2- Finderscope shoe          | 7- Flat head bolt;         | 12- Rubber foot            |
| 3- Focuser base              | 8- Left panel;             | 13- Right panel            |
| 4- Optical tube              | 9- Top base disc;          | 14- Front panel's holes    |
| 5- Primary mirror cell       | 10- Bottom base disc;      |                            |

**2. Getting Started.** The telescope is supplied with two boxes marked OTA 1/2 and Base 2/2. Each containing the optical tube and the Dobson base respectively. Start by opening the smaller flat box (should be marked Base 2/2). Remove the wooden panels, the tools and accessories. Place them on a flat and soft surface (we recommend carpeted floor to avoid scratches). **3. Assembly.** Start by setting the side panels and front panel together. Use the supplied Allen wrench and the flat bolts with pointed tip #11 (as shown in fig. 2). Make sure that the front panel's two eyepiece-rack holes are pointing out (the two white arrow as show in fig. 1). This is important because the eyepiece-rack (not included) may be fixed to those two holes. Start with one of the side panels and the move to the other one. Make sure the front panel is mounted upwards as shown in fig. 1. Now place the top base disc as shown in fig 3. You will need another 6 Flat head bolts, as used before. For each hole there is a recess on the Top base disc where the flat head bolts thread. Make sure to place the surface with the recess oriented to the outside. Use the supplied Allen wrench as shown in figure 4. At this point all panels and Top base disc should be firmly tightened. Now place the Bottom base disc as shown in fig. 6. Use the supplied bolt, nuts, and washer and central shaft to assemble as shown in fig. 7. Correct placement is very important. Start by inserting the aluminium tube (shaft – part 4 fig.7) -text continues page 6.

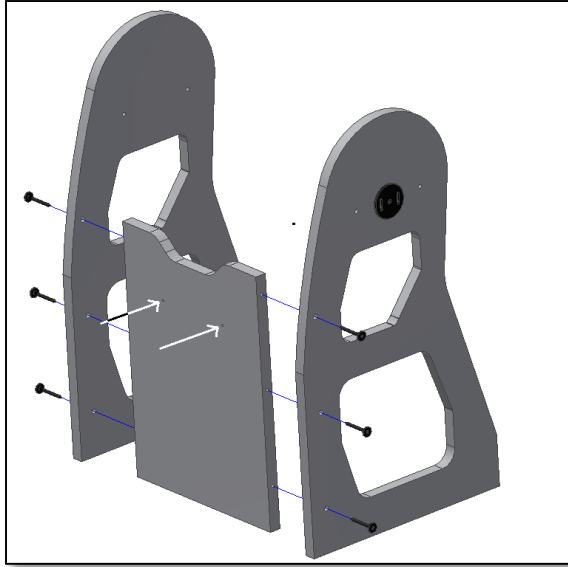


Figure 2. Assemble side and front panels.

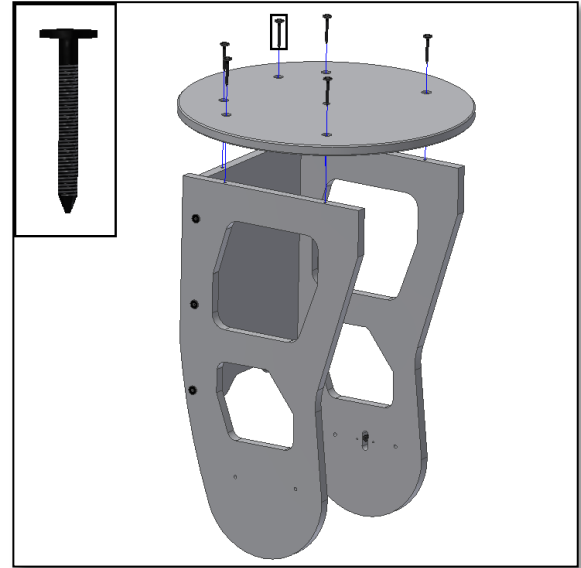


Figure 3. Assemble top base's disc. Pay attention to the right side.

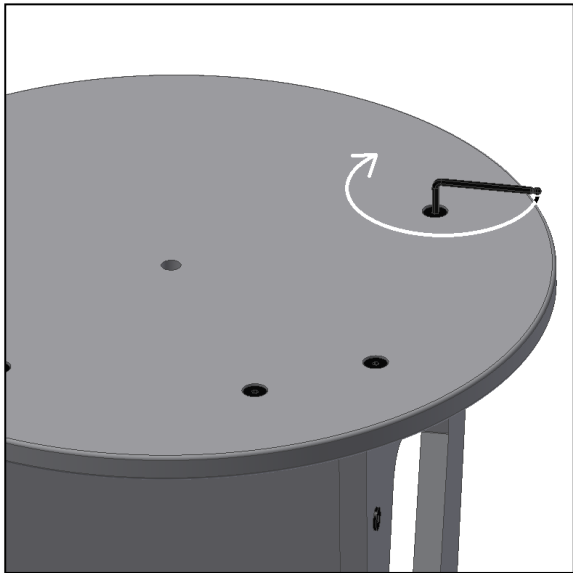


Figure 4. Tighten the parts using the supplied allen wrench.

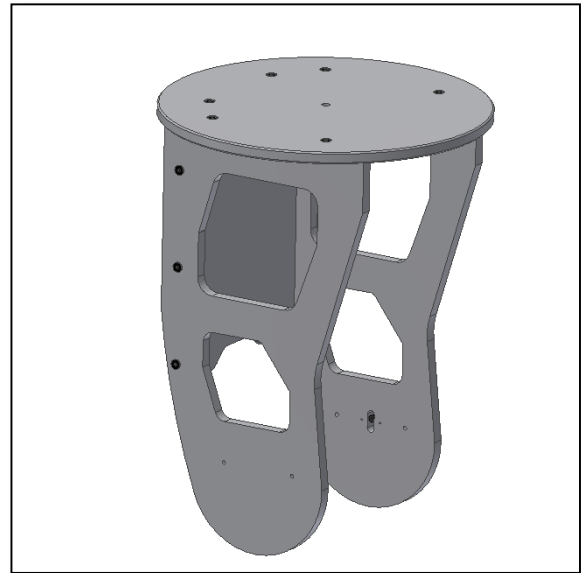


Figure 5. Base is ready to receive base's bottom disc.

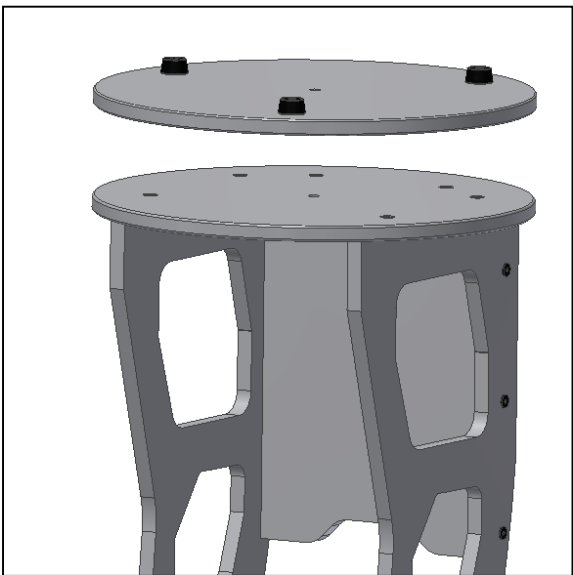


Figure 6. Rubber feet should point out.

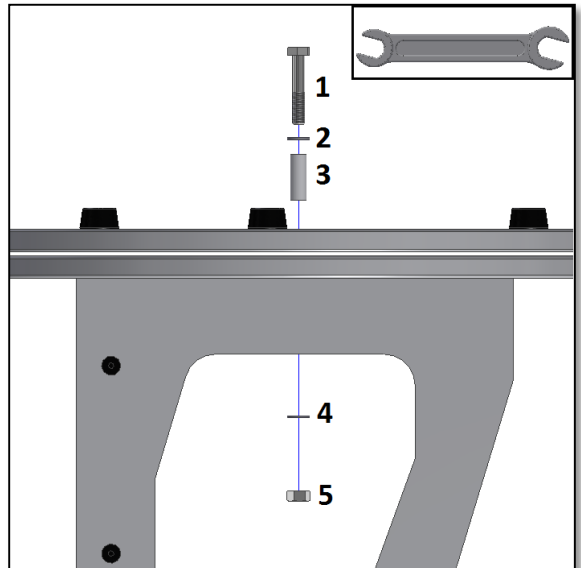


Figure 7. Use supplied nut wrenches to tighten.

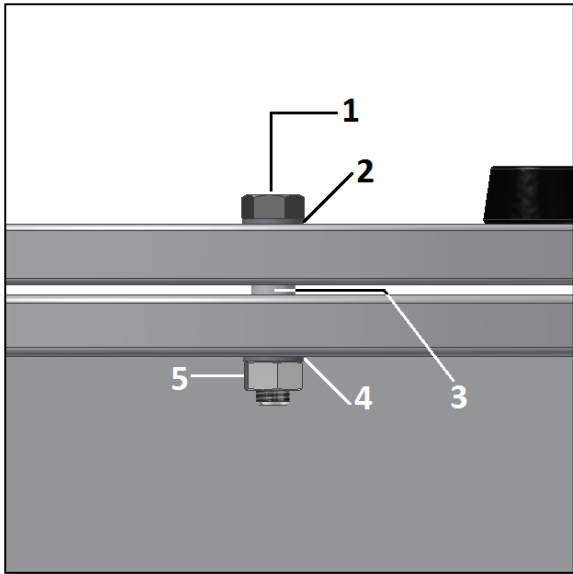


Figure 8. Shaft placement sequence is important.

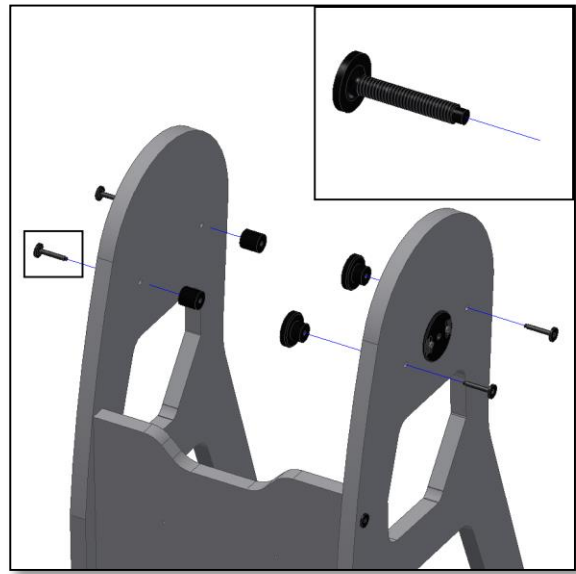


Figure 9. Tighten telescope's side bearings cylinders.

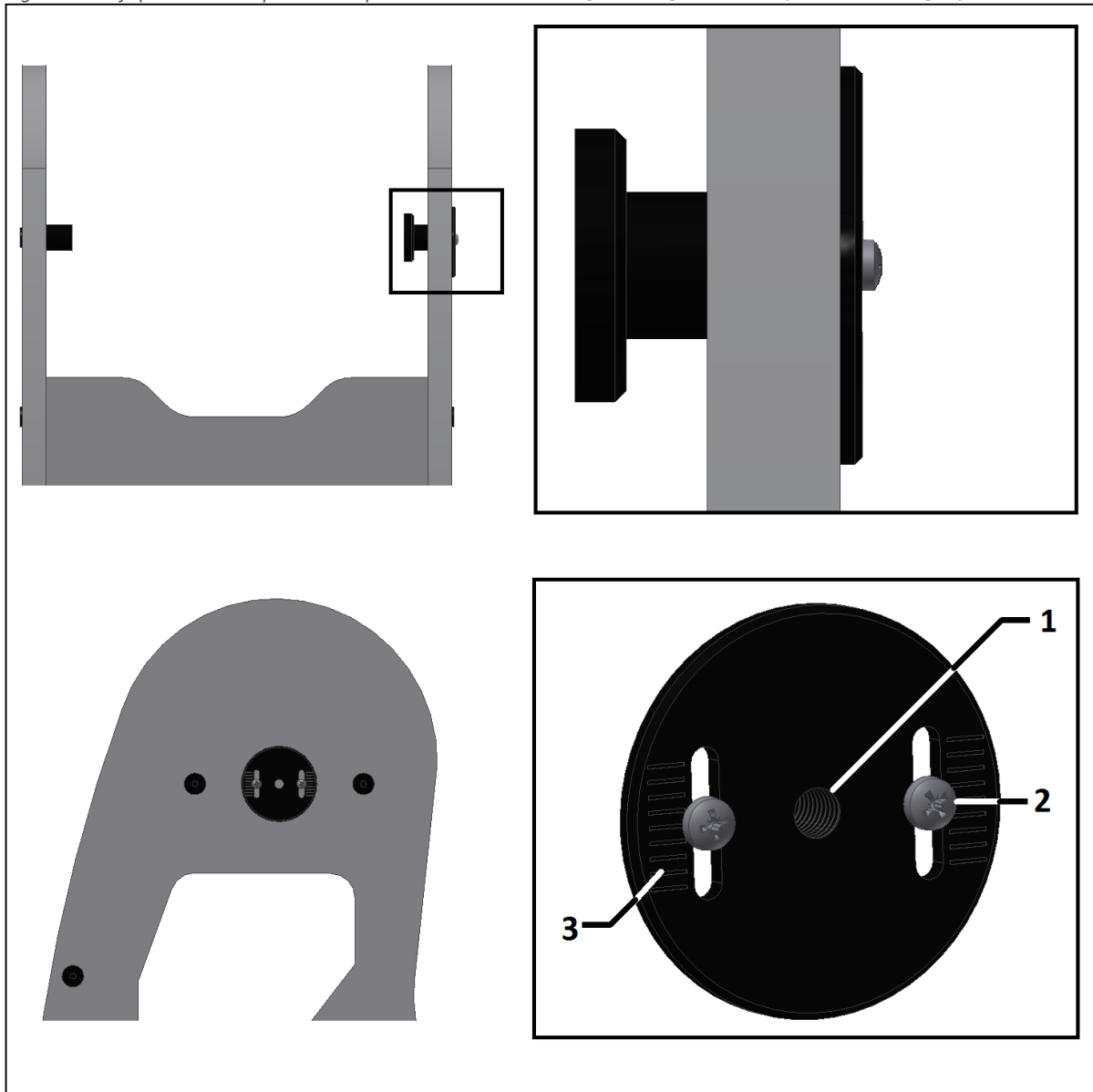


Figure 10. Side disc for balance

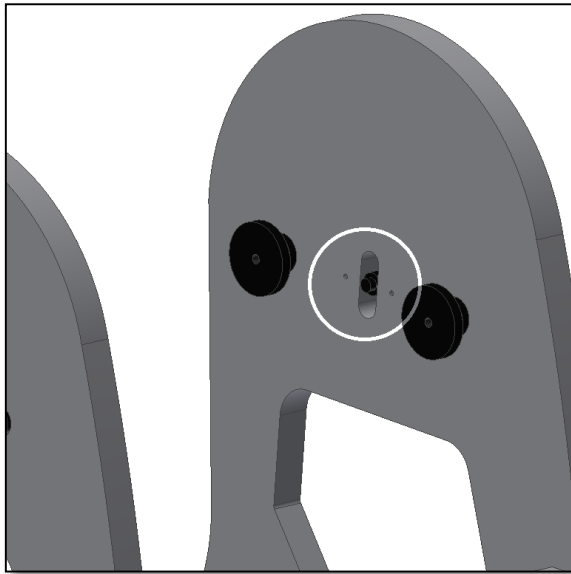


Figure 11. R.A. Axis.



Figure 12. Place tube on base.

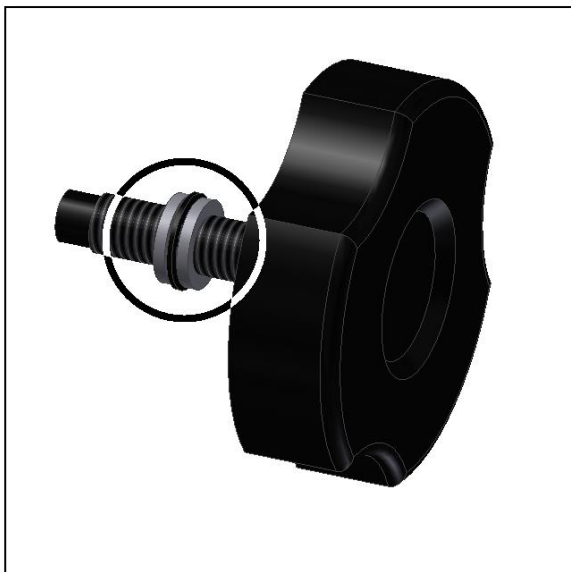


Figure 13. Insert tube in the base.

This shaft will aligned both base's discs. Insert the bolt (part 1 fig.7) and make sure to use the washers (part 2 and 4 fig 7.) between the bolt and the disc. On the opposite side insert the washer and nut. Use the supplied nut wrenches (top-right fig.7). One should hold the bolt in place with one wrench (to avoid it from rotating) and tighten the nut with the other wrench. Make sure that at the end of this procedure the discs rotate freely, but no noticeable wobbling between them exists. Place the assembled set so that the rubber feet are now touching the ground. Now it is time to install the black metal bearing cylinders. These are used to support the optical tube on top of the Dobson base. Use the supplied 4 flat head bolts #7 as shown in fig. 9. Use the supplied Allen wrench for this matter. Make sure the bearing cylinders match the correct side panel. The cylinder-shaped ones should be fitted to the right panel while the T-shaped (fig. 11) should be fitted to the left panel. Please tighten all 4 flat-head screws firmly. Place the tube on the base (fig. 12). The tube should now tilt freely. **4. What is the Balance Adjustment System and how to use it?** The balancing system is only required when the optical tube is out of balance – tilts either to the front or the back - and additional friction is required. Using a heavier eyepiece for example may tilt the telescope tube to the front. On the surface of the left panel there is also a black metal disc (#6 –fig.1). The disc is part of the telescope's balancing system. The balancing system includes the metal disc and the supplied hand-knob (fig. 13). Thread the Knob to the disc #1 – fig.10. Make sure the washer set is included (fig. 13). Keep on threading until the plastic tip hits the telescope's side bearing (fig. 14). Inspect the plastic tip as shown in figure 14. The knob's plastic tip should be hitting the telescope's plastic side bearing. We want this plastic tip to be inside the telescope's bearing recess as shown in figure 14 - bottom. The telescope's left panel with this disc was previously adjust but might require further adjustment. **4.1. How to adjust the friction?** Release (without

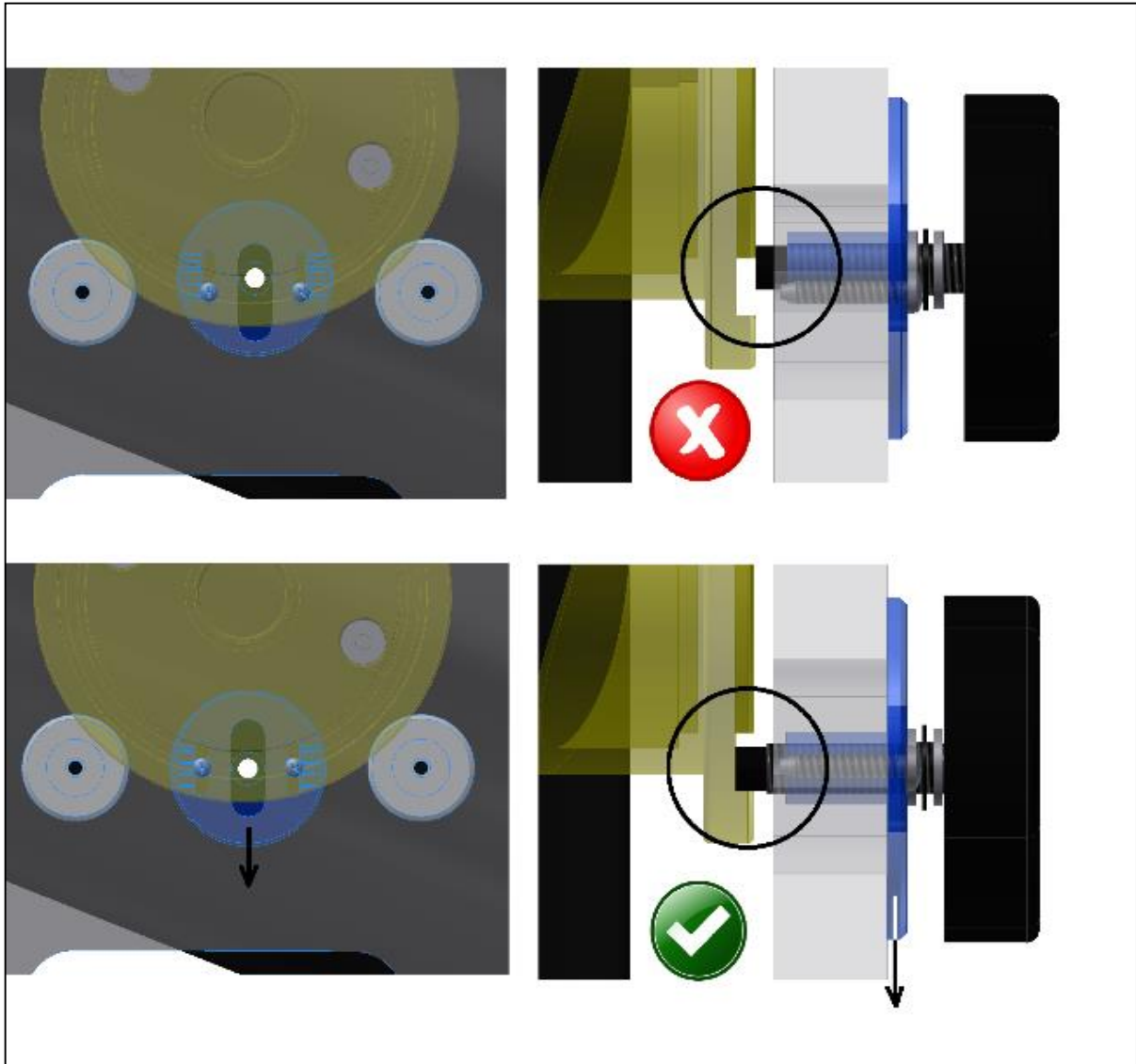


Figure 14. The Balancing System.

removing) the two cross head screw that secure the disc – fig.15. Use the supplied screwdriver. This allows the disc to be adjusted up-down if necessary so that the knob’s tip matches the exact position as seen in figure 14. The plastic tip should be touching the recess at its lowest position. Jittering may occur if the knob is not properly aligned with the recess. Take your time to adjust the knobs’ up-down position for optimal performance.

**Tighten the hand-knob firmly to get more friction. Unthread the hand-knob by 3 turns to remove the optical tube from the base.**

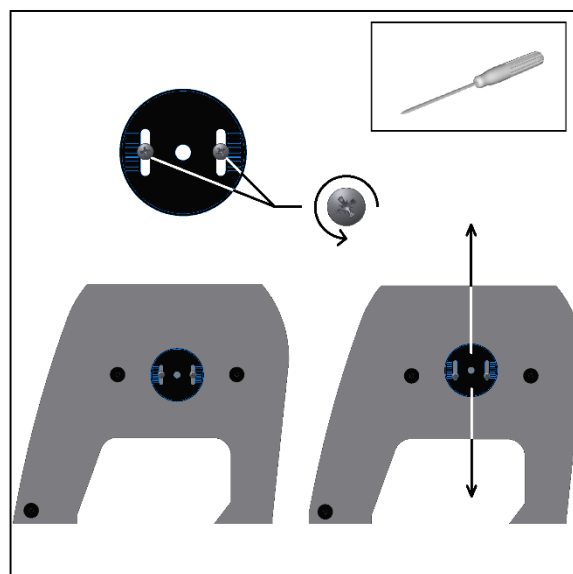


Figure 15. Disc up-down adjustment.

**5. Optional accessories (not included).** The Omegon Dobson telescope is supplied as a basic setup configuration i.e. only the optical tube and base. The focuser, finder scope and other accessories such as eyepieces are not included. Why? Because we want to give users the chance to configure the telescope to their own needs. For example if you have your own telescope eyepieces you surely don't need to buy new ones, simply use the existing ones and save. For the focuser we offer different focusers, basic and high-end focusers, the user can choose the ones which better suit their needs. Because these optional accessories are being constantly improved and update the following instructions are a basic guideline on how to install them to the telescope. **5.1. The focuser.** The focuser is an essential part of the telescope as it is used to get precise focused images. To install the focuser release the two set-screws as shown in figure 17 and insert the focuser base tube. Make sure the base tube fits the focuser base. The set screws should now be retightened to hold secure the focuser.

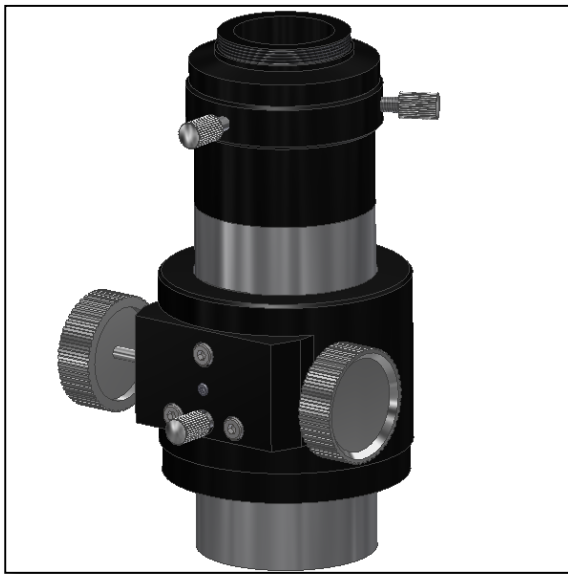


Figure 16. Crayford focuser (not included)

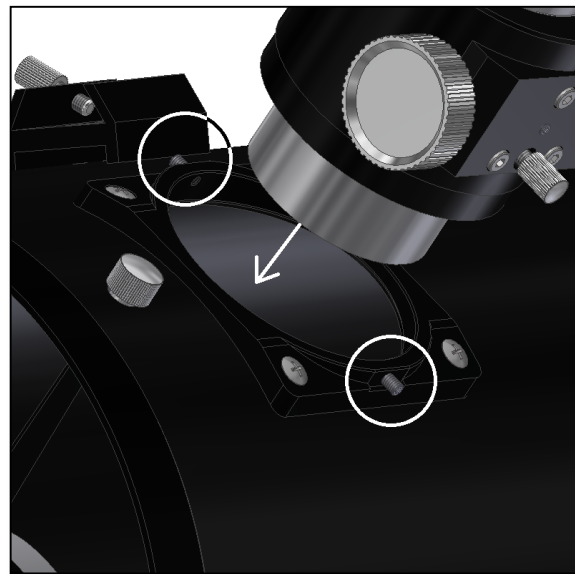


Figure 17. Installing the focuser (not included)

**5.2. Finderscope.** The finderscope is also an essential part of your telescope as it helps to locate the objects to be observed through the telescope's eyepiece. There are two main types of finderscopes, LED finders or the optical finders. This Dobson telescope uses Vixen-compatible-type findershoes, this means it is compatible with the original Vixen®/Celestron®/Orion®/ Meade® and other compatible finderscopes. See Appendix A to learn how to use a LED finderscope.

**5.3. Eyepiece Rack.** The eyepiece rack (not included) is used during the observation sessions. Eyepieces, Barlow lenses, adapters or other accessories can be kept in the rack and changed whenever necessary. This a great time and accessory saver as well.



Figure 18. LED finderscope (not included)



## 6. What can be seen with this telescope?

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



**6.1.** The Moon is one of the most spectacular 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 Mare. 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).



**6.2.** 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 Jupiter's 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.



**6.3.** 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).



**7. 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 barlow lens. But how does all of this work?

**7.1. Power (magnification)**

Your telescope has a focal length of 1200mm. This is approximately the distance between the telescope’s primary mirror 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 magnification is determined by the telescope’s focal length and the used eyepiece. To determine the magnification when using a 20mm eyepiece (just an example, there are many eyepieces with different focal lengths – all 1.25” and 2” should be compatible with this telescope) just divide the telescope’s focal length by the eyepiece’s focal length. Let’s give an example for our telescope and the eyepiece from the example above:  
 Telescope’s focal length is 1200mm.  
 Eyepiece’s focal length is 20mm.

$$\frac{1200mm}{20mm} = 60 \text{ power}$$

This means that the 20mm eyepiece provides a 60x power (magnification). This seems low, but when you try it, you will see a bright image with some (very good) details.

**7.2. Barlow Lens (not included)**

The barlow lens is a very interesting device. It is a negative lens, that multiplies the telescope’s focal length. So a 2x Barlow multiplies the original focal length by 2x, in this case  $1200mm \times 2 = 2400mm$ . A 3x Barlow lens multiplies by 3x. When used with the 20mm eyepiece a 2x Barlow provides 2x the magnification as obtained before

:

$$60 \text{ power} \times 2x \text{ Barlow} = 120 \text{ power}$$

**7.3. Erecting lens (not included)**

The erecting lens gets you an upright image view with the telescope. It also adds some power like the barlow lens. The Erecting Lens provides an extra 1.5x power.

**Some possible accessory combinations**

	Terrestrial View	Moon	Deep Sky	Jupiter and Saturn
Barlow Lens 2x				Yes
20mm Eyepiece			Yes	Yes
6mm Eyepiece		Yes		
Power	<i>Does not apply</i>	<i>200x</i>	<i>60x</i>	<i>120x</i>

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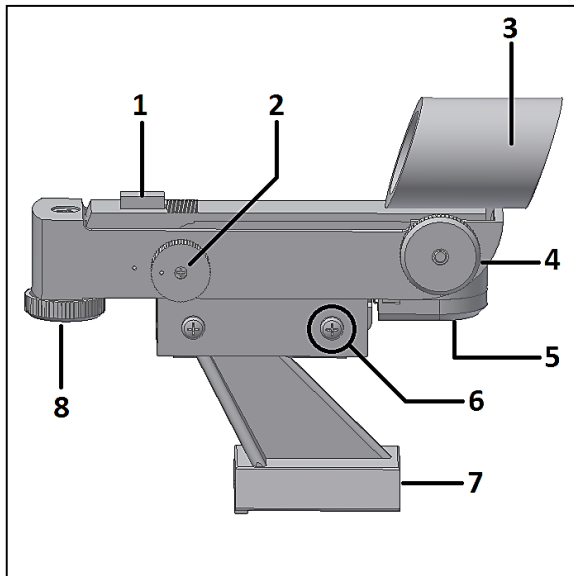


Figure 1. Parts List.

## APPENDIX A

### The Omegon® Red-dot finderscope (included only in the complete set)

#### 1. Knowing your finderscope.

- 1- Red-dot case;
- 2- Potentiometer ON/OFF switch;
- 3- Optical window;
- 4- Azimuth adjustment knob;
- 5- Battery compartment (1x battery CR2032);
- 6- Base fixing screws;
- 7- Finderscope bracket;
- 8- Altitude adjustment knob.

#### 2. Getting Started.

The finderscope is powered by a coin shaped battery CR2032 (supplied). For battery protection a plastic protection is placed between the battery and the battery contact. Remove the plastic protection by securing the finderscope with one hand and then pulling firmly on the outstanding plastic tip (figure 2). The plastic protection should be completely removed and discarded. Turn power on by rotating the potentiometer to its ON position as shown in figure 3 (you will hear a click when ON), rotate all the way to get maximum power. When powered, the red-dot point on the red-dot case (#1 – figure1) lights up (figure 4 and figure 5). A small red point is projected to the optical window (#3 – figure 1). This red point, when aligned with the telescope, allows precise pointing to objects. To precisely align the finderscope with the telescope both the altitude and azimuth (#8 and #4 figure 1) adjustment knobs need to be adjusted (figure 6 and figure 7) – please see detailed instructions on how to align in page 3. To power off the finderscope just turn the potentiometer counter-clockwise until you hear a click – red-dot dims until off (figure 8). Place the finderscope's bracket in the telescope's funderbase. Use a low power eyepiece to align the finderscope.

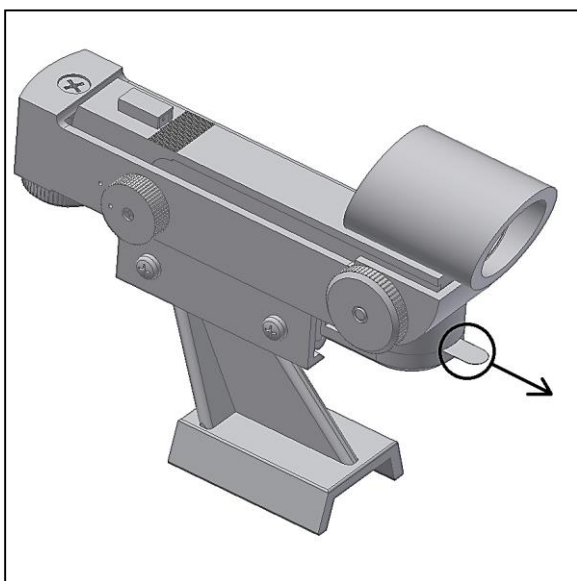


Figure 2. Remove plastic protection.

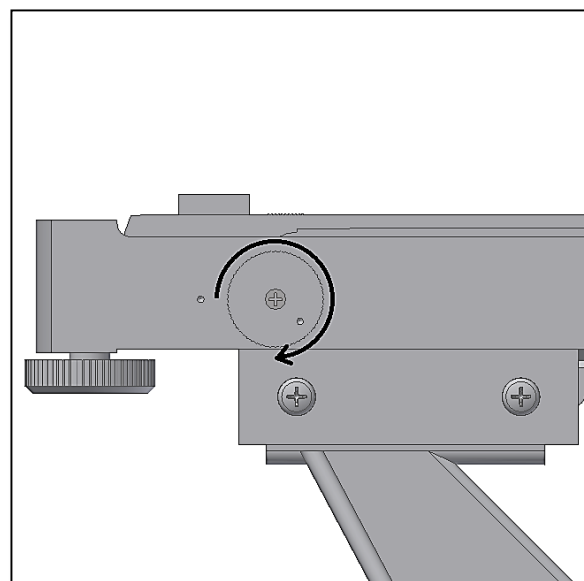


Figure 3. Turn power ON by rotating potentiometer.

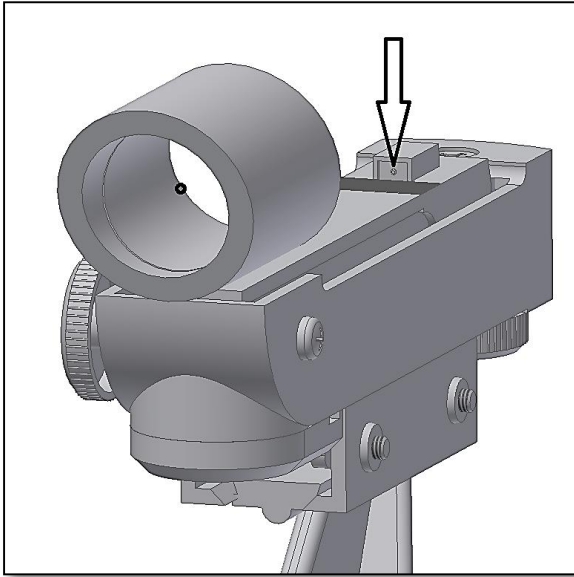


Figure 4. Red-dot lights up when ON.

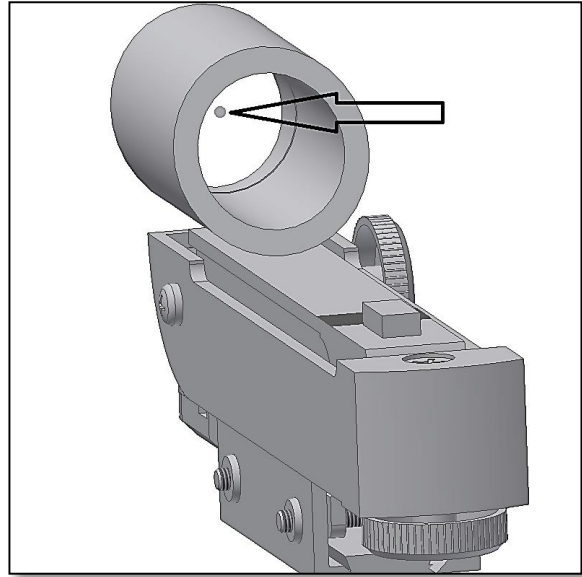


Figure 5. A red-dot is projected to the optical window.

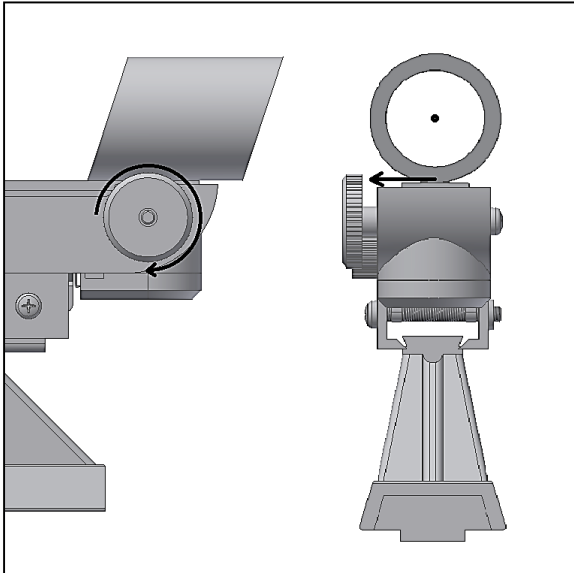


Figure 6. Turn azimuth adjustment knob to align finder.

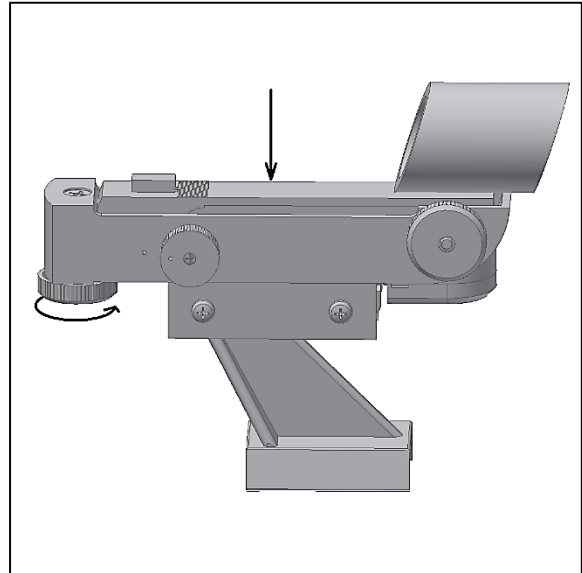


Figure 7. Turn altitude adjustment knob to align finder.

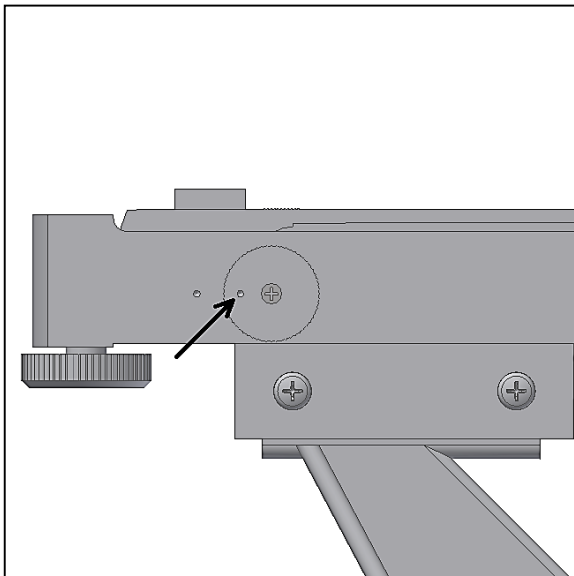


Figure 8. Turn potentiometer OFF.

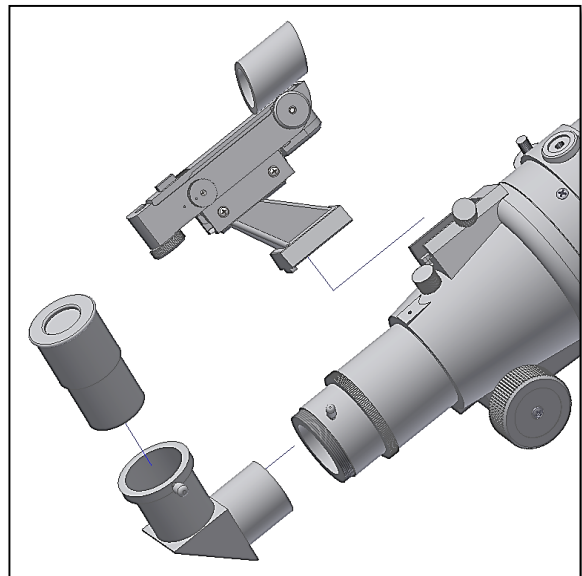
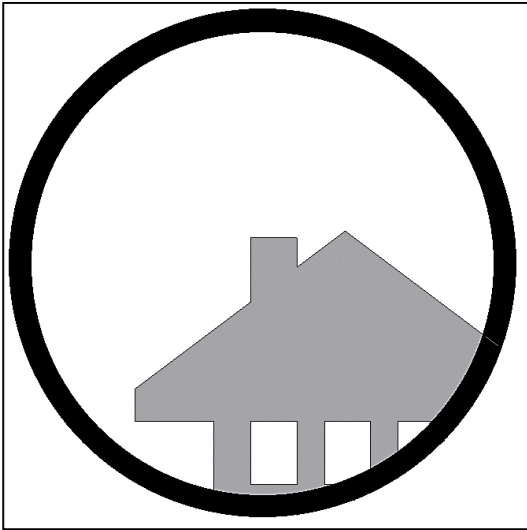
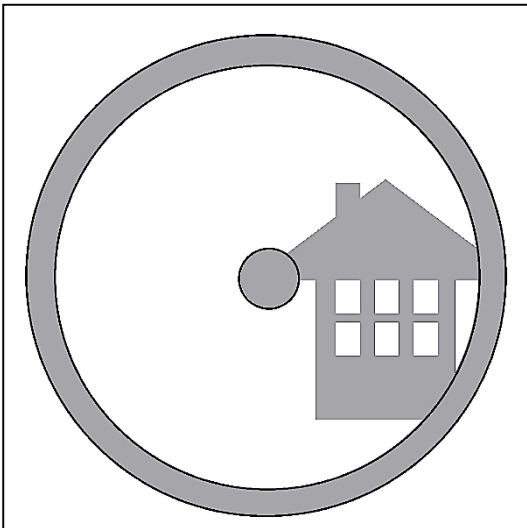


Figure 9. Place finderscope and eyepiece at the telescope.

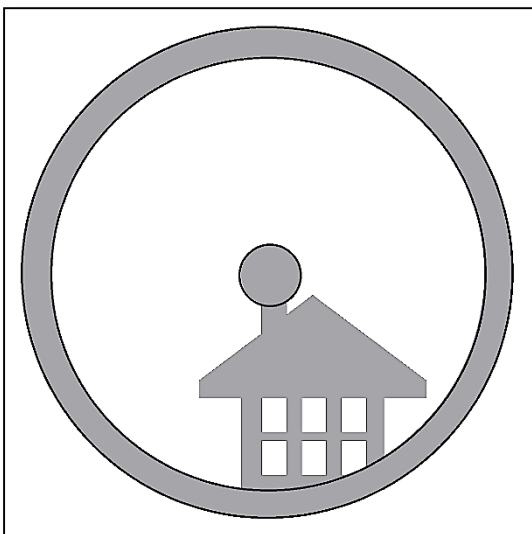
### 3. Aligning the finderscope



**3.1.** A distant object is centered 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 center of the field of view. We first look through the telescope with the lowest magnification possible, so we have the widest field of view.



**3.2.** 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.



**3.3.** After playing with the two finderscope 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!

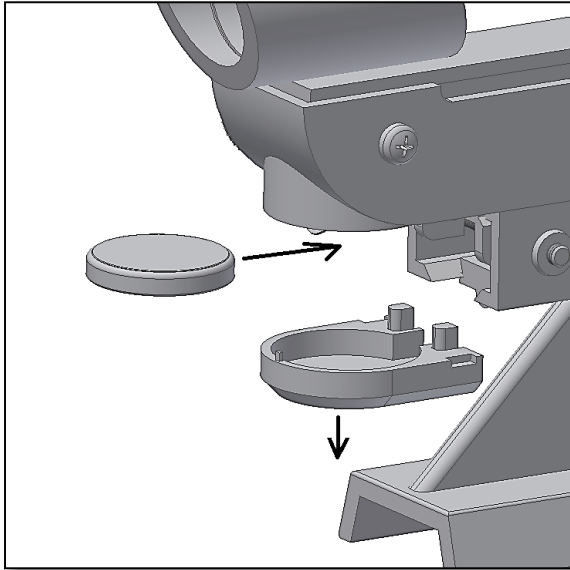


Figure 9. Remove battery.

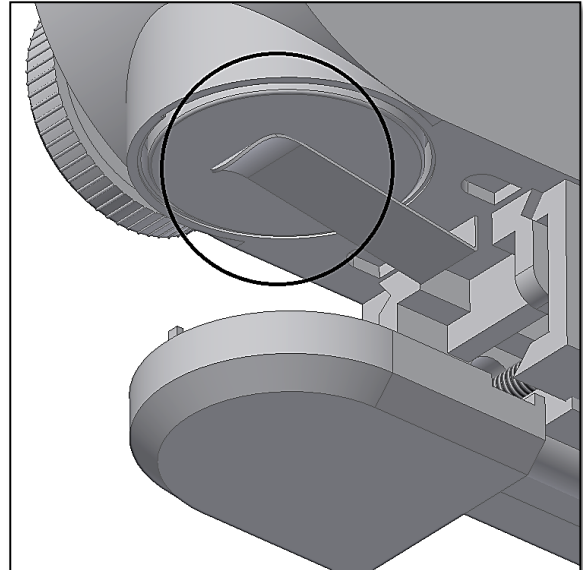


Figure 10. Place battery.

**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 battery needs to be replaced. Turn the potentiometer OFF. Now remove the battery cap and the battery from the battery compartment and replace with a new battery (figure 9 and 10). Make sure the battery clip has solid contact with the battery base. Place the plastic battery cap back to protect the battery. Turn the potentiometer 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.

