



Digital Microscope

LB-30DM

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1. Safety Measures

- 1) Carefully open the box, and avoid the accessories, like a lens, dropping to the ground and being damaged.
- 2) Do keep the instrument out of direct sunlight, high temperature or humidity, dusty and easy shaking environment. Make sure the stage is smooth, horizontal, and firm enough.
- 3) When moving the instrument, kindly use two hands to grip the two sides of the microscope body.
- 4) When running, the lamp house and nearby parts will be very hot. Kindly ensure there is enough cooling room for them.
- 5) Make sure the instrument is earthed, to avoid lightning strikes.
- 6) For safety, be sure the main switch is in an "O" (off) state before replacing the halogen lamp or the fuse, then cut off the power, and do the operation after the lamp bulb and the lamp house completely cool down. (Specified: Halogen Lamp6V/20W).
- 7) Check the input voltage be sure the input voltage signed in the back of the microscope is consistent with the power supply voltage, or it will bring serious damage to the instrument.
- 8) Use the factory-supplied power cord.

2. Introduction

Digital microscope LB-30DM is a compact bench-top unit with inbuilt digital camera to capture vivid images and real time videos. LED illumination with rheostat brightness control aids to achieve high quality images. Coaxial coarse and fine adjustment focus knob with tension adjustment aids in mobility of the objective lenses. Vertically movable condenser with iris diaphragm and filter holder on rack and pinion.

3. Features

1. Seidentopf type binocular viewing head
2. Inbuilt CMOS camera(1.3 MP)
3. Software support(Image analysis)
4. Reverse quadruple nosepiece
5. Viewing head with 10X widefield eyepieces
6. Large mechanical stage(double layered)
7. Filter : Blue and green(increases contrast and removes UV light)

4. Specifications

Model No	LB-30DM
Viewing head	Siedentopf binocular
Inter-pupillary distance	55 mm ~ 75mm
Eyepiece (Extra wide field)	EW10X / 20 mm
Camera system	1.3 MP
Semi-plan achromatic objective	4X
	10X
	40X
	100X
Camera resolution	(1280 × 1024) pixels
Software	ScopelImage 9.0
Viewing head inclination	30°
Stage	USB2.0
Moving range (stage)	140 mm × 140 mm
	75 mm × 50 mm
Illumination	Abbe NA1.25
Dimensions	1 W S-LED
Weight	350 × 310 × 570 mm

5. Applications

Used in hospitals, clinics, medical academics, morphology and related research centers for biological, pathology, bacterial, histological, immune, genetics and pharmacological analysis.

6. Instrument Introduction

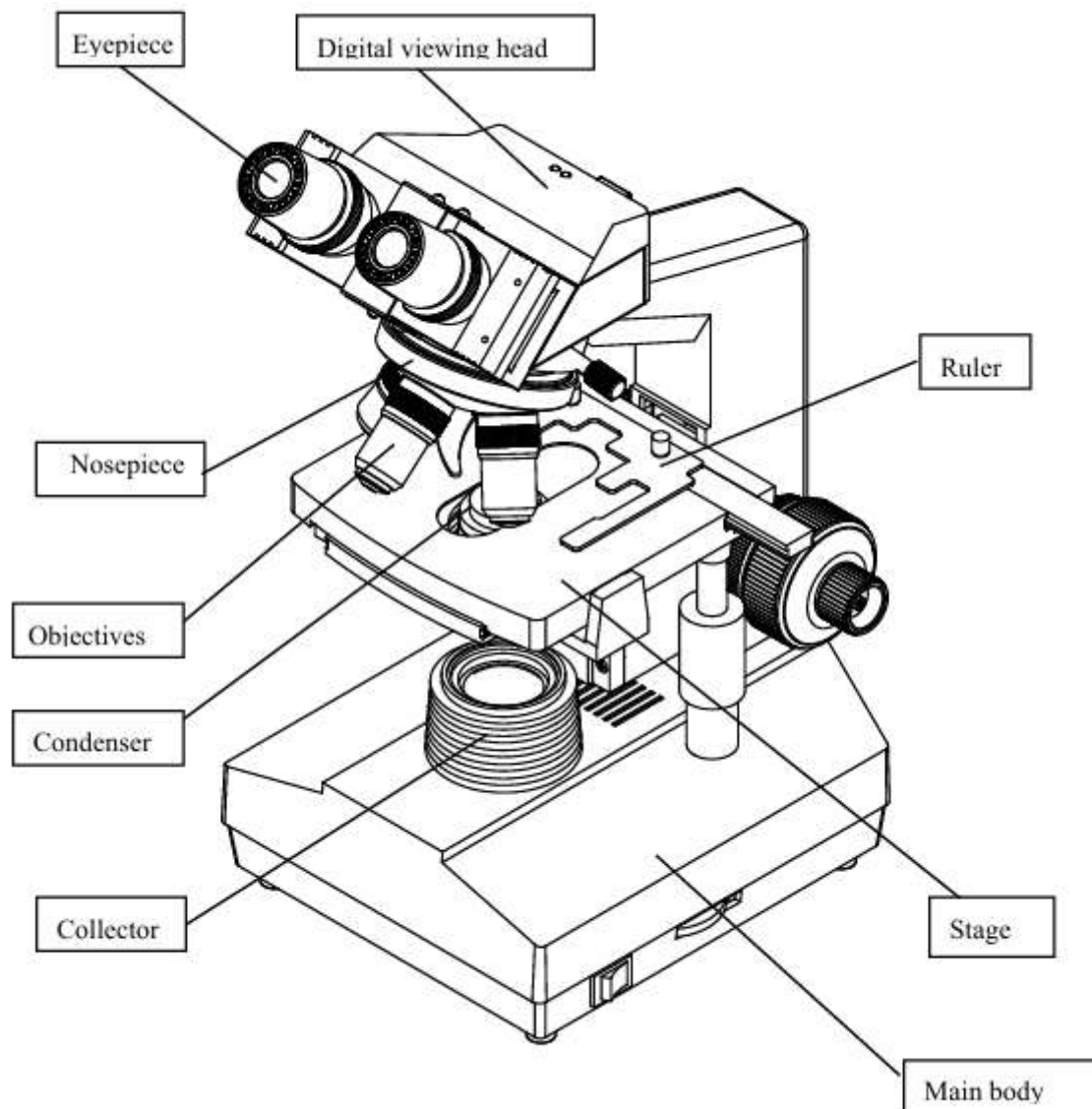


Figure-1 Digital Microscope LB-30DM

7. Installation

7.1 Operation Condition

- 1) **Temperature:** 0 °C ~ 40 °C, Maximum Relative Humidity: 85%.
- 2) **High Temperature:** High Temperature and humidity will result in mildewing, dew, and even ruinous instruments.
- 3) Avoid placing the instrument in a dusty
- 4) environment. When ending your microscope operation, kindly cover it with a dust cap.
- 5) Lay the microscope in a plan and stable position.

7.2 Assembly Diagram

The following figure shows the installation sequence of the components. The number in the figure shows the assembly steps.

- Before installing, be sure every component is clean, and do not store any parts or glass surfaces.
- Keep well with the hexagon wrench provided. When replacing the components, you will need it again.

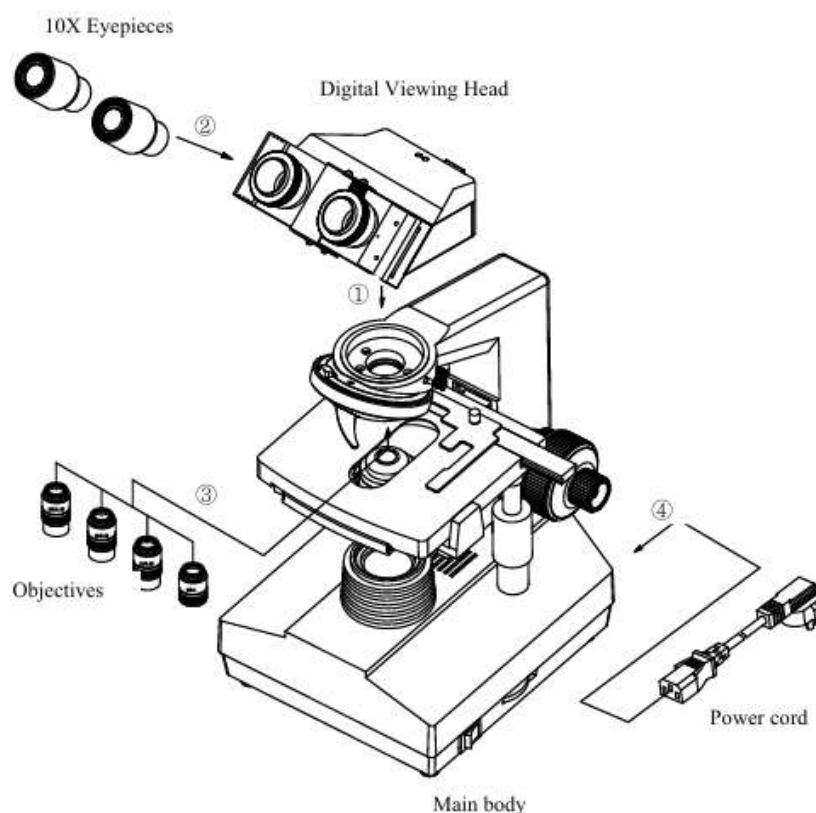


Figure-2

7.3 Assembly Step

7.3.1 Installing digital viewing head (Figure-3,4)

Insert the digital viewing head into the microscope head, turn into the right position, then screw down the bolt (1) to fix it.

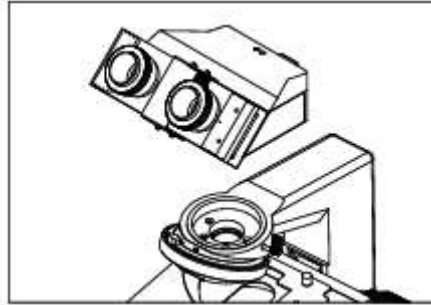


Figure-3

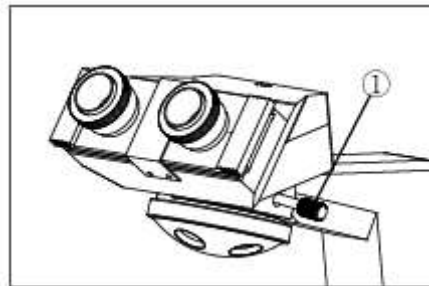


Figure-4

7.3.2 Installing the eyepieces (Figure-5,6)

Insert the eyepieces into the eyepiece tube until they are against each other as shown in **Figure 6**.

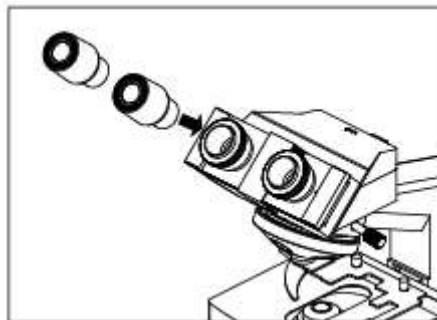


Figure-5

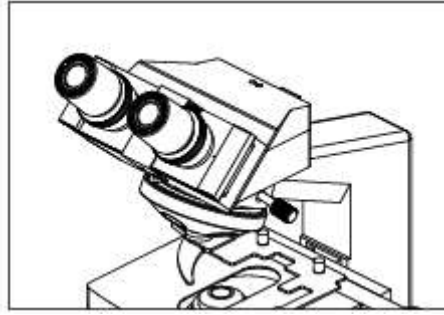


Figure-6

7.3.3 Installing Objectives (Figure-7,8)

- 1) Adjust the coarse focus knob until the support device of the mechanical stage reaches its low limit position.
- 2) Screw the lowest magnification objective into the nose piece from the left or the right side, then revolve the nose piece clockwise and mount other objectives by this quence of low to high magnification.
- 3) Installing the objective this way will make the change of magnification to be easier during use.
 - Clean the objective regularly, for the lens is susceptible to dust.
 - When operating, use 10× magnification objective to search and focus the specimen first, then replace it with a higher magnification objective if necessary.
 - When replacing the objective, slowly turn the nose piece until you hear “clicked”, which means the objective is in the required position—the light path center.

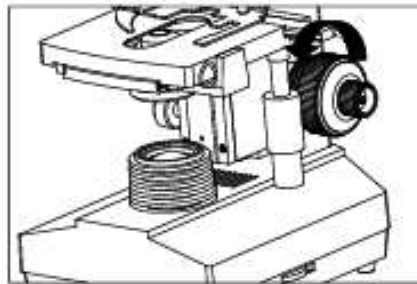


Figure-7



Figure-8

7.3.4 Installing the Color Filters (Figure 9)

- Turn the condenser bracket (1) out in the direction of the arrow in **Figure 9**.
- Put the required filters (2) into the holder on the bracket and then turn the bracket back to the right position.
- Baby blue and green filters are available in standard outfits.

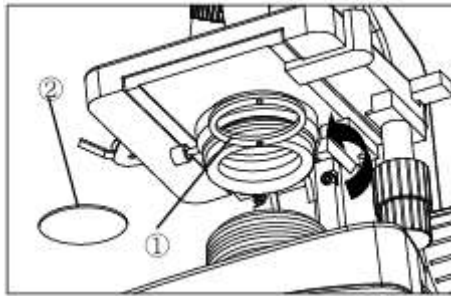


Figure-9

7.3.5 Connecting the Power cord (Figure 10,11,12)

The cable and cords are vulnerable when bent or twisted, never subject the power cord to excessive force.

- 1) Turn the main switch (1) to the "O" (off) state before connecting the power cord.
- 2) Insert the power plugs (2) into the power jack (3) of the microscope; make sure the connection is well.
- 3) Plug the power cord (4) into the power supply receptacle safely. Make sure the connection is well.

Do use the supplied power cord all the time. If lost or damaged, select the same standard cord, kindly.

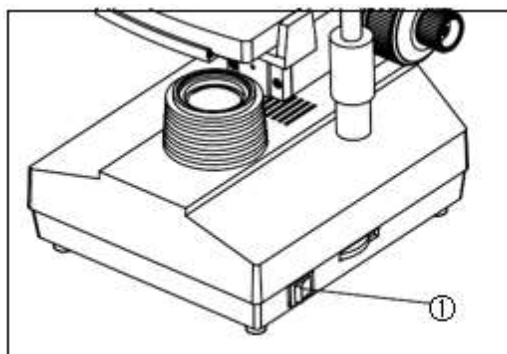


Figure-10

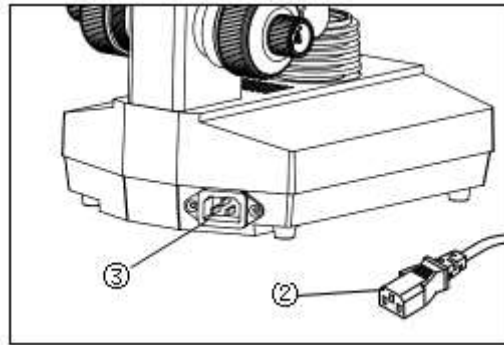


Figure-11

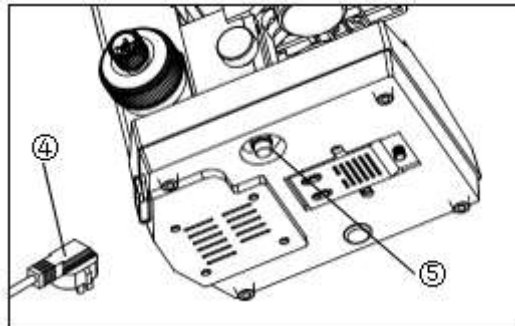


Figure-12

7.3.6 Replacing the fuse (Figure 10,11,12)

Do remember to set the main switch ① to the state of “O” (OFF) and unplug the power cord ② before replacing the fuse. Rotate the fuse kits ⑤ out of the holder, replace them with a new fuse, and then rotate it back to the holder again.

The rating of the new fuse should be the same as the old one.

7.3.7 Installing and replacing the lamp (Figure-13,14)

- Kindly use the specified halogen Lamp 6V20W. Replace the lamp as follows if necessary.
- Kindly set the main switch to an “O” (off) state before replacing it, and make sure the bulb, the lamp room, and the periphery are all cool enough to carry no burn. Then, you can do your replacement.
- Loose the bolt ① and open the window ② on the bottom of the microscope base with “—” type screwdriver.
- Pull out the old bulb ③, hold the new bulb after you wrap it with gauze or other protection materials, and insert its pin as deeply as possible into the jack in the lamp holder.
- Close the window and tighten the bolt ①.

Kindly insert the bulb gently, or it will be damaged by excessive extrusion.

Do not touch the halogen bulb with bare hands. It will shorten the service life or cause it to burst. If you leave fingerprints on the surface carelessly, clean it with a piece of dry soft cloth.

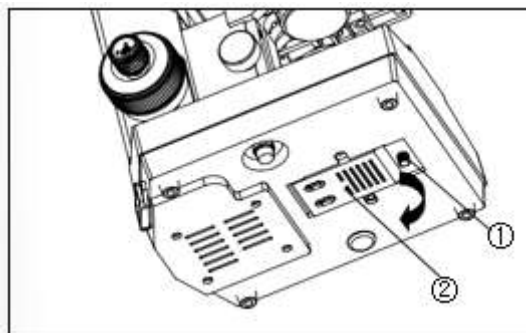


Figure-13

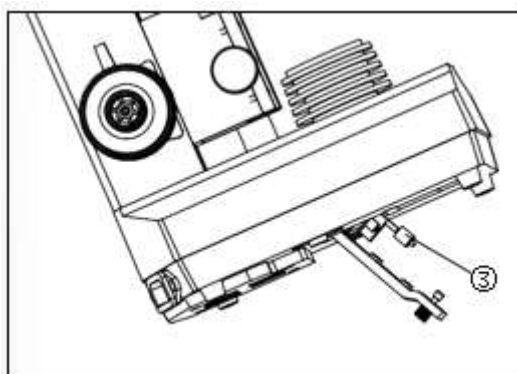


Figure-14

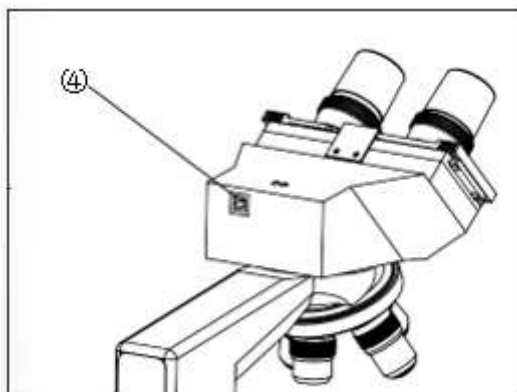


Figure-15

7.3.8 Taking Photographs and Video (Figure 15)

After connecting the microscope and computer with a USB cable, we can take photographs or videos with the microscope.

- 1) To connect the camera to a computer, do as follows: Plug one end of the USB cable into an open USB port on your computer, and the other end into the camera port④on the binocular head of the microscope.
- 2) Follow the provided CD to set up the image software and open the software.
- 3) Adjust the microscope until you can observe images through both eyepieces and computer screens clearly, now you can take photographs and videos.

8. Operations

8.1 Adjustments Sets (Figure16,17)

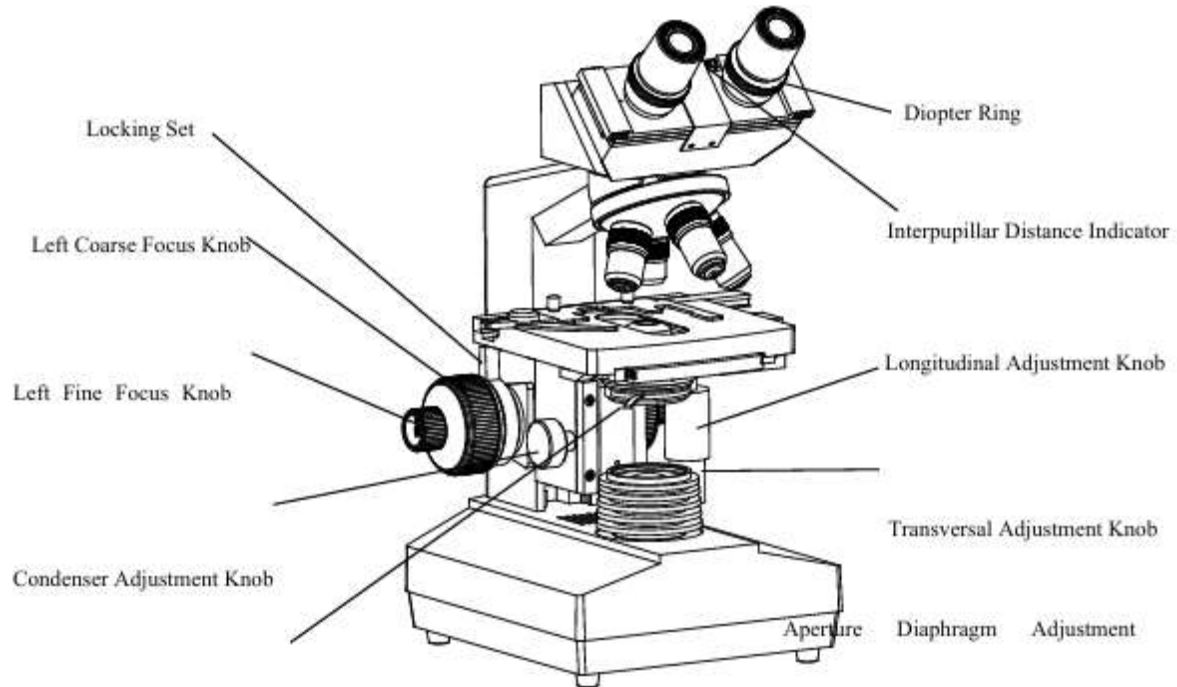


Figure-16

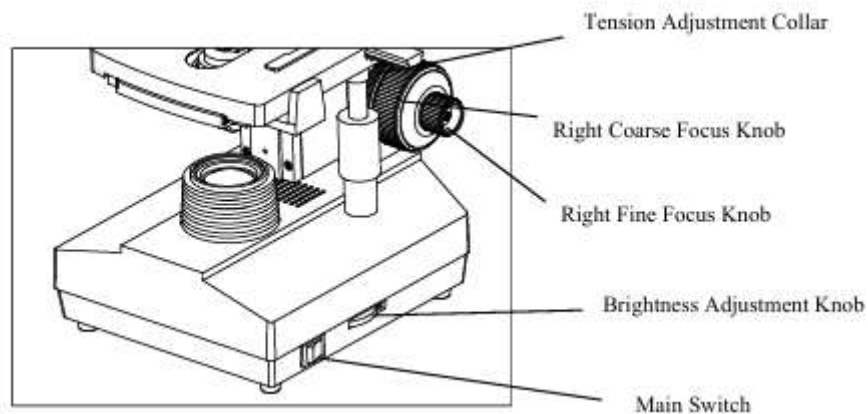


Figure-17

8.2 Operations

8.2.1 Adjusting the Brightness

- Connect the power, and turn on the main switch① (shown in the figure) which is on the bottom side of the base to “—”(on).

- Turning the brightness adjustment knob ② clockwise, the voltage decline and the brightness weaken: Whereas turning in the opposite direction, the voltage raise and the brightness strengthen.
- Using the microscope at a lower voltage can prolong the service life of the bulb.

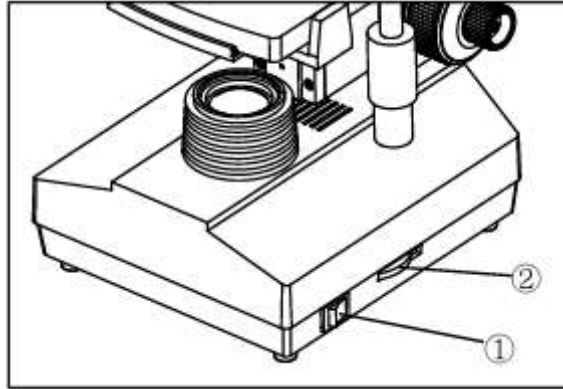


Figure-18

8.2.2 Placing the specimen (Figure19)

- Place the specimen ③ on the center of the stage and then nip it with the specimen holder ④.
- Turn the transversal and longitudinal adjustment knobs which on the mechanical ruler to move the specimen onto the required position.

Be careful when changing the objective. If you finish the observation with the short working distance objective and want to change another one, be careful not to let the objective touch the specimen.

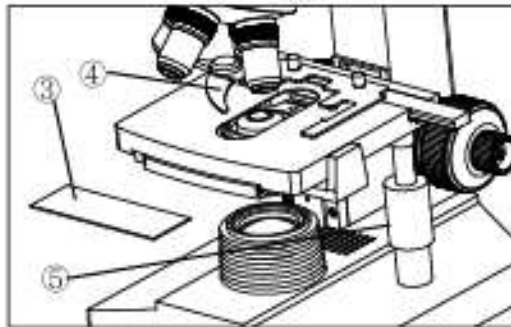


Figure-19

8.2.3 Focusing the specimen (Figure-20,21)

- 1) Focus the specimen with a 10X objective. To avoid the objective touching the specimen during focusing, you should raise the mechanical stage to let the specimen close to the objective at first, then slowly separate them to bring the specimen to focus.
- 2) Turn the coarse focus knob ① conversely to lower the specimen and search images in the 10×ocular simultaneously and then use the fine knob ② to make focus. After that, you can replace it with other magnification objectives safely and focus without the risk of damaging the specimen.

- 3) When the specimen is focused, tighten the locking set (in **Figure.16**) to give a height limit to the stage. In this way, the stage only can be lowered, avoiding false operation and damage to the specimen.

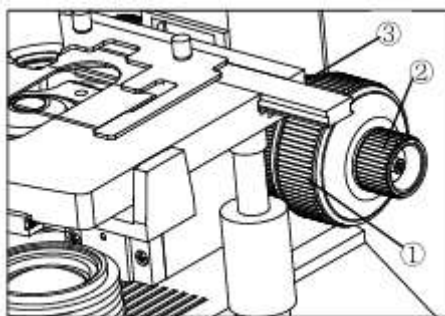


Figure-20



Figure-21

The tight tension of the coarse focus knob has already been adjusted before leaving the factory. If loosen (e.g. the stage slips down by its weight), kindly screw the intention adjustment collar③ to the right position by the supplied spanner.

8.2.4 Condenser Adjustment (Figure-22)

Turn the condenser focus knob to move the condenser up and down. Raise the condenser when using the high magnification objective and descend it when using the low magnification one.

- The condenser and the objective are coaxial. It has been adjusted before leaving the factory, so the user needn't adjust it by themselves (the distance between the top of the condenser and the stage should be in the range of 0.03mm~0.4mm).
- The highest position of the condenser has been adjusted too. It also needn't any user's operation.

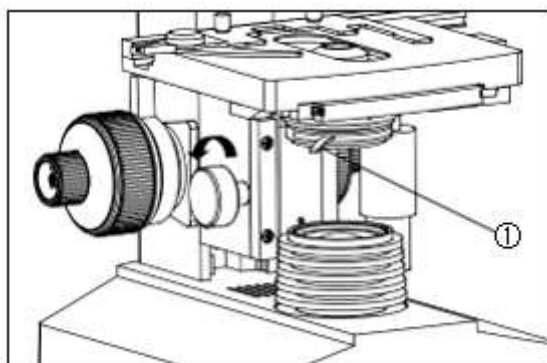


Figure-22

8.2.5 Aperture Iris Diaphragm adjustment (Figure-22,23)

Turn the aperture iris diaphragm lever ① to adjust the aperture iris diaphragm. Generally, setting the aperture iris diaphragm to 70- 80% of the N.A. of the objective in use will provide an image with good contrast.

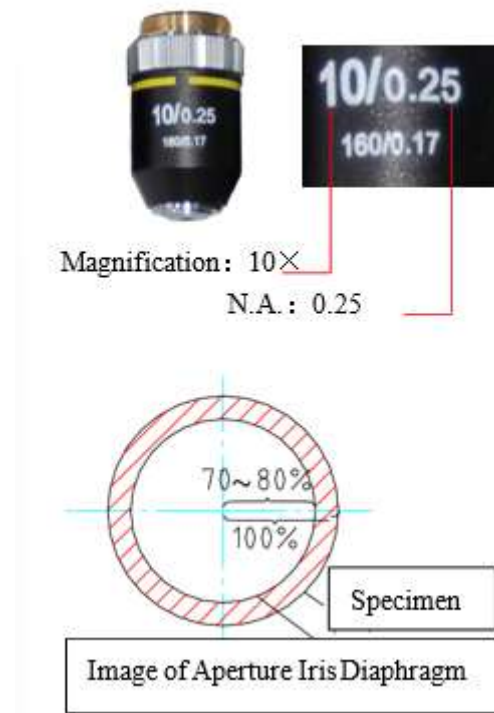


Figure-23

- If the size of the aperture diaphragm was minified, the brightness and the resolution declined, while the contrast and the depth of field increased. In other words, if the size was larger, the brightness and the resolution improved, but the contrast and the depth of field declined.
- Generally, by setting the size of the condenser aperture diaphragm at 70% ~ 80% of the numerical aperture, you can obtain a clear image with enough contrast. If the opening of the aperture diaphragm is too small, the resolution is very low.
- Minify the aperture below 60% of the objective's numerical aperture unless in a special case, for instance, observing an almost transparent specimen.
- The numerical aperture is marked on the objective. For example, the mark "10/0.25" means the magnification is 10 $\times$, and the numerical aperture is 0.25.
- If you want to observe the image of the aperture iris diaphragm, remove one eyepiece and look through the tube. You will see a dark circle encroaching on the bottom of the tube.

8.2.6 Adjusting the Interpupillary Distance (Figure-24)

The interpupillary distance range: Is 55mm~75mm.

While looking through the eyepiece, move both sliders to adjust interpupillary distance until the left and right fields of view coincide completely. The value on the right slider is your interpupillary distance.

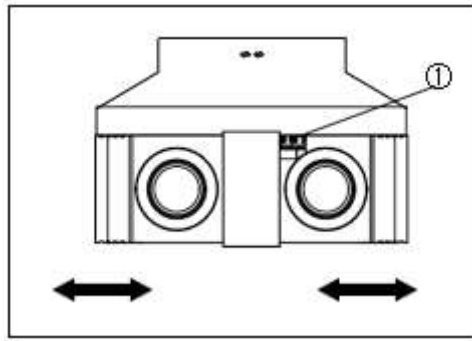


Figure-24

8.2.7 Adjusting the Diopter (Figure-25)

Turn the diopter rings ② on both eyepieces to align the number on the rings (which corresponds to your interpupillary distance) with the white dot ③ on both sliders to bring the specimen into focus.

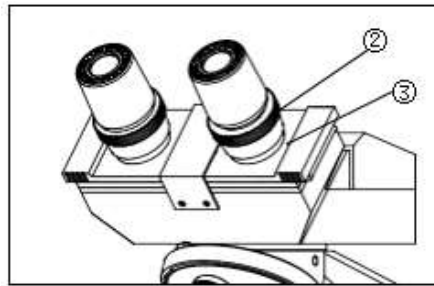


Figure-25

The diopter range of the eyepiece is ± 5 diopter. The number aligned to the line on the viewing head is the diopter in use.

9. Maintenance

- All the lenses have been well-checked and adjusted. It is forbidden to disassemble them yourself.
- The nosepiece and coarse/fine focus unit have a compact and precise frame; kindly don't disassemble them as possibly as you can.
- The nosepiece and coarse/fine focus unit have a compact and precise frame; kindly don't disassemble them as possibly as you can.
- Keep the instrument clean, wipe dust regularly, and pay attention to avoid contaminating the optical elements especially.
- The contaminations on the prism, such as finger marks and oil, could be gently wiped with a piece of soft cloth tissue paper, or gauze which has been immersed in pure alcohol or ether. (**Note:** The alcohol and ether are highly flammable, do keep them away from the fire or potential sources of electrical sparks, and use them in a drafty room as possible as you can.)
- Do not attempt to use organic solvents to clean the microscope components other than the glass components. To clean them, use a lint-free, soft cloth slightly moistened with a diluted neutral detergent.
- When using, if the microscope is splashed by liquid, cut off the power at once, and wipe up the moisture.
- Do not disassemble any parts of the microscope, which will affect the function or decline the performance of the microscope.
- Place the instrument in a cool, dry position. When not using the microscope, keep it covered with a dust cover. Make sure the lamp socket is cool before covering the microscope.

10. Troubleshooting

10.1 Optical System

Trouble	Cause	Solution
The edge of the field of view is dark or the brightness is not uniform	The nosepiece is not in the located position (objective and light path not coaxial)	Locate the nosepiece properly where it clicks.
	The image of the filament is not centered	Center the filament.
	A lens (the objective, condenser, eyepiece, or collector) is dirty.	Clean it thoroughly.
Find dust and stains in the field of view	There are stains on the lens (including the condenser, objective, eyepiece, and collector)	Clean the stains.
	There are stains on the specimen	Clean the stains.
	The position of the condenser is too low	Loosen the condenser's locking bolt, adjust the condenser to the right Position.
The image is defocused (low resolution \ contrast)	There is no coverslip on the specimen	Add coverslip.
	The cover slip is too thick or too thin	Use the standard coverslip (0.17mm).
	The specimen is placed inversely	Reversal it back.
	There was oil on the dry objective (easily happened in 40X objective)	Clean the oil.
	There are stains on the lens (including condenser, objective, eyepiece, and collector)	Clean the stain.
	didn't use oil for the oil objective	Use immerse oil.
	There was bleb in the oil	Eliminate the bleb.
	Use an unsuitable oil	Change to the specified One.
	The size of the aperture diaphragm is too big	Minify it.

	There are stains on the incident lens of the binocular tube	Clean the stains.
	The size of the aperture diaphragm is too small	Open it up.
	The position of the condenser is too low	Adjust the position.
One side of the image is dark	The condenser is not in the center of the field of the condenser inclines	Install the condenser again and adjust the center carefully by centering the bolt.
	The nosepiece is not in the right position	Turn it until it reaches the “clicked” position.
	The specimen is floating	Fix the specimen.
The image shift during focusing	The specimen slips on the stage	Fix the specimen.
	The nosepiece is not in the right position	Turn it to the “clicked” position.
The image is a little yellow	Do not use the blue color filter	Use the blue filter.
The brightness is not enough	The size of the aperture diaphragm is too small	Adjust again.
	The position of the condenser is too low	Adjust the position.
	There are stains on the lens (including condenser, objective, eyepiece, and collector)	Clean the stains.

10.2 Mechanical System

Trouble	Cause	Solution
The image cannot focus when using high-magnification objective	The specimen is placed inversely the coverslip is too thick	Turn inversely Use the standard coverslip (0.17 mm)
The objective touches the specimen when changed from low magnification to the higher magnification	The specimen is placed inversely the coverslip is too thick	Turn inversely Use the standard coverslip (0.17 mm)
The specimen is not easy to move	The specimen holder is not fixed	Fix the specimen holder.
The binocular image is not coincident	The interpupillary distance is not correct	Adjust the interpupillary distance.
Eyes are too tired	No diopter adjustment	Adjust the diopter correctly.

	The brightness is not suitable	Adjust the voltage of the lamp.
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10.3 Electrical System

Trouble	Cause	Solution
The lamp can't light when the switch is turned on	No power	Check the connection of the power cord
	The bulb is not inserted	Insert it correctly
	The bulb burns out	Replace it
The lamp burns out suddenly	Use a substandard lamp The voltage is too high	Use the specified lamp to replace it.
The brightness is not enough	Use a substandard lamp The voltage is too low	Use the specified lamp to increase the voltage
The bulb flickers or the brightness is vertiginous	The bulb is going to burn out	Replace the bulb.
	The bulb is not entirely inserted into the holder	Check the balloon and insert it again.

11. Accessories

Optional Accessories

Accessory No.	Accessory	Accessory specification
3MBA1	Eyepiece	WF16X / 11 mm
3MBA2	Objective	Plan achromatic objective 4X
3MBA3	Objective	Plan achromatic objective 10X
3MBA4	Objective	Plan achromatic objective 20X
3MBA5	Objective	Plan achromatic objective 40X
3MBA6	Objective	Plan achromatic objective 60X
3MBA7	Objective	Plan achromatic objective 100X
3MBA8	Objective	Infinite plan achromatic objective 4X
3MBA9	Objective	Infinite plan achromatic objective 10X
3MBA10	Objective	Infinite plan achromatic objective 20X
3MBA11	Objective	Infinite plan achromatic objective 40X
3MBA12	Objective	Infinite plan achromatic objective 60X
3MBA13	Objective	Infinite plan achromatic objective 100X
3MBA14	Nosepiece	Quintuple nosepiece
3MBA15	Illumination	Halogen lamp 6 V / 20 W
3MBA16	Illumination	Kohler illumination
3MBA17	Phase contrast kit	Turret phase contrast kit
3MBA18	Polarization Set	Simple polarization attachment
3MBA19	Dark-field attachment	Dark-field condenser (Dry)
3MBA20	Dark-field attachment	Dark-field condenser (Oil)
3MBA21	Photo attachment	Nikon (Connect to Nikon digital single lens reflex)
3MBA22	Photo attachment	Canon (Connect to Canon digital single lens reflex)
3MBA23	Video attachment	0.5X microscope adapter
3MBA24	Video attachment	C-mount, 1X magnification



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