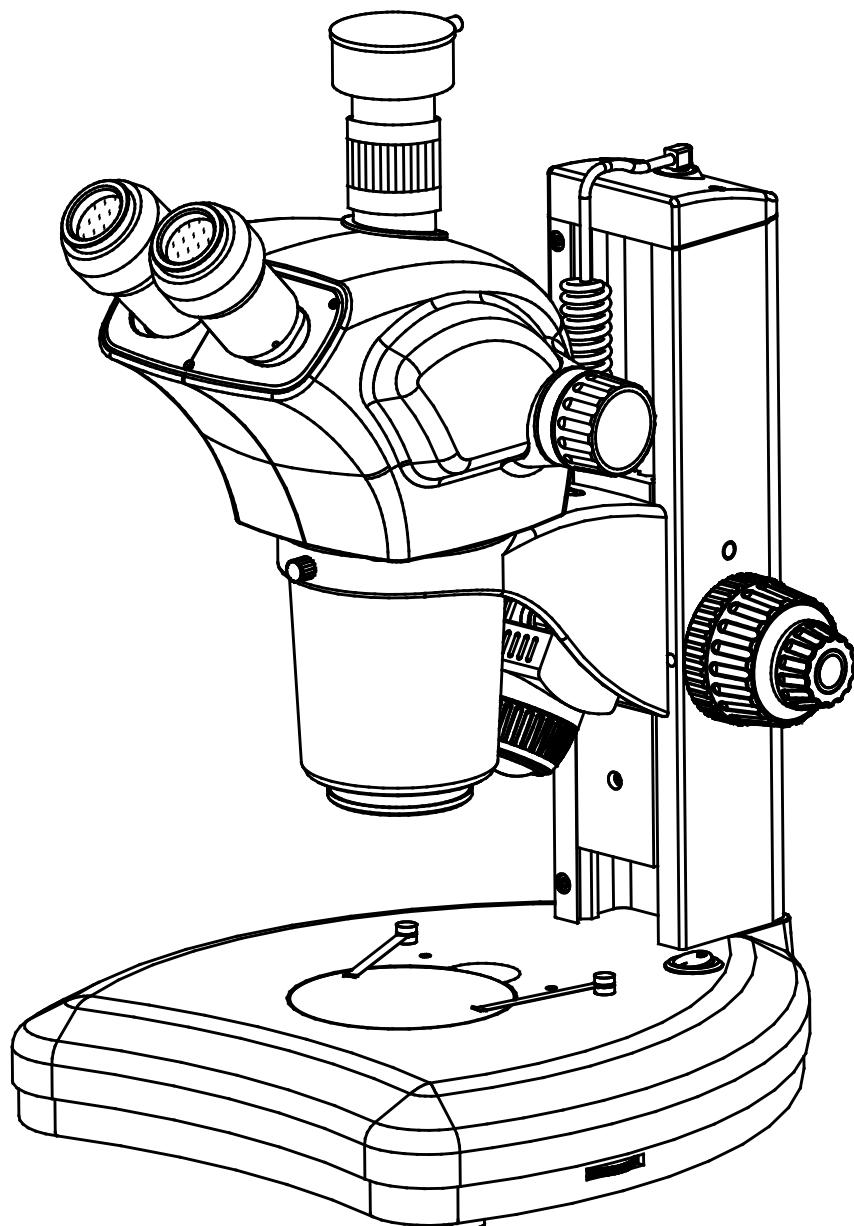


**STMLAB**  
Stereo Zoom Microscope  
**Operating Manual**



## Congratulations and Thank You for your purchase of The Microscope

*This precision instrument has been designed to require a minimum of optical and mechanical maintenance. Its excellent design assures years of high quality, reliable service. We recommend you read this entire manual carefully before beginning to use the instrument.*

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### **Caution!**

This manual uses the following symbols for safety reminders. Be sure to observe these warnings in order to operate this unit properly and safely.



#### **Warning!**

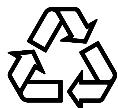
Negligence in heeding the warning of this symbol may cause personal injury or damage to this unit!

#### **Caution!**

Negligence in heeding the caution of this symbol may affect the viewing performance of this unit.

#### **Reminder!**

Provide instructions and skills in operating this unit.



Pay attention to environmental protection.

## Safety Reminder



**Warning!**

- 1. Be sure to turn off the power switch and remove the power cord before installing this unit, replacing the bulb or fuse, plugging and unplugging the power supply.**

To prevent electric shock or fire, be sure to turn off the power switch and remove the power cord before installing this unit, replacing the bulb or fuse, plugging and unplugging the power supply.



**Warning!**

- 2. Do not disassemble**

Except the removable parts mentioned herein, no part of this unit shall be removed, otherwise the performance of this unit may be reduced, or may cause an electric shock, injury or damage to this unit. Please contact the supplier if any fault occurs.



**Warning!**

- 3. Input voltage**

**Check if the input voltage is consistent with your local voltage supply. If not, do not operate this unit and contact the supplier. Improper input voltage may cause a short circuit or fire thereby causes damage to this unit.**



**Warning!**

- 4. Use specific bulb, fuse and power cord**

Use of an improper bulb, fuse or power cord may cause damage or fire to this unit. Any extended power cord used must be grounded (PE).



**Warning!**

- 5. Protect this unit from high temperatures, dampness and foreign objects**

To prevent short circuit or any other fault, do not expose this unit to any high temperatures or dampness environment for a prolonged period of time. A suitable operating environment is designated at a temperature of 5°C-35°C, and relative humidity of 20%-80% (at 25°C). If water splashes on this unit, turn off the power switch and remove the power cord immediately, and then wipe the water off with dry cloth. When any foreign object enters or drips onto this unit, please stop operating the unit and contact the supplier.



**Warning!**

- 6. Heat of light source**

The lighting bulb generates high temperatures during operation. Do not touch the collector lens or lamp box when the lamp is illuminated, and do not touch the bulb within 10 minutes after the lamp goes out due to high temperatures arising from operation. When replacing the bulb, make sure it has cooled down properly (the lamp should be off for at least 10min).

- ★ To prevent burn, do not touch the bulb when the lamp is illuminated or within 10min after it goes out.**
- ★ To prevent fire, do not place any fibrous product, paper, flammable or explosive material (e.g., gasoline, petroleum ether, alcohol) near the halogen lamp housing or mercury lamp housing.**

## 7. Storage place

### Caution!

This unit is a precision optical instrument, and improper operation or storage may cause damage or its precision may be adversely affected. Consider the following when selecting a storage place:

- ※ Avoid placing the unit under direct sunlight, directly under interior lighting or any other bright place.
  - ※ A suitable operating environment is designated at a temperature of 5°C-35°C, and relative humidity of 20%-80% (at 25°C). Do not expose this unit to high temperatures, dampness or dust for a prolonged period of time, otherwise mist or mold may develop or dust may deposit on the lens, thus cause damage to this unit and shortening its life.
- 

## 8. Installation of bulb

### Caution!

Do not touch the glass surface of the bulb directly with bare hands. When mounting the bulb, wear gloves or wrap it with cotton material.

- ※ Wipe off any dirt on the surface of the bulb with a clean cotton fabric dipped in alcohol. If the dirt is not thoroughly removed, it would etch the surface of the bulb weakening its brightness and shortening its life.
  - ※ Mount the bulb with care to avoid slipping off or injuries to your fingers.
  - ※ When replacing the bulb, make sure its contact is intact. If its contact is damaged, the bulb may be disabled or short-circuited.
  - ※ When replacing the bulb, the feet should be inserted into the holder as deeply as possible. If the feet are not tightly inserted, the bulb may go out or short circuit.
- 

## 9. Instrument handling

### Caution!

This precision optical instrument is heavy and should be handled with care. Strong impact and rough handling are strictly prohibited, it may cause damage to this unit.

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## 10. Environmental protection



Please dispose the wastes from the packaging and operation of this unit by category such as cartoon, foam, plastic, bulb and etc. Do not discard the damaged mercury lamp carelessly in order to avoid creating environmental poll

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## 1. Characteristics and applications of this unit

**STMLAB** stereo zoom microscope is a kind of positive image Optical instruments., magnification continuously variable。Equipped with a long working distance imaging system , Wide-field eyepieces, Provides superior optical and mechanical operations performance, is an important instrument in medicine, biochemical genetics., Available for industry, electronics and other industries for product testing, and relevant teaching, experimental research for colleges.

## 2. Structural features of this unit

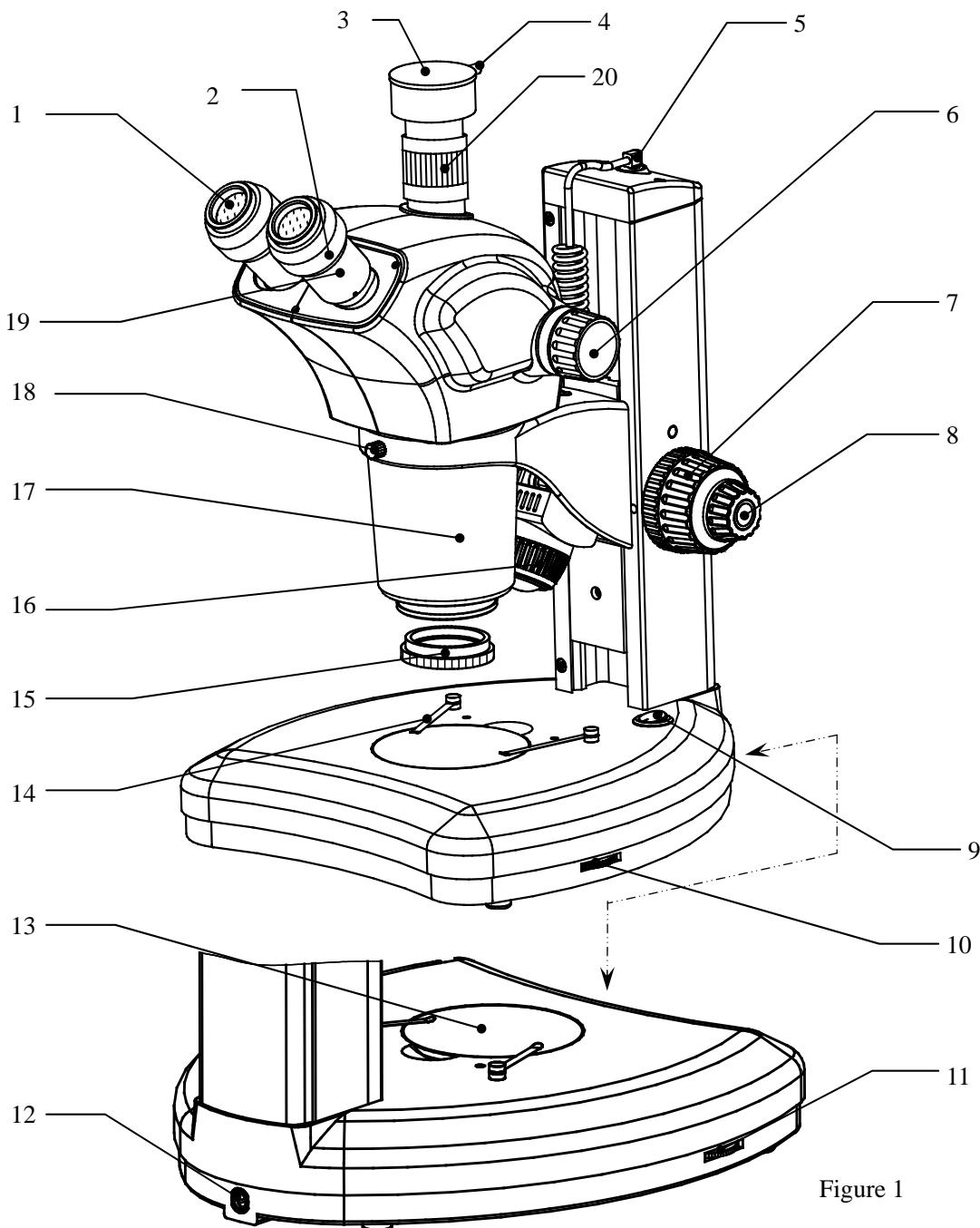


Figure 1

- 1 Eyepieces 2. Diopter Adjustment Ring 3. Dust Cover 4 Set Screw 5. Reflected Illumination Power Plug 6. Zoom Knob **7. Coarse Focusing Knob** **8.Fine Focusing Knob** 9. Power Switch 10. Transmitted Light Brightness Adjustment Knob 11. Reflected Light Brightness Adjustment Knob 12. Power Plug 13. Stage Plate 14. Specimen Holder 15. Additional Objective (Optional) 16. Reflector Cup with lamp cover 17. Objective Tube 18. Optical Body Set Screw **19.Eyepieces Set Screw** **20. Trinocular Diopter adjustment Ring**

### 3. Installation of this unit

1. Remove all parts from their packages, tear the tape, take out the main body and other components.
2. demount interfix packing and dustproof covers.
3. demount the main body , **Objective Tube17** , **stage plate 13** , **specimen holder 14**, power adapter, **eyepieces 1**
4. Loosen the optical body **set-screw 18** and install optical body into mount, and fix screw
5. Install two eyepieces 1 into eyepiece tube, **fix eyepieces set-screw19**.
6. Put the **stage plate 13** , **specimen holder 14** in main body.
7. Connect power supply to the power outlet of main body.
8. Check the reliability and security of the above installations.
9. Check and collate attached accessories and tools within the package, properly stored the accessories and tools to avoid missing.

### 4. Technical specifications

Main parameters	Total magnification		7X~63X(standard configue)				
Eyepiece	Wide-field plan eyepiece	WF 10X	field of viewΦ22mm	Eyepiece interfaceΦ30mm	Parfocal distance 10mm		
Trinocular	Hinge binocular, Observation angle of 45°, interpupillary distance: 53~75mm, both eyepiece have diopter adjustment, Adjustment range -5~-+5						
Optical System Technical Specifications	Additional objective	Total magnification		Working distance (mm)			
	/	7X~63X		110			
	0.5X	3.5X~31.5X		188			
	1.5X	10.5X~94.5X		57.2			
	2X	14X~126X		40.4			
Transmitted illumination	Light source	5W LED/12V10W Halogen(Optional)					
Reflected illumination	Light source	3W LED/12V10W Halogen(Optional)					
Main power supply	Input: AC 85V~265V 50/60Hz						

## 5. Operation

### 5.1 Turning on the power switch and adjust brightness control

Turn on the toggle switch **3** (turn it to the “-” position, the power switch turn green). Turn the brightness control knob **4/5** to adjust the brightness of the bulb, the reflected illumination **2** can be adjusted. As shown in Fig.2 . When use additional illumination(Annular Fluorescent Illumination/ Annular LED Illumination). It can be put on the objective tube **8**, see figure 2

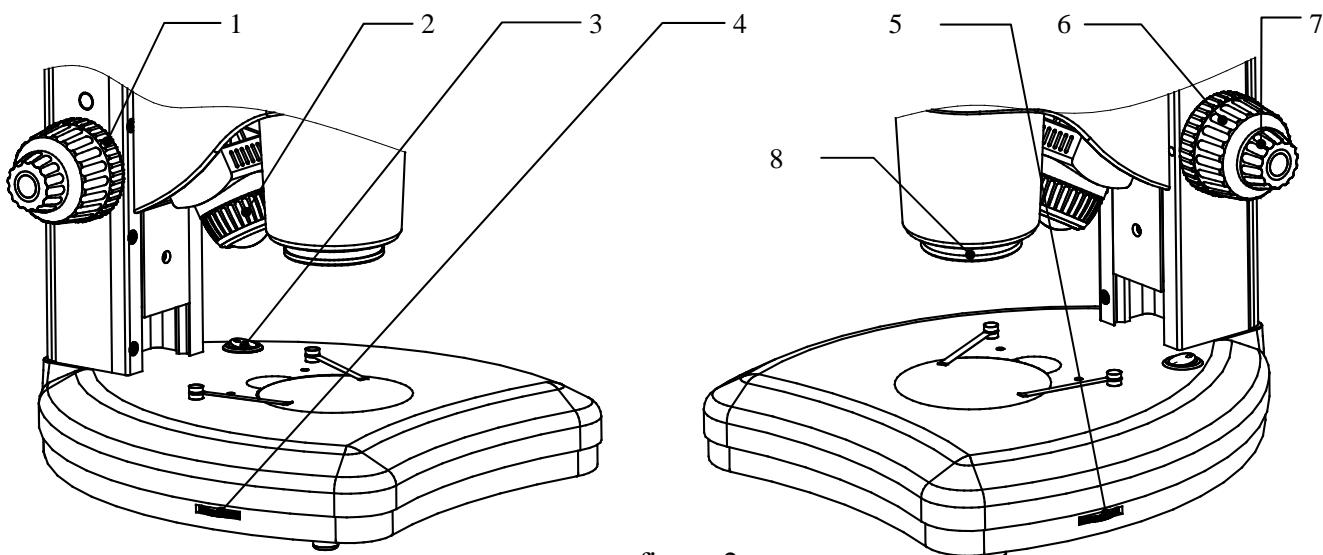


figure 2

#### Caution!

Don't keep the brightness control knob at the brightest position for a prolonged period of time; otherwise the life of the bulb may be shortened! When this unit is not in working, turn the brightness adjusting knob to the low position for protecting the electric functions of this unit.

### 5.2 Operate focusing control knob

The coaxial coarse and fine focusing system is adopted in this instrument, with coarse tension adjusting device.

5.2-1 The control knob **7** is for fine focusing, the control knob **6** is for coarse focusing. Turn the control knob to lift or lower the optical body. minimum division of fine focusing:0.4um

5.2-2 The tension of the coarse focus control knob **1** is adjustable and preset at the factory for ease of use. If wish to adjust the coarse focus tension, turn the knob **1** to tension adjustment. Turn the wheel anticlockwise decrease the tension, and clockwise increases it, as indicated by the arrow in the figure 2.

#### Caution!

Too high tension may be affected operation and physical discomfort.

### 5.3 Zoom Operation

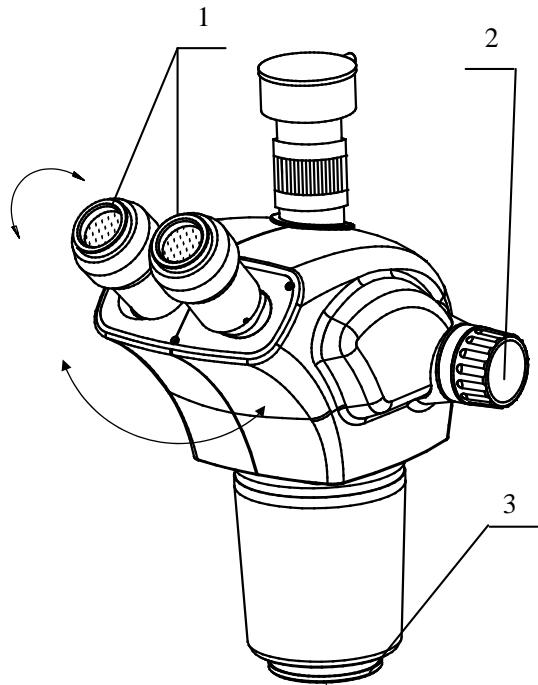


Figure 3

Diopter adjustment proper correction for individual vision is accomplished via the diopter adjustment ring **1** located at both eyepieces, see figure 3

5.3-1 turn the right diopter adjustment ring to “0” or “+/-”, turn the zoom knob **2** to maximum magnification, observe at right tube, adjust the focus control knob until image clearly, and then observe at left tube, adjust the left diopter adjustment ring to image clearly, turn the zoom knob to minimum magnification, if the image is not clear, don’t adjust focus control knob, observe at right tube, adjust the right diopter adjustment ring to get the image clearly; observe at left tube, adjust the left diopter adjustment ring to get the image clearly ; Through adjustment can get clearly image from maximum magnification to minimum magnification .

5.3-2 Proper interpupillary distance, or the distance between eyepieces, is crucial to the comfort of the user. Adjusting the interpupillary distance is accomplished through a “folding” action of the optical head, See figure 3. interpupillary distance :53~75mm.

5.3-3. Additional objective can tighten into the objective tube **3**. See figure 3. Working distance and magnification can be accordingly adjusted by using different auxiliary objectives. the computing formula is :

$$\text{Combinatorial objective magnification} = \text{Auxiliary objective magnification} \times \text{Objective magnification}$$

$$\text{Total magnification} = \text{Objective magnification} \times \text{Eyepieces magnification}$$

$$\text{Object field} = \frac{\text{Eyepieces field}}{\text{Combinatorial objective magnification}}$$

Optical parameters:

Auxiliary objective magnification	Combinatorial objective magnification	Total magnification	Object field (mm)	Work distance (mm)
0.50X	0.35~3.15	3.5~31.5	6.98~62.85	188.
0.75X	0.525~4.725	5.25~47.25	4.66~41.90	127.5
1.50X	1.05~9.45	10.5~94.5	2.32~20.95	57.2
2.0X	1.4~12.6	14.0~126	1.746~15.71	40.4

Note:The auxiliary objective is only suit for the STMLAB stereo Zoom microscope..

## 5.4 Operate trinocular device

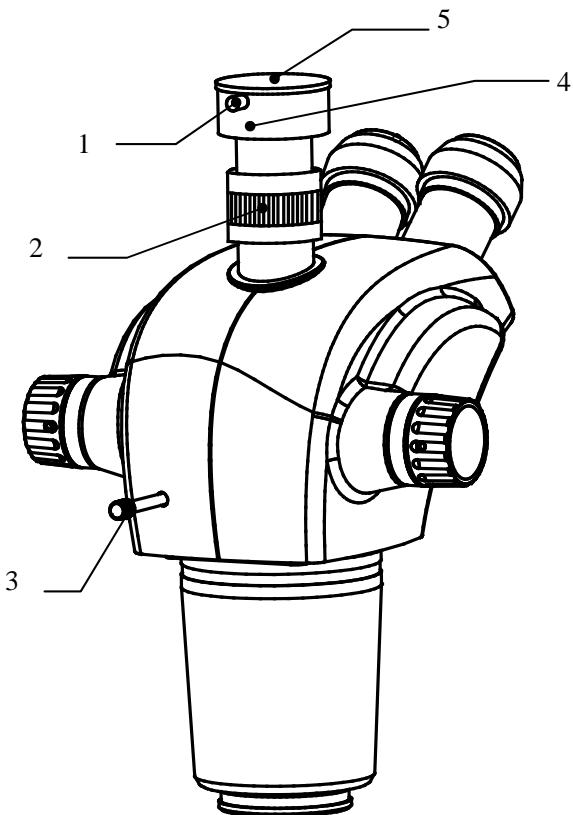


Figure 4

This unit performs eyepiece and photographic observation. Loosen the fastening screws **1** of the photography output terminal, and remove the dust-proof cap **5**. Mount the photography device on the output terminal, then tighten the fastening screws **1** again. Observe the image with the binocular, focus to make image clear., Push the push-pull rod **3** out to see whether the image with photograthy clear. If unclear, adjust the focusing control knob or **Trinocular Diopter Adjustment Ring 2** to make the image clear.as. (shown in figure 4). If there is strict synchronization requirement for eyepieces and photographic images (consistency between the center and direction of the image), a synchronization adjustment will be necessary:

- Push out push-pull rod **3**, observe with eyepieces. Find a feature point in the field of view (a readily identifiable target, such as *S* point in Fig. 20-a), move it to the center of the field of view. If there is a division eyepiece, move the target to the reticle intersection of the division eyepiece, as shown in Figure. 20-b.
- Push in the push-pull rod **3**, view the image in monitor or display screen, and see if the identified target image is at the center of the displayed window. If it deviates from the center of displayed window, adjust the 3 pcs screws **4** on the output terminal to move the identified target to center.
- Move the specimen and see if the image in the monitor or display screen moves in the same direction as the specimen. If move in different direction, it is necessary to adjust the direction of the photographic device. Loosen the fastening screws **1**, turn the photographic device to make the displayed direction of the image inline with the direction of stage

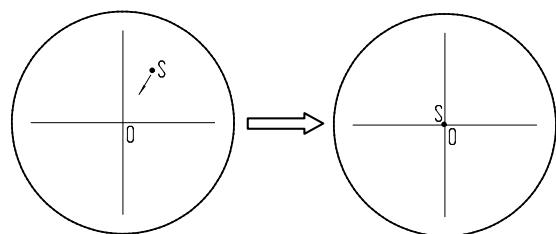


figure.20

a

b

motion, then fasten the screws.

## 5.5 Replacing light bulb (halogen)

### Replacing Reflected (upper) Light

5.5.1 Disconnect the power plug and wait to be sure the bulb is cool.

Loosen the optical body set screw, and remove the optical body from the frame.

5.5.2 Loosen the lamp house, the halogen bulb with the reflector cup can be removed, Insert the new one into the same fixture. When installing the new bulb, be careful not to touch the glass with your fingers. The new lamp should be supplied in a plastic protective envelope. If not, use a tissue or other medium to grasp the bulb. This will prevent contamination from your hand from reducing the bulb's intensity and life.

5.5.3 Reinstall the lamp house. Switch on the power, adjustment brightness of illumination, check normal or not.

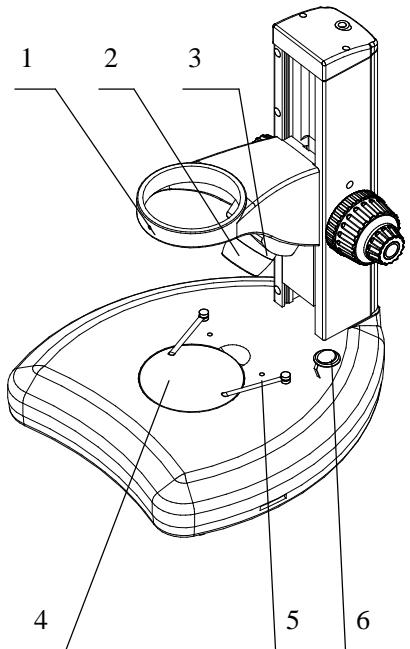


Figure 5

1. Optical Body Set Screw
2. Lamp Cover
3. Halogen Lamp With Reflector Cup
4. Stage plate
5. Specimen Holder
6. Power Switch

## Replacing the Transmitted (lower) Light Lamp

5.5.4 Disconnect the power plug and wait to be sure the bulb is cool. the halogen lamp socket is located in the base., see figure 5.

5.5.5 Remove the specimen clip and the table-board. Pull the old lamp straight out of the socket. Insert the new one into the lamp socket. When installing the new bulb, be careful not to touch the glass with your fingers. The new lamp should be supplied in a plastic protective envelope. If not, use a tissue or other medium to grasp the bulb. This will prevent contamination from your hand from reducing the bulb's intensity and life.

5.5.6 Switch on the power, adjustment brightness of illumination, check normal or not.

## 6. Maintenance

6.1 The power switch of the main unit is the power control. When finish using this unit, press the switch to "O" to cut off the power supply, unless the electric component in this unit is still operating. When this unit is not to be used for a long time, remove the power plug from the supply socket and keep all cables properly.

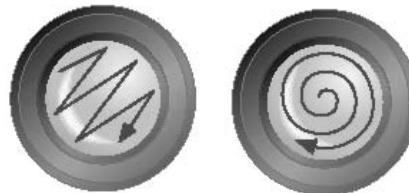
6.2 This unit should be kept clean. Remove any oil on the lens and clean the body with clean gauze (or silk fabric or absorbent cotton) dipped with a little alcohol. Put on the dust shield until this unit is completely cool and dry.

### 6.3 Cleaning the lens

Blow off or wipe off any dust on the lens with a blower ball or a soft brush; heavy dirt and fingerprints can be removed with lens tissue or soft cloth dipped with a little mixture of alcohol and ethyl ether gently (the mix ratio is: alcohol 20-30% and ethyl ether 70-80%).

#### Reminder!

It is easier to clean the lens by wiping them from inside out as shown in the figure.



Wrong

Right

6.4 Cleaning the surface of this unit: Wipe it with clean soft cloth; heavy dirt may be wiped off with a neutral detergent.

6.5 Keeping: When this unit is not to be used for a long time, turn off the power supply of this unit, allow the bulb to cool down sufficiently, put on the dust shield, store this unit at a dry, ventilated and clean place free from any acid, alkali or steam, otherwise mold may develop on the lens.

6.6 Periodic inspection: This unit should be inspected and maintained periodically to maintain its

performance.

**Caution!**

Do not wipe this unit with any organic solvent (e.g., alcohol, ethyl ether or its dilute solution), otherwise the surface paint of this unit may come off. It is suggested that a layer of non-corrosive lubricant is applied on the moving parts of this unit before the dust shield is put on, and place the eyepiece and the objectives in a container with desiccant.

## 7. Troubleshooting

Fault	Cause	Disposition
<b>Electric system</b>		
No light shown in the field of view using halogen lamp	The power switch is not turned on/the brightness control knob at the darkest position	Turn on the power switch/ make the brightness of the field of view suitable for visual inspection.
	The lamp is damaged.	Replace the lamp.
	The connector of the electric chassis is in bad contact.	Check and have professional repair it.
	The halogen lamp mounted is nonconforming.	Use a conforming halogen lamp.
<b>Optical system and imaging</b>		
There is a black shadow on the edge of the field of view or unevenly illuminated, making it impossible to observe the whole field of view.	The nosepiece has not been turned to the fixed position.	Turn the nosepiece to the fixed position.
	There is dirt or oil on the surface of the objective, eyepiece or condenser	Wipe the lens surface or replace the lens.
Oil or dust is found in the field of view.	There is oil or dust on the eyepiece lens.	Wipe the eyepiece.
Defocusing or low resolution	The objective is damaged.	Repair the objective (by a professional).
	There is oil or dust on the surface of the lens of the objective or eyepiece.	Wipe the objective or the eyepiece.
The focal plane of the image is	The specimen is not laid flatly.	Lay the specimen flatly on the object stage and hold it stably.

inclined (brighter on one side and darker on the other)		
<b>Mechanical system</b>		
The image cannot remain clear during observation.	The focusing mechanism flows (slides down) automatically.	Adjust the coarse adjusting hand wheel.