



Guangzhou Micro-shot Technology Co., Ltd

ML10

**Biological Microscope
User Manual**

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The ML10 series microscope equipped with achromatic objective or cost effective plan achromatic objective, wide field view eyepiece, using trinocular, binocular or monocular observation tube, optical system imaging vision is clear and broad. The system is widely used in biology, medicine, agriculture and other fields, it is an ideal instrument for medical treatment, teaching and scientific research.

I . Configuration

1. Eyepiece

| Type | Magnification | Focal length | FN | Remark |
|-----------------|---------------|--------------|-----------|--------|
| Wide field view | 10X | 25 | ϕ 18 | |
| Plan | 16X | 15.6 | ϕ 11 | |

2. Objective

| Type | Magnification | FN | Working distance (mm) | |
|--|---------------|------|-----------------------|-----------|
| | | | Achromatic | Semi plan |
| Achromatic or cost effective plan achromatic | 4X | 0.1 | 37.4 | 23.1 |
| | 10X | 0.25 | 6.6 | 4.1 |
| | 40X | 0.65 | 0.64 | 0.6 |
| | 100X (油) | 1.25 | 0.19 | 0.38 |

3. Total magnification

| Total magnification Eyepiece | Object | | | | |
|---------------------------------|--------|------|------|-------|------|
| | | 4X | 10X | 40X | 100X |
| 10X | 40X | 100X | 400X | 1000X | |
| 16X | 64X | 160X | 640X | 1600X | |

4. Condenser FN: NA=1.25;

5. Stage moving range: vertical 35 mm, transverse 75 mm.
6. Fine focus adjustment: 0.002 mm.
7. Coarse focus adjustment: 53-75 mm.
8. Light source: 6V20W halogen lamp (brightness adjustable).
9. Power supply : AC 220V (50HZ) or AC 110V (60HZ) can be selected.
10. mildew proof.

II. Components

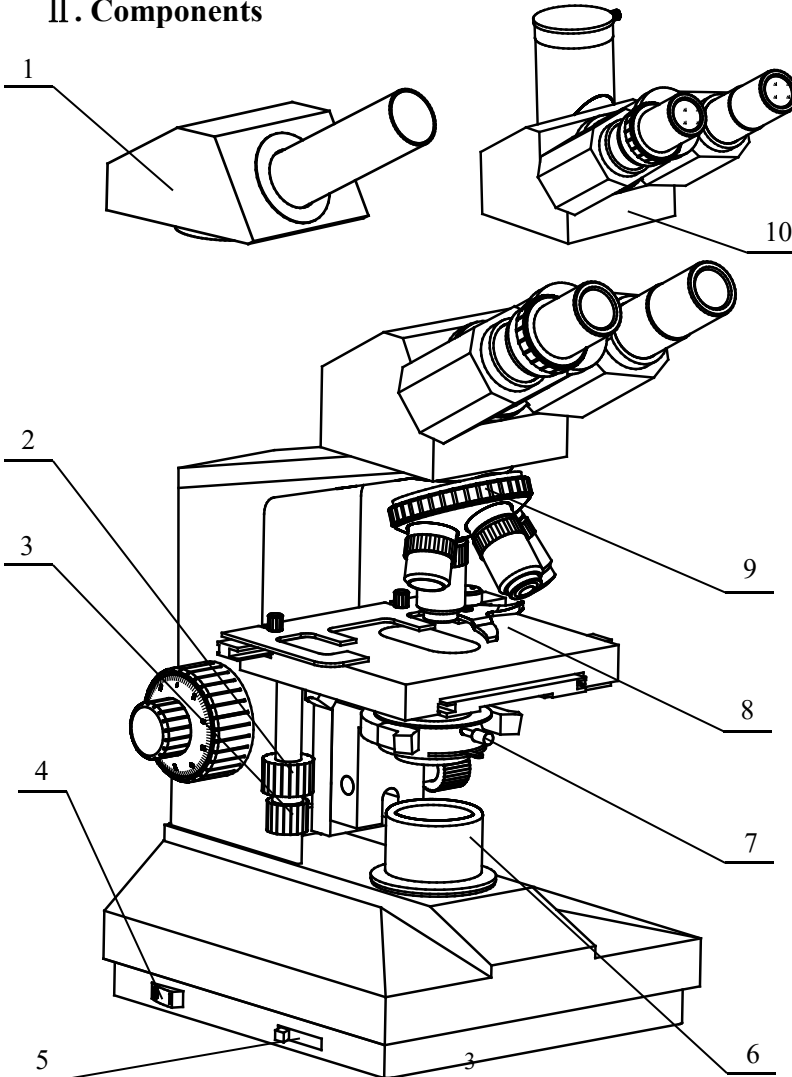


Figure 1

1. ocular 2. verticle focus wheel 3. horizontal move wheel 4. power
5. brightness control knob 6. condenser 7. condenser fix screw 8. stage 9.
nosepiece 10. trinocular

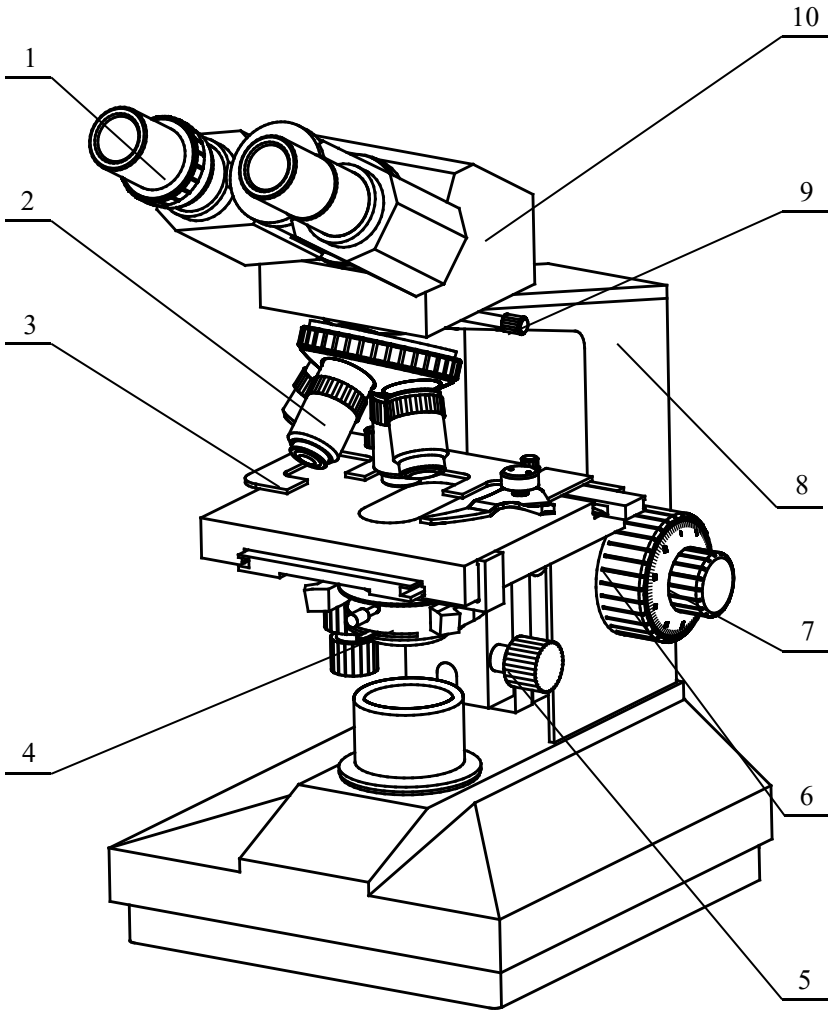


Figure 2
4

1. eyepiece 2. objective 3. slider holder 4. condenser (with aperture diaphragm) 5. condenser lifting wheel 6. fine and coarse focus system 7. fine focus wheel 8. body 9. tube fix crew 10. binocular

III. Installation

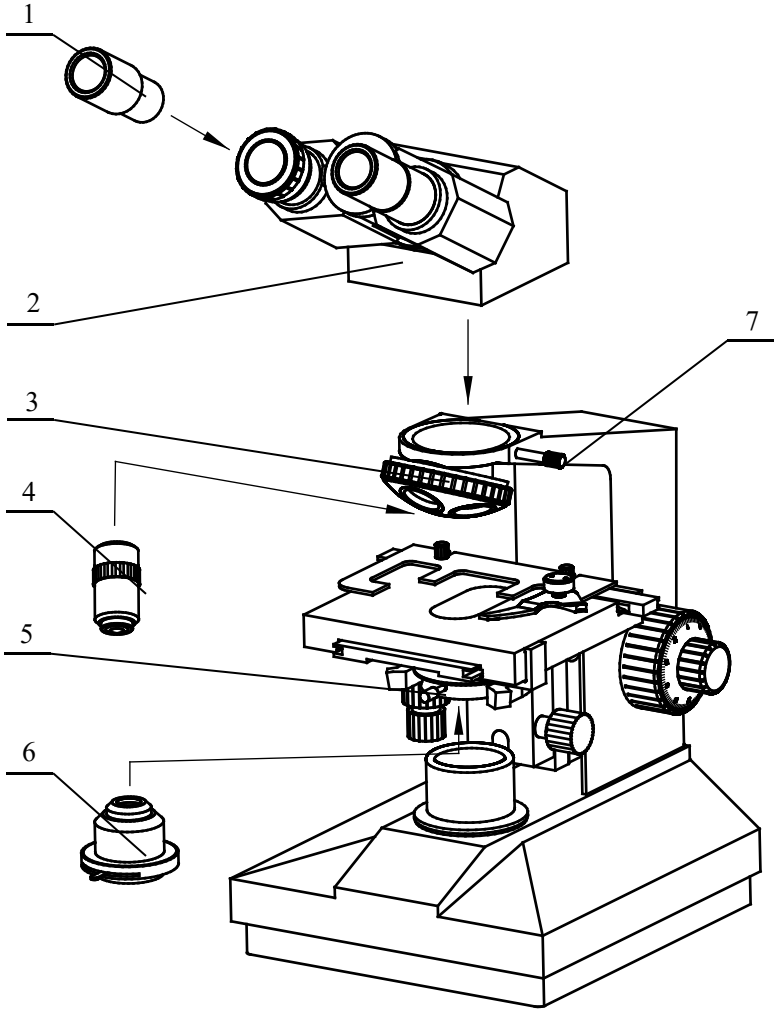


Figure 3

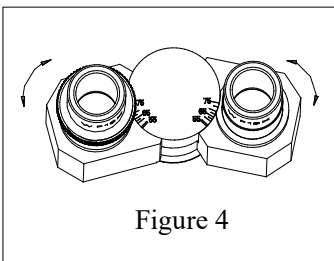
1. eyepiece
2. binocular (ocular or trinocular)
3. nosepiece
4. objective
5. condenser fix screw
6. condenser (with aperture diaphragm)
7. Tube fix screw

IV. Operation guide

1. Press the power switch to the "I" side to turn on the power.
2. Put the specimen on the stage, move 10X objective into the working position to focus the specimen.
3. Using binocular observation head, adjust the pupil distance and visibility.
4. Adjust the lifting position of the condenser, the brightness knob and aperture diaphragm to achieve a satisfactory lighting state. Properly get down the condenser makes the illumination more uniform, when change to 4X and 10X objective.
5. when converting different magnification objective, slightly adjust fine focus hand wheel. Observe with the 100X objective, need to drop the cedar oil between specimen and the objective lens..

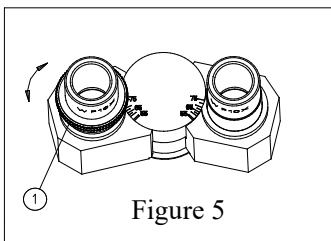
V. Adjustment

1. Adjust interpupillary



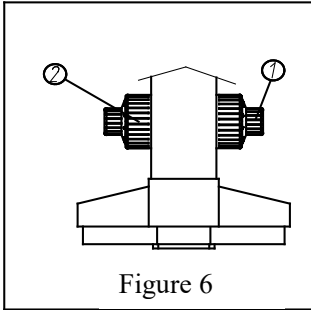
Place specimen on the stage and focus by objective. As shown, adjust the eyepiece distance until specimen image is clearly seen in both eyes.

2. Diopter adjustment



Place specimen on stage, move 40X objective to working position, view by right eyepiece first, focus by fine and coarse focusing hand wheel until specimen show in view, then look through by left eyepiece, switch diopter adjustment ring ① unit specimen view clearly.把

3. Fine and coarse focus system



Fine and coarse focus system has one coaxial and rail guide ① fine focus hand wheel ② coarse focus hand wheel.

4. Stage

Specimen holder and stage ①
convenience to hold specimen ②
vertical moving hand wheel ③
horizontal move hand wheel ④
coaxial is convenience to focus

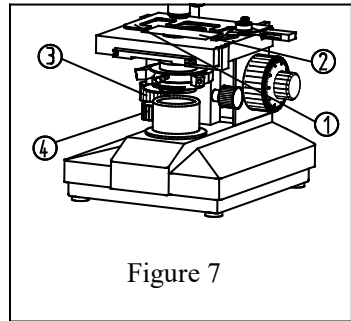


Figure 7

5. Condenser lifting

Switch condenser lifting hand wheel
① Make condenser lifting, loose
condenser fix screw ② convenience
to take off condenser, filter holder ⑥
can put on filter

6. Power and brightness adjustment

r ③ press to " I " to power on and start
brightness control knob ④ make
eyes comfortable to view images in
eyepiece Notice: Please do not keep
brightness to max brightness, it is
harmful to lamp.

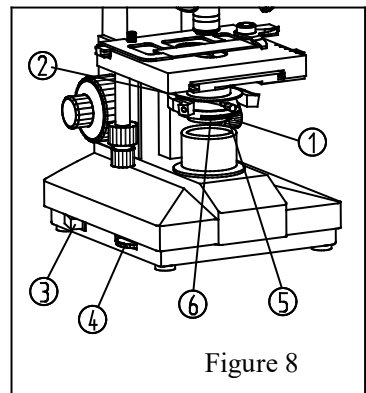
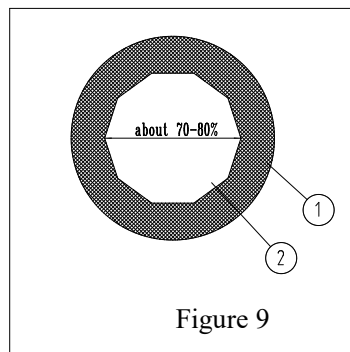


Figure 8

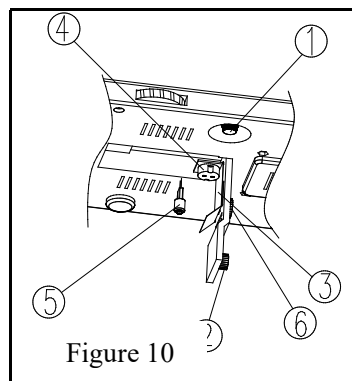
7. Condenser aperture diaphragm

Aperture diaphragm hand wheel ⑤ used to adjust field view of number for microscope lighting. Observe pupil inside objective after taking off the eyepiece ① diaphragm shape on bright ring, switch aperture hand wheel ⑤ adjust diaphragm size ② normally the diaphragm size is the best when gets to objective pupil distance 70%~80%.



8. Replace lamp and fuse

- A. Cut off power and disconnect cord plug.
- B. Tilting microscope, loosen the middle part of the chassis, fix the lamp holder plate and screw the entire lamp holder plate out of the chassis.
- C. Pulled out from the socket on the old bulb.
- D. Insert the new bulb into the lamp holder. Put the lamp in the middle position and make sure it is in good contact.
- E. Screws the lamp holder on the chassis again.
- F. Installed lamp, switch on the power, transfer the objective to correct position, adjust the mirror movements, if illumination is uneven. Can slightly loose the screws ⑥ to move the lamp socket ④ for adjusting.
- G. Loosen the fuse, press the parent, remove the outworked fuse, mount a new fuse, tighten the fuse, press the gland nut to use.



Fuse specimen: $\phi 5$, 0.5A

VI, MAINTENANCE

1. Sweep the lens

Sweep the lens by lens tissue or soft fabric immersed with mixed liquid of alcohol/ether or diethyl benzene. Cleaning the oil on the 100X objective whenever finish operating.

2. Clean the painted parts

The dust on the painted parts can be removed by gauze, for the grease spots, the gauze immersed slightly with aviation gasoline is recommended. Do not use organic solvents such as alcohol, ether or other thinner etc, for cleaning the pointed parts or plastic components.

3. Avoid disassembling the microscope

Being a precise instrument, do not disassemble the microscope casually that may cause serious damage to its performance.

4. Being not used

Cover the microscope with polymethyl methacrylate or polyethylene and places where there is dry and modules. Suggest that storage all objectives and eyepieces in closed container with drying agent.