



# **BS-3080 Series**

## **Parallel Light Path**

### **Zoom-Stereo Microscope**

### **Instruction Manual**



This instruction manual is for the operation guide, troubleshooting and maintenance to BS-3080 series parallel light path zoom-stereo 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.

*Before Use*

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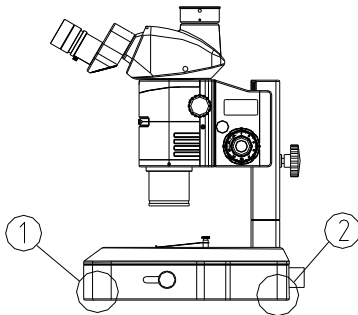
**1. Operation Notice**

Fig. 1

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

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, horizontal and firm enough.

Following environment is required when operating:  
Indoor temperature: 5°C~40°C, Max relative humidity: 80%.

3. When moving the microscope, use both hands to hold the position ① and ② of the microscope. (See Fig. 1)

★ **It will damage the microscope by holding the observation head, focusing knob, body or objectives when moving.**

4. External power adapter is used. Wide voltage range is supported as 100~240V AC.

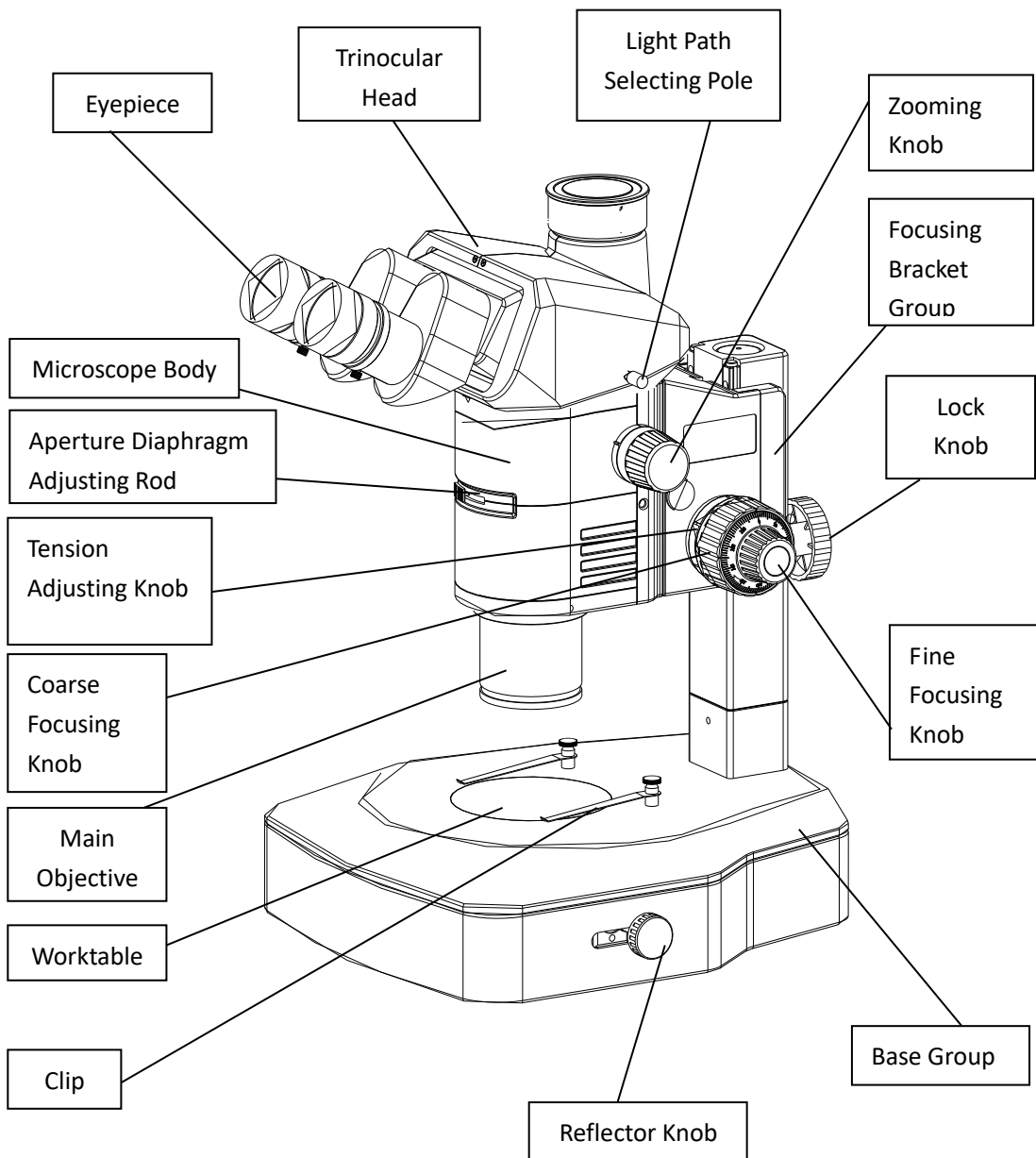
5. Use the special wire supplied by our company.

**2. Maintenance**

1. Keep all the surface of the lens clean. Wipe the lens gently with a soft lens tissue or blow away the dust. Carefully wipe off oil or fingerprints on the lens surfaces with tissue moistened with a little of 3:7 mixture of alcohol and ether.
2. Do not use organic solution to wipe the surface of other components, especially the surface of plastic components. Please use the neutral detergent if necessary.
3. Never disassemble the microscope yourself, otherwise it will influence its function or damage it.
4. After using, cover the microscope with a dust cover to prevent it from the dust, and store it in a place free from moisture to avoid rusting.
5. To keep the performance of the microscope, please check it periodically. For more details, please contact the agents nearby.

1. Components

BS-3080



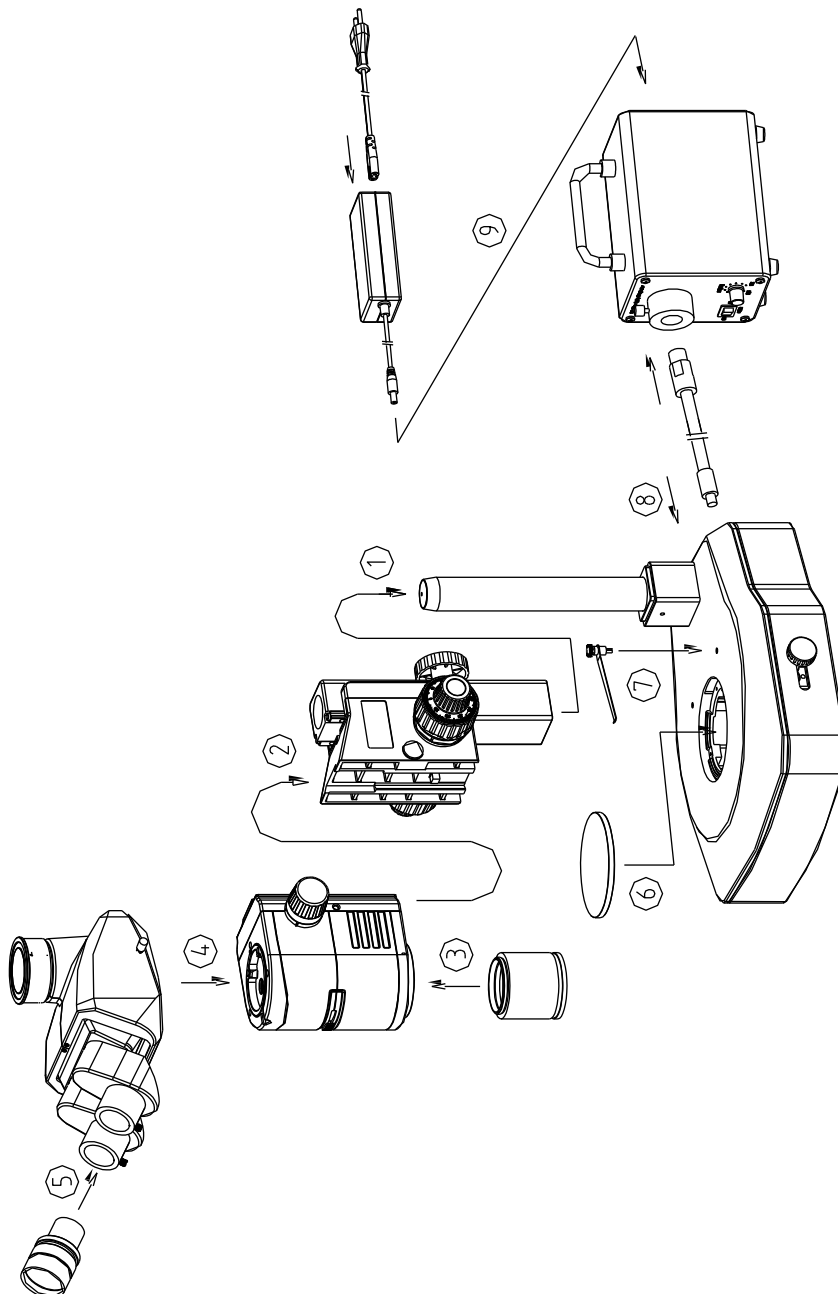
## 2. Assembling

BS-3080

### 2-1 Assembling Scheme

Following is the Assembling Scheme to describe how to assemble the components, 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

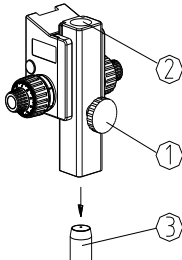


Fig. 2

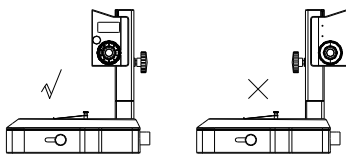


Fig. 3

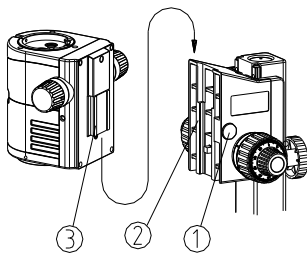


Fig. 4

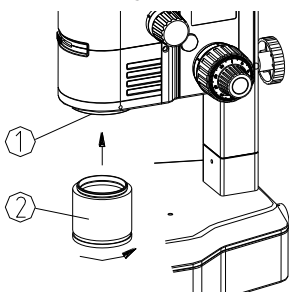


Fig. 5

**2-2-1 Assemble the Focusing Bracket Group**

Loosen the lock knob ① of the focusing bracket group, insert the hole ② of focusing bracket group into the column ③, until the focusing bracket group to the lowest position. Then tighten the lock knob ① to prevent the microscope from turning.

⊙Slowly insert it, do not force too much.

⊙To avoid the microscope turnover, the focusing bracket group must assemble on the same side to the worktable of base group, as the left view of Fig. 3. If assemble the focusing bracket group on the wrong side, the microscope will turn over as the right view of Fig. 3.

**2-2-2 Assemble the Microscope Body**

1) Remove the decorative cover ① of the focus bracket group, and loosen the M4 inner hexagon screw with a M4 inner hexagon spanner. (See Fig. 4)

2) Match the dovetail interface ③ of the microscope body with the dovetail groove ② of the focus bracket group, and insert it from top to bottom as the direction shown in the figure.

3) Tighten the M4 inner hexagon screw on the focus bracket group with a M4 inner hexagon spanner, then put the decorative cover ① back.

**2-2-3 Assemble the Objective**

1) Rotate the objective as the arrowhead direction shown in the figure, and screw the objective ② into the objective installation screw hole ①. (See Fig. 5)

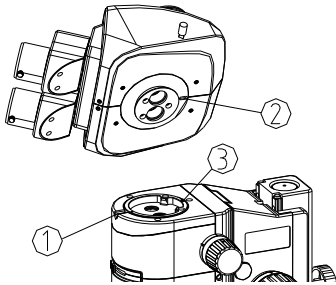


Fig. 6

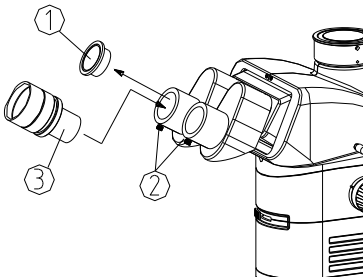


Fig. 7

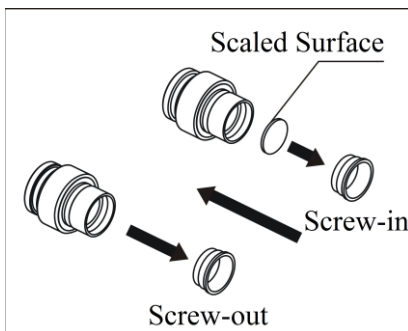


Fig. 8

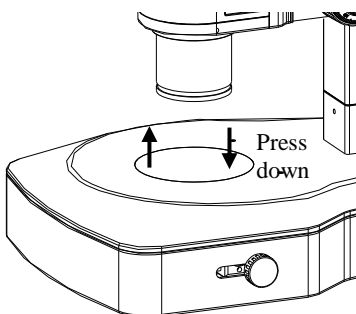


Fig. 9

**2-2-4 Assemble the Head**

- 1) Loosen the head lock-screw ① fully with a M4 inner hexagon spanner.
- 2) Make the two tubes face forward, from a little rear position of the center, insert the coattail interface on the bottom of head into the hole of body with a little rear inclined. Match the orientation groove ② of the head with the orientation pin ③ of the body, and then screw down the lock screw ①. (See Fig. 6)

**2-2-5 Assemble the Eyepiece**

- 1) Take down the eyepiece tube cover ①.
- 2) Insert the eyepiece ③ into the eyepiece tube, until it touches the bottom. Lock the eyepiece by the lock-screw ② (See Fig. 7)

**☉Install or Remove the Reticle**

- 1) Unscrew the pressure ring from eyepiece (see Fig. 8).
- 2) Clean the reticle, then install it into the pressure ring with the scaled surface upward (see Fig. 8).
- 3) Screw the pressure ring which is with reticle into the eyepiece until tight enough.
- 4) To remove the reticle, first unscrew the pressure ring from eyepiece, then take down the reticle and keep it with clean paper packed.

**2-2-6 Assemble (Remove) the Worktable**

- 1) Place the worktable on the installation hole of the base.
- 2) To remove the worktable, use fingertip to press down the worktable nearby the pillar edge (as the arrowhead direction shown in Fig. 9), then the other end of worktable will turn up. (See Fig. 9)

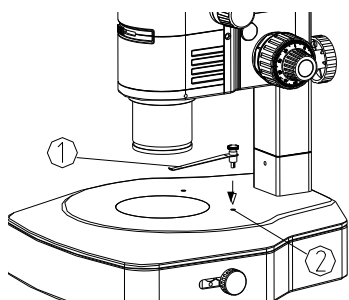


Fig. 10

### 2-2-7 Assemble the Clip

- 1) Use the clip to avoid the specimen moving.
- 2) Insert the clip ① into the two holes of the base, as the arrowhead direction shown in the figure. (See Fig. 10)

### 2-2-8 Fix the Microscope Body Position

- 1) Loosen the lock knob ①, and rotate the microscope body and the focusing bracket group left and right.
- 2) Match the center of zoom body group with the center of worktable, then lock the lock knob ①. (See Fig. 11)

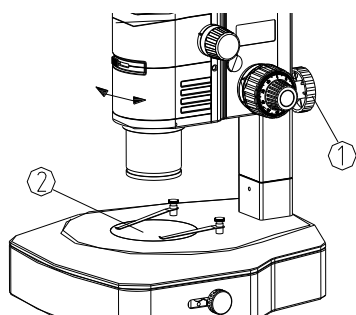


Fig. 11

### 2-2-9 Connect the LED Light Source and Power Cord

- 1) Make sure the main switch is at "O" (OFF) position. (See Fig. 12)
- 2) Insert one end of the optical fiber ① into the inner hole ② of the power supply box to the bottom, and align the flat surface with the lock screw ③, then lock it with the lock screw ③.
- 3) Insert the other end of the optical fiber ① into the hole of the base ④, then lock it with the lock screw.
- 4) Insert one end of the power adapter ⑥ into the inner hole ⑤ of the power supply box.
- 5) Insert one end of the power cable ⑦ into the corresponding hole of the power adapter ⑥, and the other end into the power supply socket.

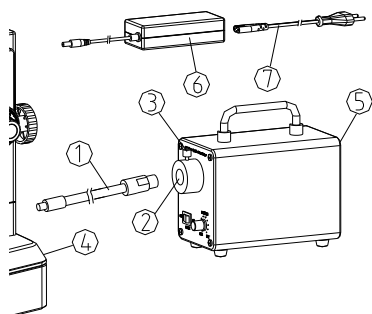


Fig. 12

★ The power supply box supports wide voltage as 100-240V.

★ 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 with the same specifications.

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



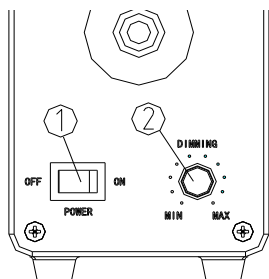


Fig. 13

### 3-1 Set Illumination

- 1) Put through the power and turn on the main power switch to "ON".
- 2) Adjust the light adjustment knob (2) until the illumination is comfortable for observation. Rotate the light adjustment knob clockwise to raise the brightness. Rotate the light adjustment knob counterclockwise to lower the brightness (See Fig. 13).

### 3-2 Adjust the Reflector

◎ The reflector has two surfaces, one is plane mirror, the other is sandblasted aluminum. Both surfaces can reflect the light, but the reflection of plane mirror is stronger.

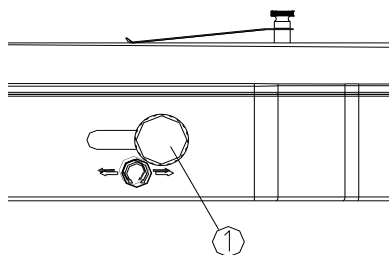


Fig. 14

1) Adjusting the adjustment knob (1) of the reflector (See Fig. 14), can change the reflector surface, also can change the lighting range after reflected.

2) The adjustment knob (1) of the reflector can be moved front and rear according to the arrowhead direction, to achieve different lighting effects.

### 3-3 Adjust the Focusing Tension

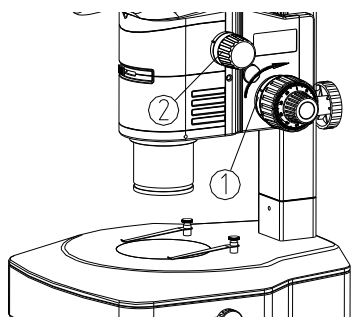


Fig. 15

1) If the handle is very heavy when coarse focusing, or the specimen leaves the focus plane soon after focusing, or the stage declines itself, these problems can be solved by adjusting the tension adjustment ring (1). (See Fig. 15)

2) Rotate the tension adjustment ring (1) according to the arrow direction in the figure, to tighten the focusing system; rotate the tension adjustment ring (1) in the opposite direction, to loosen the focusing system.

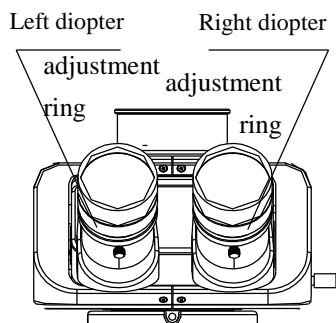


Fig. 16

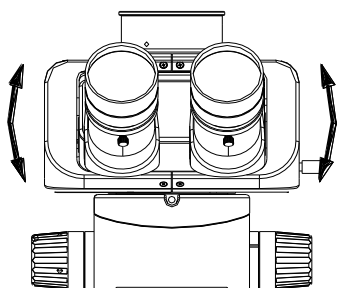


Fig. 17

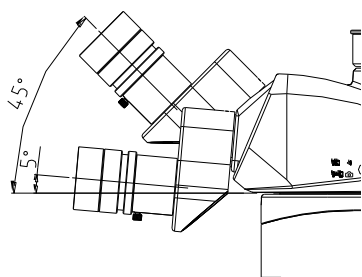


Fig. 18

### 3-4 Adjust the Diopter and Focus

★ Before operating, make sure the eyepiece lock screw is tighten.

- 1) Rotate the zoom knob to the maximum magnification. (See Fig. 15)
- 2) Rotate the focusing knob if the image is unclear when observed with the right eyepiece.
- 3) Rotate the zoom knob to the minimum magnification.
- 4) Rotate the diopter adjustment ring of right eyepiece if the image is unclear when observed with the right eyepiece. (See Fig. 16)
- 5) Then rotate the zoom knob to the maximum magnification, if the image is not clear enough when observed with the right eyepiece, repeat Step (3)~(5) as above.
- 6) Then rotate the zoom knob to the minimum magnification, turn the diopter adjustment ring of left eyepiece if the image is not clear enough when observed with the left eyepiece. (See Fig. 16)

### 3-5 Adjust the Interpupillary Distance

Hold the left and right prism boxes and rotate them according to the arrowhead pointed in Fig. 17, until it's comfortable to view.

Adjustable range: 50~76mm.

### 3-6 Adjust the Elevation Angle of Observation Head

- 1) Adjust the height and elevation of observation tube to the most comfortable position for observation.
- 2) Use both hands to hold the binocular components, to move it up or down to the position required. (See Fig. 18)

### 3-7 Turn on/off the Magnification Fixed Position

#### Function

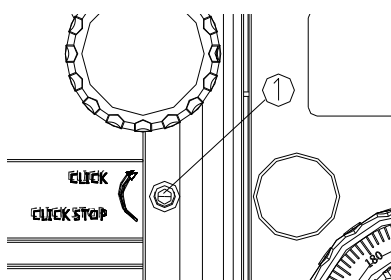


Fig. 19

◎ Magnification fixed position function is providing a ticking sound stop position for every zoom magnification indicated value of the zoom knob. When the ticking sound stop position function is turned to STOP, the zoom magnification can be finely adjusted around the zoom magnification indicated value.

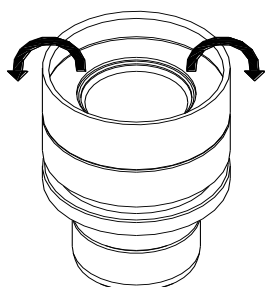
1) To turn on the ticking sound magnification fixed position function, rotate the ticking sound magnification fixed position screw① in clockwise(as the arrowhead shown) to the end with an inner hexagon spanner.(See Fig. 19)

Every magnification value on the zoom knob has a ticking sound fixed position.

2) To turn off the ticking sound magnification fixed position function, rotate the ticking sound magnification fixed position screw① in counter-clockwise(in the opposite direction of arrowhead) for two circles with an inner hexagon spanner.(See Fig. 19)

★ **Do not rotate it over the limit, otherwise it will damage the housing and internal mechanisms of the microscope.**

### 3-8 Use the Eye-cap



◎ If the user wears glasses, turn over the eye-cap border outward, and cover it on the eyepiece.

◎ If the user doesn't wear glasses, cover the eye-cap on the eyepiece. It can prevent the glasses touching

the eyepiece and avoid damaging the glasses and the eyepiece. (See Fig.20)

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### 3-9 Adjust the Aperture Diaphragm

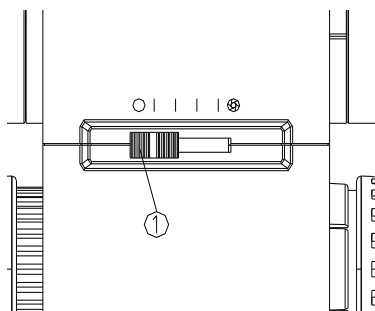


Fig. 21

Adjust the aperture diaphragm by the aperture diaphragm adjusting pole①. Pull it to the left to enlarge the aperture diaphragm, while pull it to the right to decrease the aperture diaphragm. (See Fig. 21)

In actual use, adjust the aperture diaphragm according to the size of the sample image contrast, until it's comfortable for observation and the contrast is good.

### 3-10 Select the Light Path

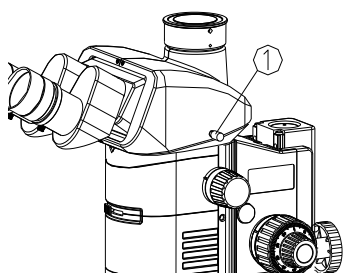


Fig. 22

When the light path selecting pole① is pushed to the innermost, all the light will enter the binocular head, which can be used for binocular observation. (See Fig. 22)

When the light path selecting pole is pulled to the outermost, all the light will enter the trinocular head, which can be used for TV&Photography.

### 3-11 Assemble and Use the CTV Adapter

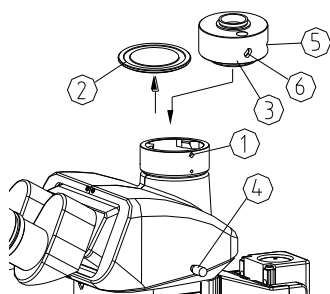


Fig. 23

1) Loosen the lock screw① of trinocular head, and take out the dust-cover② (See Fig. 23).

2) Take down the two dust-covers of the CTV adapter③. Insert the CTV adapter into the trinocular head as shown in the figure and screw down the lock screw①.

3) Connect the CCD or camera to the adapter ③.

4) For binocular observation, after the image is clear, pull the light path selecting pole ④ to the outermost, to observe the image. If the image is not clear, loosen the lock screw ⑤, and adjust the focusing screw ⑥ until the image is clear, then tighten the lock screw ⑤.

### **3-12 Assemble and Use the Polarizer Device**

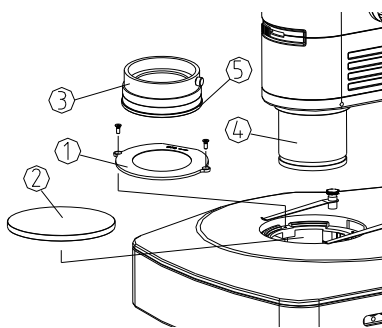


Fig. 24

1) Take off the worktable ② from the base, and fix the polarizer group ① onto the base with a M3 sunk key (make the flat side of polarizer group ① close to the pillar), then put back the worktable ②. (See Fig. 24)

2) Loop the analyzer group ③ on the outside diameter of main objective ④, and lock it with the lock screw of analyzer group.

3) Rotate the adjusting ring ⑤ of analyzer group ③, to adjust the vibrated direction of the analyzer, which is 360°rotatable.

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

| <b>Problem</b>                                                             | <b>Cause</b>                                                   | <b>Solution</b>                        |
|----------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------|
| <b>1. Optical System</b>                                                   |                                                                |                                        |
| (1) The image is too bright or too dark.                                   | Inappropriate adjustment to brightness.                        | Readjust the brightness appropriately. |
| (2) Stain or dust is observed in the field of view.                        | Stains have accumulated on the specimen.                       | Clean the specimen.                    |
|                                                                            | Stains have accumulated on the eyepiece.                       | Clean the eyepiece.                    |
|                                                                            | Stains have accumulated on the objective.                      | Clean the objective.                   |
|                                                                            | Stains have accumulated on the working plate.                  | Clean the working plate.               |
| (3) The right field of view doesn't superpose with the left one.           | Interpupillary distance is incorrect.                          | Adjust the interpupillary distance.    |
|                                                                            | Diopter adjustment is incorrect.                               | Adjust the diopter.                    |
|                                                                            | The eyepiece for the right eye is different from the left one. | Use the same eyepieces.                |
| (4) Unclear image                                                          | Stains have accumulated on the objective.                      | Clean the objective.                   |
| (5) Image is not clear when focusing.                                      | Diopter adjustment is incorrect.                               | Adjust the diopter.                    |
|                                                                            | Focus is incorrect.                                            | Adjust the focus.                      |
| (6) The eyes feel tired easily.                                            | Diopter adjustment is incorrect.                               | Adjust the diopter.                    |
|                                                                            | The brightness is not right.                                   | Adjust it.                             |
| <b>2. Focus system</b>                                                     |                                                                |                                        |
| (1) The focusing knob is not smooth.                                       | The focusing knob is too tight.                                | Loosen it properly.                    |
| (2) The image is not clear due to the self-decline of the microscope body. | The focusing knob is too loose.                                | Tighten it properly.                   |