



Biological Microscope


NBM-109

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1. Safety Measures

Safety Sign

Sign	Signification
	Study the instructions before use. An unsuitable operation would lead to a person being hurt or an instrument faulty.
	Main switch ON
0	Main switch OFF

2. Introduction

Biological Microscope NBM-109 is equipped with a 30° inclined trinocular head for comfortable viewing. It features a double-layer ceramic stage for enhanced durability. This unit automatically turns off after 30 minutes of inactivity to conserve energy. It features an LCD display that shows brightness, magnification, and color temperature adjustments. Our microscope offers various observation modes, including Bright Field, Dark Field, Phase Contrast, and Polarizing.

3. Features

- ✓ High-resolution and high-contrast imaging
- ✓ Brightness memory
- ✓ Large mechanical working stage
- ✓ Digital camera module
- ✓ Wide magnification range

Biological Microscope NBM-109

4. Specifications

Model No.	NBM-109
Head	30° inclined, gemel trinocular design 360° rotatable Adjustable eye-point height: 375-428.5mm Fixed eyepiece tube Diopter adjustable: 48-76mm Spectroscopical ratio: R: T = 50:50
High Eye Point PL Eyepiece	10X/22mm, Diopter Adjustable
Nosepiece	Backward 5 Holes Coded Nosepiece
Infinity Plan Achromatic Objective	2x/NA 0.06, WD = 5.00mm (used with frosted glass inserts) 4x/NA 0.1, WD = 15.00mm 10x/NA 0.25, WD = 10.8mm 20x/NA 0.40, WD = 1.50mm 40x/NA 0.65, WD = 0.80mm 100x/NA 1.25, WD = 0.21mm, oil immersion
Working Stage	Double layers mechanical stage Size: 210 × 171mm Moving range: 78 × 51mm Scale: 0.1mm Features a reckless safety edge and double slide holder
Focusing	Low position coaxial coarse and fine focusing knobs Tension adjust ring and safety upper stop limit ring Coarse focusing range: 27mm Fine focusing scale: 0.002mm
Main Body	High brightness 3W LED LCD screen on stand

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	Color temperature adjustable: 3000-7000K Magnification display Brightness memory ECO function with time setup
Condenser	Kohler Condenser NA1.25, PH/DF Slide Slot, Iris Diaphragm, Pre-centered
Adapter	0.5x C-mount, Focus Adjustable
Power Supply	100-240V Type-C & USB
Dimensions (H × W × D)	419 × 215 × 416 mm
Packaging Dimensions	530 × 440 × 360 mm
Weight	10kg

5. Applications

Biological Microscope NBM-109 is used for detailed observation and analysis of biological specimens, such as cells, tissues, and microorganisms. It is commonly used in laboratories, research facilities, and educational institutions.

6. Instrument Introduction

6.1 Biological Microscope

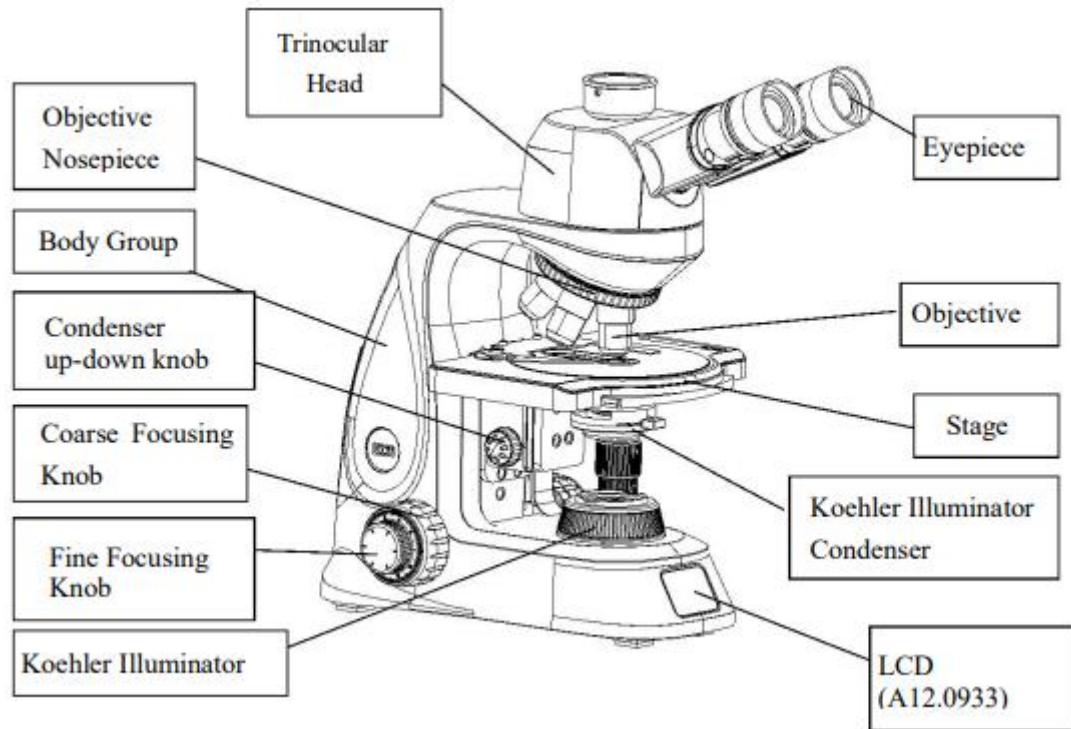


Figure 1

Biological Microscope NBM-109

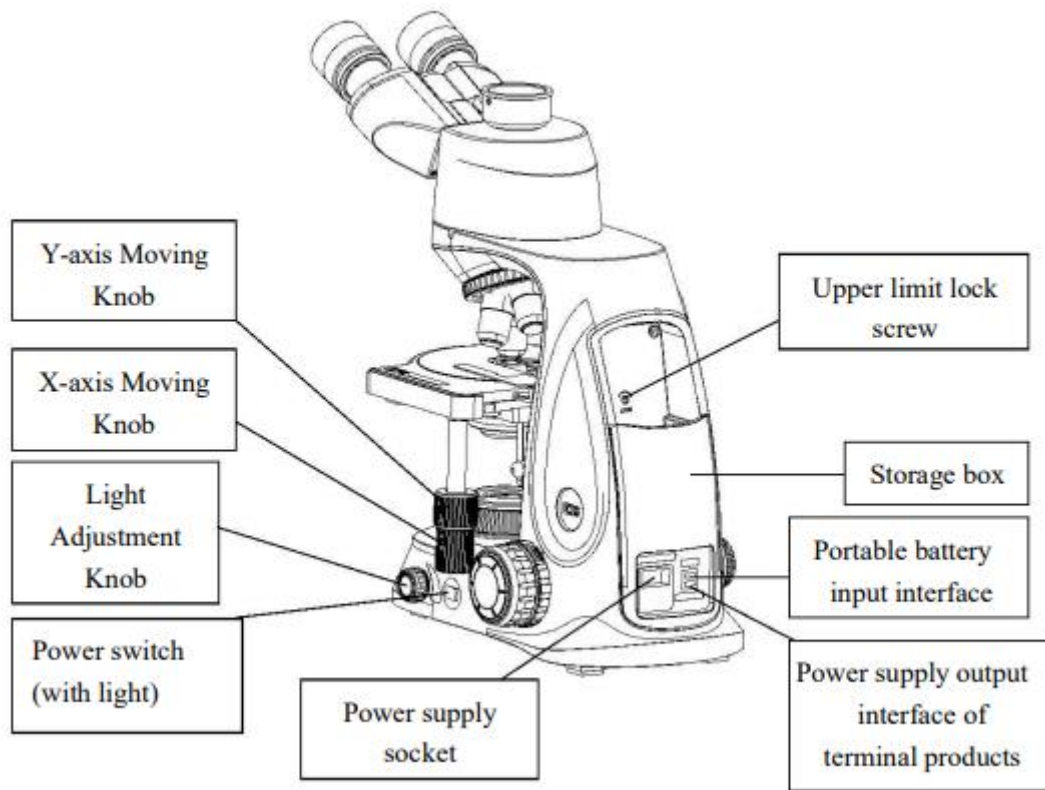


Figure 2

7. Installation

Assembling

7.1 Assembling Scheme

Below is the assembly scheme, with numbers indicating the order of assembly.

- Before assembling, ensure no dust, dirt, or debris could interfere with the process.
- Assemble carefully to avoid damaging any parts or touching the glass surfaces.

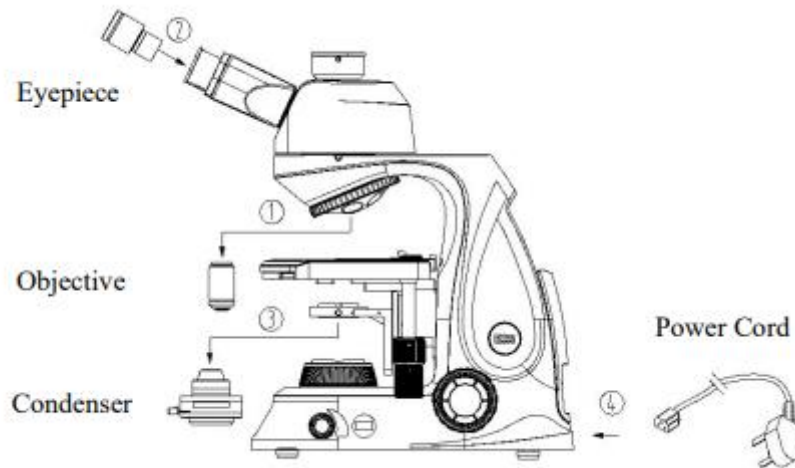


Figure 3

7.2 Assembly Steps

7.2.1 Assemble the objective

Standard Model

1. Rotate the coarse focusing knob (①) to lower the stage to an appropriate position.
2. Install the objectives onto the nosepiece (②) in a clockwise direction, starting from the lowest magnification to the highest. (See Fig. 4).

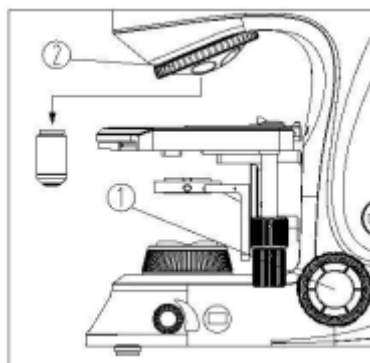


Figure 4

LCD Model

1. When installing the objectives, align the 4X, 10X, 20X, 40X, and 100X objectives with the corresponding nosepiece holes labeled 1, 2, 3, 4, and 5. (See Fig. 5).

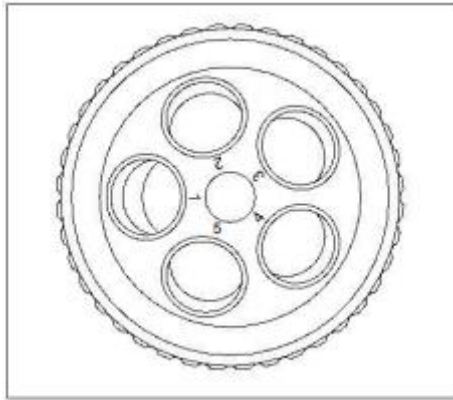


Figure 5

2. The objective nosepiece features a memory function that automatically recalls the brightness value saved for each magnification.
 - If the nosepiece is rotated clockwise or counterclockwise but does not fully align with the next objective position, the brightness value and magnification display remain unchanged.
 - Once the nosepiece is aligned with the new objective position, the brightness value adjusts to the previously saved value for that magnification, and the display updates to reflect the current objective magnification.

When operating, begin by using the low-magnification objective (4X or 10X) to locate and focus on the specimen. Once the specimen is in focus, switch to a high-magnification objective for detailed observation.

When replacing the objective, rotate the objective nosepiece until you hear a “ka-da” sound, ensuring that the desired objective is properly aligned in the center of the optical path.

7.2.2 Assemble the Eyepiece

1. Remove the cover from the eyepiece tube①.
2. Insert the eyepiece② into the eyepiece tube until it fits securely against the surface (see Fig. 6).

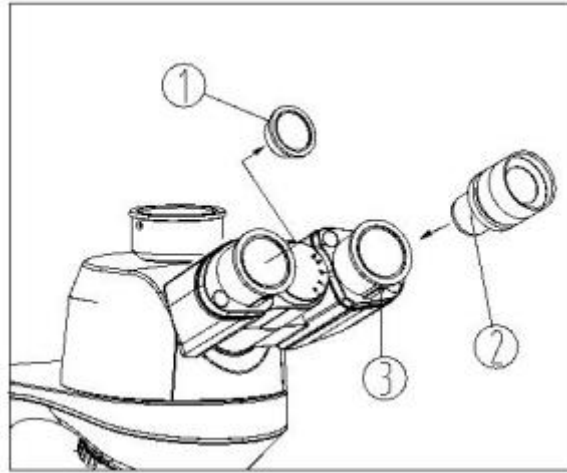


Figure 6

3. When adjusting the diopter with the adjustable eyepiece, lock the eyepiece in place using the hexagon lock screw ③ to prevent the eyepiece assembly ② from rotating within the eyepiece tube, as shown in the figure.

7.2.3 Assemble the Condenser

1. Rotate the coarse focusing knob ① in the direction shown in the figure to raise the stage to its highest position.
2. Use the condenser up-down knob ② to lower the condenser bracket to a suitable position.
3. Loosen the condenser lock-screw ③ completely.
4. Insert the condenser into the hole of the base, following the direction indicated by the arrow, until the condenser is properly aligned with the base. Rotate the condenser so that the handle faces forward.
5. Tighten the condenser lock-screw ③, and then raise the condenser using the up-down knob to its highest position. (See Fig. 7)

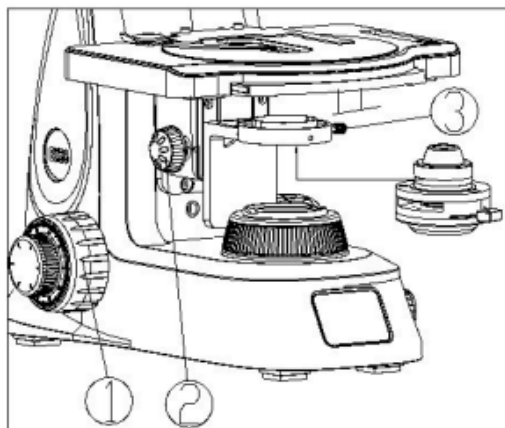


Figure 7

7.2.4 Connect the Power Cord

Do not apply excessive force when bending or twisting the power cord, as this may cause damage.

1. Ensure the power switch is in the "O" (OFF) position before connecting the power cord.
2. Insert the other end of the power cord into the power supply socket and ensure it is securely connected.

Use the power cord provided by our company. If it is lost or damaged, replace it with one of the same specifications.

The wide voltage range is supported as 100~240V.

3. The input interface (③) uses a charging bank with PD protocol and a fast-charging cable to power the microscope.
4. The output interface (④) can be connected to a USB cable to power a mobile phone or tablet. (See Fig. 8)

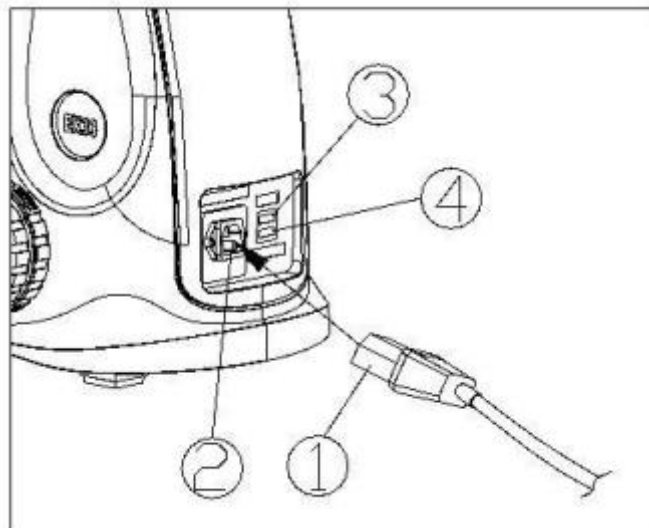


Figure 8

7.3 Assembling and Using the TV Device

1. Loosen the lock screw (①) of the trinocular head and remove the triplet dust cover (②).
2. Remove the dust cover of the TV adapter (③). First, screw the external camera (⑥) into the camera (③), then install the camera into the three-way interface in the direction shown in the figure, and secure it by tightening the lock screw (①). (See Fig. 9)
3. Insert the USB cable (⑦) into the USB interface of the external camera (⑥) and connect the other end to a USB interface on a PC that complies with 3C and UL safety certifications.
4. For binocular observation, once the image is clear, view the output video through the corresponding video capture and analysis software. If the image is unclear, rotate the focusing system (④) until the image is clear. Then, tighten the lock screw (⑤) to lock the clear image.

The output terminal is designed as a USB-dedicated interface with a 5V/500mA safety-rated working voltage.

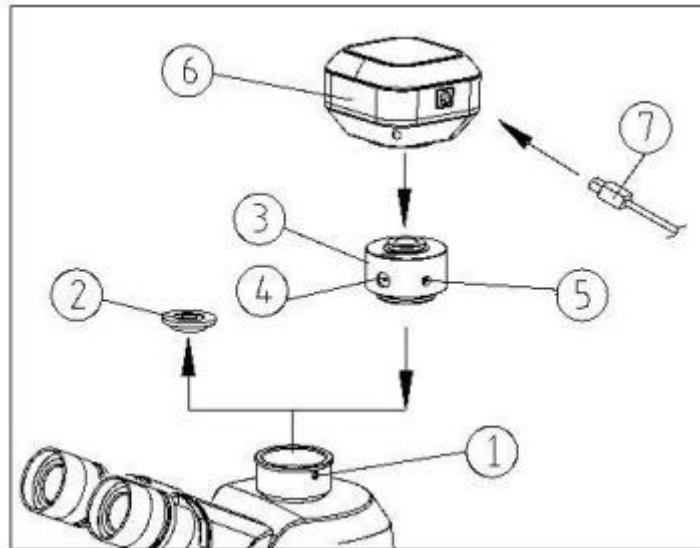


Figure 9

7.4 Assembling and Operation of Accessories

7.4.1 Assembling and operation of Phase Contrast Flapper

1. Keep the phase contrast flapper ① face up (with the side labeled facing upward) and insert it from left to right into the condenser flapper socket, following the direction indicated by the arrow (see Fig. 10).

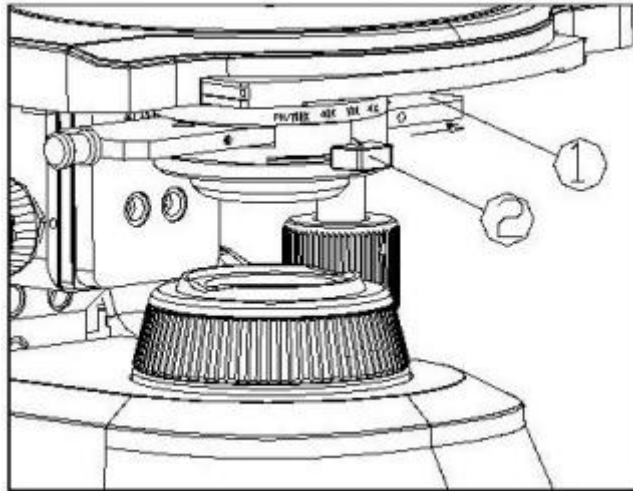


Figure 10

2. Each diaphragm or hole corresponds to a specific position; one diaphragm or hole will align with the center of the optical path when it makes a “ka-da” sound during the rotation of the phase contrast flapper.
3. When using phase contrast, set the adjusting ring of the aperture diaphragm ② to the “PH” position.

Each magnification phase contrast objective should be paired with the corresponding ring diaphragm (e.g., the 10X phase contrast objective pairs with the 10X ring diaphragm).

Since the ring diaphragm is pre-centered, it generally does not require adjustment during normal operation.

7.4.2 Assembling and Operation of Dark Field Flapper

1. Keep the dark field flapper ① face up (with the side labeled facing upward) and insert it from left to right into the condenser flapper socket, following the direction indicated by the arrow (see Fig. 11).

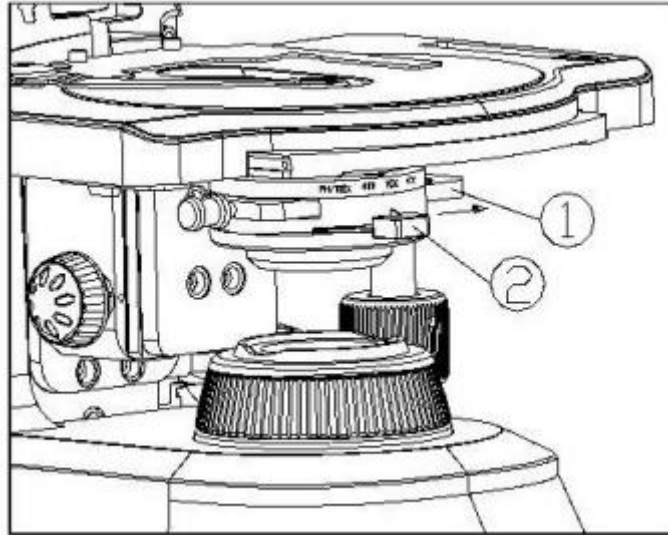


Figure 11

2. Each diaphragm or hole has a corresponding position; when it makes a “ka-da” sound during rotation of the dark field flapper, it indicates that the diaphragm or hole is aligned with the center of the optical path.
3. For dark field observation, adjust the aperture diaphragm adjusting ring (2) to the maximum position.

The dark field ring diaphragm is located on the left side of the flapper.

7.4.3 Assembling and Operation of Wireless Digital Observation Head

1. Completely loosen the locking screw (1) of the observation head. (See Fig. 12)

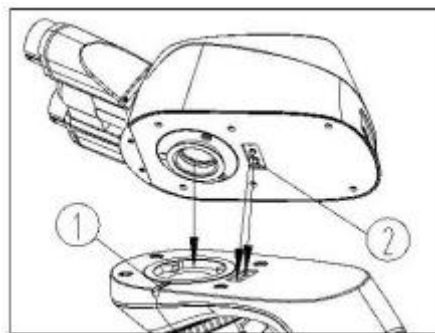


Figure 12

2. Align the dovetail interface at the bottom of the observation head with the interface base of the mirror body. Insert the two contacts (2) on the observation head into the corresponding round holes, ensuring they align properly along the hole mouth. Position the observation head so that the double tubes face forward, and then securely tighten the locking screw (1).

The two contacts (②) on the observation head are present only in wireless digital models. These contacts allow the body to supply power to the digital observation head. Take special care during installation and replacement to avoid damaging the contacts.

3. Adjust the microscope and observe using the binoculars. Once the image is clear, connect the digital observation head's RJ45 interface (③) to the computer using the video data connection cable. Use the appropriate professional software to view and capture the image. (See Fig. 13)

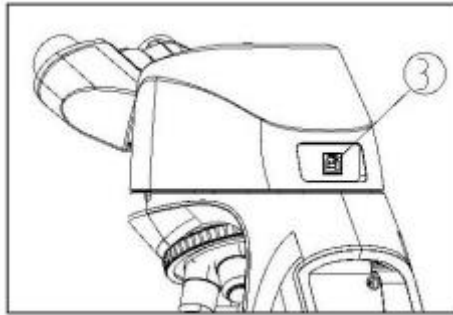


Figure 13

Connection Mode

1. **Wired Connection to PC:** Use the RJ45 Gigabit Ethernet interface for a stable connection.
2. **Wireless Connection via Wi-Fi:** Supports 802.11ac on the 5G band for high-speed wireless connectivity.

7.4.4 Assembling and Operation of Wired Digital Observation Head

1. The installation and replacement method for the observation head is the same as that of the wireless digital model but without any contacts.
2. Adjust the microscope and observe using the binoculars. Once the image is clear, connect the digital observation head's USB interface (①) to the computer using the video data connection cable. Use professional software to view and capture the image. (See Fig. 14)

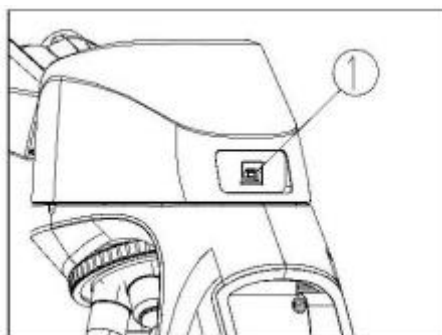


Figure 14

Our company's video data connection cable (a high-quality USB 3.0 cable) is essential. If the cable is lost or damaged, replace it with a video data connection cable of the same specifications.

Connection Mode:

Connect to the PC via a wired connection using the USB interface.

7.4.5 Assembling and Operation of the LED Fluorescence Device

1. Assembling and Operation of the LED Fluorescence Illuminator

- 1) Completely loosen the locking screw (①) of the observation head.
- 2) Position the dovetail interface at the bottom of the LED fluorescence illuminator (②) onto the interface seat of the mirror body (③). Secure it using the locking screw (①) with a hexagon spanner. (See Fig. 15)

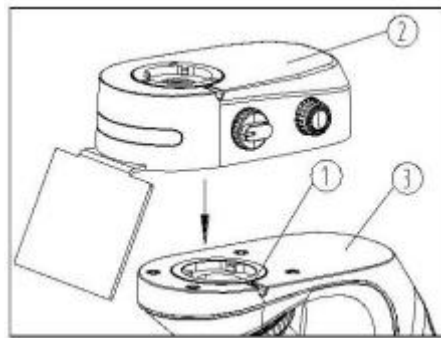


Figure 15

- 3) Place the dovetail interface at the bottom of the binocular/trinocular head (②) onto the interface seat of the LED fluorescence illuminator (③). Tighten it using the locking screw (①) with a hexagon spanner. (See Fig. 16)

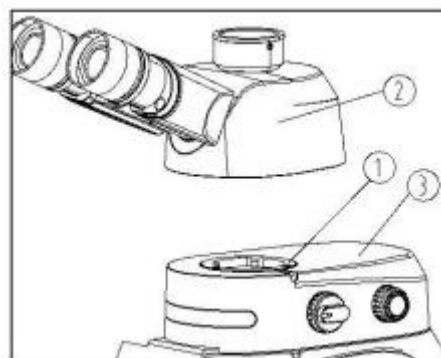


Figure 16

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- 4) Insert one end of the power cable (②) into the power socket (①) located on the back of the LED fluorescence illuminator. Connect the other end to the power socket (③) on the back of the microscope. Ensure both connections are secure. (See Fig. 17)

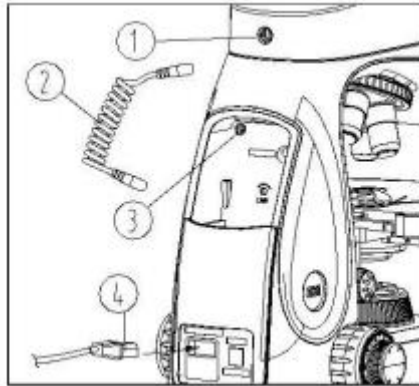


Figure 17

- 5) Connect one end of the external power adapter (④) to the power socket (⑤) on the back of the microscope. Plug the other end into a power supply socket and ensure a secure connection.

Before connecting the power, ensure the transmission power switch and the reflection adjustment knob (with switch) are both set to "Off."

- 6) For fluorescence slide observation, slide the fluorescence flashboard (①) slightly to the left. A "Dida" sound will indicate that it has reached the fluorescence observation position, and the transmission illumination path will be fully blocked. Simultaneously, turn off the light adjustment knob (to set the coding switch to the minimum (0%). (See Fig. 18)

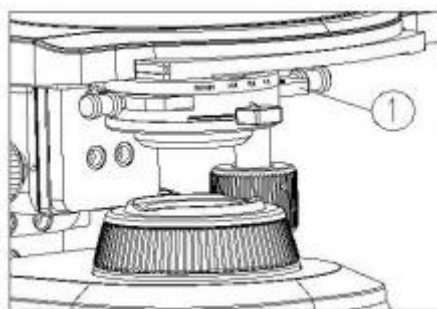


Figure 18

For transmission illumination observation, slide the fluorescence flashboard (①) to the right to completely open the transmission illumination path.

- 7) To switch between transmission brightfield and LED fluorescence modes, rotate the LED fluorescence filter block adjustment knob (①) 180° in the direction of the arrow. The "FL" marking indicates fluorescence observation, and "BF" indicates brightfield observation. (See Fig. 34)

- 8) **Illumination:** Rotate the adjustment knob (②) clockwise. A "Dida" sound will indicate that the LED fluorescence lamp has been turned on. Continue rotating clockwise to increase brightness. Rotate counterclockwise to decrease brightness and turn off the lamp entirely with another "Dida" sound. (See Fig. 19)

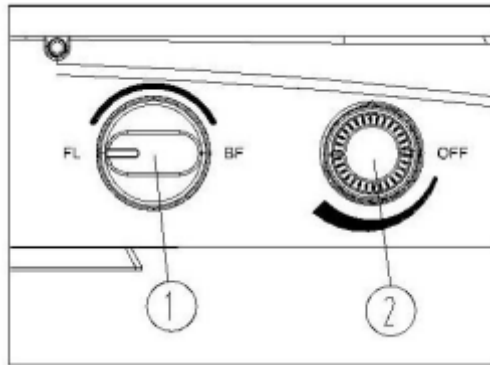


Figure 19

When the LED fluorescence lamp is on, the LED fluorescence indicator will light up, indicating fluorescence observation mode. The indicator will turn off when the LED fluorescence lamp is off.

8. Operations

8.1 Before Use

Operation Notice

- 1) As the microscope is a high-precision instrument, always operate it with care. Do not expose the microscope directly to the sun, high temperatures, damp conditions, dust, or sudden impacts. Ensure that the worktable is flat and horizontal. The following environmental conditions are required when operating: Indoor temperature: 5°C to 40°C, Maximum relative humidity: 80%.
- 2) When moving the microscope, use both hands to hold the back hand-clasping (①) and the front base (②), and lay it down carefully (see Fig. 20).

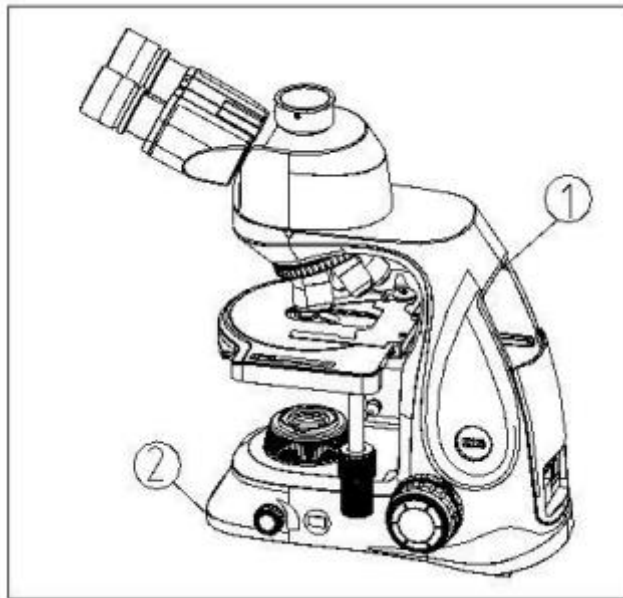


Figure 20

Do not move the microscope by holding the stage, focusing knob, or head, as this can damage the instrument.

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- 3) When in use, the surface of the condenser will become very hot. Ensure there is enough room around the condenser (③) for proper heat dissipation (see Fig. 21).

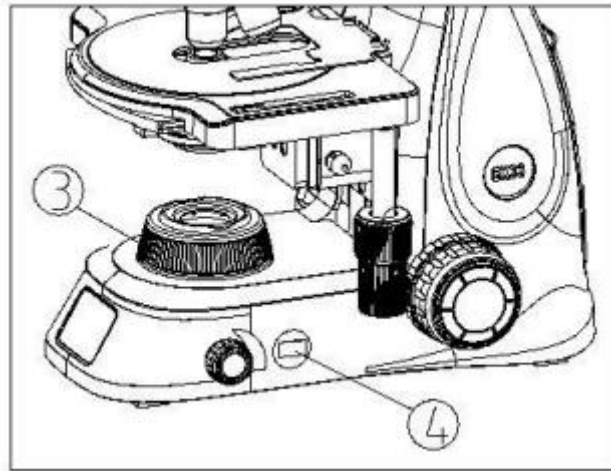


Figure 21

- 4) For safety, ensure the power switch (④) is set to "0" (OFF) and power the microscope before replacing the LED lamp. Wait until the lamp and base cool down completely.

Only use the specified bulbs: (single 3W LED, Class 3B) or (bicolor temperature 5W LED, Class 3B).

- 5) The microscope uses an internal power supply adaptor and supports a wide voltage range of 100-240V.
- 6) Always use the special power cable supplied by our company.
- 7) Ensure the device is placed in a well-ventilated area, and that the vents are not blocked.
- 8) All power devices are in easily accessible positions.
- 9) Ensure the power plug or connector is placed in an easily accessible location.
- 10) It is recommended to assess the electromagnetic environment before using the equipment.
- 11) Do not use the microscope near strong radiation sources (e.g., unshielded RF sources), as they may interfere with the normal operation of the device.
- 12) The waste LED bulbs are classified as hazardous waste according to the National Hazardous Waste List and should be disposed of by qualified institutions.
- 13) No specific contraindications apply to this product.
- 14) Any parts that require inspection, replacement, or repair should only be handled by the manufacturer or designated personnel.
- 15) Failure to use the equipment according to the manufacturer's instructions may result in damage to the instrument.

8.2 Set Illumination

1. Connect the power supply and turn on the main power switch to “—” (on) on the side.
2. Adjust the light adjustment knob (①) until the illumination is comfortable for observation. Rotate the knob clockwise to increase the voltage and brightness or rotate it counterclockwise to decrease the voltage and brightness (see Fig. 22).

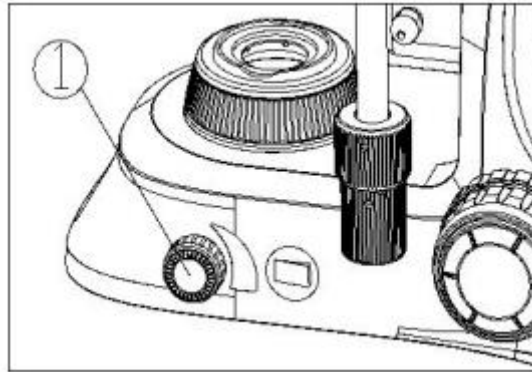


Figure 22

Using the bulbs in a low-voltage state can extend their lifespan.

8.3 ECO Function

The microscope is equipped with an intelligent induction device. If the microscope is not operated for 30 minutes, it will automatically turn off the power and enter standby mode to save energy. To resume use, simply touch the light adjustment knob ① to wake up the light source and continue working. (See Fig. 22)

8.4 LCD Display

The LCD ① displays the current illumination brightness, color temperature, and objective magnification values as follows:

- ② Displays the current lighting brightness.
- ③ Displays the objective magnification value.
- ④ Displays the current color temperature value.
- ⑤ Displays the ECO status. (See Fig. 23 & 24)

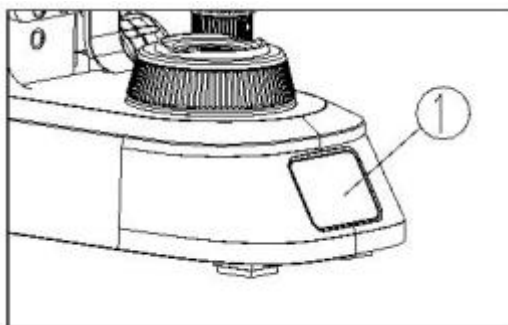


Figure 23

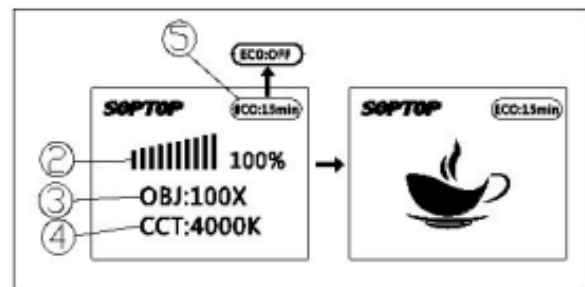


Figure 24

1. The light adjustment knob ① controls the brightness of the illumination, with an adjustable range of 0%-100%.
2. Pressing the light adjustment knob ① adjusts the illumination color temperature, with an adjustable range of 3000K-7000K.

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3. Long pressing the light adjustment knob ① activates the ECO function, which is adjustable within a duration range of 5-60 minutes. A coffee cup icon will prompt you to take a rest one minute before the power turns off automatically. If you need to continue using the microscope, simply touch the converter or knob ① to wake up the light source and continue working. If you do not wish to use this function, you can set it to OFF.

8.5 Place the Specimen Slide

1. Push the wrench ① of the specimen holder backward.
2. Place the slide ② into the clip, then loosen the wrench ① and clamp the slide securely. (See Fig. 25).

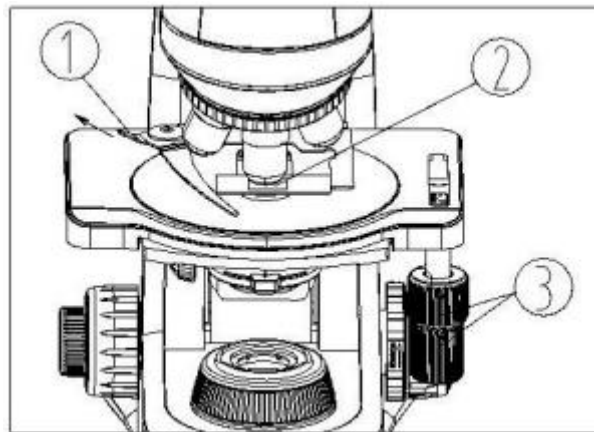


Figure 25

3. Rotate the X and Y-axis knobs ③ of the stage to move the specimen to the center of the light path.

8.6 Adjust the Focus

1. Move the 4X objective into the optical path.
2. Rotate the position screw ② to the top. Observe through the right eyepiece with your right eye and rotate the coarse focusing knob ① until the specimen outline appears in the field of view (see Fig. 26).

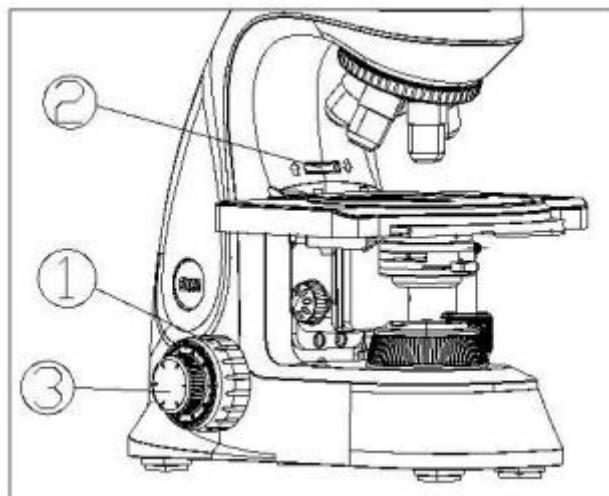


Figure 26

3. Rotate the fine focusing knob (3) to bring the details into sharp focus, and then lock the position screw (2).

The positioning screw prevents the objective from touching the clips.

8.7 Adjust the Focusing Tension

1. If the handle is very heavy when focusing, the specimen moves out of the focus plane after focusing, or the stage lowers itself, adjust the tension adjustment ring (1) (see Fig. 27).

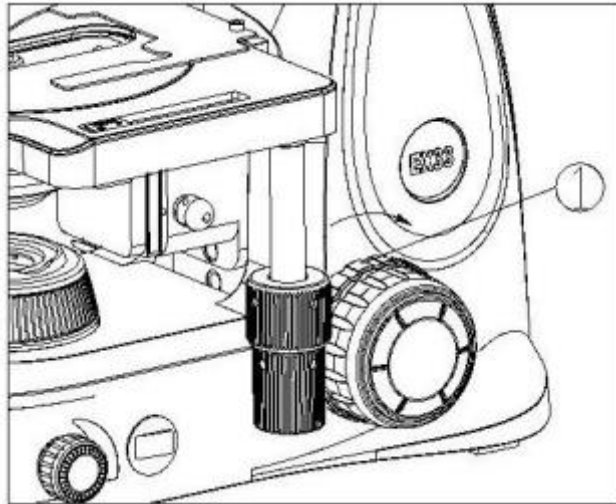


Figure 27

2. To tighten the focusing arm, rotate the tension adjustment ring (1) in the direction indicated by the arrow; to loosen it, rotate it in the opposite direction.

8.8 Adjust the Diopter

Align the "0" mark on the diopter adjustment ring (1) with the scale (2), then adjust the focus to obtain a clear image. Next, observe through the other eyepiece and rotate the diopter adjustment ring until the image is clear. (See Fig. 28)

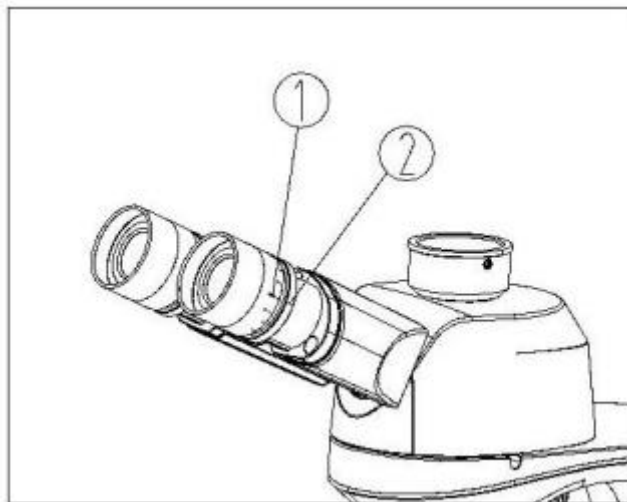


Figure 28

The diopter adjustment ring (①) features a range of ± 5 diopters. Aligning the ring with the scale value (②) corresponds to your eye's diopter. Remember your eye's diopter value for future use to save time on adjustments.

8.9 Adjust the Interpupillary Distance

1. When observing with both eyes, hold the base of the prism and rotate it around the axis until there is only one field of view and it is comfortable for observation.
2. The "①" on the eyepiece base should align with the scale (②) of the interpupillary distance indicator, which shows the value of the interpupillary distance (see Fig. 29).

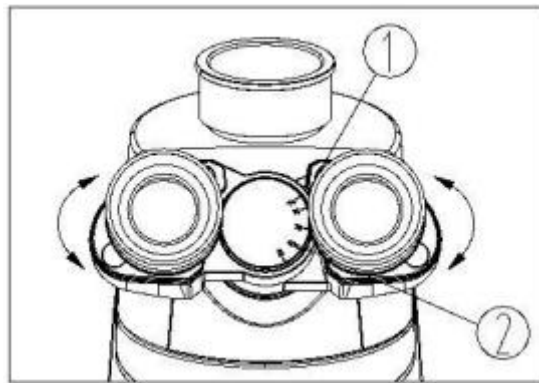


Figure 29

Adjustable range: 48–76mm.

Remember your interpupillary distance for future reference.

This gemel eyepiece tube can be rotated 360°. Users can adjust the eyepoint height according to their height. For example, when the interpupillary distance is 65mm, rotating the front part of the eyepiece tube by 180° will raise the eyepoint by 34mm (see Fig. 30).

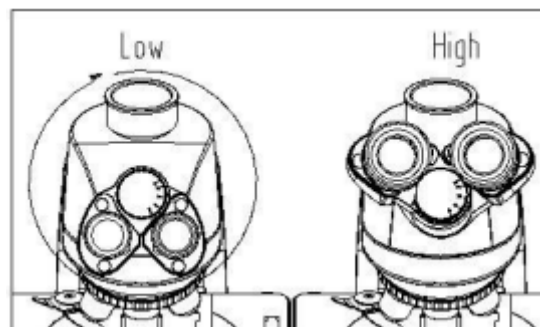


Figure 30

8.10 Center the Condenser

1. Rotate the condenser up-down knob ① to raise it to the highest position (see Fig. 17).
2. Rotate the 10X objective into the light path and focus on the specimen.
3. Rotate the field diaphragm adjustment ring ② to set the field diaphragm to the smallest position. At this point, the image of the field diaphragm will be visible in the eyepiece.
4. Adjust the condenser up-down knob ① to focus the image of the field diaphragm as clearly as possible.
5. Use the center adjustment screw ③ to align the image with the center of the field of view (see Fig. 31).

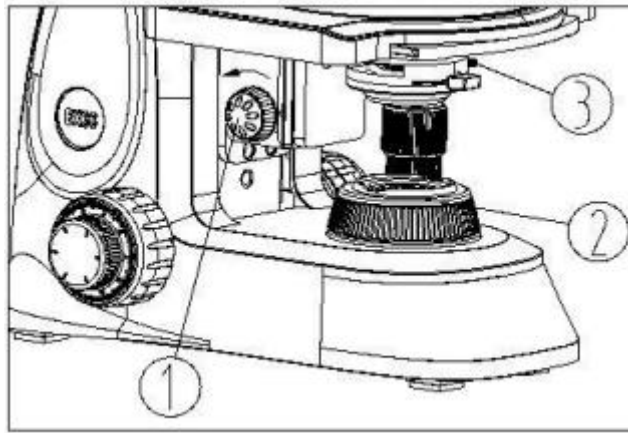


Figure 31

6. Gradually open the field diaphragm. If the image remains centered, it indicates that the condenser is correctly centered.
7. You can slightly enlarge the field diaphragm and make sure the image is confined to the field of view.

8.11 Adjust the Field Diaphragm

By limiting the diameter of the beam entering the condenser, the field diaphragm helps block stray light and enhances image contrast. When the image is just at the edge of the field of view, the objective performs at its best, providing the clearest image.

8.12 Aperture Diaphragm

1. The aperture diaphragm controls the numerical aperture (N.A.) of the illumination system. For optimal resolution, contrast, and depth of field, the N.A. of the illumination system must match the N.A. of the objective.
2. As the contrast is usually low, rotate the diaphragm adjustment ring ③ so that the arrowhead points to the corresponding magnification position on the condenser base ④. This adjusts the condenser aperture diaphragm to 70%-80% of the objective's N.A. If necessary, remove the eyepiece to observe from the tube. Adjust the ring ③ until the image appears as shown in Fig. 32 and adjust the proportion accordingly (see Fig. 33 & 34, where ① is the image of the aperture diaphragm and ② is the edge of the objective).

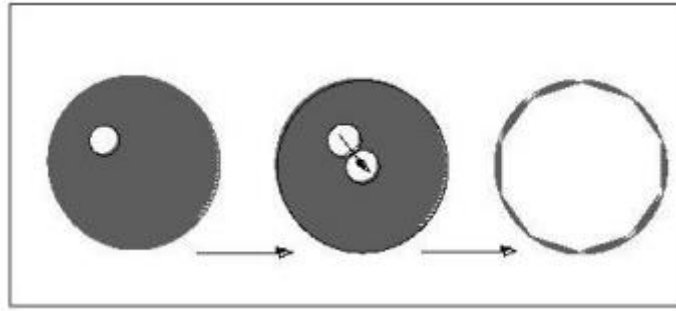


Figure 32

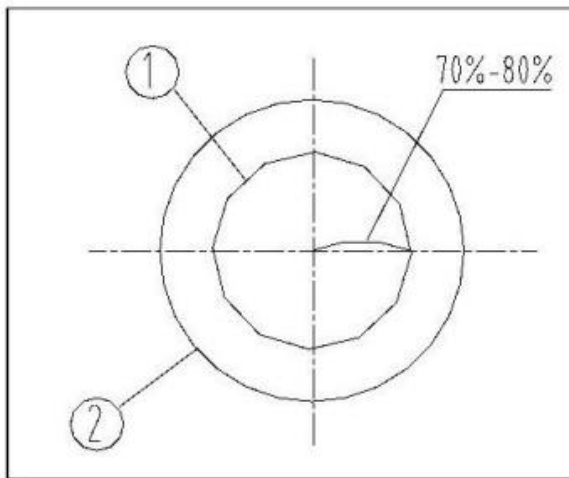


Figure 33

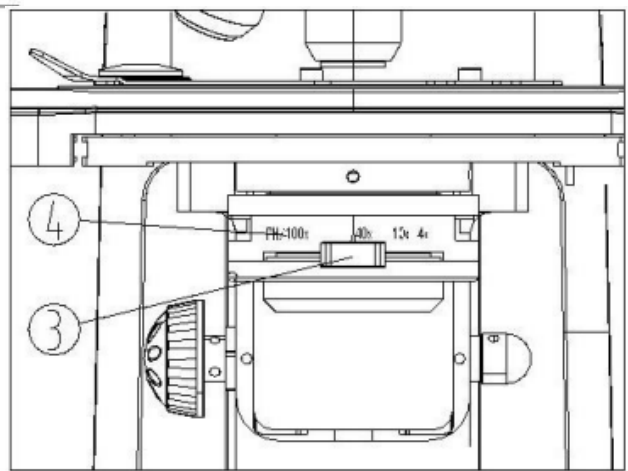


Figure 34

8.13 Use the Oil Objective (100X)

1. Use the 4X objective to focus on the specimen.
2. Place a drop of oil ① on the specimen to be observed (see Fig. 35).

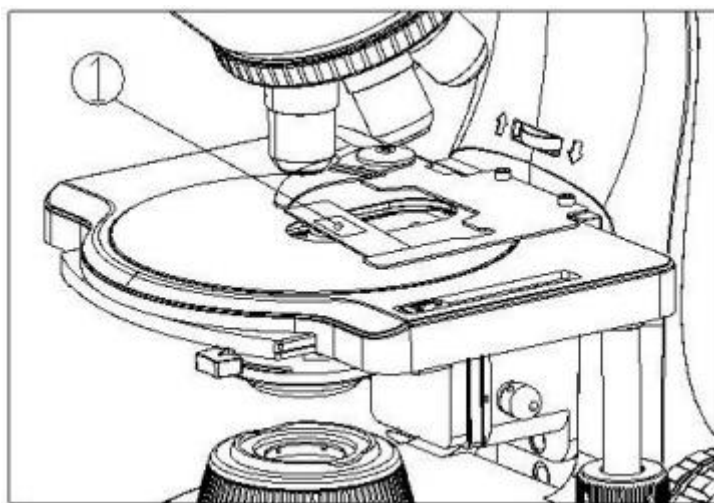


Figure 35

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3. Rotate the nosepiece counterclockwise and move the oil immersion objective (100X) into the light path. Then, use the fine focusing knob to focus.

Ensure there are no air bubbles in the oil, as they may affect the image.

- Move the eyepiece to examine the air bubbles. Open both the aperture diaphragm and field diaphragm fully and observe the edge of the objective through the tube (it should appear round and illuminated).
 - Slightly rotate the nosepiece and gently swing the oil immersion objective a few times to remove any air bubbles.
4. After use, wipe the front lens with a tissue moistened with a small amount of a 3:7 mixture of alcohol and ether, or with dimethylbenzene. Also, wipe off any oil from the specimen.

Do not place another objective in the light path before the oil is wiped off, to avoid wetting the dry objective.

Excessive dimethylbenzene may dissolve the lens's coating.

8.14 Use the Filter

- The filter can improve the background and enhance contrast (see Fig. 36).

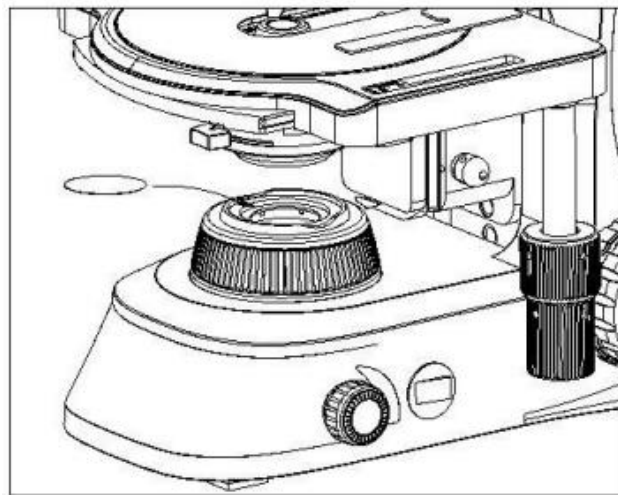


Figure 36

- There are three filter colors: blue, green, and yellow.

When installing the filter, place the rough side facing downward.

Replace the Fuse

Turn the main switch to "0" (OFF) before replacing the fuse and unplug the power cord. Use a "-" type screwdriver to unscrew the fuse group ① from the fuse base ②. Install a new fuse and screw it securely onto the fuse base (see Fig. 37).

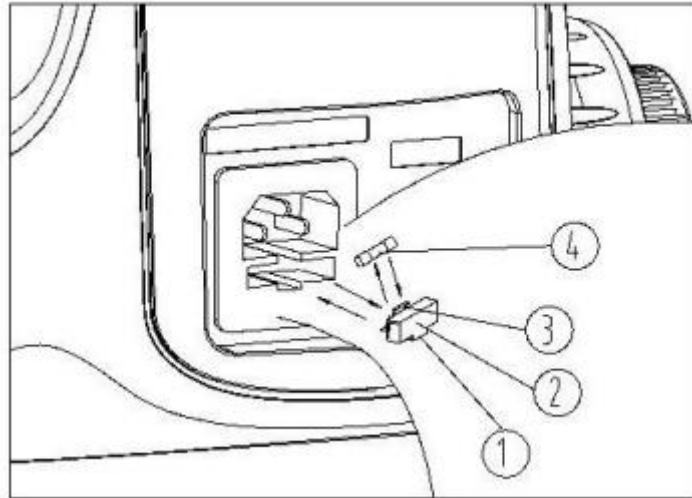


Figure 37

9. Maintenance

1. Gently wipe the lens with a soft tissue. To remove oil marks or fingerprints, use a tissue moistened with a small amount of a 3:7 mixture of alcohol and ether or dimethylbenzene.

Caution: Alcohol and ether are flammable. Keep them away from open flames or heat sources. For instance, avoid using these chemicals near electrical devices that are being turned on or off. Always work in a well-ventilated area.

2. Do not use organic solvents to clean the surfaces of other components. If necessary, clean them with a neutral detergent.
3. If the microscope meets liquid during use, turn off the power immediately and dry the affected area thoroughly.
4. Never disassemble the microscope, as this may compromise its performance or cause damage to the instrument.
5. After use, cover the microscope with a dust cover to protect it.

10. Troubleshooting

Since unfamiliar operations may prevent the microscope from performing optimally, the table below provides some potential solutions.

Problem	Cause	Solution
1. Optical Part		
(1) The LED light is bright, but it's dark in the field of view.	The field diaphragm is not large enough.	Enlarge the field diaphragm.
	The condenser is too low.	Adjust the condenser.
	Condenser centered incorrectly	Center the condenser.
	Fluorescent filter adjusting knob at BF.	Turn the knob to FL
(2) The side of the field of view is dark or not even.	The nosepiece is not in the right position.	Turn the nosepiece into the right position.
	Stains or dust has accumulated on the lens such as condenser, objective, or eyepiece.	Clean the lens.
(3) Stain or dust is observed in the field of view.	Stains have accumulated on the specimen.	Clean the specimen.
	Stains have accumulated on the lens.	Clean the lens.
(4) Unclear image	There is no cover glass on the specimen.	Add the cover glass.
	The cover glass is not standard.	Use a standard cover glass with a thickness of 0 or 0.17mm.
	The cover glass faces down.	Adjust it.
	The immersion oil has accumulated on the dry objective.	Clean it thoroughly.
	The immersion oil is not used for the oil objective.	Use immersion oil.
	An air bubble is in the immersion.	Get rid of the air bubble.
	Use the wrong immersion oil.	Use the correct one. (Cedar oil)
	The aperture diaphragm is not opened correctly.	Adjust the aperture diaphragm.
	Stain or dust has accumulated on the inlet lens of the eyepiece.	Clean the lens.
	The condenser is too low.	Adjust the condenser to the highest position.
	The specimen is floating.	Fix the specimen.

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(5) One side of the field of view is dark or the image moves while focusing.	The nosepiece is not in the right position.	Turn the nosepiece into the right position.
	The condenser centered incorrectly.	Center the condenser.
(6) The eyes feel tired easily. The right field of view doesn't superpose with the left.	The interpupillary distance is wrong.	Adjust the interpupillary distance.
	The diopter adjustment is wrong.	Adjust the Diopter.
	Eyepieces for the left eye and right eye are different.	Use the same eyepiece.
2. Mechanical Part		
(1) Cannot get the objective focused on high magnification.	The cover glass faces down.	Put the cover glass to face up.
	The cover glass is too thick.	Use a standard cover glass with a thickness of $\delta 0.17$ mm.
(2) The objective touches the cover glass while turning the nosepiece from low to high magnification.	The cover glass faces down.	Put the cover glass to face up.
	The cover glass is too thick.	Use a standard cover glass with a thickness of $\delta 0.17$ mm
(3) Coarse focusing knob is too tight.	Tension knob is too tight.	Loosen a little.
(4) Stage declines itself and cannot stay on the focal plane when observing.	The tension knob is too loose.	Tighten a little.
(5) Coarse focusing knob can't rise.	The limit stop knob is locked.	Loosen the knob.
(6) Coarse focusing knob can't decline.	The base of the condenser is too low.	Raise the base.
(7) The slide cannot move smoothly.	The slide is not fixed correctly.	Adjust it correctly.
	The stage is fastened incorrectly.	Fasten the stage correctly.
(8) The image moves obviously when touching the stage.	The stage is fastened incorrectly.	Fasten the stage correctly.

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3. Electrical Part

(1) The LED light does not work.	No power supply.	Check the connection of the power cable.
	The bulb is not installed correctly.	Install it correctly.
	The plug-in of the LED light is not connected well.	Connect it correctly.
	The Halogen lamp or LED lights burnt out.	Replace it.
(2) The bulb burnt out very often.	A wrong bulb is used.	Replace it with the correct one.
(3) The field of view is not bright enough.	The use of the light adjustment knob is wrong.	Adjust correctly.
(4) The bulb flickers or the brightness is not stable.	The wire doesn't connect well.	Connect it correctly.

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11. Accessories

Standard Accessories

- Inner Hexagon Spanner M4 (L Type)
- Dust Cover
- Cleaning Paper

Optional Accessories

Accessory	Specification
Plan Eyepiece	Diopter adjustable, Dia. 30mm, PL10x/22mm
Infinity Plan Objective	60x/0.85, WD=0.30, Spring
Infinity Plan Phase Contrast Objective 1	10x/0.25, WD 10.8mm
Infinity Plan Phase Contrast Objective 2	20x/0.4, WD 1.5mm
Infinity Plan Phase Contrast Objective 3	40x/0.65, WD 0.8mm
Infinity Plan Phase Contrast Objective 4	100x/1.25, WD 0.18mm
Phase Contrast Board 1	For Phase Contrast Objective 10x, 40x
Phase Contrast Board 2	For Phase Contrast Objective 20x, 100x
Turret Phase Contrast Condenser Set	N.A. 1.25 Kohler Illumination, for 10x, 20x, 40x, 100x Phase Contrast Observation
Turret Phase Contrast Condenser + Dark Field Set	N.A. 1.25 Kohler Illumination, for Phase Contrast (10x, 40x, 100x) and Dark Field Observation
Microscope Head	Siedentopf trinocular, 30° inclined, 360° rotatable
Dark Field Board Set	For 4x-40x objectives (Kohler Illumination System)
	Darkfield slide (Use as a bottom light barrier in LED fluorescence microscopes)
Polarizing Attachment Polarizer	Dia. 40mm, for transmitted light source
Polarizing Attachment Analyzer	-



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