Version No.: V1.0

BestScope

BS-2026 Series Biological Microscope Instruction Manual

BS-2026M

BS-2026B

BS-2026BD1

This instruction manual is for the operation guide, troubleshooting and maintenance to the BS-2026 series biological microscope. Please study this manual thoroughly before operating, and keep it with the instrument. The manufacturer reserves the rights to the modifications by technology development. On the basis of operation ensured, technical specifications may be subject to changes without notice.

Contents *BS-2026 Series*

1. Operation Notice

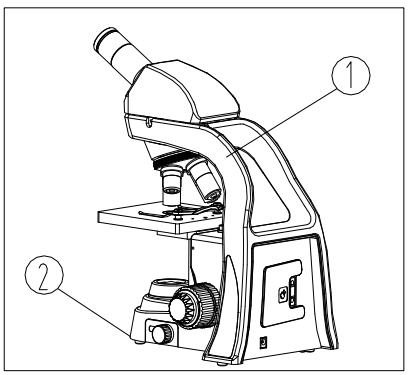


Fig.1

1. As the microscope is a high precision instrument, always operate it with care, and avoid physical vibrations.

2. Do not expose the microscope in the sun directly, either not in the high temperature, damp, dust or acute shake. Make sure the worktable is flat and horizontal.

3. When moving the microscope, keep holding the rear cover hand clasp① and the front end of microscope body② with each hand. Handle with care. (See Fig. 1)
★ It will damage the microscope by holding the stage, focusing knob or head when moving.

4. Connect the microscope to the ground to avoid lightning strike.

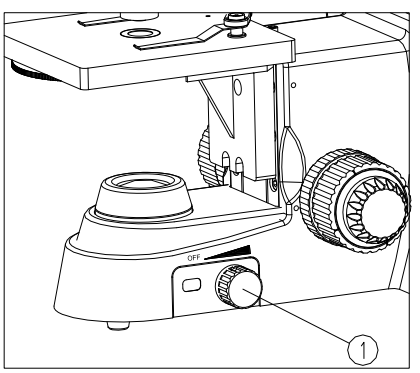


Fig.2

5. For safety, make sure the power knob① is rotated counterclockwise to the minimum before replacing the bulb, and wait until the bulb and base cool down completely (see Fig. 2).

★ Bulb selected only: single 5050 LED

6. Wide voltage range is supported as 100~240V. Additional transformer is not necessary. Make sure the power supply voltage is in this range.

7. Use the special wire supplied by our company.

2. Maintenance

1. Wipe the lens gently with a soft tissue. Carefully wipe off the oil marks and fingerprints on the lens surfaces with a tissue moistened with a small amount of 3:7 mixture of alcohol and ether or dimethylbenzene.

★ As the alcohol and ether is flammable, don't place these chemical near to fire or fire source. For example, when turning on or turning off the electrical device, please use these chemical in a ventilated place.

2. Don't use organic solution to wipe the surfaces of the other components. Please use the neutral detergent if necessary.

3. If the microscope is damped by liquid when using, please power it off immediately and wipe it dry.

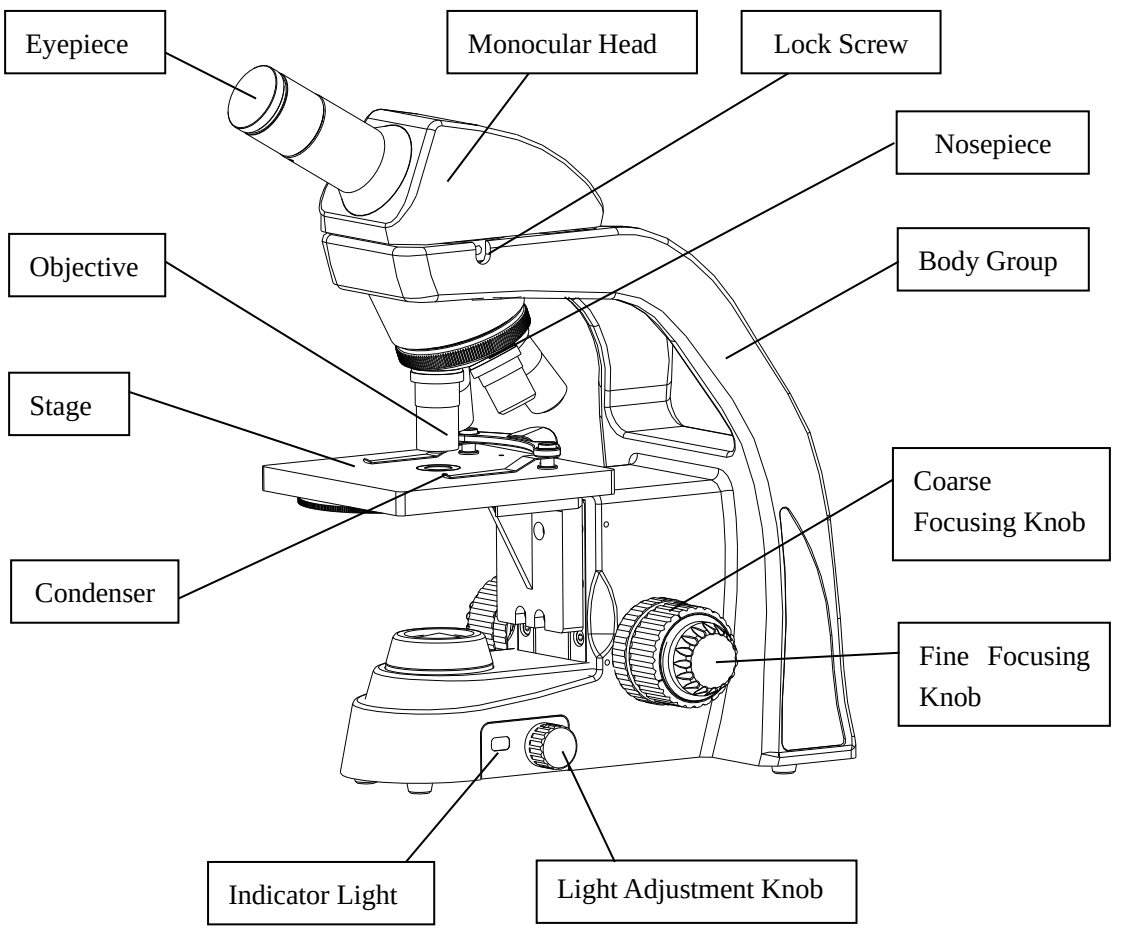
4. Never disassemble the microscope, otherwise the performance will be affected or the instrument will be damaged.

5. After using, cover the microscope with a dust cover.

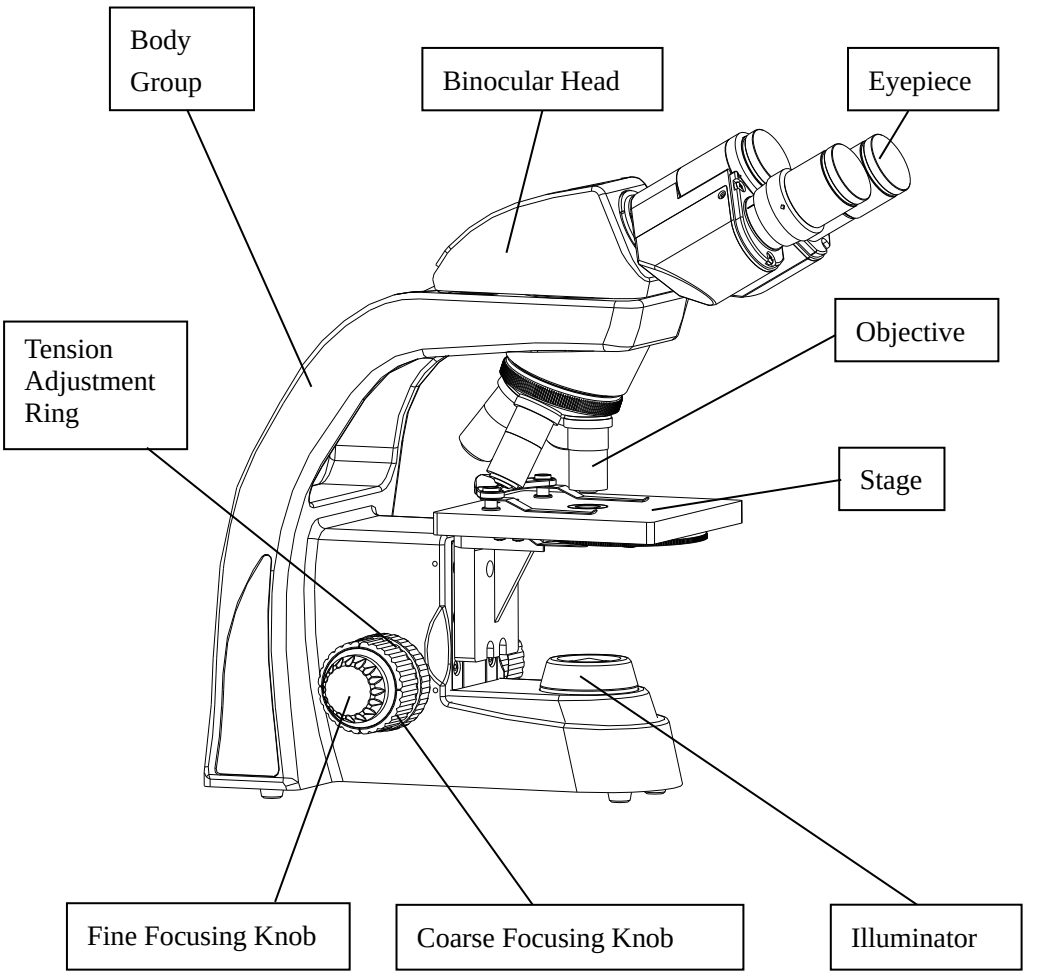
3. Safety Sign

Sign	Signification
	Study the instructions before use. Unsuitable operation would lead to person hurt or instrument faulty.

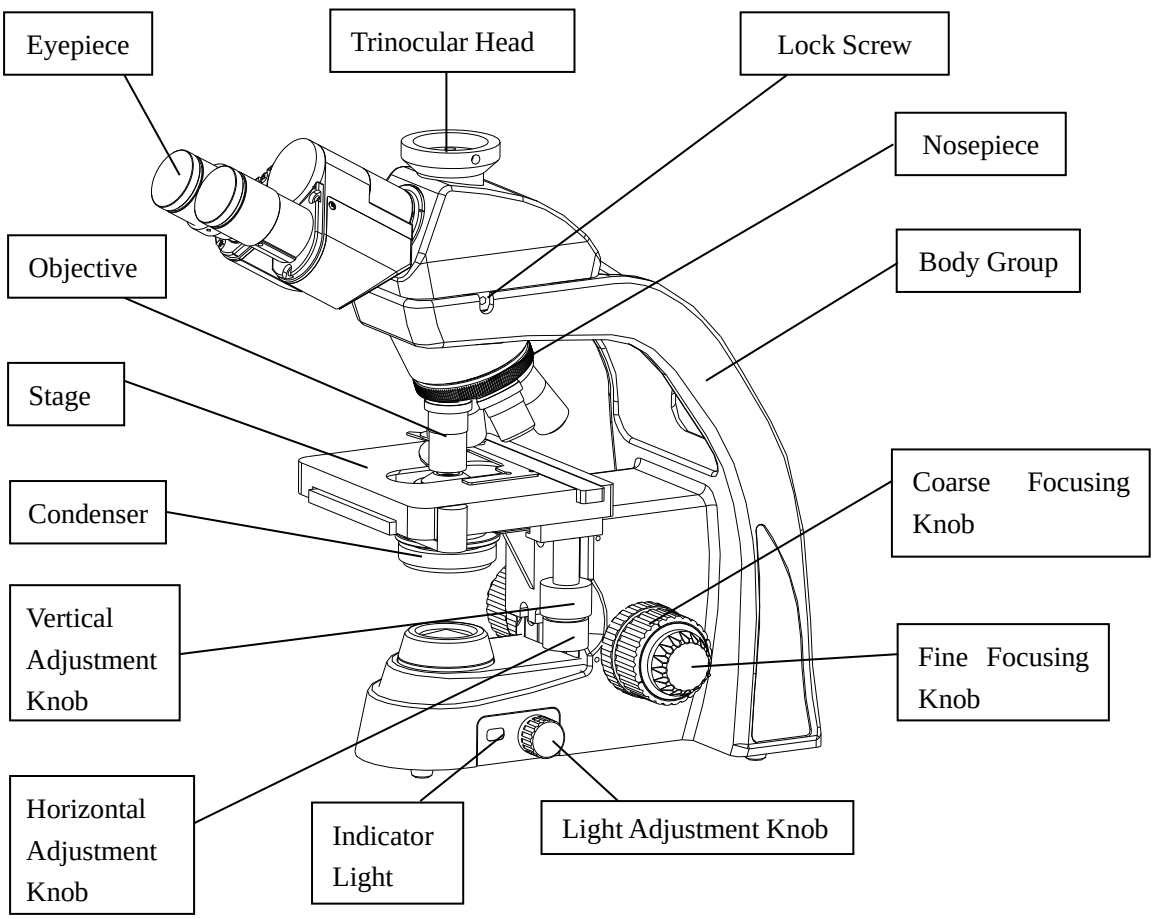
1. Components *BS-2026 Series*



BS-2026M


Body Group
Binocular Head
Eyepiece
Tension Adjustment Ring
Objective
Stage
Fine Focusing Knob
Coarse Focusing Knob
Illuminator

BS-2026B


Eyepiece
Trinocular Head
Lock Screw
Nosepiece
Objective
Body Group
Stage
Condenser
Coarse Focusing Knob
Vertical Adjustment Knob
Fine Focusing Knob
Horizontal Adjustment Knob
Indicator Light
Light Adjustment Knob

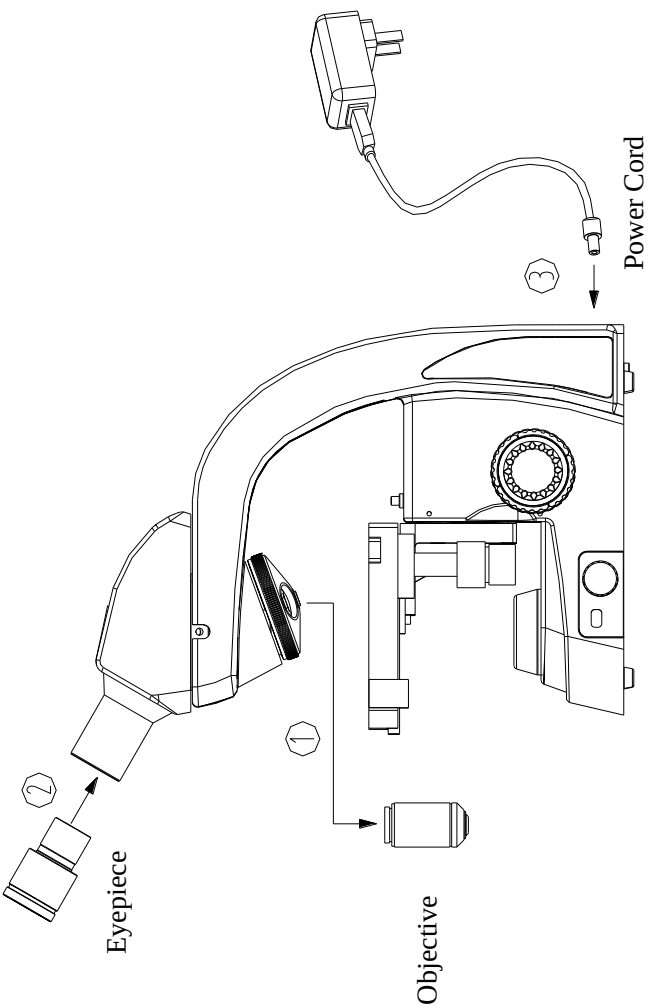
BS-2026T

2. Assembling

2-1 *Assembling Scheme*

Following is the Assembling Scheme, and **the numbers denote the assembling order**.

★ **Before assembling, make sure there is no dust, dirt or other materials which will disturb it. Assemble carefully and do not scrap any part or touch the glass surface.**



2-2 *Assembling Steps*

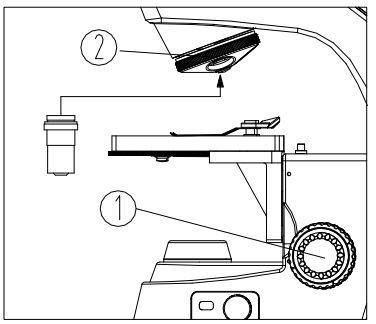


Fig.3

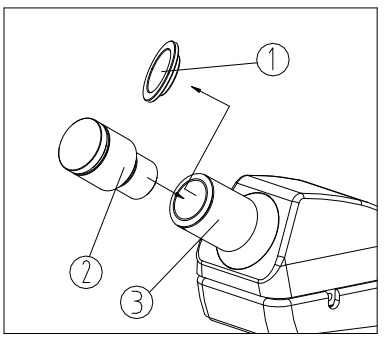


Fig.4

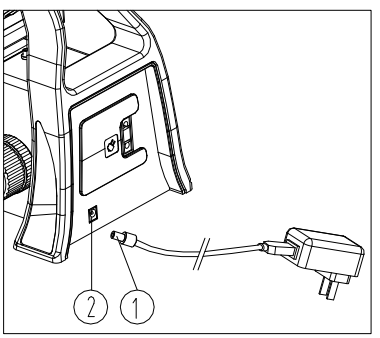


Fig.5

2-2-1 *Assemble the Objective*

1. Rotate the coarse focusing knob① to lower the stage to a suitable position (see Fig.3).

2.Then install the objectives into the nosepiece② from the lowest magnification to the highest in clockwisedirection.

★When operating, first use the low magnification objective (4X or 10X) to search for specimen and focus, and then replace with high magnification objective to observe.

★ When replacing the objective, rotate the objective nosepiece until it sounds "click", to make sure the objective wanted is in the center of optical path.

2-2-2 *Assemble the Eyepiece*

1. Take down the cover of eyepiece tube①.

2. Insert the eyepiece② into the eyepiece tube, until it touches the surface.

3. Tighten eyepiece with M2.5 inner hexagon lock-screw③ (see Fig.4).

2-2-3 *Connect the Power Cord*

★ Don't use strong force when the power cord is bended or twisted, otherwise it will be damaged.

1. Make sure the light adjustment knob is at "O"(OFF) before connecting the power cord.

2. Insert the connector① of into the power socket②, and make sure it connects well (Fig.5).

3. Insert the other connector into the socket of power supply, and make sure it connects well.

4.There are rechargeable batteries at the bottom of the microscope. Open the battery box to replace the battery (see Fig.6).

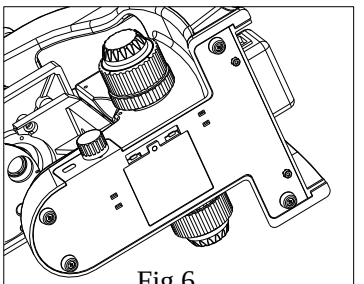


Fig.6

★ Use the special wire supplied by our company. If it's lost or damaged, choose one in the same specifications.

★ Wide voltage range is supported as 100~240V.

★ Connect the power cord appropriately to make sure the instrument is connected to ground.

3. Operations

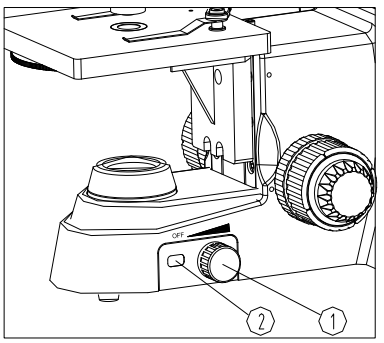


Fig.7

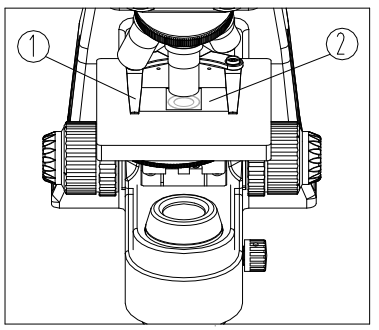


Fig.8

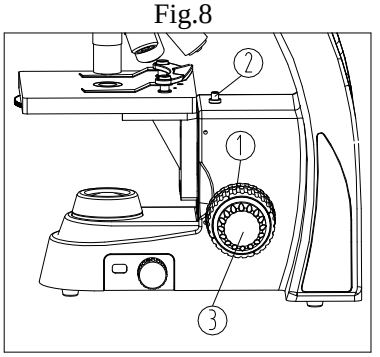


Fig. 9

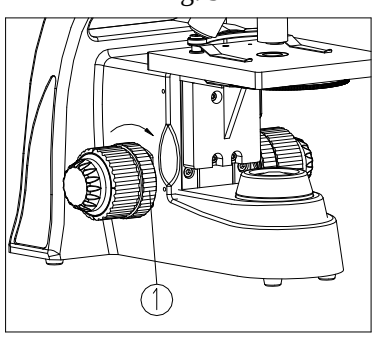


Fig. 10

3-1 *Set Illumination*

1. Put through the power and adjust the light adjustment knob① until the illumination is comfortable for observation. Rotate the light adjustment knob in clockwise to raise the voltage and brightness. Rotate the light adjustment knob in counterclockwise to lower the voltage and brightness (see Fig.7).
2. Indicator light, light green when normal use, orange light when charging.

3-2 *Place the Specimen Slide*

Place the cover glass of slide② faced upwards and move the specimen to the center (aligned with the center of objective). And fix the coverslip by the slide-holder (see Fig.8).

3-3 *Adjust the Focus*

1. Move the objective 4X into the optical path.
2. Observe the right eyepiece with right eye, rotate the coarse focusing knob① until the specimen outline appears in the view field (see Fig. 9).
3. Rotate the fine focusing knob③ for clear details.

★ The position screw② can avoid the objective touching the clips.

3-4 *Adjust the Focusing Tension*

If the handle is very heavy when focusing or the specimen leaves the focus plane after focusing or the stage declines itself, please adjust the tension adjustment ring① (see Fig. 10).

To tighten the focusing arm, rotate the tension adjustment ring① according to the arrowhead pointed; loosen it in the reverse direction.

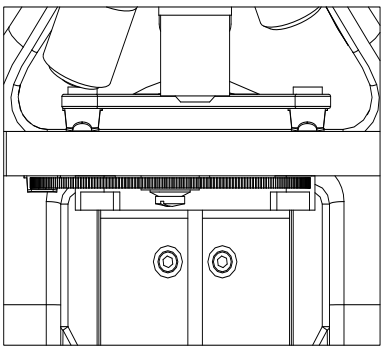


Fig. 11

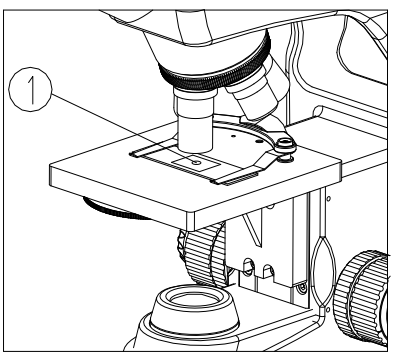


Fig. 12

3-5 *Aperture Diaphragm*

1. The aperture diaphragm decides the numerical aperture of the illumination system. Only when the N.A. of illumination system is matching with the N.A. of the objective, it can obtain better resolution and contrast, and also increase the depth of field.

2. For the microscope with disc diaphragm, turn the diaphragm to select a aperture to get the background brightness suitable (see Fig. 11).

3-6 *Use the Oil Objective (100X)*

1. Use the 4X objective to focus the specimen.

2.Place a drop of oil① on the specimen observed (see Fig. 12).

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

★ Make sure there is no air bubble in the oil for fear affect the image.

A. Move the eyepiece to examine the air bubble. Open the aperture diaphragm and field diaphragm fully and observe the edge of the objective field (It seems round and bright).

B. Rotate nosepiece slightly and swing the oil objective to remove the air bubble.

4. After using, wipe the front lens with a tissue moistened with a small amount of 3:7 mixture of alcohol and ether or with dimethylbenzene. Wipe off the oil on the specimen.

★ Don't put another objective to the light path before the oil is wiped to avoid wetting the dry objective.

★ Too much dimethylbenzene would dissolve the lens's stickiness.

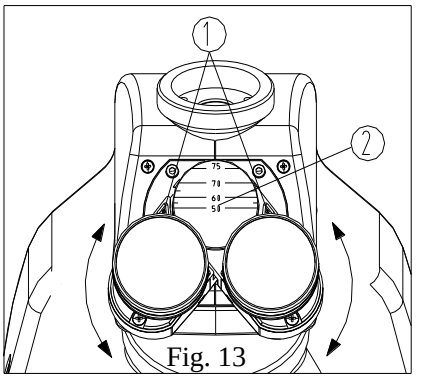


Fig. 13

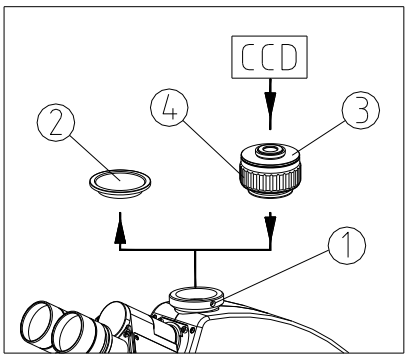


Fig. 14

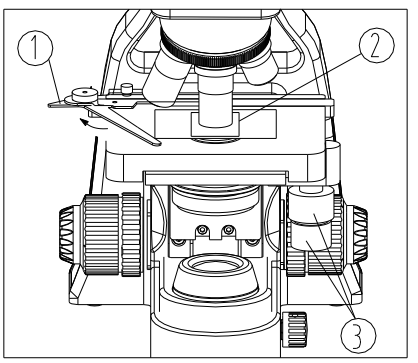


Fig.15

Series 3-7 *Use binocular/trinocular head*

3-7-1 *Adjust the Interpupillary Distance*

When observe with two eyes, hold the base of the prism and rotate them around the axis until there is only one field of view.

"①"on the eyepiece base points to the scale② of interpupillary indication, means the value of interpupillary distance (see Fig. 13). Adjustable range: 50~75mm.

★Remember your interpupillary distance for further operation.

3-7-2 *Assembling and using of the TV Device*

1. Loosen the lock screw① of trinocular head, and take out the dust-cover② (See Fig. 14).
2. Take down the two dust-covers of the TV adapter③. Insert the TV adapter into the trinocular head as shown in the figure and screw down the lock screw①.
3. Loosen the lock screw④ of the TV adapter. Take down the vidicon interface (C type) ⑤ from the TV adapter, and screw into the CCD or camera⑥. Then assemble the camera on the TV adapter, and screw down the lock screw④.
4. For binocular observation, after the image is clear, observe the image of CCD. If the image is unclear, rotate the TV adapter③ for focusing until it is clear.

3-8 *Use mechanical platforms (Optional)*

3-8-1 *Place the Specimen Slide*

1. Push the wrench① of the specimen holder backwards.
2. Place the cover glass of slide② faced upwards into the clip, loosen the wrench① and clamp the slide (see Fig.15).

3. Rotate the X and Y-axis knob③ of the stage, and move the specimen to the center (aligned with the center of objective).

3-8-2 *Aperture Diaphragm*

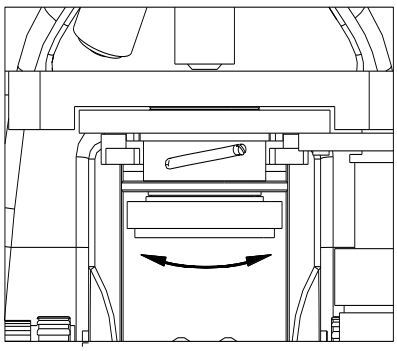


Fig. 16

1. The aperture diaphragm decides the numerical aperture of the illumination system. Only when the N.A. of illumination system is matching with the N.A. of the objective, it can obtain better resolution and contrast, and also increase the depth of field.
2. Turn the condenser clockwise or counterclockwise to change the height of the condenser (See Fig. 16).
3. Before installing the filter, rotate the condenser to the bottom and then open the filter holder.

★ Place the filter's rough side downward.

3-9 *Store the Power Cord*

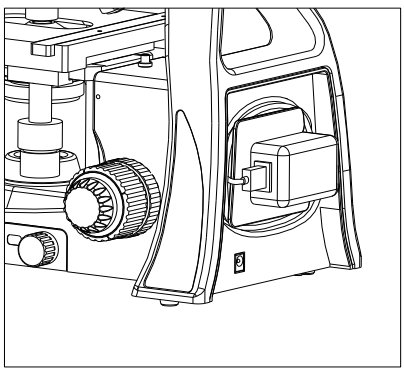


Fig. 17

When the microscope is not in use, the power cord can be wrapped around the rear cover, and the power charger can be plugged into the socket on the back of the microscope to avoid being lost. (See Fig. 17)

★ Don't use strong force when the power cord is bended or twisted, otherwise it will be damaged.
★ Use the special wire supplied by our company. If it's lost or damaged, choose one in the same specifications.

4. Troubleshooting *BS-2026 Series*

As the performance of microscope can't play fully due to unfamiliar operations, the table below can provide some solutions.

Problem	Cause	Solution
1. Optical Part		
(1) The LED light is bright, but it's dark in the field of view.	Field diaphragm is not large enough.	Enlarge the field diaphragm.
	Condenser is too low.	Adjust the position of condenser.
(2) The edge 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.
	Stain 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's no cover glass on the specimen.	Add the cover glass.
	The cover glass is not standard.	Use a standard cover glass with thickness δ0.17mm.
	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 oil objective.	Use immersion oil.
	Air bubble is in the immersion.	Get rid of the air bubble.
	Use wrong immersion oil.	Use a 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 eyepiece.	Clean the lens.
	The condenser is too low.	Adjust the condenser.
(5) One side of the field of view is dark or the image moves while focusing.	The specimen is not fixed.	Fix the specimen.
	The nosepiece is not in the right position.	Turn the nosepiece into the right position.
	Condenser centered incorrectly.	Center the condenser.

Problem	Cause	Solution
(6) The eyes feel tired easily. The right field of view doesn't superpose with the left.	Interpupillary distance is wrong.	Adjust the interpupillary distance.
	Eyepieces for the left eye and right eye are different.	Use the same eyepiece.
2. Mechanical Part		
(1) Cannot get the objective focused in 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 thickness δ0.17mm.
(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 not standard.	Use a standard cover glass with thickness δ0.17mm.
(3) Coarse focusing knob is too tight.	Tension knob is too tight.	Loosen it a little.
(4) Stage declines itself, cannot stay on the focal plane when observing.	Tension knob is too loose.	Tighten it 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) Cannot move the slide smoothly.	The slide is not fixed correctly.	Adjust it correctly.
	The movable specimen holder is not fixed properly.	Adjust it correctly.
(8) The image moves obviously when touching the stage.	The stage is fastened incorrectly.	Fasten the stage correctly.
3. Electrical Part		
(1) The LED light does not work.	No power supply.	Check the connection of the power cable.
	The LED bulb is not installed correctly.	Install it correctly.
	The LED bulb is burnt out.	Replace it.
(2) The bulb burnt out very often.	A wrong bulb is used.	Replace it with a correct one.
(3) The illumination is not bright enough.	A wrong bulb is used.	Replace it with a correct one.
	The use of light adjustment knob is wrong.	Adjust correctly.