Polarizing Microscope

MP20 SERIES

User Guide

Micro-shot Technology Limited
www.m-shot.com

MP20 series **simple polarize microscope is utilizing polarize light to observe and research the polarize characteristic of the matter which have the double refraction .It can be used to medical inspection. such as the frame detail of the nerve fiber, the animal muscle, the plant fiber and the crystal of the tooth, bone, hair and alive cell .It can be observe the fine frame of the a biochemistry salt crystal ,but the fine frame can't be observe for nature light.**

Ⅰ、SPECIFICATIONS

1. Eyepieces

Type	Magnification	Focus(mm)	Field(mm)	Remark
Wide field eyepiece	10X	25	ϕ18	
Plan eyepiece	16X	15.6	ϕ11	Optional

2. Objectives

Type	Magnification	N.A	W.D(mm)	
			Achromatic	Semi-Plan
Achromatic or Semi-Plan Achromatic	4X	0.1	37.4	23.1
	10X	0.25	6.6	4.1
	40X	0.65	0.64	0.6
	100X（oil）	1.25	0.19	0.38

3． Total Magnification

Objectives / Total Magnification / Eyepieces	4X	10X	40X	100X
10X	40X	100X	400X	1000X
16X	64X	160X	640X	1600X

4. Condenser numerical aperture：NA=1.25;

5. Stage: 360° rotatable stage, Size: ϕ 120mm;
Mechanical stage additional 360° rotatable stage
Size: ϕ 100mm(optional);

6. Fine focusing knob: minimum division：0.002mm;

7. Interpupillary distance adjustment range：53-75mm;

8. Light sources：6V20W halogen lamp brightness adjustment;

9. Anti-fungus: Yes.

Ⅱ、COMPONENTS

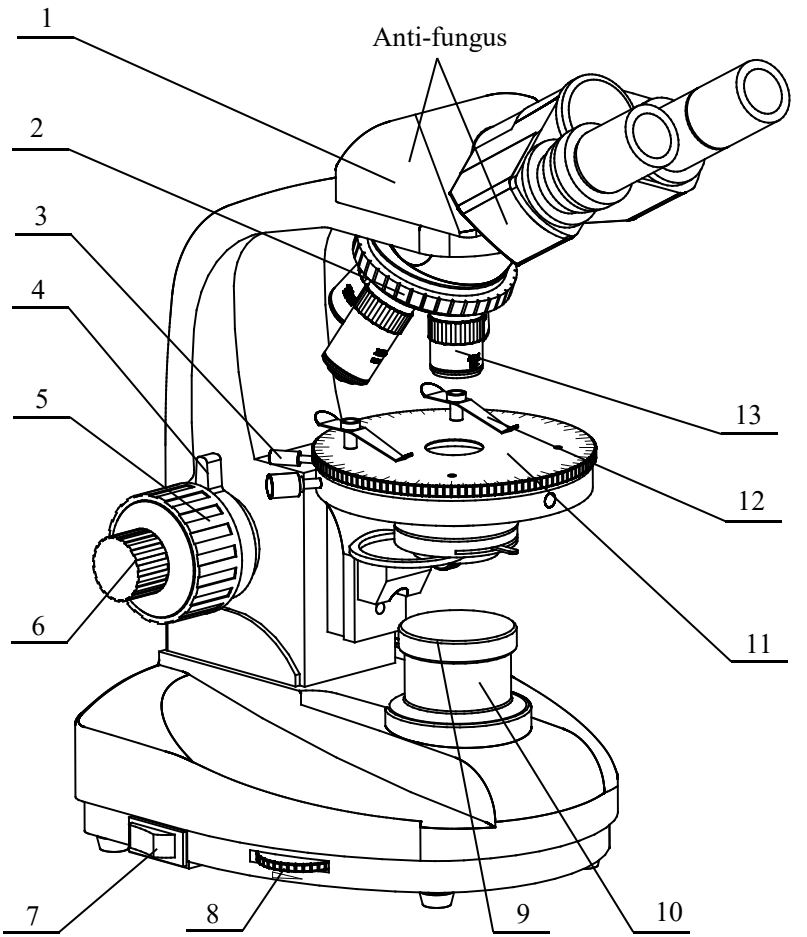


Fig.1

1. Binocular 2. Nosepiece 3. Stage rotatable locking screw 4. Limit knob 5. Coarse focusing knob 6. Fine focusing knob 7. Power switch 8. Light control 9. Polarizer 10. Collector 11. Stage 12. Specimen holder 13. Objective

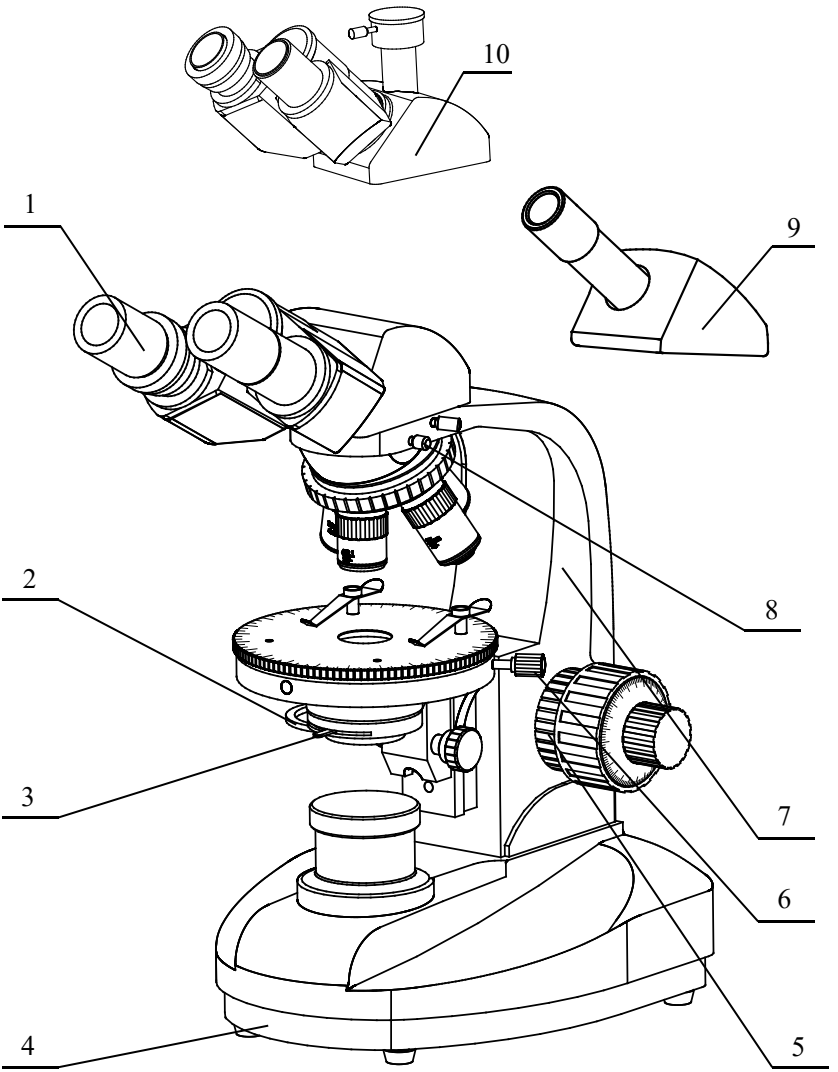


Fig.2

1. Eyepiece 2. Filter seat 3.Condenser (with aperture diaphragm) 4. Chassis 5. Adjustable tensional knob 6. Adjustment of center screw 7. Main body 8. Analyzer lever 9. Monocular 10. Trinocular

Ⅲ、INSTALLATION

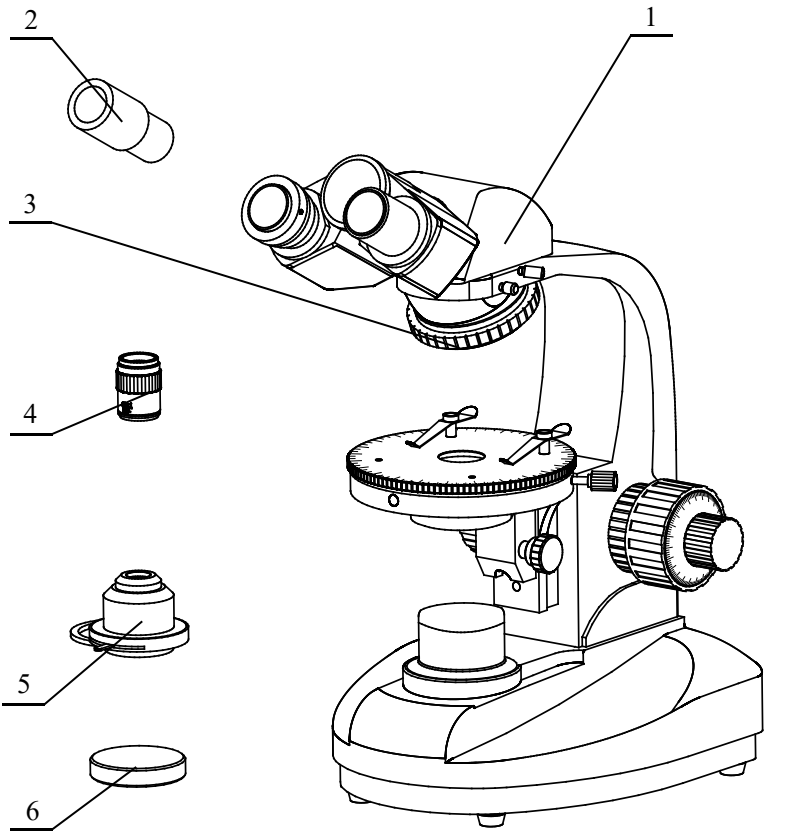


Fig.3

1. Binocular 2. Eyepiece 3. Nosepiece 4. Objective 5. Condenser (with aperture diaphragm) 6. Polarizer

Ⅳ、OBSERVING OPERATION

1. Press the power switch on the side “I”, which means the circuits is got through.
2. Set the 10X objective into operation position by turning the nosepiece, then focus the specimen which is on the stage.
3. Adjust interpupillary distance and diopter when watching with binocular.
4. Adjust the up & down position of the condenser, light control and aperture diaphragm in order to getting satisfied Illumination effect. When watching with 4X or 10X objective, bring down the condenser propriety to get symmetrical light.
5. While interchange other objectives turn the nosepiece and refocus slightly with the fine focusing knob. When use the 100X objective, may be sure to put a drop of cedar wood oil between the objective and the specimen.
6. When to use polarize, push the Analyzer lever 8 to make the Analyzer on the observation position, rotate the polarizer 9, you can observe the variant contrast light of field.(Fig.1,2)

Ⅴ、THE OPERATIONS OF EACH UNIT

1. Adjustment of interpupillary distance

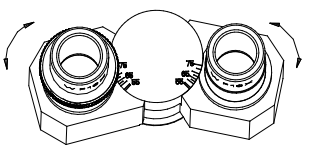


Fig.4

Put the specimen on the stage and ring the specimen into exact focus. Adjust the interpupillary distance of binocular until the right-left field of view can be composed one. (Fig.4)

2. Adjustment of diopter

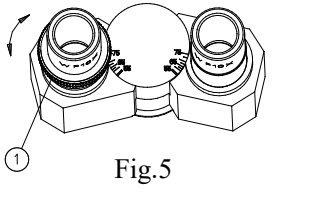


Fig.5

Put the specimen on the stage. Turn the 40X objective to working position. Firstly, observe at right column with right eye, adjust coarse-fine focusing knob to image clearly. Secondly, observe at left column with left eye, adjust the diopter control ① to image clearly.(Fig.5)

3. Coarse/Fine focusing

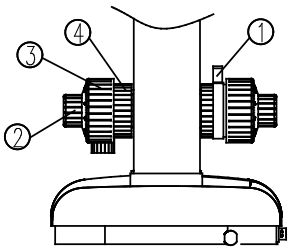


Fig.6

The instrument used coaxial coarse/fine focusing mechanism. The adjustable tensional knob ④ used for adjusting the tension of the coarse focusing knob ③ to prevent the stage from naturally sliding down. The limit knob ① prevents accidental specimen/objective contact. ② is fine focusing knob.(Fig.6)

4. Stage

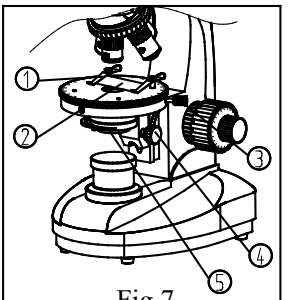


Fig.7

The convenient specimen holder ① on stage is used for holding specimen ②, adjust the adjustment of center screw ③, to make the specimen rotatable center in the optical center.(Fig.7)

5. Elevated condenser

The condenser is moved up or down via turning up-down knob ④, filter plate places on the filter seat ⑤. (Fig.7)

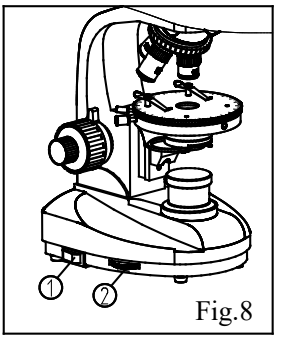


Fig.8

6. Power switch and adjustable brightness

Turn on the power switch ①, adjust the light control ② until image can be observed comfortably. (Fig.8)

Note: Don't let the light control at the lightest position so long that reducing the life-span of the bump.

7. Aperture diaphragm

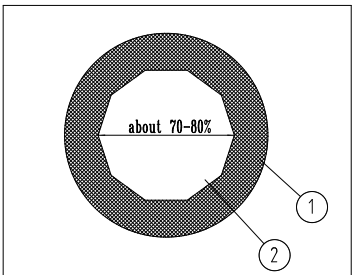
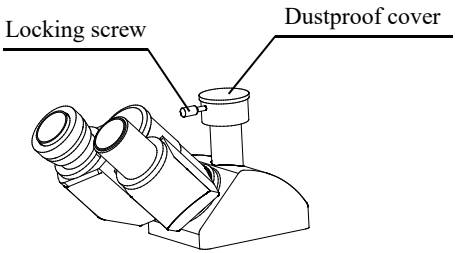


Fig.9

The aperture diaphragm lever ⑤ can be turn to adjust NA of the illumination system (Fig.8). Removing the eyepieces, watch through the eyepiece tube, adjusting screw is used while the diaphragm image is eccentric with the objective pupil①. Turn the aperture diaphragm for getting an image with advisable contrast. Usually, adjusting diameter of the aperture diaphragm image②to 70-80 percent of the objective pupil can get it.(Fig.9)

8. Trinocular

Loosen trinocular locking screw，get off the dustproof cover，can be connect the CCD adapter and digital camera adapter etc.Trinocular and binocular observation synchronization easy to photograph.



9. EXCHANGE THE LAMP AND FUSE（Fig.10）

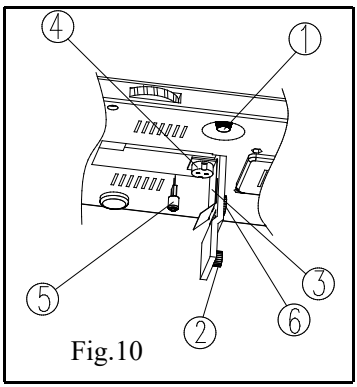


Fig.10

A. Switch off the power supply and pull out the plug of electrical wire.

B. Incline the microscope, loose the screw ② of fixing lamp base boards ③ on the middle part of bottom, and removes lamp baseboard from bottom.

C. Pull out the old lamp from lamp base④.

D. Insert the new lamp ⑤ into lamp base ④. Notice the properly touching.

E. Reinstall lamp base board ③ on

bottom with screw②.

F. Mount the lamp well, plug in electrical wire, turn on the power supply, turn objective lens into light path, adjust condenser upwards and downwards, and make light enter view field. If light spot is offset the center of view, loose the screw ⑥ slightly and move the lamp base ④, make lamp spot into center, then tighten up the screw ⑥ to use immediately.

G . Loose the screw of fuse①, put out the bad fuse, mount the new fuse, and tighten the screw of fuse① and use.

The specification of fuse： φ5，0.5A

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 poly methyl methacrylate or polyethylene and places where there is dry and modules. Suggest that storage all objectives and eyepieces in closed container with drying agent.