



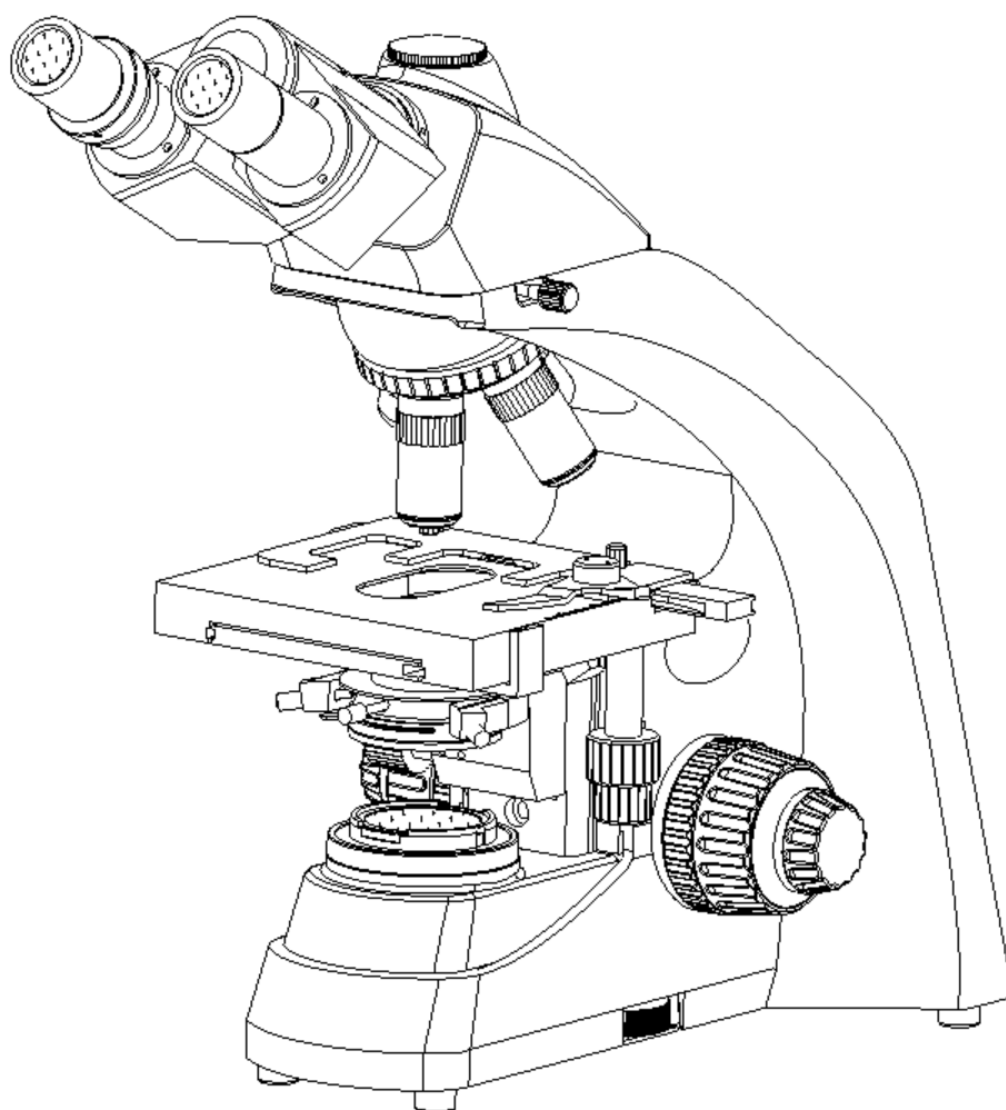
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A12.0206

Laboratory Biological Microscope

Instruction Manual



Thank you for buying our product!

This unit is a precision optical instrument. Our product has been design to provide the highest level of safety, however, improper operation or negligence in following the instructions in this manual may cause personal injuries and property losses. In order to ensure your safety, prolong the life of this unit and maintain it properly, please read this manual carefully before operating this unit.

.....

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

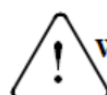
Except the removable parts mentioned herein, no part of this unit shall be removed, otherwise the performance of this unit may be reduced, or may cause an electric shock, injury or damage to this unit. Please contact the supplier if any fault occurs.



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.



Warning!

7. Coarse/fine focusing knobs

This unit employs a coarse/fine coaxial focusing mechanism. Do not turn the left/right coarse/fine focusing knob in the opposite direction. When the objectives lifting device reaches the limit of motion, do not continue to turn the coarse focusing knob, otherwise the focusing mechanism may be damaged.

Caution!**8. Storage place**

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.

Caution!**9. Installation of bulb**

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.

Caution!**10. Instrument handling**

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.

**11. Environmental protection**

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

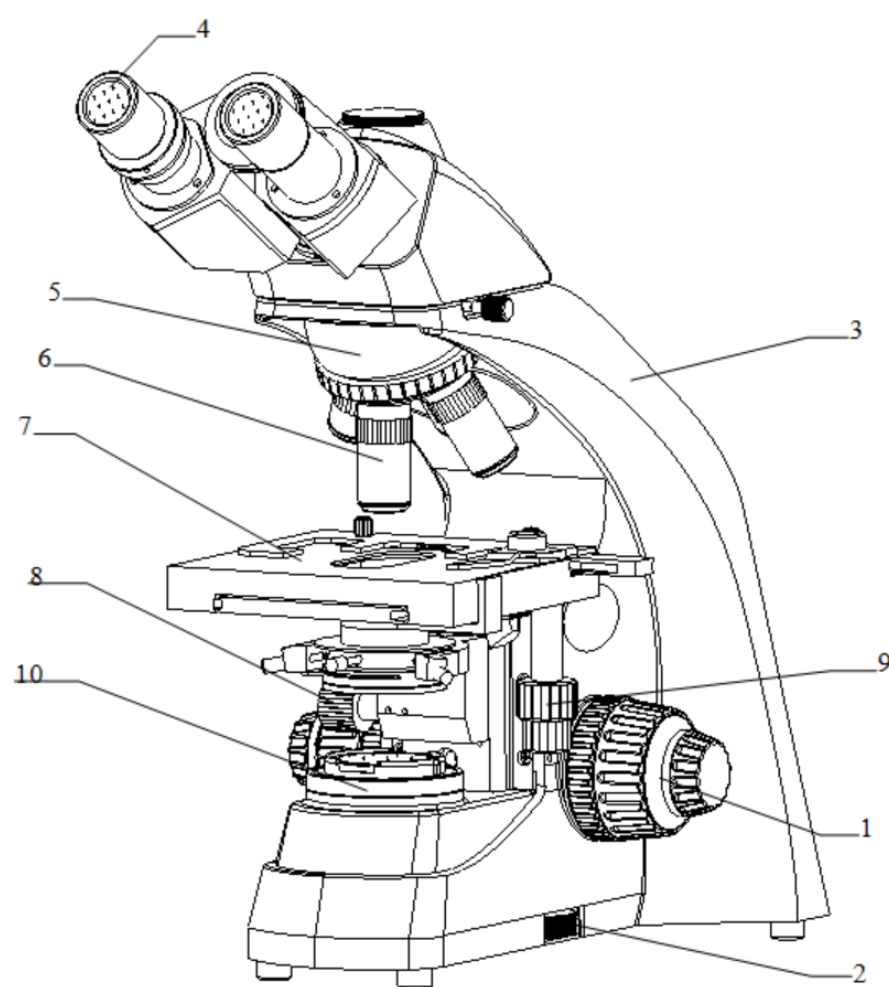
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I. Characteristics and applications of this unit

A12.0206 biological microscope is equipped with eminent optical system, provides excellent optical performance and the update of the system. Because of the streamline figure and pastel color, it has more beautiful appearance. It achieves the notion of ergonomics design, so it can provides the more comfortable operation and operational room. It can be used in the field of the biology, medicine, industry, agriculture, at the same time it is the perfect research instrument for the department of hospital, teaching and academy.

II. Structural features of this unit.



A12.0206 Biological Microscope

- 1. Coarse and Fine Focus
- 2. Brightness Control
- 3. Body
- 4. Eyepieces
- 5. Nosepiece
- 6. Objective
- 7. Stage
- 8. Condenser Adjustment
- 9. Longitudinal and Transverse Adjustment
- 10. Condenser

Fig.1

III. Installation of this unit

1. Installation diagram

Caution!

Before installing, be sure every components is clean, no score any parts or glass surface.

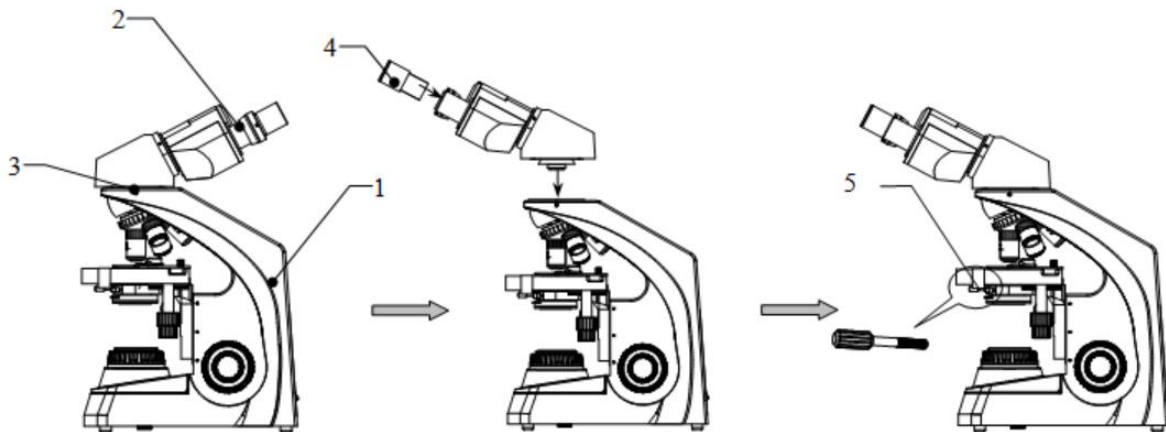


Fig.2

2. Installation steps

1. Remove all parts from their packages and retain them in the event you need to transport the product. Take out the main body 1, demount interfix packing and dustproof covers.
2. Loosen the set-screw 3
3. Mount the trinocular or binocular on the reflected illumination and close the set-screw .
Note: the eyepiece tube of trinocular or binocular locates the frontispiece of main body.
4. Install two eyepieces 4 into eyepiece tube; turn the eyepieces for about a circumference to make the eyepieces fit the eyepiece tube.
5. Take out the condenser according to Abbe and turn down the support of condenser, put the condenser according to Abbe into the support of condenser
6. Connect power supply to the power outlet of main body.
7. Check the reliability and security of the above installations.
8. Check and collate attached accessories and tools within the package, properly stored the accessories and tools to avoid missing.

IV. Technical specifications

Table 1

Main Parameter	All Magnification	40X~1000X(standard)			
	Mechanical Tube Length	160mm			
	Object Conjugate Distance	195mm			
Eyepieces	Plan Objective	WP10X	field: Φ 18mm	Objective Port: Φ 23.2mm	Parfocalization Distance: 10mm
Binocular	Articulated Binocular, view in 30° , interpupillary Distance: 53~75mm				
Infinity Plan Achromatic Objective	Magnification	NA	Work	Coverglass	Remark
	4X	0.10	17.9		
	10X	0.25	8.8	0.17	
	40X	0.65	0.56	0.17	include spring
	100X(oil)	1.25	0.33	0.17	include spring, oil
Condenser	Abbe Condenser (NA:1.25) can be moved freely up and down				
Stage	Double Layer Mechanical Stage, size: 135 X 125mm, Moving Range: 75 X 35 mm				
Light Source	1W LED adjustable of the brightness				
Power Supply	AC Voltage 85V~265V 50/60Hz, fuse parameter: 250V 3.0A				
Optional Accessory	Dark Field of Condenser	Dry Dark Field of Condenser			
		Wet(Immersion Oil)Dark Field of Condenser			
	Colour Filter	Green Colour Filter			
		Yellow Colour Filter			
	Trinocular	Articulated Binocular, view in 30° , interpupillary Distance: 53~75mm			
	Camera	digit and video microscope camera			
	Illuminator	6V 20W Halogen lamp, adjustable of the brightness			



V. Operation

1. Turning on the power switch and adjust brightness control



Warning

Before turning on the power switch, check if the input voltage is consistent with local voltage supply. If not, do not operate this unit. If this unit uses an improper input voltage, short circuit or fire may arise, thereby cause damage to this unit!

Turn on the toggle switch 1 on the back of the main body frame (turn it to the “-” position), so that the transmitted LED bulb is illuminated. Turn the brightness control knob 2 to adjust the brightness of the bulb, and make the brightness of the field of view suitable for visual inspection. As shown in Fig. 3.

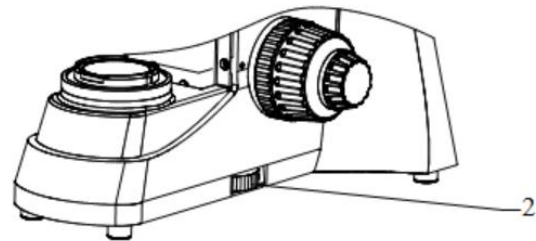
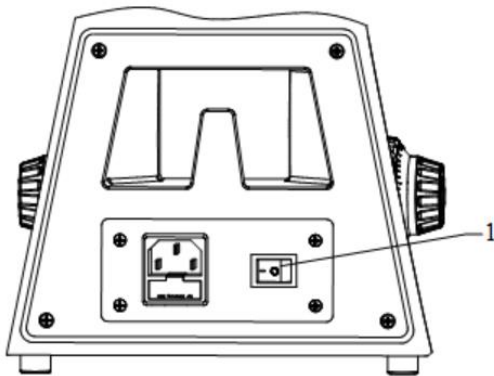


Fig.3

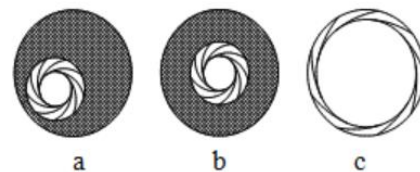
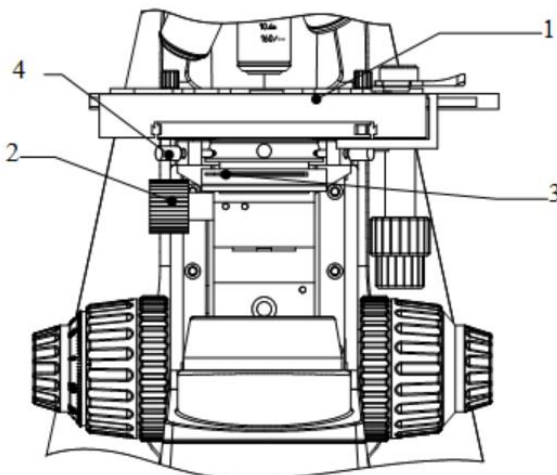
Caution!

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.

2 Adjusting condenser

(1) Put the sample on the glass stage 1, adjust the Condenser Adjustment knob 2, and make the condenser to the highest position.

(2) Turn 10X objective into optical path, turn down the aperture diaphragm 3 little compare with field, as shown in Fig. 4-a, if the aperture diaphragm not in the center of field, it can be adjusted by the two set-screw to the center of field, as be shown in Fig.4-b. Restart the field diaphragm to larger than field shown in Fig.4 -c



- (3) If you choose the dark field condenser to observation, you need to adjust the center of the condenser for the symmetrical illumination. If you choose the dark field immersion oil condenser to observation, you need to put some anisol to fill the room of the between of sample and condenser for the dark field observation

Reminder!

The aperture diaphragm size is proportion with the magnification ration of objective (numerical aperture), the smaller (larger) of objective numerical aperture, the smaller (larger) of the aperture diaphragm. Change the brightness of field by the adjust the size of aperture diaphragm is not be come true

3. Reset diopter adjustment ring

Turn the diopter ring 1 of the left eyepiece tube, and when the “0” diopter position is aligned with the side scale (mark white line), as shown in Fig. 5

- (1) Turn the $40\times$ objective into the light path, turn the diopter ring of left eyepiece tube to “0” diopter position
 - (2) Only with your right eyes observe the right eyepieces as far as when the specimen image into focus.
 - (3) When the specimen image not into focus with you left eye observe, you need to adjust the diopter ring with your left eyes observe the left eyepieces as far as you can observe clearly.
- This series of microscopes have N=5 diopter for you adjustment.

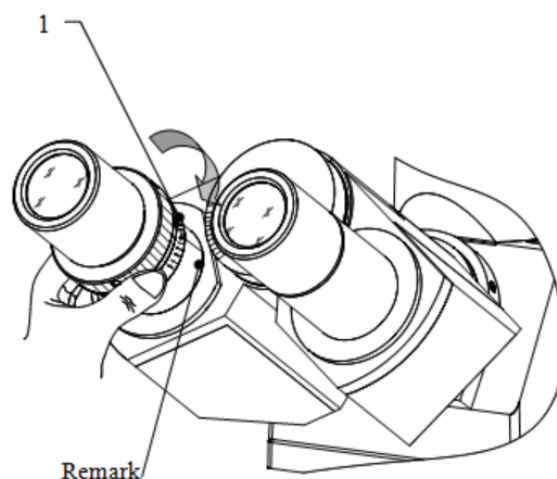


Fig.5

4. Adjustment of interpupillary distance

Parallax can be eliminated by adjusting the interpupillary distance so that the distance of the eyepiece tube is identical with interpupillary distance and enable to observe more comfortably and clearly. When observe through two eyepieces, if the field of view consists of two overlapping circles, as shown Fig.6-a, alter the exit pupil center distance of the eyepiece tubes by turning the left or right frame body 1 until the field of view becomes a fully overlapped circle, as shown in Fig.6-b, at the same time ,the eyepiece tube can be turned 360° for the different operators of eyes high.

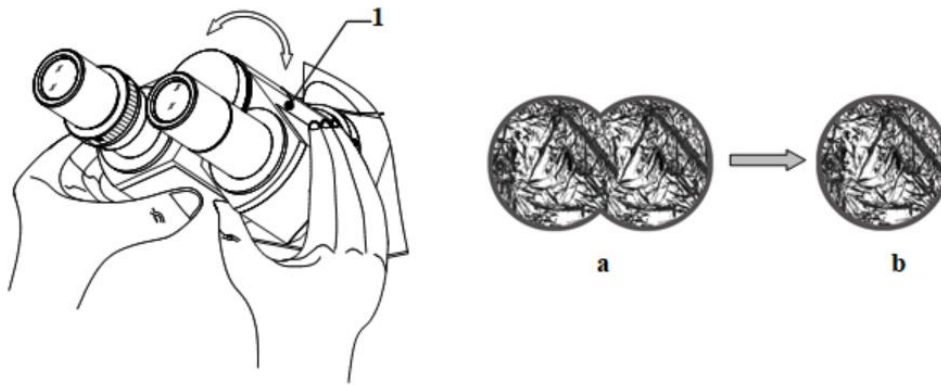


fig. 6

5 . Operate coarse and fine focusing control knob

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

- (1) The control knob 1 is for fine focusing, the control knob 2 is for coarse focusing. Turn the coarse focusing control knob 2 anticlockwise to lift the objective and clockwise to lower it. As shown Fig.7
- (2) Put the 10X objective into the light path with the turn of nosepiece (When turn into the right position, the objective will has a automatic halt.).
- (3) Turn coarse control knob unit the stage in the highest position, observe through the eyepieces, slowly turn coarse control knob, with the stage slowly down, to focus until the image clear and stop turning.
- (4) Turn fine control knob to precision focus for a clearly image.
- (5) The knob 3 is to lock the stage position of height; this function is making sure the long working distance of objective not to be touched with stage or simple. When the stage be locked in the preset position with turn the coarse, you can rapidly focus the image clear.

Reminder!

When you use the high magnification objective, please use the 10X objective focus the image clear at first and set the knob 4 , then turn to observe by the high magnification objective, you can make the stage to the preset position by the coarse control knob, and make the more precision focus by the fine control knob

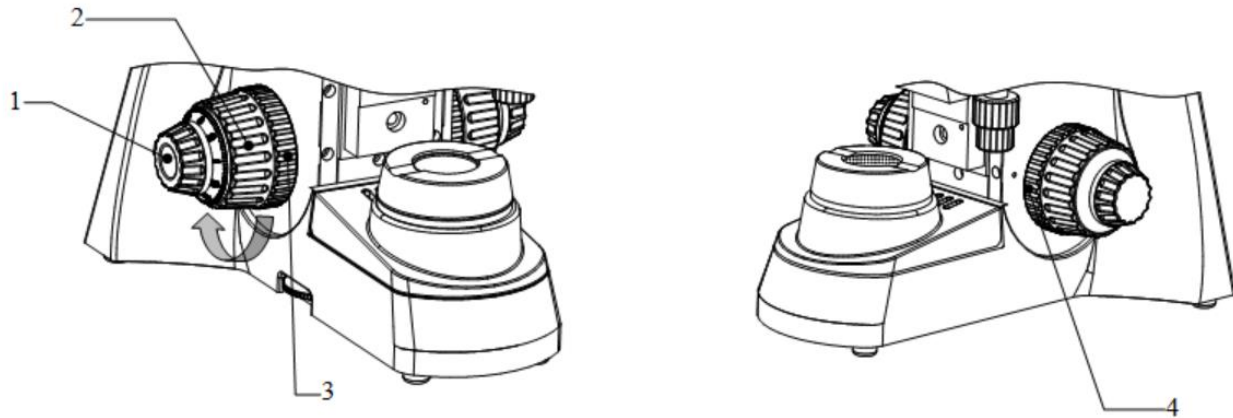


fig. 7

- (6) The tension of the coarse focus control knob 2 is adjustable and preset at the factory for ease of use. If you wish to adjust the coarse focus tension, turn the tension knob 4 to adjustment. Turn the wheel anticlockwise increase the tension, and clockwise decreases it, as indicated by the arrow in the figure 7.

Caution!

Too high tension may be affected operation and physical discomfort.

VI. Replace Bulb and Fuse

1. Replace bulb (suitable for Halogen lamp)

The unit light source is use 6V 20W bulb. When replace the LED lamp, should ensure the specification in order to avoid electrical trouble. The following is operating steps.

- (1) Turn off the power switch, and unplug the power cord2, as shown in Fig.10
- (2) Wait at least 10 minutes until the bulb and its surrounding have cool down. This is to prevent hand getting burnt.
- (3) Take out the screws4, and pull out the lamp house cover, take out the bad bulb3, and place the new one.
- (4) If you want to adjust the position of the bulb , you can Loosen the adjustment screw and move the bulb Front and

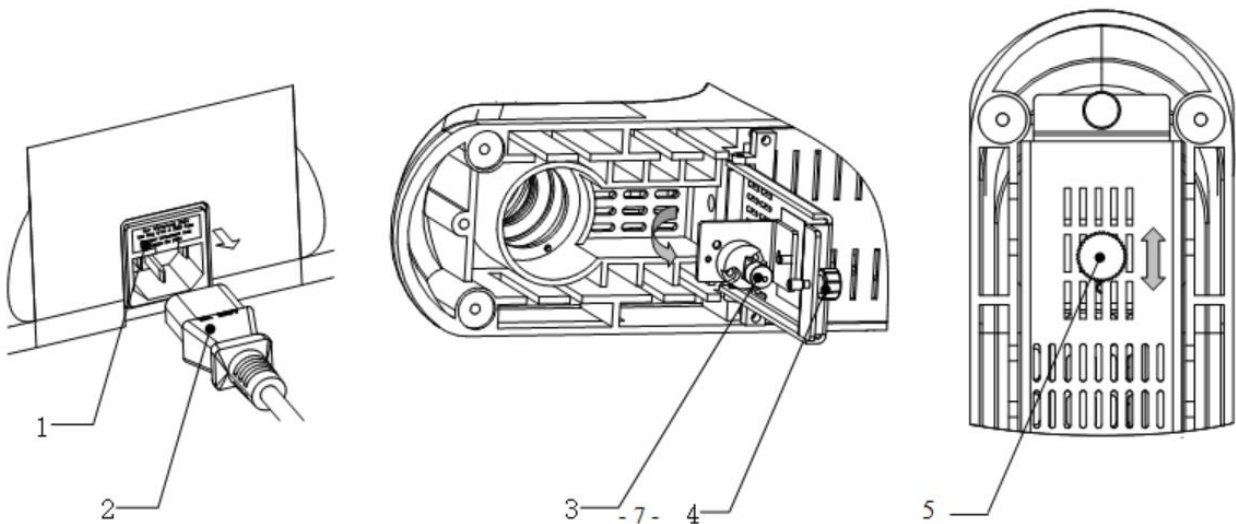


Fig.10