

INSTRUCTIONS

AHBS3

RESEARCH PHOTOMICROGRAPHIC
MICROSCOPE SYSTEM

AUTOMATIC VERSION

VANOX

ASSEMBLY INSTRUCTIONS

WARNING

Before assembly, please read this manual carefully:

- *A microscope is a precision instrument. Always handle it with extreme care, and do not subject it to sudden shocks.*
- *When assembling the microscope, keep all the connecting surfaces clean, and avoid scratching the components.*

OLYMPUS®



AX5712

UNLOCK THE NEUTRAL DENSITY FILTERS

The ND filters for light adjustment situated in the base are locked during transportation. Unlock these filters before assembly as follows:

1. Turn the microscope on its back. (Fig. 1)
2. Fully loosen the locking Hexagon screw located in the center of the base by turning it clockwise (as indicated by the ARROW on the label ①). Use the Hexagon wrench provided in the cleaning kit contained in the smaller accessory case.

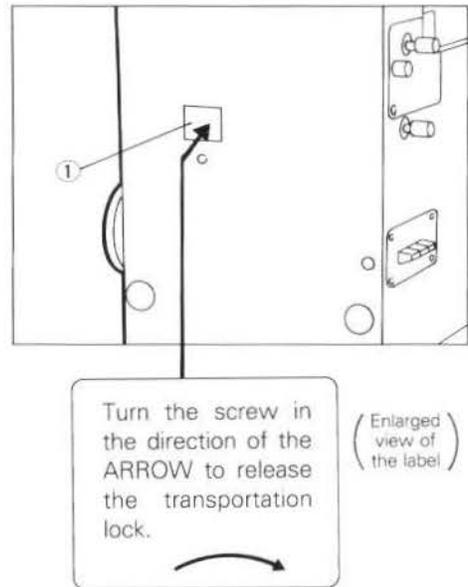


Fig. 1

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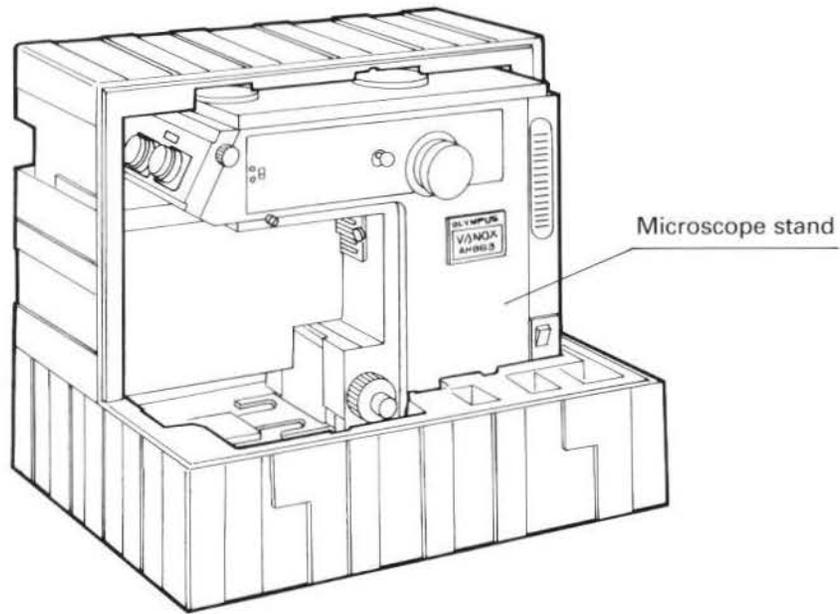
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1 STANDARD CONFIGURATIONS

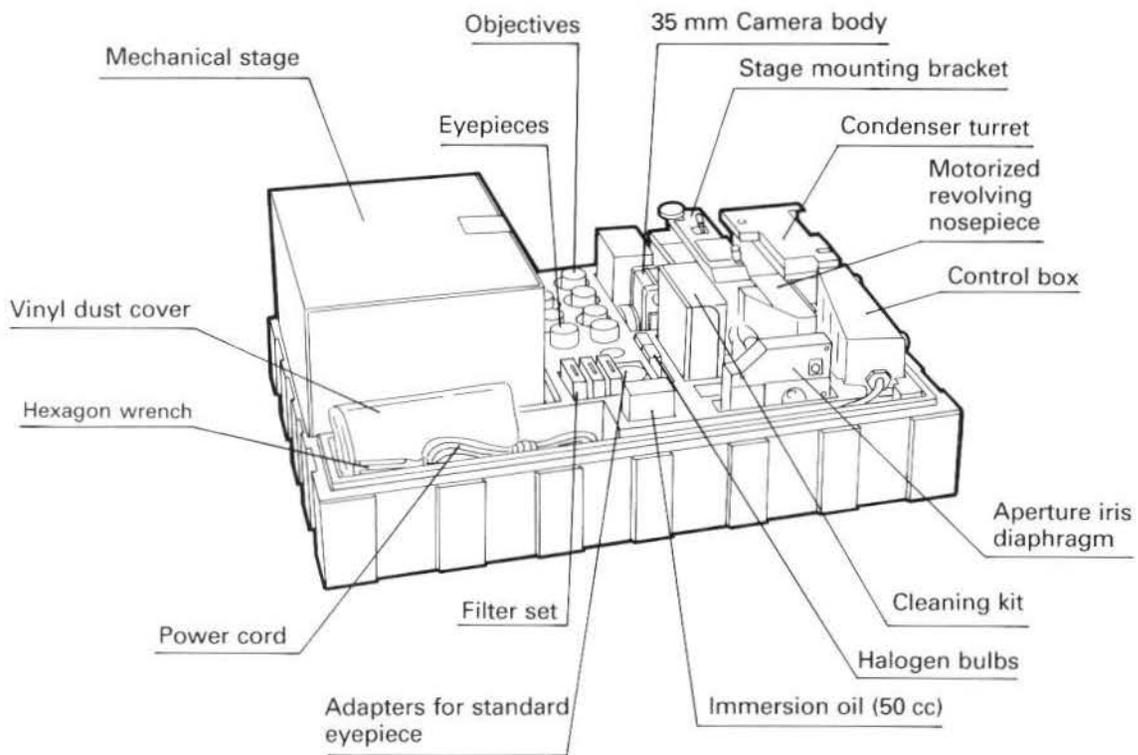
Component	Model	AHBS3-513	AHBS3-514
Microscope stand equipped with binocular tube, filter holder and bulb socket, including stage mounting bracket (A2-CH), condenser turret (A2-TCS2), aperture diaphragm unit (A2-AAC) control box (A2-CB), 2 pcs adapter (AA7496) for standard eyepieces, Hexagon wrench (AB2759), 50 cc immersion oil and vinyl dust cover (A041)	AHBS3-F	○	○
Power cord	UYCP	○	○
Sextuple revolving nosepiece unit	AH3-6RE	○	○
Mechanical stage with right-hand low drive controls, including specimen holder (A2-HL) and stage insert plate (AA5867)	AH2-SVR	○	○
Halogen bulb, 2 pcs.	JC12V 100W HAL-L	○	○
Automatic 35 mm camera bodies, 2 pcs.	C-35AD-4	○	○
Color temperature compensation filter set consisting of 45LBT-N and 43IF550-W45	PM-FIL-6	○	○
Lens cleaning kit	CLEANING KIT	○	○
SPlan fluorite objective 2X	SPLFL2X	○	○
SPlan achromatic objective 4X	SPL4X	○	
SPlan achromatic objective 10X	SPL10X	○	
SPlan achromatic objective 20X (spring)	SPL20X/R	○	
SPlan achromatic objective 40X (spring)	SPL40X/R	○	
SPlan achromatic objective 100X (spring, oil)	SPL100X/RO	○	
SPlan apochromatic objective 4X	SPLAPO4X		○
SPlan apochromatic objective 10X (spring)	SPLAPO10X/R		○
SPlan apochromatic objective 20X (spring)	SPLAPO20X/R		○
SPlan apochromatic objective 40X (spring)	SPLAPO40X/R		○
SPlan apochromatic objective 100X (spring, oil)	SPLAPO100X/RO		○
LB eyepieces 10X (focusable), 2 pcs.	SWHK10X	○	○

Note: ○ indicates the compatible components for each model.

2 CONFIGURATION OF COMPONENTS IN STYROFOAM CASES



Case A



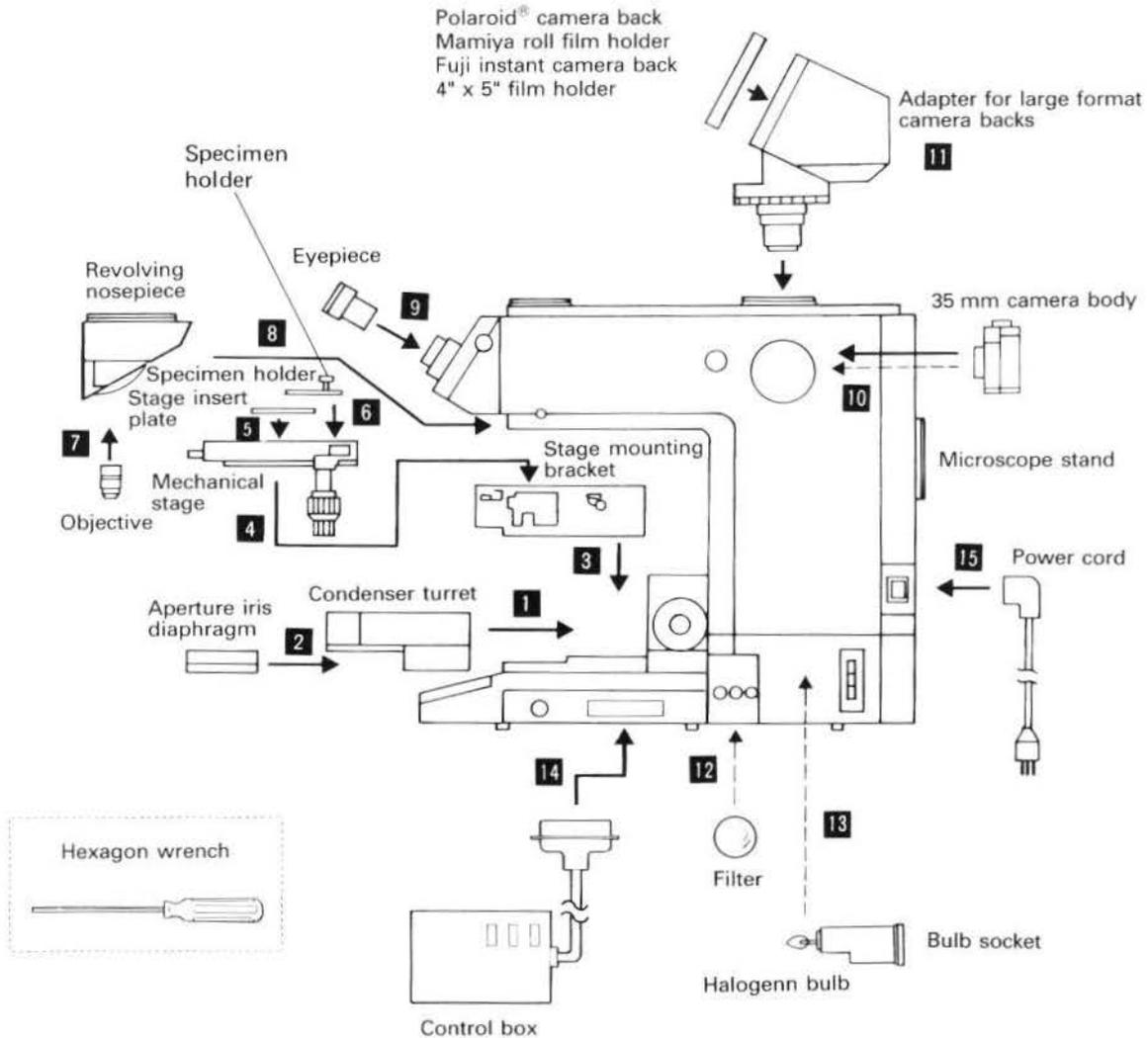
Case B

3

ASSEMBLY

Ascertain that the ND filters are unlocked as mentioned before. The following picture illustrates the sequential procedure of assembly. The numbers indicate the order of assembly of various components.

- ★ Remove dust caps before mounting components.
- ★ Keep all connecting surfaces clean and avoid scratching the glass surfaces.



- ★ Avoid installation of the microscope in the following locations:
 1. Near air conditioner vents.
 2. In areas subject to excessive vibration and temperature change.
 3. In areas close to noise-generating equipment.

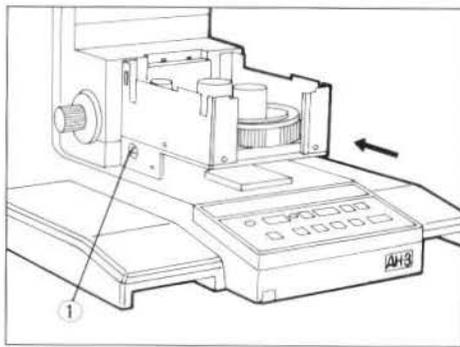


Fig. 2

1 Attaching the Condenser Turret

Slide the condenser turret onto the dovetail slide on the base of the microscope stand.

- ★ With a slightly upward tilt, push the condenser turret as far as it will go, and clamp by tightening the Hexagon screw ① with the Hexagon wrench provided. (Fig. 2)

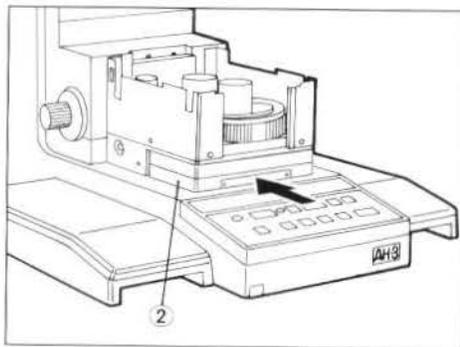


Fig. 3

2 Attaching the Aperture Iris Diaphragm

Slide the aperture iris diaphragm onto the dovetail slide between the condenser turret and the base. Clamp the aperture iris diaphragm by tightening the Hexagon screw ② located on the left hand side of the microscope stand. Use the Allen wrench provided. (Fig. 3)

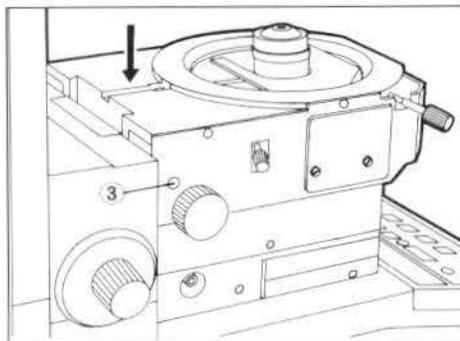


Fig. 4

3 Mounting the Stage Mounting Bracket

1. Make sure that the condenser turret is rotated to position 10 – 20.
2. Insert the stage mounting bracket all the way into the dovetail without tilting. Slightly lifting the front side, insert the bracket until it reaches the index line behind the dovetail (as shown by ARROW), and clamp the Hexagon screw ③ with the Hexagon wrench provided. (Fig. 4)

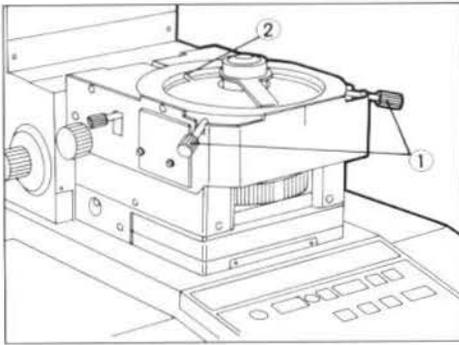


Fig. 5

4 Mounting the Mechanical Stage

1. Loosen the two centering screws ① but do not let them fall off. (Fig. 5)
2. Mount the stage in the stage bracket, making sure that the guide pin ③ aligns with the notch ② in the bracket. (Figs. 5, 6)
3. Tighten the centering screws ①, so that the stage does not come off. (Fig. 5)

★ It is not necessary to tighten the screws completely because the stage will be centered later.

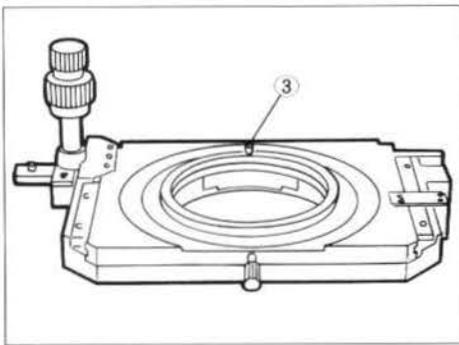


Fig. 6

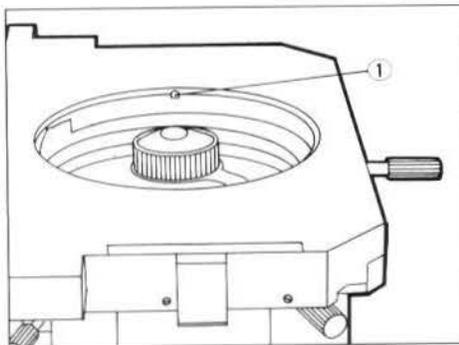


Fig. 7

5 Mounting the Stage Insert Plate

Align the guide pin ② of the insert plate with the notch ① in the stage, and lower the stage insert plate. (Figs. 7, 8)

★ Handle the insert plate carefully. Any deformation of the stage insert plate will affect the horizontal position of the specimen slide.

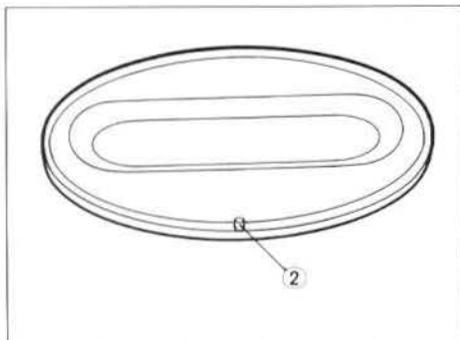


Fig. 8

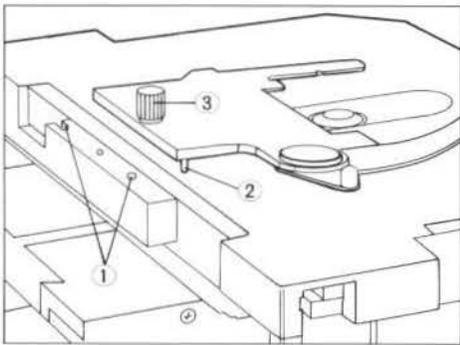


Fig. 9

6 Mounting the Specimen Holder

1. Insert the guide pins (2) of the specimen holder into the bores (1) in the stage. (Fig. 9)
2. Tighten the knob (3) with a coin. (Fig. 9)

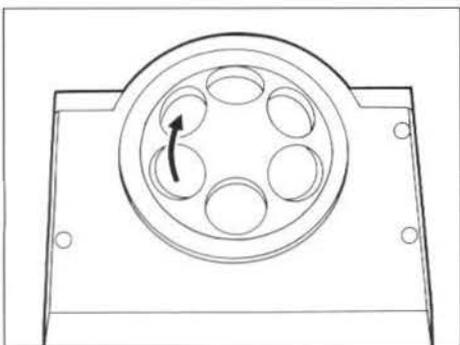


Fig. 10

7 Mounting the Objectives

1. Place the revolving nosepiece on a bench with the threaded objective holes facing upward. Attach in the objectives, from the lowest power to the highest, in a clockwise direction. (Fig. 10)

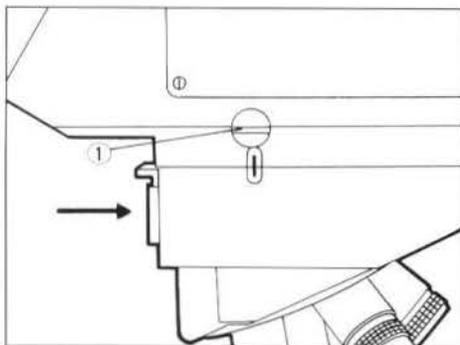


Fig. 11

8 Mounting the Revolving Nosepiece

Lower the stage as far as it will go.

1. Loosen the nosepiece clamping screw (1), but do not let it fall off. (Fig. 11)
2. Aligning the nosepiece with the dovetail of the stand, slowly push the nosepiece in all the way until the index marks on the nosepiece and on the microscope stand are aligned.
3. Tighten the screw (1). (Fig. 11)

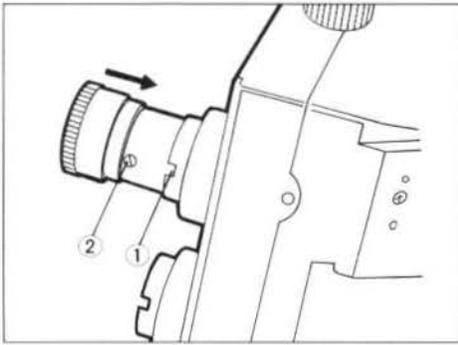


Fig. 12

9 Inserting the Eyepieces

Insert the eyepieces into the eyepiece tubes so that the positioning pins ② on the eyepieces fit the notches ① in the tubes. (Fig. 12)

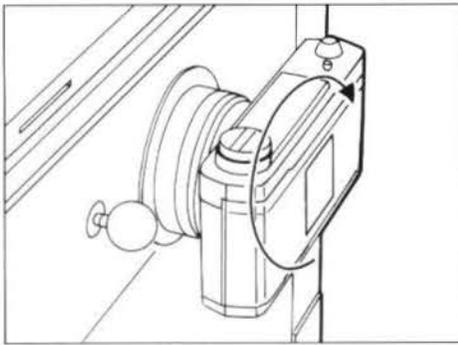


Fig. 13

10 Attaching the 35 mm Camera Body

Aligning the red dot on the camera back with that on the mounting ring of the microscope stand, rotate the camera in the direction of the ARROW until it stops. (Fig. 13)

- ★ For loading the film, refer to the Observation and Photomicrography Instructions.
- ★ Do not press the rewind button on top of the camera body when mounting or dismounting the camera body.

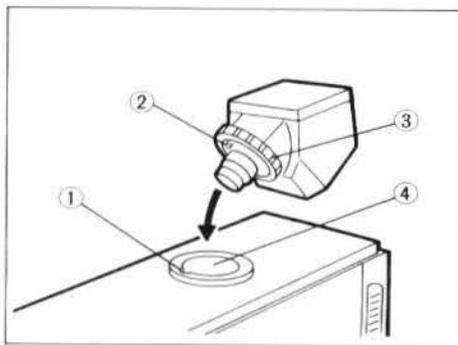


Fig. 14

11 Attaching the Adapter for Large Format Camera Backs

1. Remove the dust cap from the camera port ④ at the top of the microscope stand, and while inserting the guide pin ② of the adapter into the notch ① in the camera port, clamp with knurled ring ③. (Fig. 14)
- ★ Be sure to put the dust cap on the camera port ④ whenever the adapter is removed.

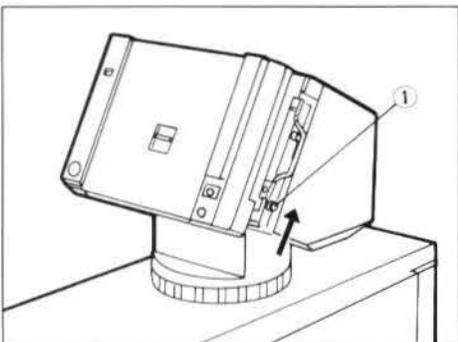


Fig. 15

2. Pull out the clamping latch ① and place the large format camera back on the adapter, then slide the latch to its original position in the direction of ARROW. (Fig. 15)

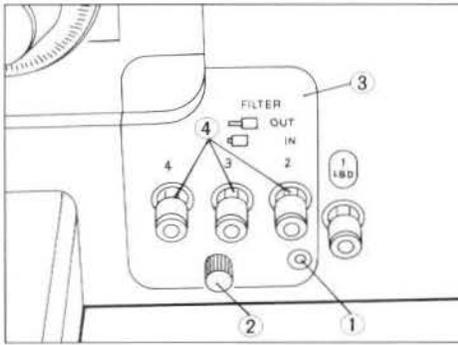


Fig. 16

12 Mounting the Filters

1. Loosen the filter tray clamping screw ① with the Allen® wrench provided and pull out the filter tray ③ by means of the knob ②. (Fig. 16)
 - ★ Do not pull out the filter holder knobs ④ when removing the filter tray ③, as the filter holders ⑥ may hit the base, preventing the removal of the filter tray and possibly damaging the filters. (Fig. 16)
2. Place the filters ⑤ into the filter holders ⑥. (Fig. 17)
3. Making sure the filter holder knobs are pushed in, insert the filter tray ③ into the base on the dovetail slides, then tighten the clamping screw ① with the Allen® wrench provided. (Fig. 16)

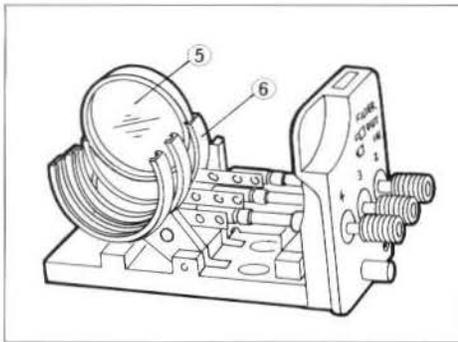


Fig. 17

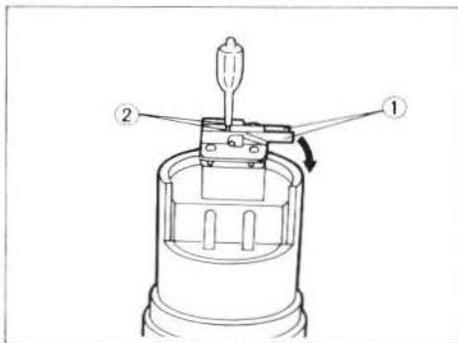


Fig. 18

13 Inserting the Light Bulb

1. Pull out the bulb socket from the left hand side of the microscope stand.
2. Pressing down the spring levers ① in the direction of the ARROW, insert the pins ② of the Halogen bulb into the socket. (Fig. 18)
 - ★ Use gloves or gauze to hold the bulb.
3. Release the levers and the bulb is held in position.
 - ★ Do not touch the bulb with bare hands. If fingerprints or dust particles are left on the bulb, wipe them off; otherwise the bulb life will be reduced.
4. Aligning the positioning pin ② on the microscope stand with the positioning groove ① of the bulb socket, insert the socket into the microscope stand. (Fig. 19)

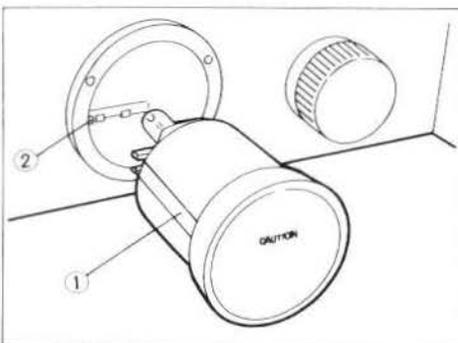


Fig. 19

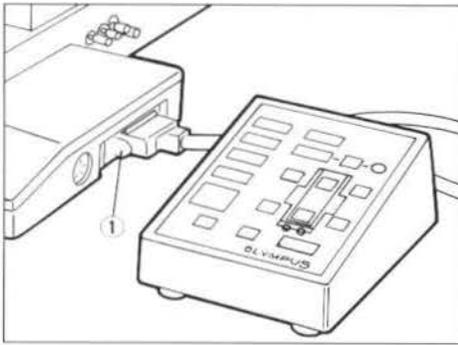
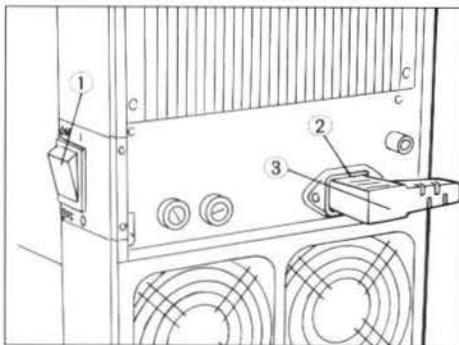


Fig. 20

①

14 Counting the Control Box

Insert the plug of the control box into the connector on the right side of the microscope base, and secure the plug with the wire clamps ①. (Fig. 20)



15 Connecting the Power Cord

Connect the power cord ③ to the receptacle ② at the back of the microscope stand. (Fig. 21)

1. Make sure that the power switch ① is turned OFF. (Fig. 21)
2. Plug the power cord ③ with a 3-contact plug into the AC outlet. (The plug will fit into a grounding type power outlet, and there is no need to connect it to any other grounding devices.)

★ If a 2-contact grounding plug is used, ground the microscope to a properly grounded device (except a gas pipe). If necessary, use an extension cord.

★ This microscope incorporates a noise filter in the electric circuit, feeding a very low current in order to reduce interference from external electrical noise. Therefore, if the conductive part of the microscope stand is touched when the microscope is not grounded, an electric shock may result.

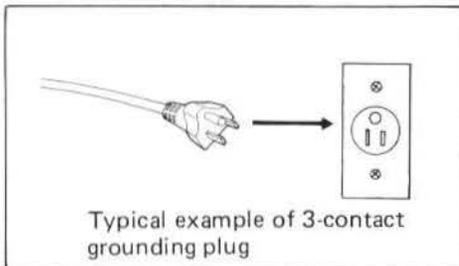


Fig. 21

4 PREPARATION FOR OBSERVATION

4-1 Interpupillary Distance and Diopter Adjustment

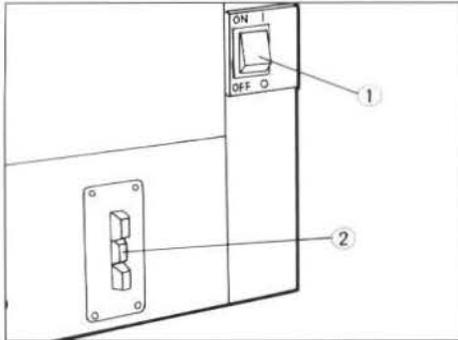


Fig. 22

1. Turn on the power switch ①.
The green pilot lamp lights up and the cooling fan are activated. (Fig. 22)

2. Press the low voltage selector button "PHOTO" ②. (Fig. 22)

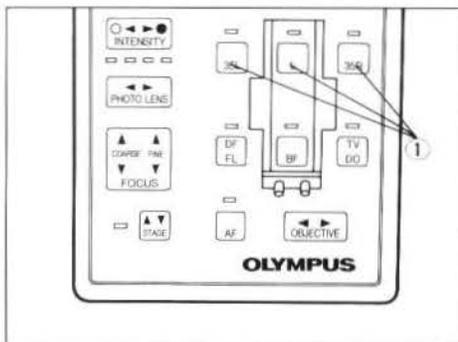


Fig. 23

3. Press one of the camera back selector buttons ① on the control box. (Fig. 23)

The control panel indicates which the camera back is used.

- ★ Details of the control and indication panels are given in the Observation and Photomicrography Instructions.

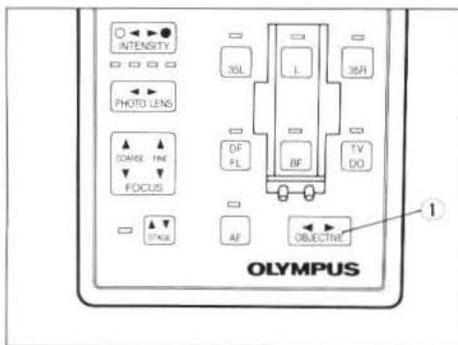


Fig. 24

4. Engage the 10X objective.
Press the OBJECTIVE button ① on the control panel or control box, until the 10X objective is engaged. (Fig. 24)

- ★ The nosepiece can also be rotated manually.

- ★ All photo eyepieces can be used by means of the PHOTO LENS button ①, although the 2.5X photo eyepiece makes the following procedure easier because of its wide field of view. (Fig. 25)

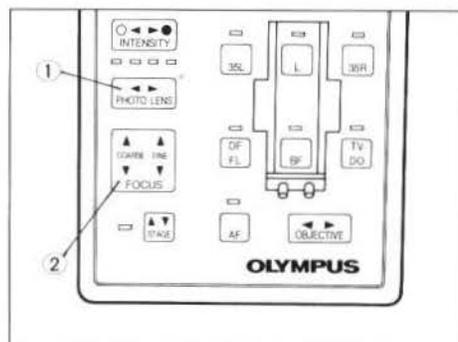


Fig. 25

5. Press the coarse and fine adjustment (FOCUS) button ② to bring the stage up to the closest point to the objective. (Fig. 25)

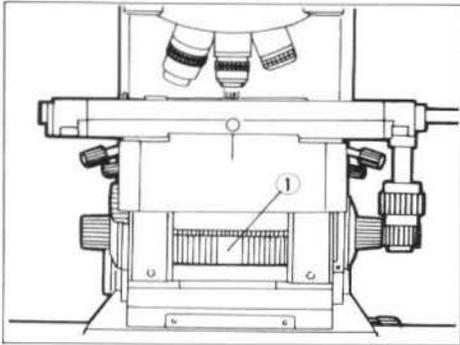


Fig. 26

6. Rotate the condenser turret to 20 – 10.
 Manually rotate the knurled ring ① of the turret. (Fig. 26)
 (The top lens of the condenser is interlocked with the knurled ring.)
 ★ The condenser turret has 3 positions: 100 – 40; 20 – 10; and 4 – 1.

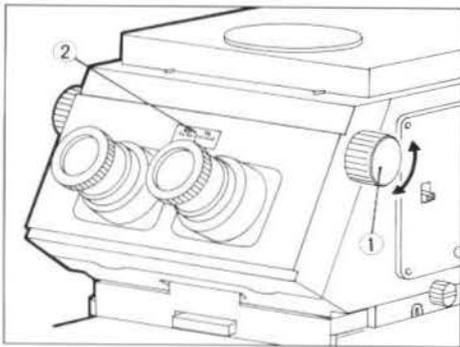


Fig. 27

7. Adjust interpupillary distance.
 Turn either the right or left interpupillary distance adjustment knob ① until perfect binocular vision is obtained. (Fig. 27)
 ★ It is suggested to memorize your individual interpupillary distance and make the distance adjustment by reading the scale ② located between the eyepiece tubes. (Fig. 27)

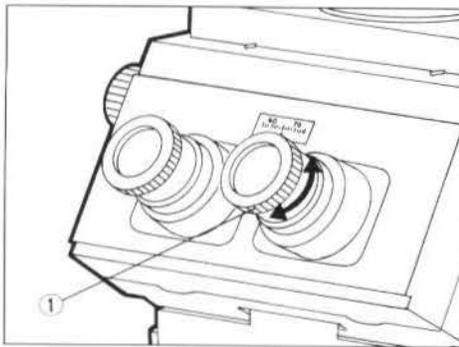


Fig. 28

8. Adjust diopter.
 Looking through one of the eyepieces, rotate the diopter adjustment ring ① on the eyepiece tube to obtain a sharp image of the reticle. (Fig. 28)



Adjust so that the double cross lines can be seen clearly as two separate lines.
 Repeat this adjustment procedure on the other eyepiece.

4-2 Adjustment of Light Intensity for Observation

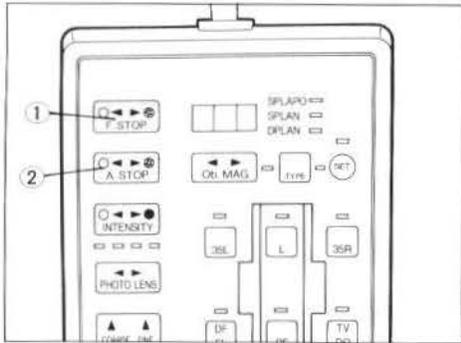


Fig. 29

1. Fully open both the field iris and aperture iris diaphragms.
Press the position marked "O" on the field iris diaphragm button ① on the control box until a beep is heard. (Fig. 29)
Press the position marked "O" on the aperture iris diaphragm button ② on the control box until a beep is heard. (Fig. 29)

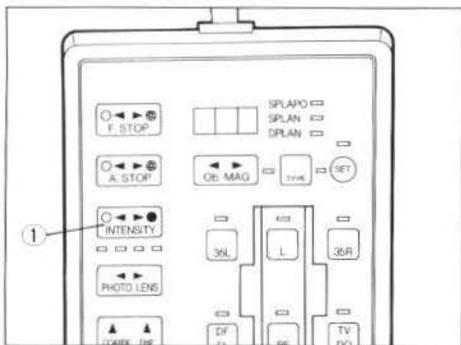


Fig. 30

2. Adjust the intensity.
Looking through the eyepieces, press the intensity control button ① on the control box to obtain optimum intensity. (Fig. 30)
Intensity can be varied in 11 steps in increments of 50%.

4-3 Centering Adjustment of Optical Axis

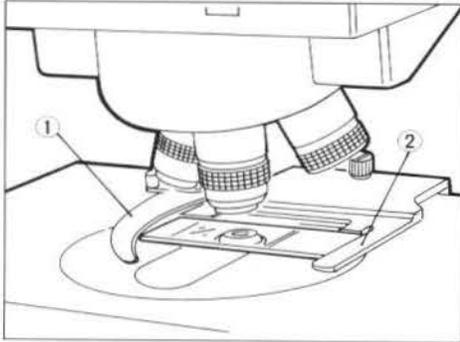


Fig. 31

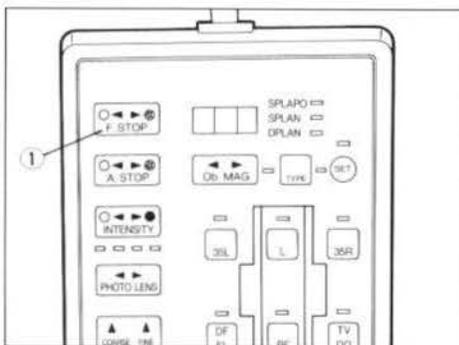


Fig. 32

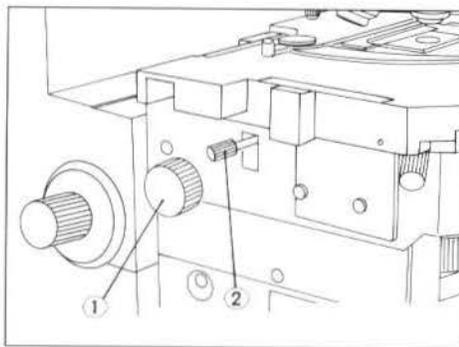


Fig. 33

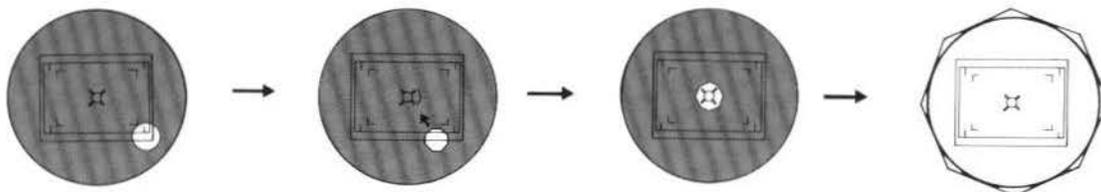


Fig. 34

1. Place a specimen on the stage.

① Open the spring-loaded specimen lever ① and slide the specimen slide into the holder. (Fig. 31)

② Push the slide all the way against the ledge ② of the specimen holder and release the lever ① slowly. (Fig. 31)

★ A sudden release of the lever may damage the specimen holder. If the corners of the specimen slide are chipped and glass fragments fall on the sliding surfaces of the stage or condenser, malfunctions may occur.

• Specimen slide

Specimen slides of 0.9 – 1.2 mm thickness are recommended.

• Cover glass

Use cover glasses measuring 0.17 mm thick (No. 1-1/2) or, if not available, No. 1 cover glasses.

2. Bring the specimen into focus.

Engage the 10X objective and bring the specimen into focus by using coarse and the fine adjustment (FOCUS) button on the control box or the fine adjustment knobs on the microscope stand.

3. Center the field iris diaphragm.

① Press the position "⊗" of the field iris diaphragm button ① on the control box until a beep sounds. (Fig. 32)

② Bring the field iris diaphragm image into focus with the condenser height adjustment knob ①. (Fig. 33)

③ Adjust the condenser centering knobs ② until the centers of the reticle and field iris diaphragm coincide. (Fig. 33)

④ Adjust the centering as shown in Fig. 34. After the centering is complete, open the field iris diaphragm until it inscribes field of view and check its final center position, while pressing the "O" position of the field iris diaphragm button.

4-4 Stage Centration

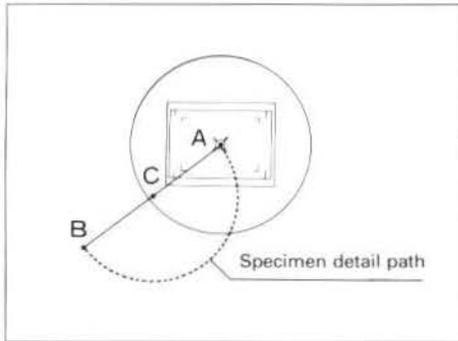


Fig. 35

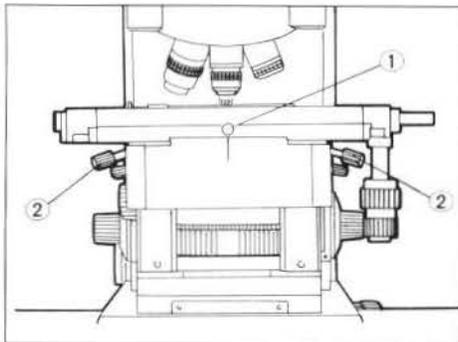


Fig. 36

1. Looking through the eyepieces, find an easily distinguishable specimen detail and bring it to the center of the reticle. (Fig. 35)
2. Loosen the stage rotation stopping screw ①, and rotate the stage by about 180°. (Fig. 36)
3. If the specimen detail moves from position "A" to "B" as the stage rotates, bring the specimen detail to position "C", halfway between "A" and "B" with the stage centering knobs ②. (Fig. 36)
4. Move the specimen detail from "C" to "A" using the stage X-Y traverse knobs. (Fig. 35)
5. Repeat steps 2 through 4 until the specimen detail virtually stops moving even when the stage is rotated. This completes the stage centration. Although the use of a higher magnification objective will increase the accuracy of centration, the 10X objective is usually sufficient for centering purposes.

4-5 Objective Data Input

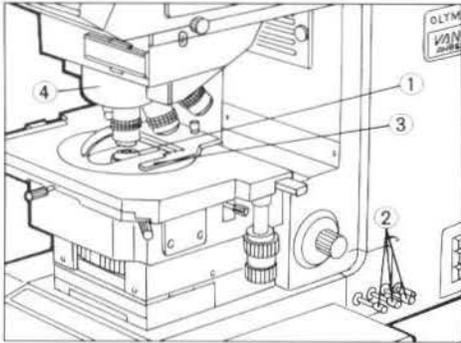


Fig. 37

Ascertain that the following conditions are met:

- ① Move the specimen slide ① out of the light path. (Fig. 37)
- ② All filters ② except the LBD filter are disengaged. (Fig. 37)
- ③ The light path is not blocked by the specimen holder ③ or anything else. (Fig. 37)
- ④ No reticle ④ is engaged in the light path. (Fig. 38)
- ⑤ The field iris diaphragm is centered.
- ⑥ The revolving nosepiece is rotated until it stops with a click. (Fig. 37)

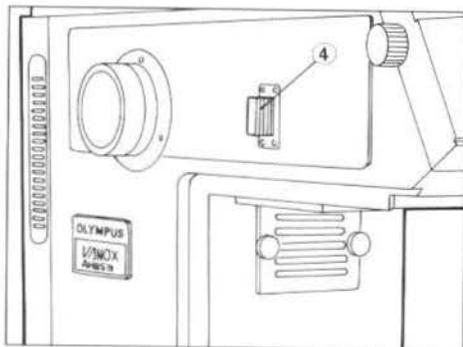


Fig. 38

1. Enter the objective data.

- ① Swing in the 10X objective.
- ② Ascertain that the condenser turret is rotated to the 20 – 10 position.
- ③ Press the objective magnification selector (Ob. MAG.) button ① until the objective magnification "10" appears on the display window ②. (Fig. 39)

As the position "▶" of the objective magnification selector button is pressed, the indication changes in the order of:

1-1.5-2-2.5-4-5-10-20-40-50-60-80-100-150-0-(1)

Pressing the position "◀" reverses the indication.

- ④ Press the objective type selector (TYPE) button ① until the type of objective in use is illuminated. (Fig. 40)

If any other objectives are in use, select the type with a numerical aperture which is the closest to that of the engaged objective, as follows:

SPlanFL	→	SPlan
NCDPlanFL	→	DPlan
NCSPlan	→	SPlan
NCSPlanApo	→	SPlanApo

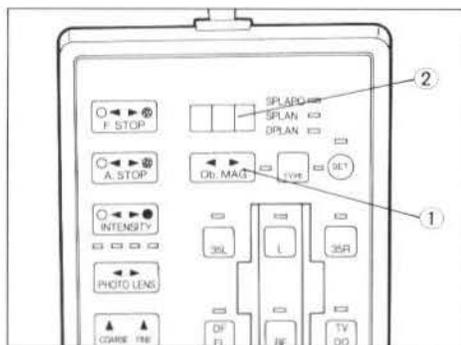


Fig. 39

- ⑤ Press the SET button ② to put the data in the memory. While the data is being input, the yellow LED ③ blinks. When the data input is complete, the LED goes off. (Fig. 40)

★ Unless the SET button is pressed while the LED is blinking, the setting will return to the previous selection automatically. If this happens, press the SET button again.

(When low power objectives 1X – 40X are used, it takes slightly longer, 6–8 seconds, to memorize compensation data.)

- ⑥ Repeat the above procedure for all objectives.

★ If no objective is mounted, set to "0". The memory backup batteries are built-in.

Note: When objectives or bulbs are replaced, be sure to input new data.

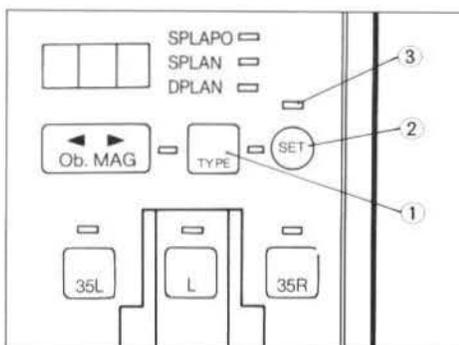


Fig. 40



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The design of the product is under constant review and whilst every effort is made to keep this manual up to date, the right is reserved to change specifications and equipment at any time without prior notice.