



Polarising Binocular Microscope

Model 206 LED Cod. 5313115

INSTRUCTIONS MANUAL

Eyepieces:

10X/ø18 and 16X/ø10 wide field eyepieces.

Revolving Nosepiece:

Four-positions revolving nosepiece have a rubber ring for easy rotation. Precision ball bearing mechanism insures accuracy and optical alignment of the system.

Mechanical Stage:

Mechanical stage with ball bearing is 160mm × 130mm. X-Y travel is 76mm × 50mm. Two 0.1mm verniers provide accurate location of specimen.

Condenser:

Rack and pinion focusing N.A. 1.25 Abbe condenser offers a uniform illumination even use 4X objective.

Filters:

Swing-out filter holder for change filter easily

Illuminator:

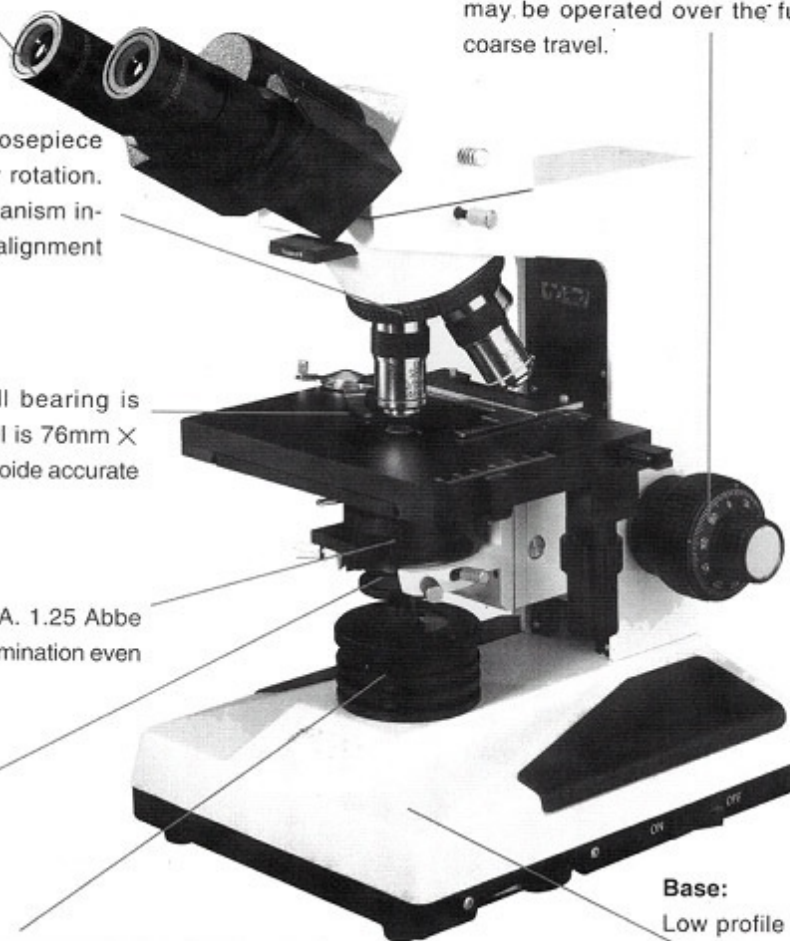
3W LED lamp is fixed in door block under base of microscope for ease to change. Input voltage 220V 50Hz and 110V 60Hz can be chosen. Brightness can be adjusted continuously.

Coaxial Coarse and Fine Focusing Knobs:

Coarse knob with tension adjustable. Fine knob movement is 0.2mm per rotation with graduations in 0.002mm increments, which may be operated over the full range of coarse travel.

Base:

Low profile design and plastic armrests offers comfortable operation with hands resting on base.



1. Brief introduction

Biological Microscope Model: 206 stands among the most advanced microscope of the same type due to its multifunctional and serializing designs and perfect manufacture.

Ergonomics principle is fully applied to the design of Model: 206 Biological microscope. Each operation part is reasonable in arrangement. Coarse and fine focusing knob with rubber ring provide you comfortable feeling and can be rotated flexibly. Both hands can rest on plastic supporting arm plate of base with comfortable operation. Coarse focusing travel is 25mm. X-Y travel of the large stage is 50 x 76mm.

Each objective attached to this model conforms to standard DIN. Its resolving power and aberration have been adjusted to the best state. Another distinctive feature is that Model 206 Biological microscope can be provided with multifunction such as phase contrast, photographing, dark field, polarizing, plotting, TV and video recording, fluorescence illumination by choosing corresponding accessories. This model can meet your various needs and can be your ideal tool in your work.

Model: 206 Biological microscope is an ideal instrument in research work in many fields such as biology, bacteriology, histology, immunology, pharmacology, chemistry, agriculture and animal husbandry.

2.1 Total magnifications

Eyepiece : WF10X, WF16X

Achromatic Objective: 4X, 10X, S40X, S100X (oil)

	4x	10x	40x	100x
10x eyepiece	40x	100x	400x	1000x
16x eyepiece	64x	160x	640x	1600x

2.2 Mains

Input : 220V/50Hz or 115v/60Hz (alternative)

Output : Halogen lamp 6V/20W

Cartridge fuse : 0.75A ϕ 5 X 20

3. Assembly

3.1 See picture, stage by rotating coarse focusing knob. Lower condenser by revolving condenser-lifting knob. Aligning the condenser holder stop pin, push condenser to its position, and fix it with knurled screw.

3.2 Installing the Binocular Head and fixing it with knurled screw.

3.3 See picture, put pair eyepiece WF10X or WF16X into eyepiece tube, Lower stage and put objective 4X, 10X, 40X, 100X into revolving nosepiece hole in sequence of magnification.

3.4 See picture, If Simple Polarizing Attachment is required, please insert the one piece of Polarizer into gap on the Abbe condenser and one piece of Analyzer into gap between Revolving nosepiece and Binocular head.

4. Operations

4.1. Adjustment of microscope

4.1.1. Insert the plug in power socket (before this, be sure to check whether the current and voltage of the power corresponds to input current and voltage specified.)

4.1.2. Push light level control potentiometer to min. Turn on mains switch, then slide light level potentiometer to proper position

4.1.3. Turn revolving nosepiece and put 10X objective into light path.

4.1.4. Rotate condenser lighting knob and lift condenser to its location.

4.1.5. Put sample on stage and fix with stage clip. Rotate operated stage knob to make sample enter illuminating area of condenser.

4.1.6. Open aperture diaphragm to midst position by pulling diaphragm adjusting lever.

4.1.7. Observe with right eye. Focus until get clear image (lift stage slowly until image outline is seen by rotating coarse focusing knob, then turn fine focusing knob until get clear image.) Adjust knurled screw to middle field diaphragm image of the eyepiece visual field (field diaphragm can be changed by turning field diaphragm adjusting ring.)

4.1.8. Center-to-center distance and visual accommodation adjustment. Observe through left eyepiece, turn visual accommodation ring on left eyepiece cone to get clear image. By rotating binocular eyepieces with both hands, make the center-to-center distance of the two eyepieces corresponds to operator's interpupillary distance until the two images of both eyes coincide. Interpupillary distance and diopter requirements can be reached after carrying out these two adjusting items above.

- When employ 100x oil objective. The space between objective and specimen, Stage glass and condenser front lens should be filled with microscope immersion oil.
- When employ high objective, the thickness of cover glass should be within designed requirement $0.17\text{mm} \pm 0.01\text{mm}$, otherwise image clearness will be affected.

4.2. Object-image contrast adjustment in bright field observation

Normally, image contrast of object in eyepiece visual field has close relation with objective contrast. Good object-image contrast can be obtained by adjusting illumination brightness, aperture diaphragm to proper degree and choose proper filter. However, brightness in visual field shouldn't be changed by adjusting aperture diaphragm. Take off eyepieces and observe through eyepiece cones directly, then aperture diaphragm image can be seen. Normally good effect can be got by making aperture diaphragm image fill 70% - 80% of objective back diaphragm.

4.3. Operation of antiskid and limiting devices

4.3.1. Stage may slide down slowly after a long-term operation. Under this circumstance, stage can be prevented from sliding down by adjusting the tension of coarse focusing knob by tightening the left adjusting ring.

4.3.2. The instrument is equipped with limiting device, which also can be called quick focusing device. After the clear image is obtained by using 10x objective, tighten right limiting ring, then the rising height of the stage is limited. After this, objective image outline can be seen by employing coarse focusing to lift stage to this setting.

- Left and right coarse and fine focusing knob must be turned in same direction. Turning in reversed direction forcedly is absolutely forbidden, otherwise, the focusing mechanism will be damaged.

4.4. Bulb replacement

- Bulb should not be replaced until it cools down entirely.
- Filament center may diverge optical axis center after bulb replacement. Under this circumstance, adjusting should be performed.

4.4.1. Turn off mains switch and pull out plug.

4.4.2. Screw off knurled screw and turn over bulb holder plate.

4.4.3. Pull out burnt bulb in arrowed direction and replace with a new one. Be sure not to left fingerprint and stains on bulb to avoid reducing bulb brightness and lifetime.

4.4.4. Screw in knurled screw and fix the bulb holder plate.

4.4.5. Switch on mains switch.

4.4.6. Take off eyepieces and observe through binocular eyepiece cone directly. The image of filament should be in the middle.

Important advice

- 1) Don't let the microscope exposure under Sun light directly, don't placed it in where is high temperature、wet、dust or acid and alkali.
- 2) The microscope must be earthed in order to avoid getting an electric shock.
- 3) The power switch must be closed and cut off the electrical power when changing the bulb or fuse.
Please don't change the bulb until the lamp is cool completely.
- 4) You must use specified bulbs with the same specification supplied by our company.
- 5) Don't knock down any part of the microscope in avoid of damage and trouble.
- 6) After finishing work, please cut off the power supply and cover the dustcover.
- 7) Clean the lens with gauze moistened with a spot of mixture of ether and alcohol 7:3.

5. Problems occurred in using and disposal method

According to different use method, although it is not malfunction, the microscope performance may not be given out completely. If the trouble occurred, please try to find the cause.

Problem point	Cause	Disposal method
1. Brightness of viewing field is not uniformity	Objective is not entered into the light path	Ensure the objective is entered into the light path ("click" sounded)
	Condenser position is too low	Adjust to the top
	Dirty or dust on objective、 eyepiece、 condenser and light exit	Cleaning completely
2. You can see the dirty and dust in the viewing field	There's dirty and dust on eyepiece condenser, light exit and the specimen	Cleaning completely
3. Viewing image glaring	Condenser is too low	Drive up the condenser
4. Viewing image looks frosted and unclear	Objective is not entered into the light path	Ensure the objective is entered into the light path ("click" sounded)
	There's dirty and dust on eyepiece , objective, condenser, light exit and the specimen	Cleaning completely
	there's no immersion oil on oil immersion objective	Using immersion oil
	Air bulb in immersion oil	Take out the air bulb
5. When focusing with high magnification objective, it will touch the specimen	The specimen placed is on the reversed side	Reversing Cover glass side on the top, then place the specimen again
6. Focusing adjusting knob is too heavy	Tension adjusting ring is too tight.	Loosen properly
7. The stage goes down automatically, the image becomes blurry during observing	Tension adjusting ring of the coarse focusing adjusting knob is too loose.	Tighten properly
8. The coarse focusing adjusting doesn't go down	Condenser is too low	drive up the condenser
9. Field of vision of 2 eyes differed	interpupillary distance is not fitting	adjusting correctly
	Diopter of 2 eyes is not adjusted equally	adjusting correctly
	Magnification of left and right eyepiece is different	Change to the same magnification eyepiece
10. Objective touches specimen, while change the objective from the low magnification to high magnification	The specimen placed is on the reversed side	Reversing Cover glass side on the top, then place the specimen again
	The cover glass is too thick	Change to cover glass 0.17mm thick
11. The bulb does not work	Forget to plug in	Make sure to plug in
	The bulb is not inserted correctly	Insert it correctly
	The bulb is burn out	Replace bulb with a new one
12. The field of view is not bright enough	Brightness adjustment knob turned to wrong position	Adjust correctly
13. The bulb light flickers or the brightness is not stable	The bulb uses long time and will be burn out soon	Replace it by a new one
	The wire is not connected in order	Connecting wire completely