

User Manual

omegon

▽nabla I



Omegon® ▽-I Nabla I Microscopes

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Omegon® ∇-I Nabla I Microscopes

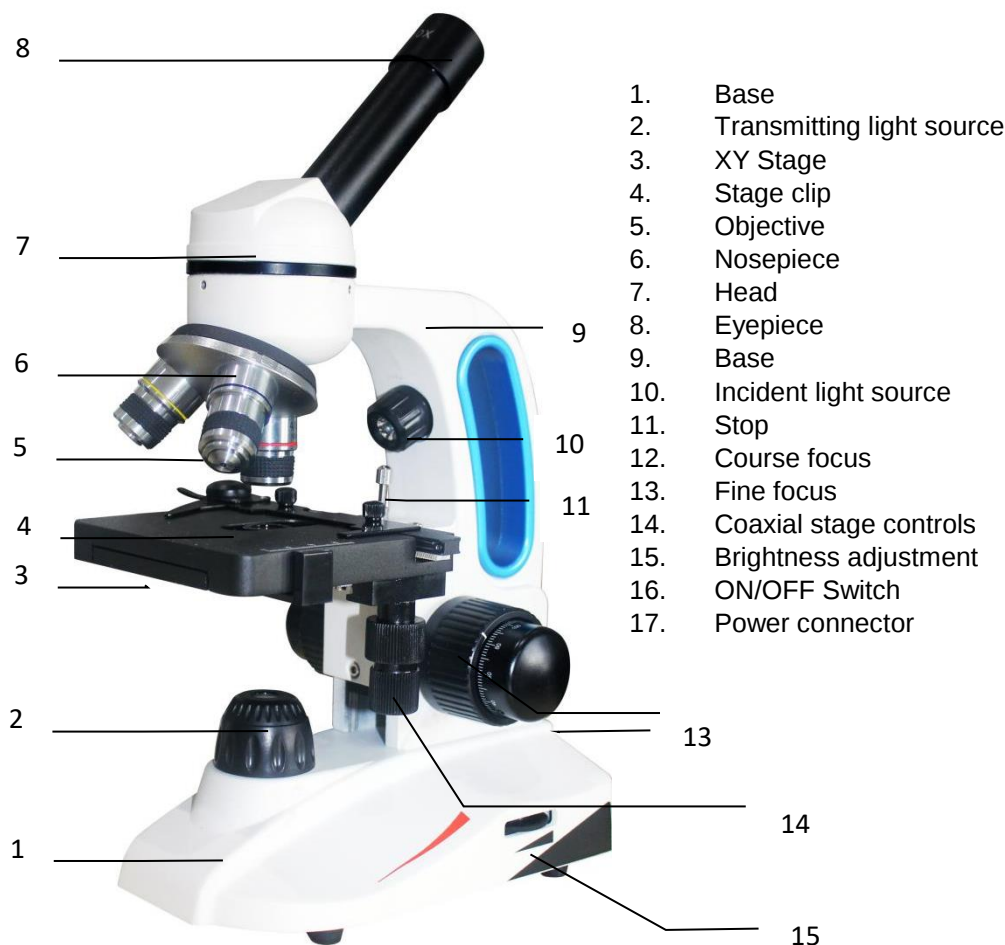
Congratulations on purchasing your Omegon ∇-I Nabla I microscope. This device offers you a number of advantages that are not usually found in this price range. The ∇-I not only has the transmitted light illumination that is usual for upright microscopes, but also incident light. This makes opaque objects such as coins, stamps, etc. accessible. The coaxial adjustment drive of the cross table, together with the focus fine drive that can also be operated with one hand, enables relaxed positioning and focusing of the object. This means you can fully concentrate on observation without taking your hands off the controls.

Preparation

Place the box with the microscope on a stable surface where it cannot fall down and where you have enough space to set it up. You will need a formula to work with the microscope: total magnification = objective magnification * eyepiece magnification. For example, the combination of the 10x eyepiece with the 4x objective results in a total magnification of 40x.

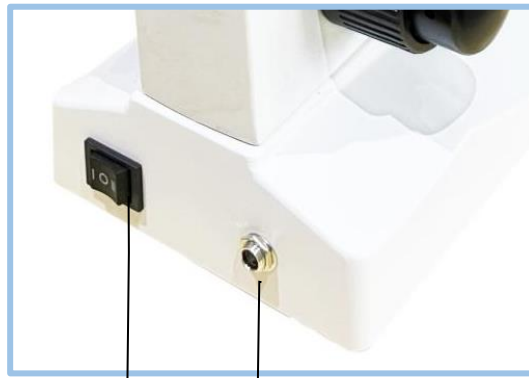
Microscope parts

Omegon ∇-I Nabla I M – Monoculare Version





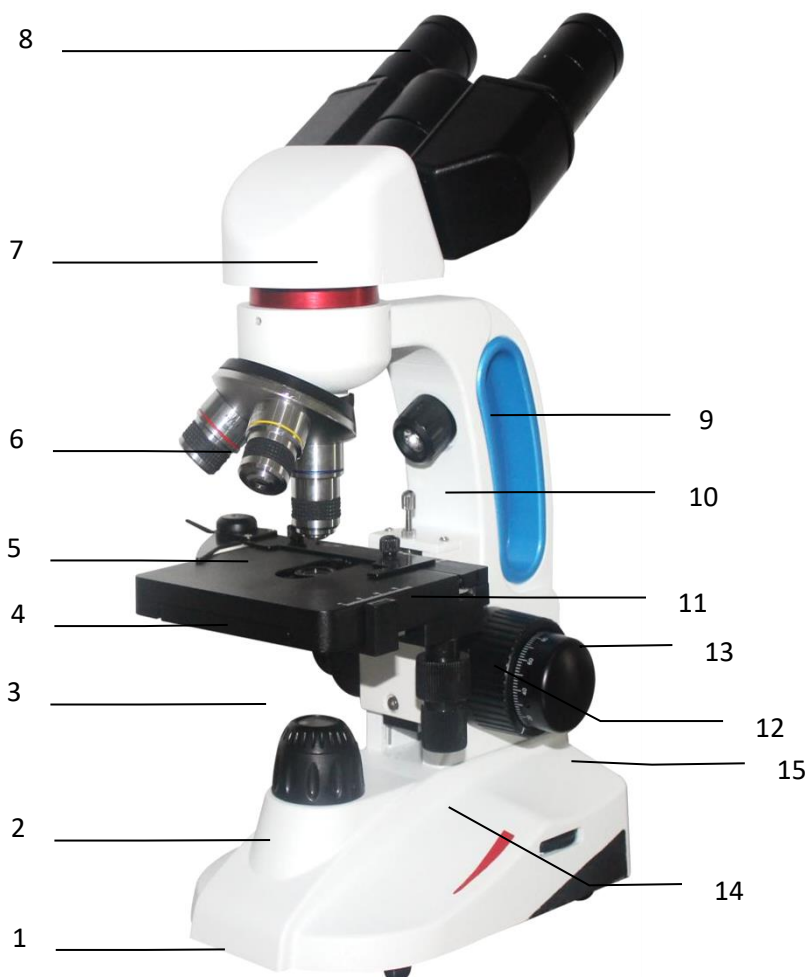
The monocular head can be rotated 360°



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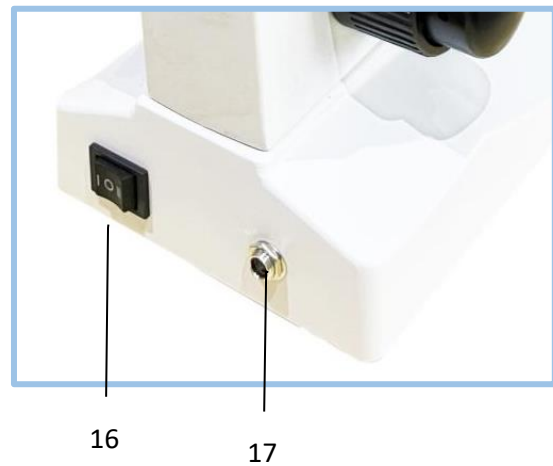
Omegon ∇-I Nabla I B – Binocular Version



1. Base
2. Transmitting light source
3. Stage
4. Stage clip
5. Objective
6. Nosepiece
7. Head
8. Eyepieces
9. Frame
10. Incident light source
11. Stop
12. Course focus
13. Fine focus
14. Coaxial stage controls
15. Brightness adjustment
16. On/Off switch
17. Power connector



The binocular head can be rotated 360°



Features

The biological microscopes of the Omegon ▽-I Nabla I series have been specially developed for the sophisticated entry into the fascinating hobby of microscopy. This device has: A new, modern look, a design optimized by computer-aided finite element analysis, which increases mechanical stability. The high-quality optical system ensures a clear image. A high-performance LED light source is used. With the support of the Abbe condenser, the 4x, 10x and 40x objectives can achieve a high color temperature similar to sunlight with high luminance and high uniformity. The ergonomic design makes the operation and use of the instrument more comfortable and the user does not get tired after prolonged use. The combination of a coaxial cross table with coarse and fine focusing, unique in this price range, ensures relaxed observation of even difficult details.

Assembly

Unpack the instrument's outer packing box and take out the inner box. Unpack the inner box to see the instrument and accessories inside. Read the packing list, check and count whether the accessories included in the package are complete. Take out the microscope stand and place it on a firm and stable surface. Remove the dust cover from the microscope. Take out the supplied objective lenses and screw them one by one into the objective mounts on the nosepiece. Then take out the supplied eyepiece and insert it into the eyepiece mount of the microscope head. Choose the 5V 1A adapter or 3 AA batteries as the power source.

Calibration

Open the slide holder on the mechanical stage and place a slide with a specimen on the stage. When you release the lever, the slide is clamped onto the stage. Then position the part of the specimen you want to examine more closely under the objective. Turn the nosepiece until the 10x objective is in the microscope's light path and use the coarse focus to move the microscope stage to the highest position under the objective. Turn the Abbe condenser so that the condenser moves to the highest position. Turn the power switch on and turn the brightness control to adjust the light intensity for observation through the eyepiece. Turn the coarse focus knob back and forth until an image of the microscopic sample can be observed through the eyepiece. Turn the fine focus knob until the microscopic image observed in the eyepiece is in focus. The microscope is now ready for use.

Operation

1. Using the monocular microscope:

Rotate the nosepiece to select the objective lens for the desired magnification. Focus your specimen using the coarse and fine focus knobs until the specimen appears sharp in the eyepiece. Use the coaxial stage adjustment to center the desired part of your specimen in the eyepiece. Rotate the condenser so that it is in the highest position. Operate the condenser aperture diaphragm handle so that both the resolution and contrast of the observed image in the eyepiece meet requirements. It is recommended to adjust the condenser aperture diaphragm so that the diameter of the image on the rear focal plane of the objective lens is 70–85% of the diameter of the pupil behind the objective lens. You can remove an eyepiece from the microscope and look directly into the eyepiece tube to observe the rear focal plane of the objective and adjust the aperture diaphragm. Before observing with the 100x oil immersion objective, drop a drop of immersion oil onto the sample and then move the 100x oil immersion objective into the drop. To remove bubbles in the immersion oil, you can swing the oil immersion objective away and back again using the nosepiece. Then re-center the specimen. The monocular head of the microscope can be rotated 360° to adapt to the operator's operating habits.

2. Using the binocular microscope:

Unpacking, installation and calibration of a binocular microscope are the same as

for a monocular microscope, but calibration should depend on the focusing of the right eyepiece tube. After calibration is complete, insert an eyepiece of the same magnification into the left eyepiece tube and then perform binocular calibration (see Fig. 2 to see the structure of a binocular head): Hold the left or right part of the binocular head. With both hands, rotate the eyepiece until the interpupillary distance between the two eyepieces matches the interpupillary distance of your eyes (your eyes should be able to observe the image of the microscope at the same time). Rotate the diopter adjustment ring on the left eyepiece tube until the microscopic image observed in the left eyepiece is as sharp as that observed in the right eyepiece. At this point, binocular adjustment is complete; scales on the dial between the two eyepiece tubes on the binocular head mark the interpupillary distance. If you already know your own interpupillary distance, you can set it to a known position and eliminate the step of interpupillary distance adjustment; the microscope's binocular heads can be rotated 360° to adapt to the operator's operating habits.

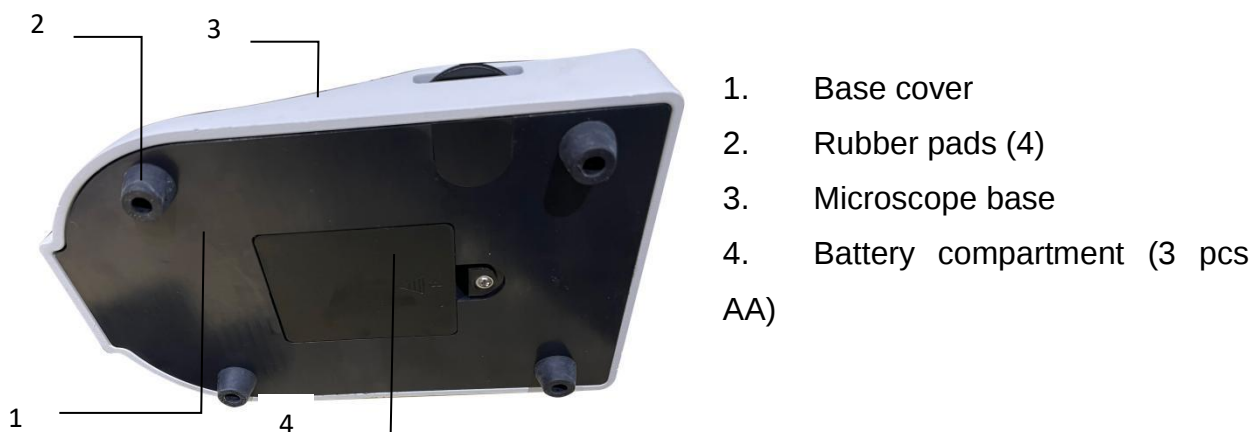


(Abb. 2) Binocular Head

1. Diopter adjustment for the left eyepiece
2. Left eyepiece
3. Vernier for the pupil distance
4. Right eyepiece

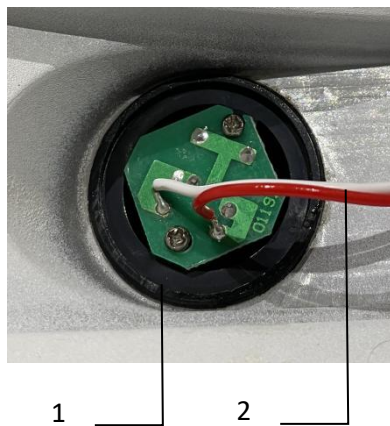
Changing the LED-bulb

This product uses a high-performance LED for illumination, which features high color temperature, long life and high luminous efficiency. However, the luminous efficiency may decrease after long-term use. Replace the LED illumination with a spare module to achieve satisfactory illumination. As shown in Fig. 3, loosen and remove the screws in the rubber feet on the microscope base. Remove the bottom cover plate to see the LED socket (Fig. 4) of the LED module.



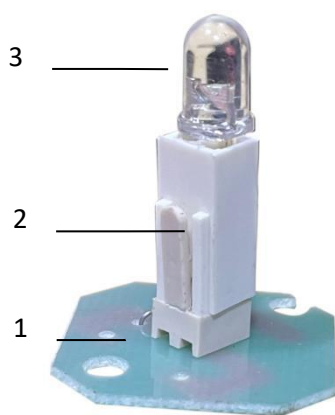
1. Base cover
2. Rubber pads (4)
3. Microscope base
4. Battery compartment (3 pcs AA)

(Fig. 3) Nabla I microscope from below



1. LED Module
2. Power cable of the LED Module

(Fig. 4. LED module in the microscope base)



1. LED Module
2. LED Socket
3. LED Bulb

(Fig. 5) LED Module



(Fig. 6) LED bulb in the socket

As shown in (Fig. 5), pull the LED module out of the microscope base; Pull the LED socket out of the module; as shown in (Fig. 6), unscrew and remove the compression ring of the LED bulb, and then take out the LED bulb. Replace the damaged LED bulb with a new one: as shown in Fig. 6, install it into the LED socket and press it tightly with the LED compression ring. Insert the LED socket into the LED module. The

positive and negative electrodes of the LED bulb should be consistent with those of the lamp holder when inserting. To ensure the luminous efficiency of the LED bulb, the surface of the new bulb should be clean and transparent, without oil stains, fingerprints, scratches and other defects. Install the entire LED assembly into the illumination of the microscope. First, push the compression spring aside and then insert the LED module into the illumination base. To ensure uniform illumination when the microscope is set to a low rate, for example, adjust the light intensity control so that the brightness in the field of view of the 4x objective is uniform when observing with the 4x objective.

Maintenance and Service

Before delivery, the microscope has undergone test commissioning and inspection. In order to ensure optimal function and longer service life, serious disassembly is not allowed under any circumstances. The instrument must be installed in a shady, cool and dry environment without corrosive influences. All objectives must be handled carefully and must not be disassembled or arbitrarily removed. If not used for a long time, the objective lens, eyepiece and other optical components must be stored in a moisture-proof box; Turn off the power switch, unplug the power cord and cover the instrument with a dust cover after use. To ensure safety, the grounding terminal of the power supply must be in good condition. Appendix 1 contains information on the most common errors during use, the causes of the errors and the methods for troubleshooting. If the problems cannot be solved, please contact the seller or the manufacturer.

Attachment 1: Troubleshooting

Error	Cause of the error	Troubleshooting
Uneven brightness in the field of view of the microscope.	The nose piece is not rotated to a correct location; there's dust or other contaminants on the surface of the optical parts of the eyepiece or objective lens.	Revolve the nose piece to make the objective lens positioned at a proper location; wipe off the dust on the surface of the optical parts with lens paper.
The eyes are prone to fatigue during observation.	Incorrect focusing or wrong eye distance. Due to the very small depth of focus various parts of a object or prepareate have to be focused separately.	For a monocular microscope, turn the fine adjustment knob to make the image clearer. For binocular microscopes, adjust the interpupillary distance of the eyepieces so that both eyes see the microscopic image at the same time, and adjust the diopter adjustment ring on the left eyepiece tube so that the image is sharp in both eyes at the same time.

Attachment 2: Specifications

Head:

Monocular Head, 45-Grad- Inclination, 360-Grad-Rotatable.

Binocular Head, 30-Grad-Inclination, 360-Grad- Rotatable.

Eyepiece WF10X

Objectives 4X, 10X, 40X

Nosepiece with 3 Positions

Kondensor: NA0,65 Kondensor

Focusunit: Coaxial coarse and fine focussing (Focusrange: 20 mm)

Stage: 95 mm × 105 mm, double layer adjustable stage

Illumination: Incident and transmitting light sources (LED)