



BS-8045 Series Gemological Microscope Instruction Manual



BS-8045B

This instruction manual is for the operation guide, troubleshooting and maintenance to the BS-8045 series gemological 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.

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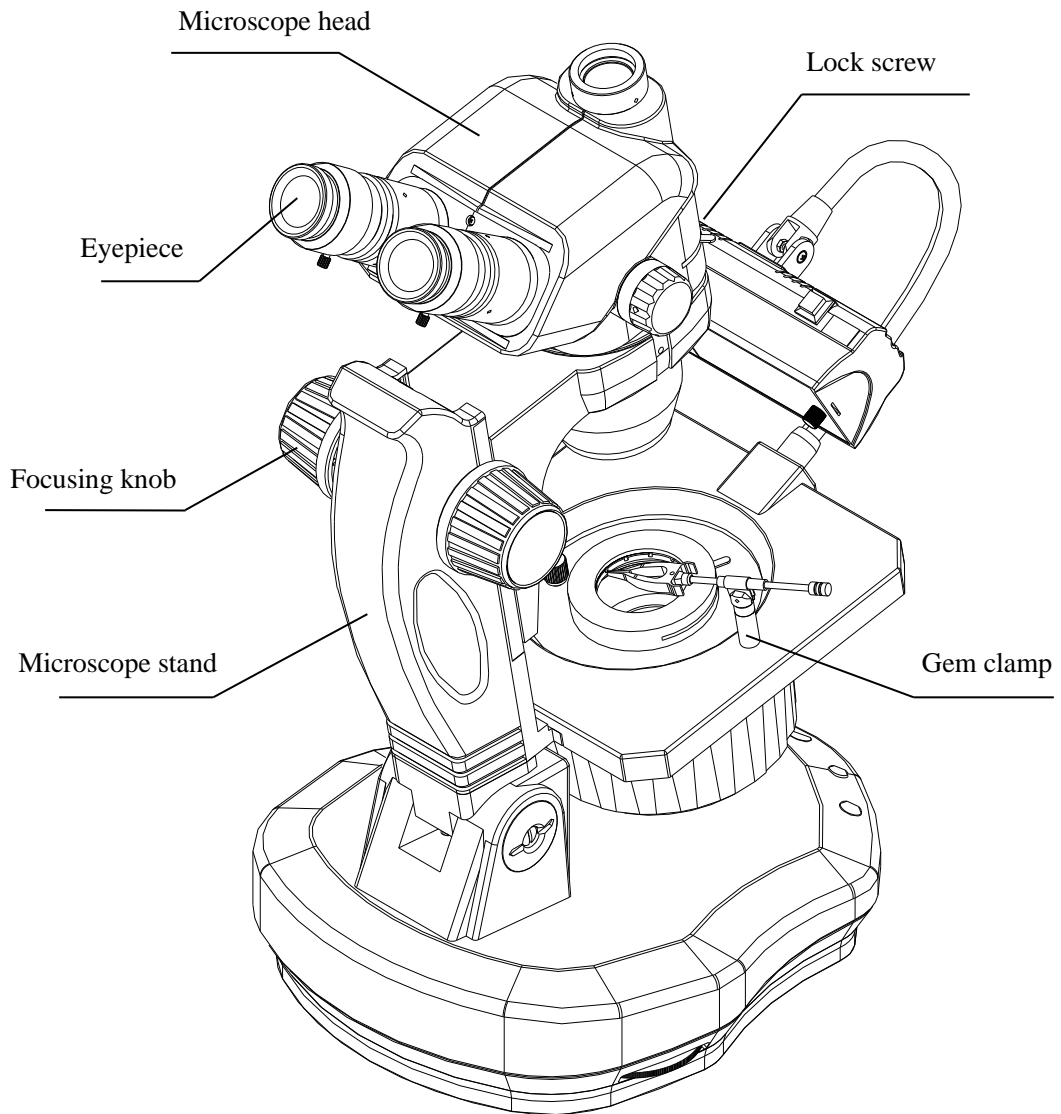
Before use***BS-8045 series******Operation***

1. As the microscope is precision instruments, it should be taken carefully and avoid impact during transportation.
2. The microscope should be set in dry and clean place. Do not expose in the sun directly and avoid high temperature and violent vibration. The environment temperature should be 0 °C~40 °C and the humidity should be 85%.
3. To keep the image clearly, do not leave finger prints or stains on lens.
4. Make sure the main power supply is suitable within 90-240V before use.
5. Do not adjust the right and left focusing knob to opposite direction simultaneity, otherwise it will with trouble.
6. Please shut off power supply before replace bulb.
7. Please shut off power supply before remove the microscope.
8. Please holder the microscope from arm and base and put off safety.

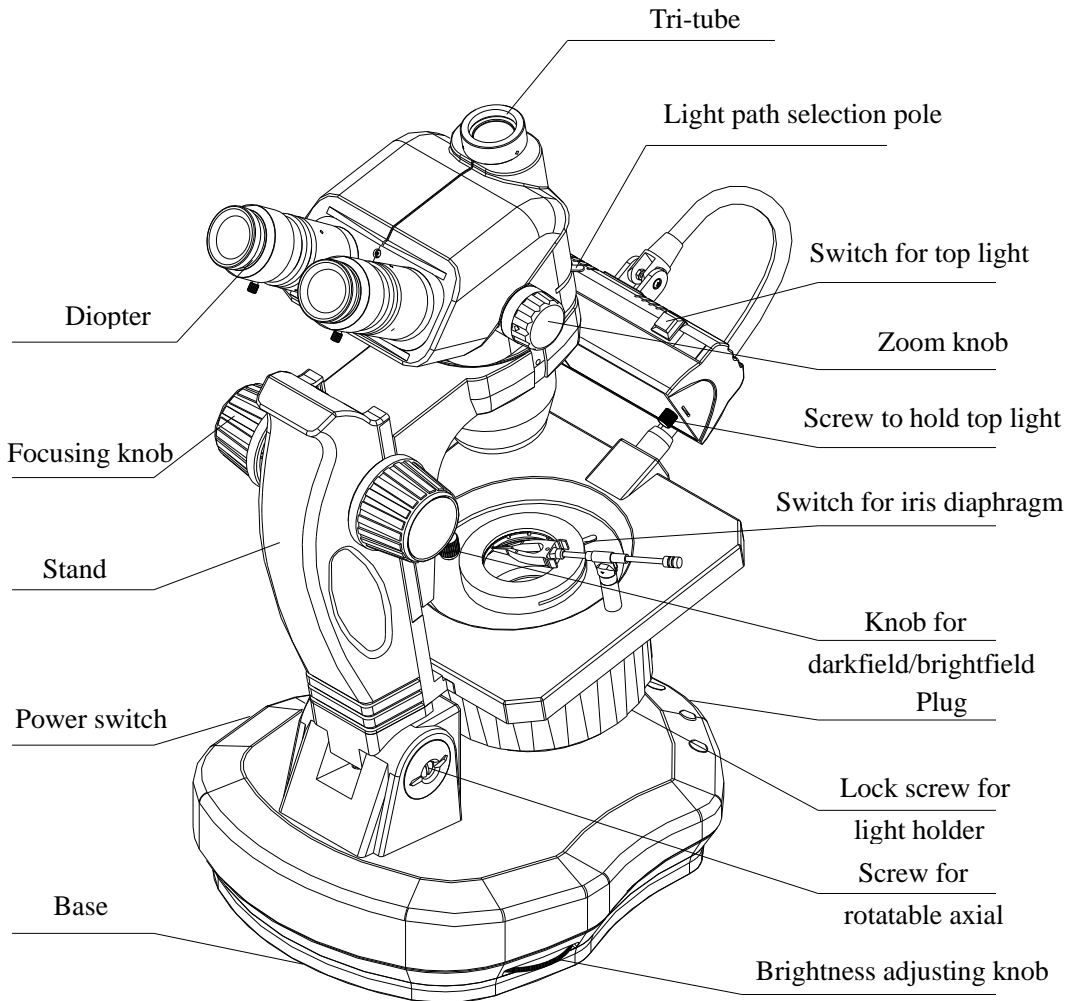
★ **If hold on the stage, focusing knobs or observation tubes during removing, it will damage the microscope.**

Maintenance

1. All lenses should be kept cleanly. Use air or lens cloth to clear dust; Use cotton pledget with 3:7 ethanol and aether mixed to clear spot and fingerprint.
2. Never use organic solution to clean the surface of microscope, especially the plastic parts. If necessary, please choose neutral detergent.
3. Do not disassemble or assemble the microscope yourself to avoid damaging the capability.
4. After using, put on dust cover to protect microscope and put in dry place to prevent rust.



BS-8045T

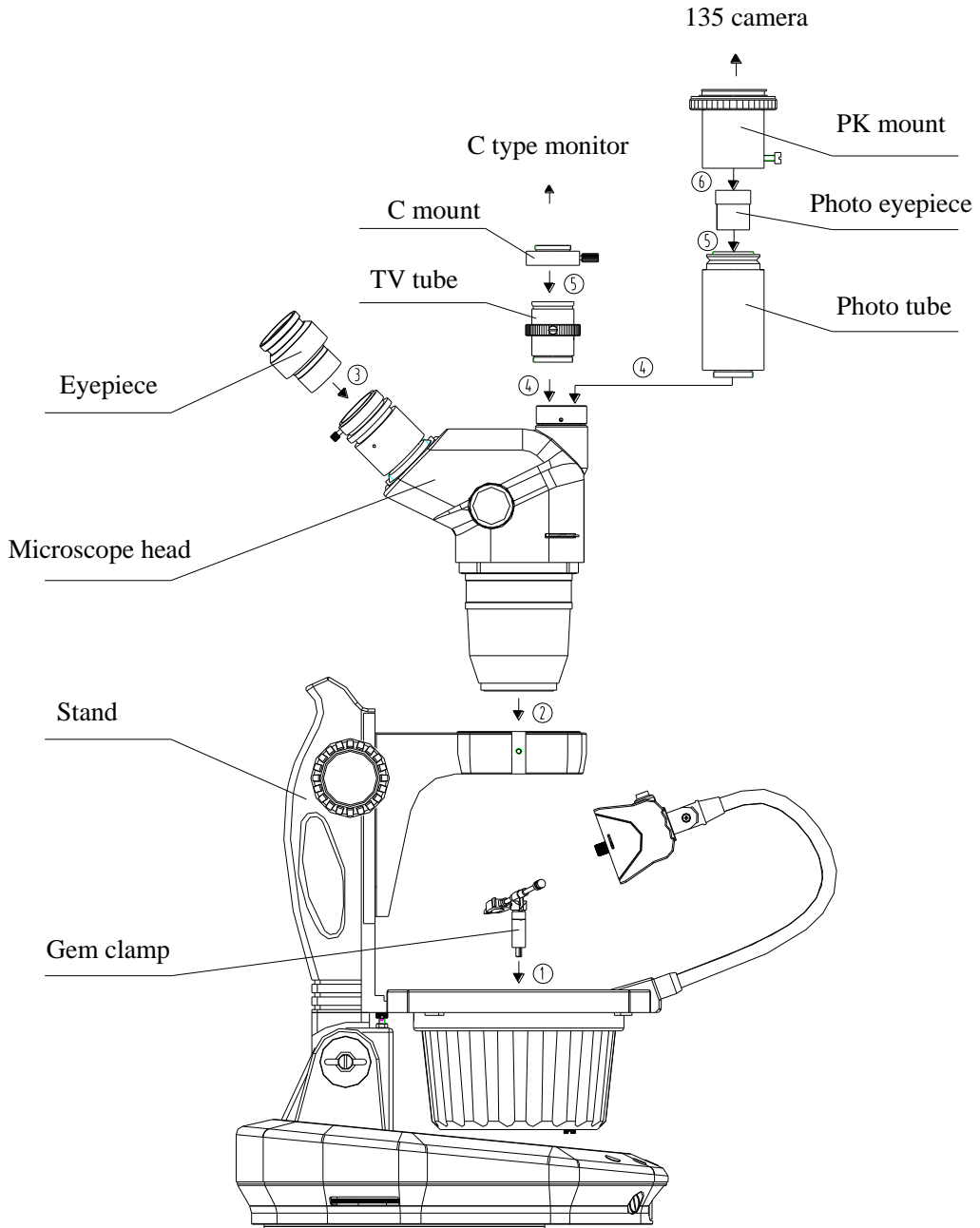


2. Assemblage

BS-8045 series

Below is the assemblage scheme for BS-8045 series, the numbers show assemblage order.

★ Before assemblage, please make sure that every part is clean. And keep them clean during assemblage.



3. Operation

BS-8045 series

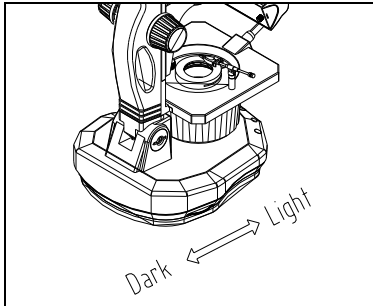


Figure 1

3-1 Illumination

- (1) Connect main power supply and set main switch at “-”.
- (2) Use bottom light: Turn brightness adjusting knob to suitable. The direction showed. (Fig. 1)
- (3) 7W fluorescent bulb for top light and it can not adjusted for brightness. It has separate switch knob, show the figure below.

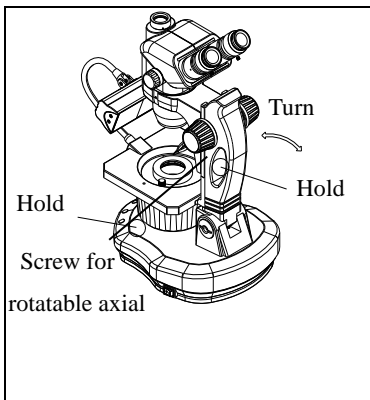
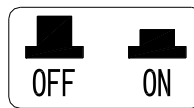


Figure 2

3-2 Adjust observation tube & base

- (1) Hold the front of the base and arm to turn to suitable position for observation. (Fig. 2) Then tight the screw for rotatable axial.
- (2) The plastic disc under base can make the whole microscope for 360° rotatable.

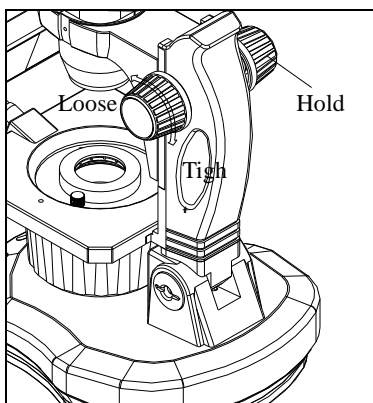


Figure 3

3-3 Adjust focusing tightness

- (1) Hold one knob to turn another to achieve adjustment of tightness. Tightness is base on turn direction. (Fig. 3)
- (2) Adjust the tightness to suitable to make observation more comfortable and prevent stage slipping down.

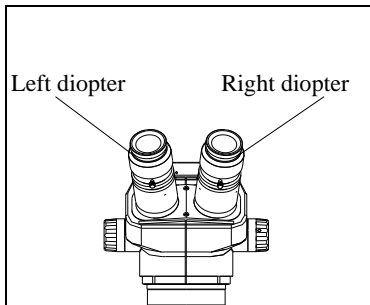


Figure 4

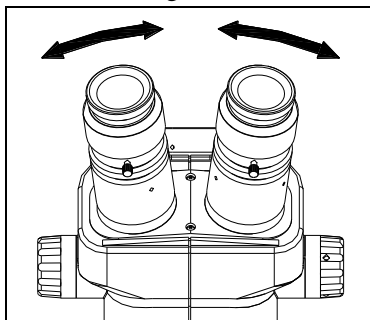


Figure 5

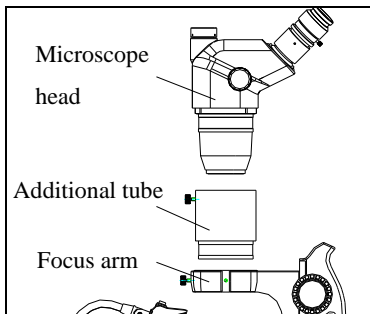


Figure 6

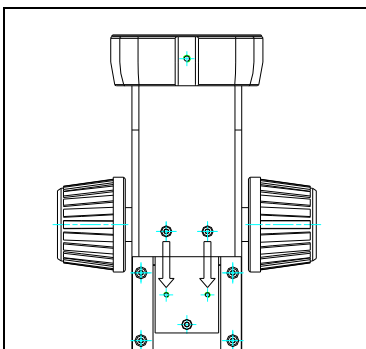


Figure 7

3-4 Diopter & focusing

- (1) Turn the focusing knob to Max. magnification.
- (2) Turn the both eyepiece tube at "0" position.
- (3) Observe through right tube. If the image is not clear, use focusing knob to make it clear.
- (4) Turn the focusing knob to Min. magnification.
- (5) Observe through right tube. If the image is not clear, adjust diopter to make it clear.(Fig. 4)
- (6) Turn the focusing knob to Max. magnification again. If the image is still not clear, repeat the above step (3) and (5).
- (7) Turn the focusing knob to Min. magnification, then observe through left tube. If the image is not clear, adjust diopter to make it clear. (Fig. 4)

3-5 Interpupillary distance

Hold both eyepiece tube to turn as the direction showed Fig. 5 to suitable position

3-6 Auxiliary lens

- (1) Set on auxiliary lens to the bottom of the microscope head.
- (2) It should use additional tube when use 0.5X auxiliary lens. (Fig. 6)
- (3) When use 1.5X or 2X auxiliary lens, please take off 4pcs M3 screws on focus arm and set the focus arm into 4pcs holes and lock. (Fig. 7)

★ It need not use additional tube when use 0.75X auxiliary lens.

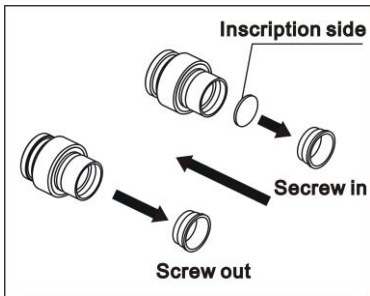


Figure 8

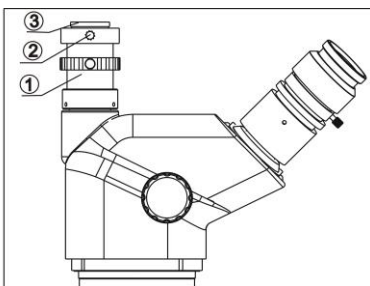


Figure 9

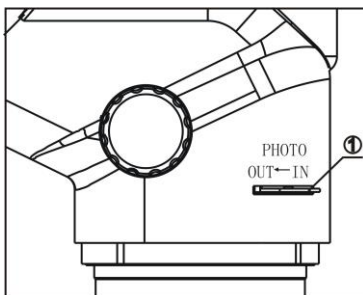


Figure 10

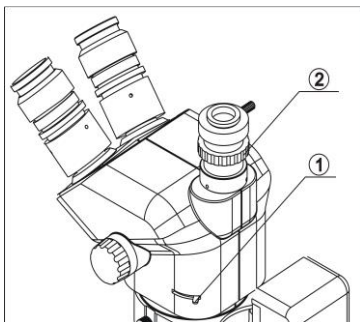


Figure 11

3-7 Mount and remove micrometer

- (1) Take off the mounting ring from eyepiece. (Fig. 8)
- (2) Clean the micrometer and mount it into mounting ring, make sure the inscription side up. (Fig. 8)
- (3) Mount the mounting ring into eyepiece.
- (4) To remove the micrometer, please take off the mounting ring first. Then take out the micrometer and wrap it with clean and soft paper for storage.

3-8 Set photo device & TV device

- (1) Screw video tube ① into M28 hole of tri-tube. (Fig. 9)
- (2) Loose the lock-screw ② on TV tube, and take off the C-mount ③ from tube.
- (3) Screw the C-mount into video camera.
- (4) Connect the video camera with TV tube and lock by screw ②.

3-9 Select light path

- (1) To observe through binocular, please turn the light path selection lever ① to "OUT". (Fig. 10)
- (2) If turn the light path selection lever ① to "IN", (Fig 10) , you can observe through both binocular and trinocular.

★ Whether the light path is to "OUT" or "IN", please make sure it is to the end.

3-10 Focus TV device

- (1) Turn the light path selection lever ① to "IN". (Fig 11)
- (2) Turn the zoom knob to the Max. magnification and observe through video camera and adjust focusing knob to make image clear.
- (3) Turn the zoom knob to the Mix. Magnification. If the image is not clear, please adjust the adjusting ring ② on video tube to make it clear.
- (4) Turn the zoom knob to Max. magnification again. If the image is still not clear, please repeat the step (2), (3) to make it clear within the whole zoom range.

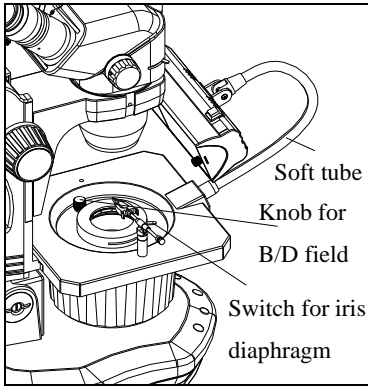


Figure 12

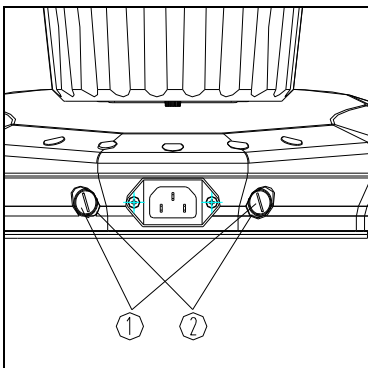


Figure 13

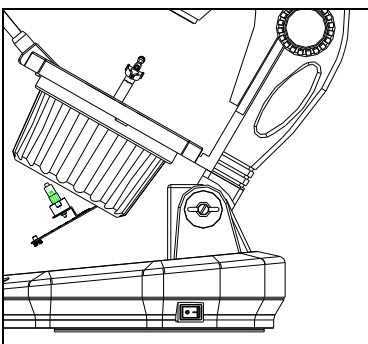


Figure 14

3-11 Iris diaphragm

Turn switch for iris diaphragm to change the aperture of bottom light. The aperture for iris diaphragm is $\Phi 3\text{mm} \sim \Phi 44\text{mm}$. (Fig. 12)

3-12 Switch Bright-field & Dark-field

Turn the knob for bright-field and dark-field to select bright-field and dark-field. (Fig. 12)

★ Whenever select dark-field or bright-field, the knob should be turned thoroughly.

3-13 Adjust top light

It is 7W fluorescent bulb for top light and connect by a soft tube.

(Fig. 12)

3-14 Replace fuse

Please set the power switch at "O" before replace fuse. Use "-" screw driver to take off fuse ① from its base ② and change a new on, then screw in. (Fig. 13)

★ Fuse: 250V3A

3-15 Replace bulb for bottom light

Please shut off power supply before replace bulb. Turn the microscope stand with 45° and loose the screw under stage. (Fig. 14)

★ Please wait the bulb cool down for replacement.

★ Don't touch the bulb directly by hand.

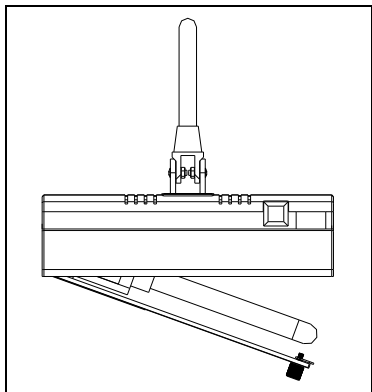


Figure 15

3-16 *Replace bulb for top light*

Please shut off power supply before replace bulb. Loose the screw on cover and turn over it. Pull out the bulb for replacement. (Fig. 15)

- ★ Please wait the bulb cool down for replacement.
- ★ Don't touch the bulb directly by hand.

3-17 *Polarizer*

There are 2 piece of polarizer. One set under the microscope head (same as auxiliary lens) and the other set on iris diaphragm.

4、 Technical parameter
BS-8045 series
4-1 Optics

Eyepiece	Standard objective		Objective for selection					
	WD 100mm		Auxiliary lens 1.5X WD 47mm		Auxiliary lens 2X WD 26mm		Auxiliary lens 0.75X WD 120mm	
	Mag.	Field mm	Mag.	Field mm	Mag.	Field mm	Mag.	Field mm
10X/22	6.7X	32.8	10.1X	21.9	13.4X	16.4	5.0X	43.8
	7.0X	31.4	10.5X	21.0	14.0X	15.7	5.3X	41.9
	8.0X	27.5	12.0X	18.3	16.0X	13.8	6.0X	36.7
	10.0X	22.0	15.0X	14.7	20.0X	11.0	7.5X	29.3
	15.0X	14.7	22.5X	9.8	30.0X	7.3	11.3X	19.6
	20.0X	11.0	30.0X	7.3	40.0X	5.5	15.0X	14.7
	30.0X	7.3	45.0X	4.9	60.0X	3.7	22.5X	9.8
	40.0X	5.5	60.0X	3.7	80.0X	2.8	30.0X	7.3
15X/16	45.0X	4.9	67.5X	3.3	90.0X	2.4	33.8X	6.5
	10.1X	23.9	15.1X	15.9	20.1X	11.9	7.5X	31.8
	10.5X	22.9	15.8X	15.2	21.0X	11.4	7.9X	30.5
	12.0X	20.0	18.0X	13.3	24.0X	10.0	9.0X	26.7
	15.0X	16.0	22.5X	10.7	30.0X	8.0	11.3X	21.3
	22.5X	10.7	33.8X	7.1	45.0X	5.3	16.9X	14.2
	30.0X	8.0	45.0X	5.3	60.0X	4.0	22.5X	10.7
	45.0X	5.3	67.5X	3.6	90.0X	2.7	33.8X	7.1
20X/12	60.0X	4.0	90.0X	2.7	120.0X	2.0	45.0X	5.3
	67.5X	3.6	101.3X	2.4	135.0X	1.8	50.6X	4.7
	13.4X	17.9	20.1X	11.9	26.8X	9.0	10.1X	23.9
	14.0X	17.1	21.0X	11.4	28.0X	8.6	10.5X	22.9
	16.0X	15.0	24.0X	10.0	32.0X	7.5	12.0X	20.0
	20.0X	12.0	30.0X	8.0	40.0X	6.0	15.0X	16.0
	30.0X	8.0	45.0X	5.3	60.0X	4.0	22.5X	10.7
	40.0X	6.0	60.0X	4.0	80.0X	3.0	30.0X	8.0
60.0X	4.0	90.0X	2.7	120.0X	2.0	45.0X	5.3	
80.0X	3.0	120.0X	2.0	160.0X	1.5	60.0X	4.0	
90.0X	2.7	135.0X	1.8	180.0X	1.3	67.5X	3.6	

4-2 Auxiliary lens (for selection)

Auxiliary lens	Mag.	WD (mm)	Auxiliary lens	Mag.	WD (mm)
SAO0.5	0.5X	177	SAO1.5	1.5X	47
SAO0.75	0.75X	117	SAO2	2X	26

★ The working distance is settled, it will not change as the magnification change.

★ Total mag.= Zoom mag. X Eyepiece mag. X Auxiliary objective mag.

View field of eyepiece

Field diameter (mm) = _____

Zoom mag. * auxiliary objective mag.

4-3 Photo adaptor mag.= Zoom mag.(* Auxiliary objective mag.) * Photo eyepiece mag.

4-4 TV device mag.=Zoom mag. (* Auxiliary objective mag.) * C-mount TV adaptor

5. Troubleshooting
BS-8045 series

The performance of the microscope can't be made fully because of unfamiliar using, this table will give some advices:

Trouble	Cause	Remedy
1. Optical parts		
(1) Brightness too bright or too dark	Adjustment of brightness is not correctly	Adjust it correctly
(2) Dirt appears inside of view field	Dirt on specimen	Clean specimen
	Dirt on surface of eyepiece	Clean eyepiece
	Dirt on surface of objective	Clean objective
	Dirt on stage	Clean stage
(3) Double image	Interpupillary is not right	Re-adjust the interpupillary
	Diopter is not right	Re-adjust the diopter
	Different magnification of both eyepiece	Use the same eyepiece
(4) Image is not clear	Dirt on surface of objective	Clean objective
(5) Image blur during focusing	Diopter is not right	Re-adjust the diopter
	Wrong focusing	Focus again
(6) Incision image appears when observe through eyepiece or TV device	Light path selection lever is not at right position	Turn it to right position
(7) Image is not clear on monitor during focusing	Wrong focus depth of video device	Re-adjust the focus depth by adjusting ring on TV adapter
2. Electrical parts		
(1) Bulb does not work	Wrong setting of bulb	Set the bulb correctly
	Bulb has burned out	Replace the bulb
	Fuse has burned out	Replace the fuse
	Dirt on the stage stopped the light path	Clean the stage
(2) Bulb burned out	The bulb is not standard	Use standard bulb
(3) Light flickered out	Bulb is going to burn out	Replace the bulb
	The wires do not connect right	Connect it correctly
3. Focusing parts		
(1) Focusing knobs work stiff	Too tight of the focusing knobs	Loose it to suitable
(2) Image is not clear by the focusing arm slipping down during focusing	To loose of the focusing knobs	Tight it to suitable