



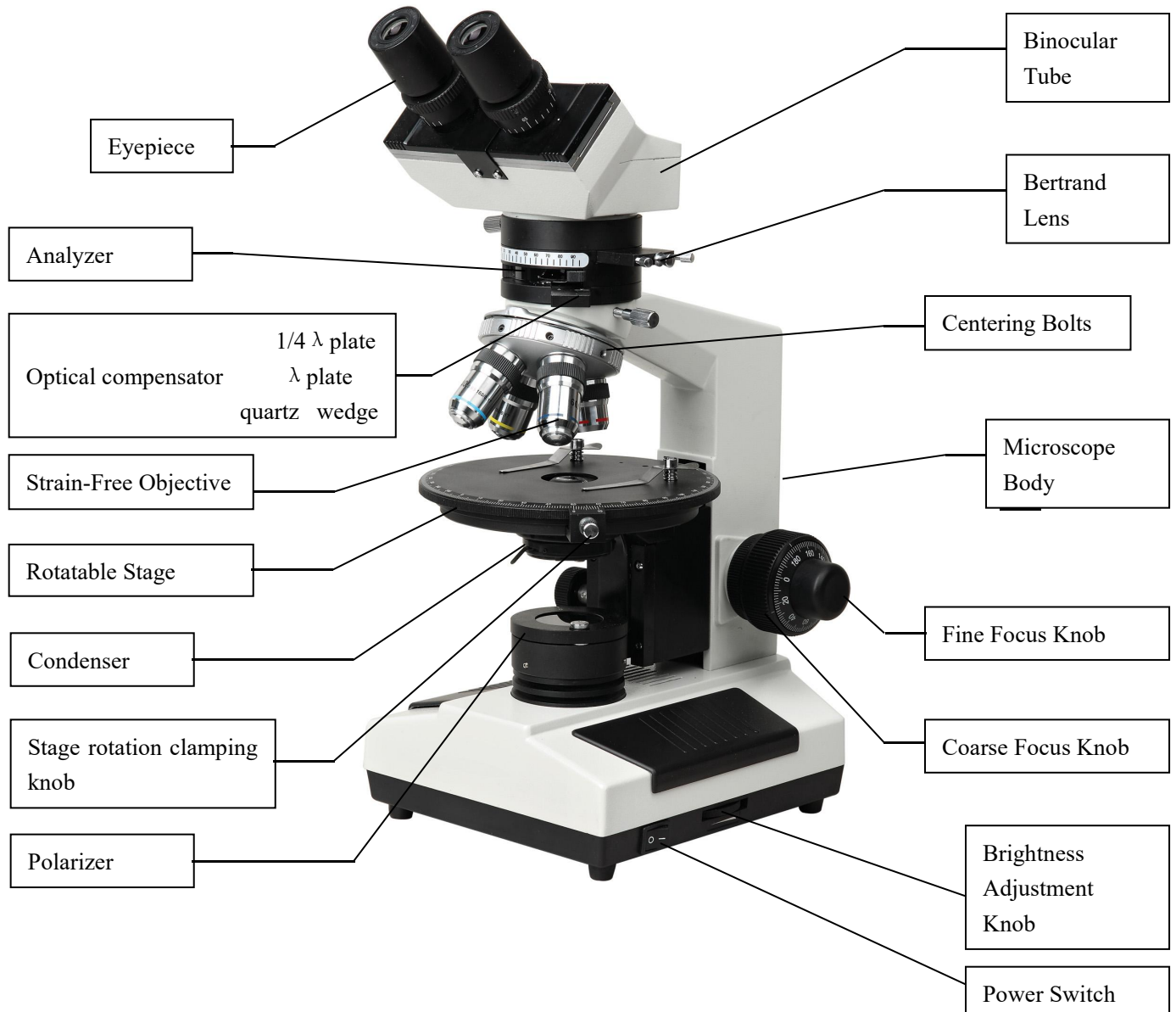
Polarized Light Microscope

SISCO-AM-MS-C-P107B

User Manual



Please read this manual carefully before using the microscope, and let it's along with the instrument.



I. USE FIELD

The instrument is easy to operate and useful. You can observe the kinds of minerals' crystal figures, color, interference color, and even identify their optical performance exactly. It is used so widely that you can see it everywhere, just like geology, petroleum, coal, chemical fiber, medical treatment, inspection, and so on. You can also find it in academic demonstration and research.

II. MAIN SPECIFICATIONS

1. Mechanical Tube Length: 160mm

2. Strain-Free Objective(Achromatic):

MAGNIFICATION	NUMERICAL VALUE (NA)	THICKNESS OF COVER SLIP (MM)	FOCUS (MM)	WORK DISTANCE (MM)	WORK TYPE
4×	0.10	0.17	31.05	37.5	dry
10×	0.25	0.17	17.13	7.316	dry
40×	0.65	0.17	4.65	0.632	dry
60×(optional)	0.85	0.17	2.969	0.185	dry

3. Cross-hair Scale Ocular

KIND	MAGNIFICATION	FOCUS (MM)	LINEAR FIELD OF VIEW (MM)
PLAN LENS	10×	24.95	Ø18

4. Sum Magnification:

OCULAR	10×	10×	10×	10×
OBJECTIVE	4×	10×	40×	60×
TOTAL	40×	100×	400×	600×

5. Objective Conjugate Distance: 195mm

6. Assistant Lens: 1×

7. Circular Rotating Stage: Diameter ϕ 160mm, 360° rotatable, graduated in 1° increments, minimum resolution 6'.

8. Coaxial Coarse and Fine Focusing System

Focus range: 28mm

Sensitivity and Graduation of Fine Focus: 0.002mm

9. Mechanical Focus Range: 28mm

10. Polarizer: 0°, outing of the optical path available

11. Analyzer: 0°-90° rotatable, swing out

12. Bertrand Lens: availability of swing out of the optical path

13. Optical Compensator: $1/4\lambda$ slip, λ slip and quartz wedge, insert at 45°

14. Condenser: NA=1.25 Abbe Condenser, with Iris diaphragm & filter

15. Illumination: 6V20W Halogen Lamp, Brightness adjustable

III. CONFIGURATION TABLE

NAME	SPECIFICATION	MSC-P107B	MSC-P107T
Microscope Body	Main Bracket	●	●
	Rotatable Stage	●	●
	Condenser Bracket	●	●
Viewing System	Sliding Binocular Head	●	
	Sliding Trinocular Head		●
Polarized Accessories	Analyzer: 0°-90°rotatable,swing out	●	●
	Bertrand Lens: out of optical path available	●	●
	1X Assistant Lens	●	●
Nosepiece	Quadruple Nosepiece, Center Adjustable	●	●
Optical Compensator	λ slip (first class red)	●	●
	1/4 λ slip	●	●
	quartz wedge	●	●
	blank slip	●	●
Illumination	Halogen Lamp 6V20W,	●	●
	spare Lamp	●	●
	spare BGX-1-20(0.5A)Fuse	●	●
Eyepiece	Eyepiece10×with scale of cross-hair	●	●
	Eyepiece10×	●	●
Strain-Free Objective	Achromatic Objective 4×	●	●
	Achromatic Objective10×	●	●
	Achromatic Objective40× (spring)	●	●
	Achromatic Objective60× (spring)	○	○
Condenser	Abbe Condenser with Iris Diaphragm & Filter	●	●
Collector	Collector with polarizer ,0° rotatable	●	●
Use Manual		●	●
Check Eligible Certificate		●	●
Encasement List		●	●
Wrapping Box		●	●

Note: ●Standard outfit, ○ Optional

X. INSTALLATION

1. Operation Environment:

1) Temperature: $0^{\circ}\text{C}\sim 40^{\circ}\text{C}$, Maximum Relative Humidity: 80%

2) High Temperature: High Temperature will result in mildew, dew, and even ruinous instruments.

3) Avoid placing the instrument in a dusty environment. When ending your microscope operation, please cover it with the dust cap.

4) Please lay the microscope in a plan and stable position.

2. Input Power Checking: The supplied voltage should be consistent with the required voltage as marked at the bottom of the microscope, or the instrument will be damaged.

3. Lamp:

1) The lamp is already installed when the instrument leaves the factory.

2) When using, or soon after it is turned off, the lamp and the cooling part are very hot, so you should keep yourself carefully from burns.

3) Replacing the lamp:

When replacing the lamp, be sure the bulb is the appointed one at first. Then turn the main switch on "O" (off), pull up power plug, waiting until the bulb, the lamp house and periphery are all cool down, so you can begin your replacing: lay down the microscope, pull up the bulb top control switch, turn out the top, then insert the bulb into the holder stably and safely, and return the top back to finish.

Don't touch the Halogen bulb with your hands. Please do the replacement with your glove or the lamp-protected cover. If you leave fingerprints on the surface carelessly, use a soft cloth, dipping it with some pure alcohol. Then clean them away. If you didn't do so, the stains will shorten the lamp's service life or cause it to burst.

4. Binocular Tube:

Mount the binocular tube into the polarizer accessories stayed on the main bracket and screw down the set screw.

5. Eyepiece (ocular):

Insert the eyepiece into the binocular tube.

6. Objective:

Rotating the stage until it drop to the lowest limited position, then screw the different magnification objectives in to the turret (nosepiece) and fix them in turn.

7. Condenser:

The condenser had already left the factory. If you need to take it down, please loosen the locking bolt.

8. Polarizer:

When the polarizer was in the optical path, its polarized direction was east-west at 0° . It had been adjusted and located on the collector before it left the factory, so it didn't allow disassembly. When the polarizer swung out of the optical path, the system stayed in an analyzed (single-polarized light) state.

9. Color filters:

Place the filters on the iris diaphragm brocket under the collector when you use them.

V. OPERATION

1. Illumination

Turn the brightness adjustment knob & the main switch until you obtain the needed brightness. The illumination brightness is decided by the kinds of conditions, for example, the contrast of the specimen, the magnification of the objective, the adjustability of the eyes, and so on. Too weak or too intense light is not correct. Generally, please don't adjust the brightness to the highest state, or the bulb's service life will be shortened for full-load working.

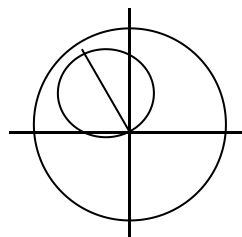
2. Focus

When observing, use the 10X objective to focus. To avoid the objective touch the specimen, please rise the stage up to let the objective near the specimen at first, by rotating the coarse focus knob, then looking into the eyepiece and reversing the coarse knob slowly in the same time until you find a image, then turn the fine focus knob to obtain a sharp image. Following the above steps, you can change the magnification freely and focus on the specimen with no risk of destroying it.

The tightness of the tension adjustment collar has been adjusted before leaving the factory. If it's very loose (the mechanical stage drops itself because of deadweight), please turn the tension adjustment collar until the tightness is in order.

Adjusting the stage and the objective optical axis coincident with each other: The nosepiece is center adjustable, the objective optical axis and stage have been pre-adjusted coincident at the factory, and should not require readjustment.

If they are not coincide accurately, please adjust it follow the bellow steps: First, focus on the specimen, find a visibly target point in the viewing field, and move it to the crossing point of ocular, rotate the stage, if the stage deviated from the center of the objective optical axis, the target point will rotate around the mechanical center of stage. The trail is a circle. According to the target point's trail, you can find the move regularly. Adjust the centering bolts on the nosepiece to move the objective optical axis into the center of the mechanical stage, and let them overlap completely. Then rotate the stage again, observe the two points, and note whether they remain coincident at all times (Is the target point moving?). If moving, repeat the adjustment until the target point stays still.



4. Focusing the condenser:

(1) The highest position of the condenser has been pre-adjusted at the factory, and should not require readjustment.

(2) Turn the condenser focus knob to shift the condenser. It needs to raise the condenser when using the high magnification objective, and to lower it when using the low magnification one.

(3) Adjusting the aperture diaphragm (iris diaphragm):

·The aperture diaphragm (iris diaphragm) is designed for matching the objective's numerical

aperture, not for adjusting brightness. Usually, for most specimens, it can be obtained a good, enough contrast image if reducing the diaphragm opening to 70- 80% of the N.A. of the objective in use.

·Adjusting the center of the aperture diaphragm (iris diaphragm):

The center of the condenser's aperture diaphragm(iris diaphragm) has been pre-adjusted at the factory, and should not require readjustment. Push the Bertrand lens in or take away the ocular, look into the tube, and you will see a bright circle. Changing the diaphragm opening slowly, you can observe that the circle is changed coaxially.

5. Orthogonal polarized light viewing:

(1)When the polarizer is in the center of the optical path, its polarized direction is east-west at 0° . The analyzer is located in the center of the optical path all the time, and marked with 0° - 90° graduation. Swing the analyzer lever, and let the graduation center on the 90° scale line. So the two polarized prisms are orthogonal exactly. That means the polarized direction of the polarizer is east-west, and the direction of the analyzer is south-north.

(2)When the polarizer gets out of the optical path, the analyzer will still stay in the center of the optical path. The instrument is in a single-polarizing observation.

6. Convergent light observation:

The convergent light observation often uses a high magnification objective. Under the orthogonal polarized light state, push in the Bertrand lens, and raise up the condenser, then you can observe the convergent light performance of the specimen.

7. Optical Compensator:

Constant optical compensator, just like $1/4 \lambda$, λ slip, and quartz wedge variable optical compensator, is equipped. After the specimen focus, separately insert a $1/4 \lambda$ slip (micaceous), a λ slip (gypsum), and quartz wedge into the slot under the analyzer at 45° , and you can observe a first-class gray interferogram, a first-class red interferogram, and the IV class available optical interferogram of the specimen correspondingly.

8. Adjusting the illumination system:

The illumination has been pre-adjusted at the factory. If you need to change the lamp, please follow the steps below: First, pull out the button under the base, remove the bulb, and replace it with a new one. Second, loose the light source adjusting bolt, and adjust the filament into the center of the viewing field, then screw down the bolt, so you have a best illumination environment for observation.

VI.MAINTENANCE

1. Carefully open the box, avoid the accessories dropping to the ground and being damaged, for example, the lens.
2. All the lenses have been well checked and adjusted. It is forbidden to disassemble them by yourself.
3. The nosepiece and coarse/fine focus unit have a compact and precise frame, please don't disassemble them as possible as you can.
4. Keep the instruction clean, and wipe the dust regularly. Pay attention to avoid contaminating the optical elements, especially.

5. Place the instruction in a cool, dry position. When using the microscope, remember to cover it with a dust helmet. Do wait for the lamp house to cool completely before covering.

6. The cleaning of the prism

The contaminations on the prism, for example, finger mark/oil, could be gently wiped with a piece of soft brush\tissue paper, or gauze which has been immersed in pure alcohol or xylene. Do not use organic solvents to wipe the non-optical elements. When must clean, please use the soft detergent.

(Note that the alcohol and the xylene are all burned easily, do not let them near the fire, and use them in a drafty room as as possible you can.)

7. The cleaning of the non-optical elements: Do not use organic solvents to wipe the non-optical elements. When must clean, please use the soft detergent. The plastic surface can only be cleaned with water.