

omegon



# Instruction Manual

# Dobson 102/640 DOB

English version 8.2014 Rev A

## The Omegon® 102/640 DOB

*Congratulations on the purchase of the new Omegon® 102/640 DOB. This small telescope will give you hours of fun, with its all optical glass mirror and super compactness, and 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, some nebulae and a glimpse of the Jupiter disc features and its Galilean moons and the rings of Saturn. We have included many accessories so it will be easy to use this telescope.*

### 1. Included parts

we have included several accessories that will make the use of the telescope easier and fun, please take a look at the list of the parts so you can identify them in the future.

1. 3x magnification Barlow Lens;
- 2, and 3. Two eyepieces 1.25" (31.75mm); a H20mm and a H6mm eyepiece;
4. One Red Dot finderscope;



Figure 1. Parts list.

### 2. Getting Started.

It is very simple to get started. Here is how the telescope works. The telescope aperture should point to the object being observed. The mirror on back of the tube will gather the light coming from the object and reflects it to the secondary mirror that brings it to the eyepiece. Close to the aperture there is the focuser. The focuser moves up and down to get a precise focused image. At the focuser one can use the supplied accessories. Different accessories combinations give different results, such as different image magnifications or correct image for example. But all this will be explained in detail in the next pages.

### 3. Assembly.

Your telescope comes fully assembled. You just need to install the finderscope (figure 2 and 3) and place one of the supplied eyepieces (figure 4 and 5) don't forget to tighten the focuser thumbscrew to secure the eyepiece.. The dobsonian mount is a simple to use that moves up and down and rotates on its base. This is great because makes the use of the telescopes extremely easy and intuitive. The side hand knob (arrow figure 4) allows to increase friction and thus allowing to adjust smoothness of movement. To start observing insert an eyepiece (start by the low power eyepiece H20mm) make sure to tighten the focuser thumbscrew. Rotate the focuser knobs to get perfect focus. Start by choosing a distant terrestrial object, like a distant tree or church tower. This will allow you to get familiarized with the telescope operation for night use.

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



Figure 2. Remove the two thumb nuts.



Figure 3. Place the finderscope as shown.

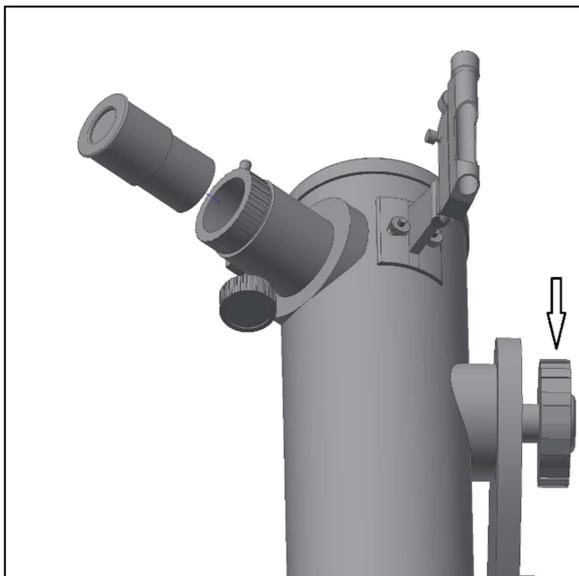


Figure 4. Insert a low power eyepiece (H20mm).

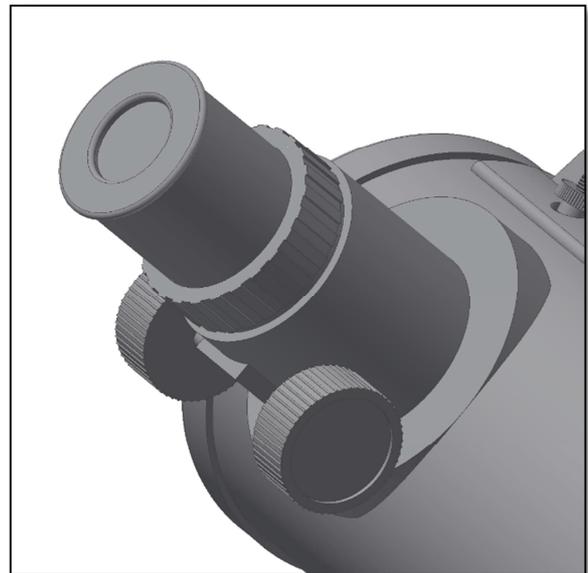


Figure 5. Tighten the side thumbscrew to secure eyepiece.

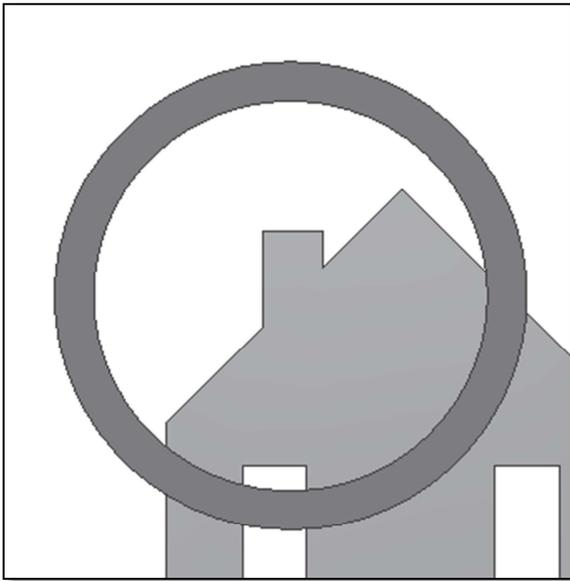


Figure 6. Use the barlow with eyepiece.

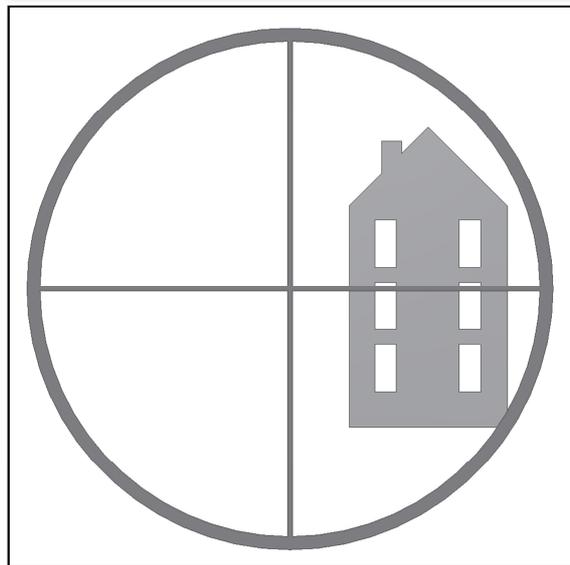


Figure 7. Tighten both focuser and barlow thumbscrews.

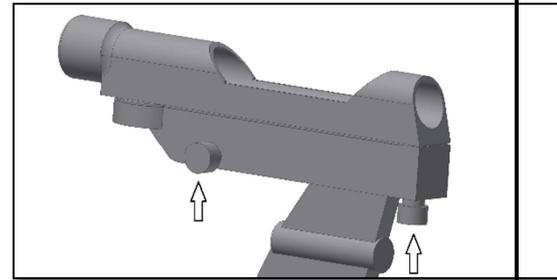
**4. How to use and align a finderscope?** *Example for recticle finderscope but also works for red dot finders.*



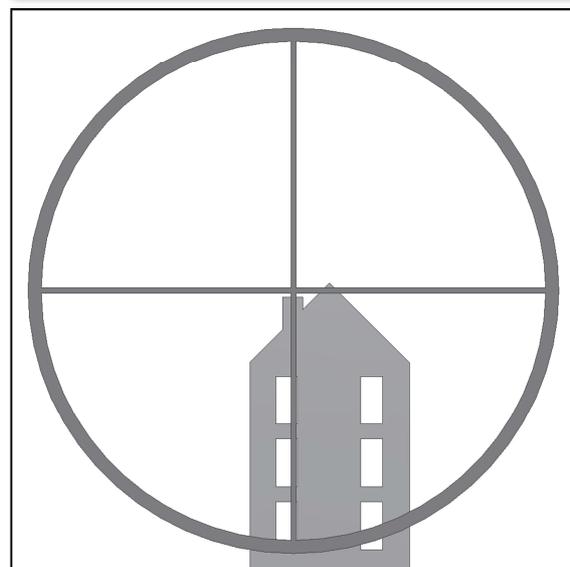
**4.1.** A distant object is centered at the telescope's field of view. In this example we have a house with a chimney. The chimney is the reference point to place at the center of the field of view. We first look through the telescope with the lowest magnification possible (H20mm should be preferable). So we have the widest field of view.



**4.2.** Looking through the finderscope we see the same building but in this case the chimney is not centered. We adjust the finderscope using the two thumbscrews (figure below) so that the finderscope red point moves slightly. This is enough to correct the objects position in the finderscope. Trial and



error is required to get a satisfactory result.



**4.3.** 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!

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

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



**5.1.** 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 observed when the Moon is not full. Try the crescent Moon and look for features along the terminator (between illuminated and dark surfaces).



**5.2.** 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 be able not only to see Jupiter's planet disc with its two major discernible bands but also its biggest moons, Io, Europa, Ganymedes and Callisto.



**5.3.** 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).

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

Using the accessories is easy and fun. To change magnification simple swap eyepieces. To get more magnification simply use the barlow lens. But how all of this work?

$$\frac{640mm}{20mm} = 32 \text{ power}$$

This means that the H20 eyepiece provides a 32 power (magnification). This seems low but try it, you will see a a bright image with some very good detail.

### 5.1. Power (magnification)

Your telescope as a focal length of 640mm. This is approximately the distance between the telescope lens to 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 telescopes focal length and the used eyepiece. You probably noticed that the two supplied eyepieces are H20mm and H6mm. This means that the H20mm is a 20mm focal length eyepiece while the H6mm is a 6mm focal length eyepiece.

To determine the magnification just divide the telescope focal length by the eyepiece focal length. Lets give an example for our telescope and the supplied eyepieces:

Telescope focal length is 640mm  
H20 eyepiece focal length is 20 mm

### 5.2. Barlow Lens

The barlow lens is a very interesting device. It is a negative lens that multiplies the telescopes focal length. So a 2x Barlow multiplies the original focal length by 2x, in this case  $640mm \times 2 = 1280mm$ .

A 3x Barlow lens multiplies by 3x.

Your telescope is supplied with a 3x Barlow lens. When used with the H20 eyepiece you get 3x the power obtained before  
 $32power \times 3x \text{ Barlow} = 96 \text{ power}$

### 5.3. Erecting lens (not included)

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

Here are some examples on how to use the accessories.

### Some possible accessory combinations

	Terrestrial View	Moon	Deep Sky	Jupiter and Saturn
Barlow Lens 3x				Yes
H20 Eyepiece			Yes	Yes
H6 Eyepiece		Yes		
Power	<i>Not suitable</i>	<i>106x</i>	<i>32x</i>	<i>96x</i>

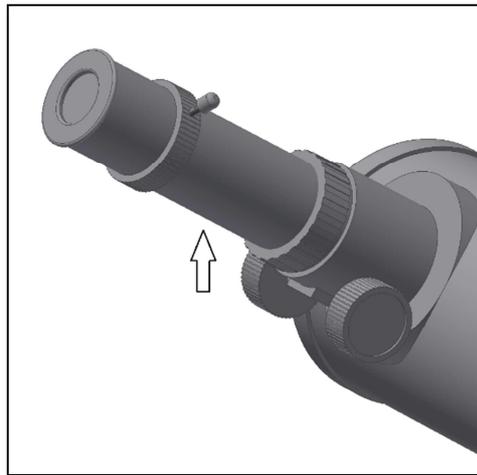
## 6. Troubleshooting and frequently asked questions

**Q: I can't get to focus my telescope, only get a bright circle.**

R: Make sure you have inserted the Diagonal and an eyepiece (start by the lowest power eyepiece – H20). Point to a distant object during the day and proceed as described in 4.

**Q: I get a mirrored view of the objects. Like if they were reversed, and R show up like Я**

R: This is caused by the Diagonal Mirror. It has a mirror inside. To get a corrected image it is



necessary to use the Erecting Lens (not included) and the Eyepiece as shown below.

**Q: When I use the barlow lens and the H6 eyepiece the image is so dark I can't hardly see anything.**

A: Power should be used with moderation. It depends on how stable the atmosphere is, too much turbulence causes image distortion. Usually the limit is 2x for each millimeter of the telescope aperture. In this case this telescope, the telescope has an aperture of 102mm so in a very good night you should be able to reach 208x. The more magnified the image is the darker it gets.

**Q: Is my telescope compatible with other eyepieces ?**

A: Omegon telescopes are compatible with all telescope eyepieces from different manufacturers as long as the eyepiece is a 1.25" (or 31.75mm) size eyepiece. If you would like to test an eyepiece from a fellow astronomer go ahead. Different eyepieces provide different visual experiences.

**Q: I want to use my telescope to take pictures**

A: This telescope is designed for visual use. It doesn't mean it can't be used for photography, however it will be hard to get high quality pictures with this telescope. If you have a smartphone you can shoot the Moon or some terrestrial objects. Search online for digiscoping and afocal photography.

**Q: The stars only appear as points in the telescope**

A: Stars will always appear only as points, even in the largest telescopes in the world. It is more interesting for beginners to observe two-dimensional objects, such the moon or planets. Once you find these, you will be able to start learning about the astronomical calendar.

**Q: I would like to observe the Sun**

A: An appropriate solar filter, placed over the objective, is essential for observing the sun. These are

available as plastic foil or glass filters. They allow only a tiny and harmless fraction of sunlight into the telescope when securely positioned over the objective, so allowing you to observe the sun in complete safety. Eyepiece solar filters (not available from us) should be avoided at all costs as they are considered unsafe.

*Note: Never look directly at the sun through a telescope without an objective solar filter!*

**Q: I can't see anything when I look through my telescope**

*A: The telescope is only suitable for astronomical observing and when used outside at night. Observing from inside the house or during the day is not usually possible.*

*The dust caps must first be removed and an eyepiece inserted before you can start observing. Are you sure you have removed all the dust caps, not just the small ones? If you have not, then no light will enter the telescope and everything will appear black.*

Annotations

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*For any other questions please feel free to drop a line or visit our website at:*

*<http://www.astroshop.de>*

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