User Manual

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Omegon® ∇-II Nabla II Microscopes

English Version 05_2024 Rev. A Art.-Nr. 82925/82926/82927

Omegon® ∇-II Nabla II Microscopes

Congratulations on purchasing your Omegon ∇-II Nabla II microscope. This device offers you a number of advantages that are not usually common in this price range. 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 concentrate fully on observation without taking your hands off the controls.

Unboxing

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.

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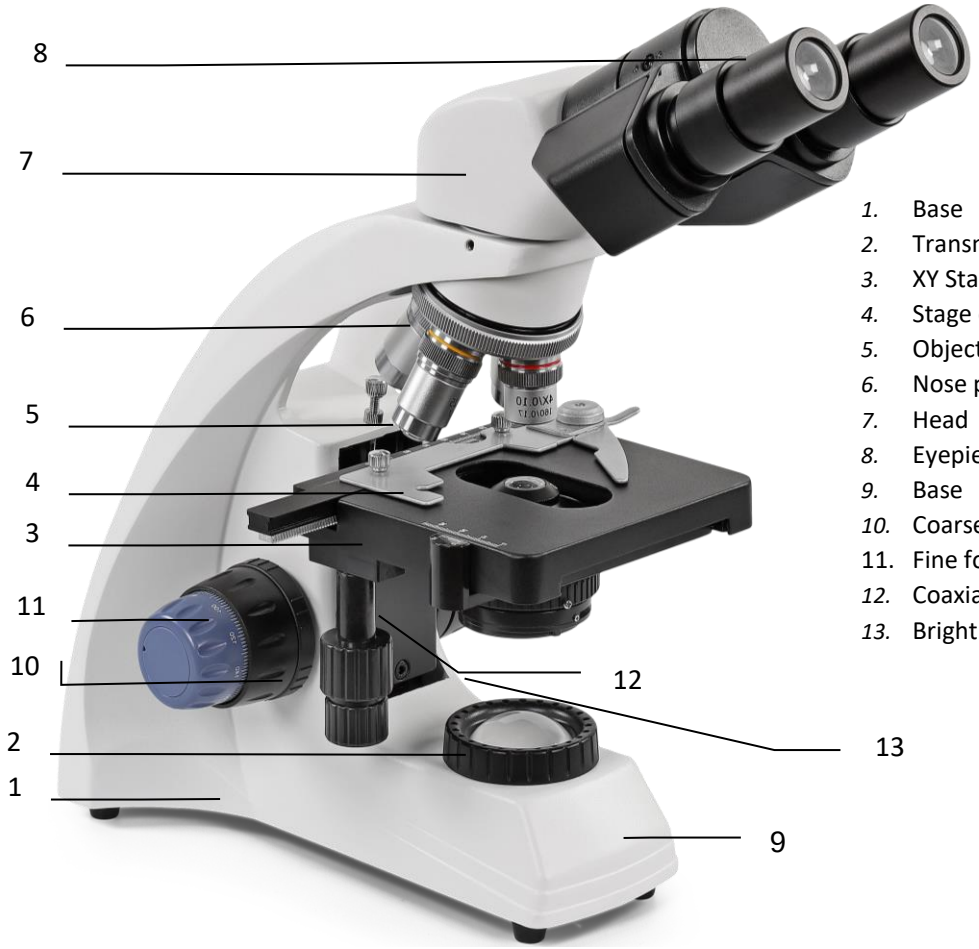
Omegon ∇-II Nabla II B – Binocular Version



1. Base
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Features

The Omegon ∇-II Nabla II series biological microscopes are specially designed for teaching in universities and colleges, as well as primary and secondary schools. This device features: Novel modern appearance, 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 feel fatigue after long-term use. This product is suitable for teaching in universities and colleges, as well as clinical laboratory tests in hospitals.

Setup

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 on/off 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 aperture diaphragm handle of the condenser so that both the resolution and contrast of the observed image in the eyepiece meet requirements. It is recommended to adjust the aperture diaphragm of the condenser 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

preferences.

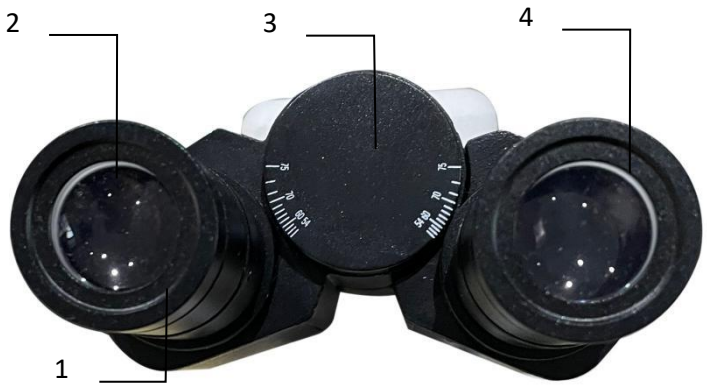
2. Using the binocular microscope:

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 with 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 firmly. 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 binocular heads of the microscope can be rotated 360° to adapt to the operator's preferences.

3. Using the trinocular microscope:

Unpacking, installing and calibrating a trinocular microscope is the same as for a binocular microscope. In addition to the binocular attachment, the trinocular version also has a camera port that allows a camera to be connected at the same time.



(Abb. 2) Binocular head

1. Diopter adjustment for the left eyepiece
2. Left eyepiece
3. Scale for the eye distance
4. Right eyepiece

Maintenance

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.

Appendix 1: Troubleshooting

Error	Cause	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 preparate 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.

Appendix 2: Technical Data

Technical Data	
Binocular head	Binocular head, 30° inclined, Eye distance 55mm-75mm
Eyepiece	WF10×
Nosepiece	Nosepiece with 4 positions
Objective	Achromatic Objectives：4×、10×、40×(S)、100×(S)Oil immersion
XY Stage	Mechanical 2-way stage Stage size：125mm×115mm Verstellbereich：75mm×30mm
Condensor	N.A.1.25 Abbe Condensor with diaphragm and filter holder
Focuser	Coaxial rack and pinion focuser with coarse and fine focus Focussing vernier scale divisions 0.002mm
Illuminiation	LED3W/4V 220V/110V Brightness adjustable
Collector	Fixed field of view, high brightness
Optional Accessories	Eyepieces: WF16×,WF20×, P16×and 1.3 MPixel Camera
	Achromatic Objectives: 20×,60×(S)

Objectives:

Type	Magnification	Numerical Aperture (N.A.)	Working distance (mm)	Cover glass thickness (mm)
Achromatic Objective	4×	0.1	37.5	0.17
	10×	0.25	6.54	0.17
	40×(S)	0.65	0.63	0.17
	100×(S) Oil	1.25	0.195	0.17