V

INSTRUCTION FOR OLYMPUS STEREOSCOPIC MICROSCOPES

model **V·VA·VK**

OLYMPUS OPTICAL CO., LTD. TOKYO JAPAN

The use of stereoscopic microscopes is steadily expanding. They are used for the study of the anatomy of animals, for the classification of plants, and for inspection during the assembling of the parts of transistor radios, clocks, watches and other precision instruments. Accordingly, increasingly larger varieties of design and magnification are required for diffe rent fields of research to satisfy different purposes.

In response to the demands received from greatly diversified fields, OLYMPUS is manufactur ing all types of stereoscopic binocular microscopes including those with zooming devices. Shown on the pages 3 and 4 are three different types of such microscopes — Models V, VA and VK — which have become known as the most practical stereoscopic binocular micr oscopes. The following information gives a complete picture of the superior efficiency and functions of these microscopes.

model VK

FEATURES :

1) 45 degree inclined binocular head. Rotative and fixative at any position.
2) Real and erect image with stereoscopic effect.
3) Large field and long working distance.
4) Interpupillary distance adjustment provided.
5) Diopter adjustment to compensate different visual faculties of both eyes.
6) Available simplified wooden base and hand rest,
7) Convertible clear glass and smoked glass.

Table of Magnifications and Field and Distance

Objectives	Free Working Distance	Eyepieces	
		G 10 ×	
		Magnification	Field
2 × (Fixed)	66. 5 mm	20×	10. 0 mm

model V

FEATURES :

1) 45 degree inclined head. Rotative and fixative at any position.
2) The paired objective is interchangeable easily by bayonet mount.
3) Real and erect image with stereoscopic effect.
4) Large field and long working distance.
5) Interpupillary distance adjustment provided.
6) Diopter adjustment to compensate different visual faculties of both eyes.
7) Available simplified wooden base with hand rest.
8) Convertible clear glass and smoked glass.

Table of Magnifications and Field and Distance

Objectives	Free Working Distance	Eyepieces			
		G 10 ×		G 20 ×	
		Magnification	Field	Magnification	Field
1. 5×	67 mm	15 ×	13. 3 mm	30 ×	6. 7 mm
3 ×	56 mm	30 ×	6. 7 mm	60 ×	3. 3 mm
6 ×	30 mm	60 ×	3. 3 mm	120 ×	1. 6 mm

model VA - 10 - I

model VA

FEATURES :

1) Vertical binocular tube.
2) Real and erect image with stereoscopic effect.
3) Large field and long working distance.
4) Interpupillary distance adjustment provided.
5) Diopter adjustment to compensate different visual faculties of both eyes.
6) Convertible clear glass and smoked glass.

Table of Magnifications and Field and Distance

Objectives	Free Working Distance	Eyepiece G 10 ×	
		Magnification	Field
1 ×	117 mm	10×	20. 0 mm
2 ×	78 mm	20×	10. 0 mm
3 ×	58 mm	30×	6. 7 mm
6 ×	31 mm	60×	3. 3 mm

model VA - 10 - II

model VA - 10 - IV

Combinations :

Eyepiece	G 10 ×			
Objectives / Stand	1 ×	2 ×	3 ×	6 ×
Horizontal stand (VS- I)	VA-10- I	VA-20- I	VA-30- I	VA-60- I
Inclined stand (VS- II)	VA-10- II	VA-20- II	VA-30- II	VA-60- II
Universal stand (VS-IV)	VA-10-IV	VA-20-IV	VA-30-IV	VA-60-IV

CONSTRUCTION AND FUNCTIN OF STEREOSCOPIC MICROSCOPES

MICROSCOPIC BODY :

The body is fixed to the supporting pillar by metal mount. The upper part includes the inclined binocular body tube (the vertical binocular body tube in case of Model VA), and its lower part is equipped with objective lenses.

Model V Objective lenses are interchangeable ; bayonet type.

Model VA Equipped with one of four different kinds of objective lenses (1X, 2X, 3X and 6X).

Model VK Equipped with the objective lens of magnification 2X.

The body is made to rotate 360° around the pillar. It can be slid up and down for a range of 50 mm, and can be fixed by tightening the screws at any desired position. Then; by the rack-and-pinion adjusting mechanism the optical head (front part) can be slid up and down within 40mm range. It also has a tap hole to which the Epi-illuminator Model LSG-II can be attached if desired. (In Models V and VK the hole is found on both the front and sides, while in Model VA on the front only).

BINOCULAR TUBE :

The angle of visual axis is 12°, and the eyepiece tube on the left is provided with a diopter adjustment.

Inter-pupillary distance of each tube can be adjusted separately, and the range of adjustment is from 56 mm to 76 mm in case of eyepiece G 10X. Furthermore, since the body tube of either Model V or Model VK can rotate through 360° around the vertical axis, it can be fixed at any desired position for microscopic examinations.

BASE :

The size of the oval-shaped base is 130 mm × 184φ mm, and its thickness 18 mm. A glass stage plate can be fixed to the hole on the surface of the base with clamping screw.

The stage VS-II of model VA is inclined 30 degrees to horizontal. It makes a 60° angle to the horizontal through the inclined body tube. In other words, the body tube is at vertical angle to the stage face.

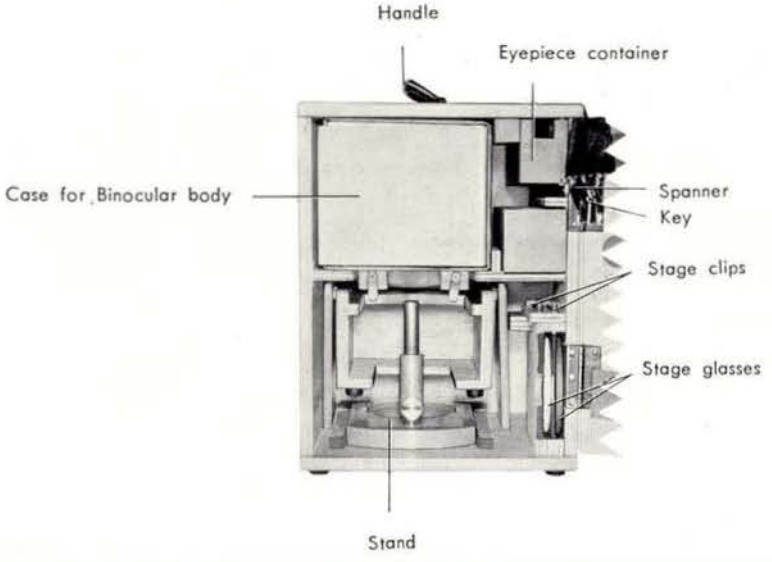
Model VA-IV is designed to use in combination with a universal stand (Model VS-IV), which serves many purposes. The main body of Model V or Model VK can also be fixed to this universal stand.

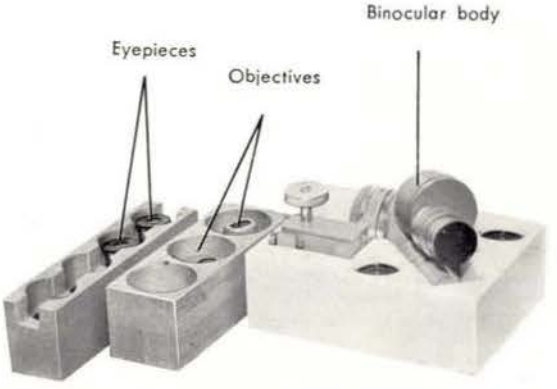
SIMPLE STAND :

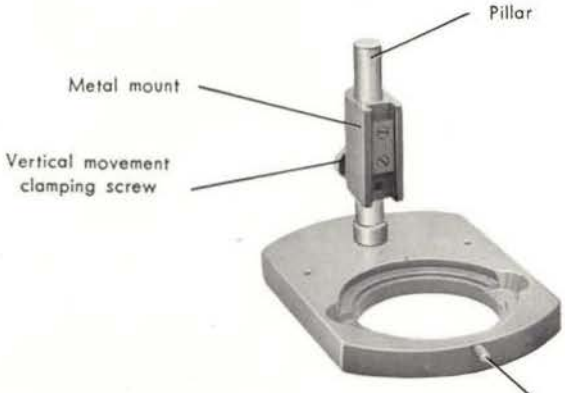
This is a wooden stand to be used exclusively with Model V and VK.

It is 96 mm high, and is equipped with hand rests on both sides. It can be kept in the container together with the main body of the microscope.

HOW TO ASSEMBLE STEREOSCOPIC MICROSCOPES







1 Uncover the container with the key hung from its handle.

2 Loosen the bottom screw with the spanner, and take out the base.

3 Remove the corrugated cardboard, take out the main part of the microscope and fix it on to the base. For this purpose, first fix the metal mount on the supporting piliar at the proper height, then fix the main body with clamping screw.

4 Carefully place the stage plate into the stage plate grooves on the base, and fix it there with clamping screw.

5 Model V or VK has a special simplified base for its own use.

NOTE :

The axis of the focusing handle is regulated by tapering mechanism, and one can either tighten or loosen it as one pleases. In case the main body tends to slide down, grasp the handles on both sides with your hands and gently turn them clockwise as you do when you wring a towel, and you can fasten the handles. To loosen the handles, turn them in the opposite direction. In ordinary cases handles should be adjusted rather tightly.

PROPER HANDLING OF THE OLYMPUS STEREOSCOPIC MICROSCOPES

1 PROPER SELECTION OF THE OBJECTIVE LENS :

Since the objective lens for either Model VA or Model VK is fixed, there is no such need.

In Model V, however, one must select a proper objective lens, and adjust the mark (red mark) of the main body with that of the objective lens. Adjust the bayonets and turn the lens 90° in the direction indicated by the arrow mark in the photograph, and the objective lens is fixed.

At this moment the mark indicating magnifications faces the front.

2 PROPER SELECTION OF THE EYEPIECE :

Slip the proper lens into the eyepiece sleeve. While the lens is removed, be sure to cover the eyepiece sleeve with its cap to avoid dust.

3 MOVEMENT OF THE BODY :

To slide the main body up and down, loosen the clamping screw of the main pillar, move it to the desired height while holding the base with the other hand, and fix the body to the pillar with the clamping screw.

4 DIOPTER ADJUSTMENT AND INTER-PUPILLARY DISTANCE ADJUSTMENT

Move the helicoid of the diopter adjustment ring on the left eyepiece tubo, and obtain the standard vision (marked zero).

While looking with your right eye into the lens, bring the specimen into focus by manipulating the focusing handle. Then turn the diopter adjusting ring little by little both to the left and to the right till you reach the point where the specimen is seen most clearly. Then manipulate the prism-housing with both hands, while looking into the microscope with your both eyes to obtain the proper inter-pupillary distance to fit your eyes. When that is obtained you can get a stereo view of the specimen.

5 REMARKS FOR MICROSCOPIC EXAMINATION :

The specimen should be fixed on the stage by the clip. Use either the opal glass stage or the clear glass stage, according to the kind of specimen and the purpose of your observation. If the specimen is white and hard to observe when placed on the clear glass stage, you can improve the visibility by placing a sheet of black paper under the stage.

You may sometimes be able to improve the effect of your microscopic examination by using an exclusive illuminator LSG (optional accessory), when such illuminator suits your research purposes.

Epi-illuminator LSG-II with transformer TF

How to adjust the coarse adjustment handles :

When turned in both directions as indicated in the picture withe arrows, the coarse adjustment handles can be either tightened or loosened according to the directions in which they are turned.

Be careful not to let the main body slide down.

Measurement of length

When you wish to measure length, use the eyepiece micrometer (10 mm, divided into 100 equal parts). Use 22 mmφ for G 10X, and 19 mmφ for G 20X.

Insert the eyepiece micrometer into the micrometer inserting groove found in the lower part of the eyepiece, and fix it with the pressing ring attached to the micrometer.

Shown on the next page is the value of one division of the eyepiece micrometer scale at each magnification :

Objective lens \ Eyepiece	G 10 ×	G 20 ×
1 ×	0.1	0.05
1.5 ×	0.066	0.033
2 ×	0.05	0.025
3 ×	0.033	0.0165
6 ×	0.0165	0.008

When the further precise measurement is required, use the objective micrometer simultaneously with the eyepiece micrometer.

OPTIONAL ACCESSORIES

1 Epi-illuminator LSG-II with transformer

2 Trans-illuminating mirror base with hand-rests and 20W bulb

3 Universal stand VS-IV

REMARKS :

Maintenance Instruction :

Special care must be taken to avoid dampness and dust when storing the microscope. A laboratory, where the microscope is mostly used, is often under unsatisfactory conditions as far as those two factors are concerned. It is preferred that immediately after the use, the microscope is stored in the cabinet. If, because of constant research requirements, such storing would cause any inconvenience, be sure to use the provided plastic cover.

Objectives and eyepieces can best be stored in a desiccator. It is also a desirable practice to keep some desiccant in the cabinet.

When the eyepiece is removed from the microscope, be sure to put on the provided cap. It must be absolutely prohibited to disassemble the mechanical parts of the microscope for repair or for any other reasons. It must be done by the professional engineers. In cleaning parts of the microscope, one must be very cautious — dusts at the minute part may be blown away by use of a rubber ball or may be removed by a soft brush.

OLYMPUS HIGH GRADE STREOSCOPIC MICROSCOPES

model SZ

- A perfect multi-objective Zooming system
- Zoom ratio : 4. A continuous flow of magnification from 7.5X to 30X (upto 120X when 20X oculars and 2X objective are used) is available.
- No out-focusing effect while changing magnification.
- Trans-illumination and Epi-illumination are available.
- Special attachments :

  Trans-illuminating mirror base with hand-rests, epi-illuminator, extra objectives 0.75X, 1.5X & 2X extra oculars G10X-D (cross-hair) and G20X paired.

model X

- Inclined 45° binocular head.
- Novel rapid change of magnification.
- Different magnifications in each of the ranges from 6.3X to 40X, 12.5X to 80X, with objective 1X (Type I) and also 12.5X to 80X, 25X to 160X with objective 2X (Type II) are obtained by simple turning a drum.
- Large working distance.
- The working distance is 80 mm.
- Erect image with non-reversed sides.
- Interpupillary Distance adjustment provided.
- Diopter adjustment to compensate different visual faculties of both eyes,
- Extra stand for large specimen proyided.
- Clear Glass and smoked glass provided.
- Available epi-lamp.

OLYMPUS OPTICAL CO., LTD.
3-7 Kanda-Ogawamachi, Chiyoda-ku, Tokyo, Japan

Printed in Japan