

WESTLAB EXTREME MONOCULAR MICROSCOPE, RECHARGEABLE, LED USER MANUAL

CODE 664-089C

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**Please read these instructions
carefully before use.*



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BEFORE USE

1. OPERATION

- (1.) As the microscope is a precision instrument, always handle it with care, avoiding impact or abrupt movement during transportation.
- (2.) Do not let the microscope BE in the sunlight directly. Keep it in a dry and clean place. Avoid high temperature and acute shaking. Following environment is required: Indoor temperature: 0°C~40°C, Max relative humidity: 85%.
- (3.) Avoid impacting the definition of the image, do not leave dust and fingerprints on the lens surfaces.
- (4.) Before using, examine to ensure that the power supply voltage is consistent with the rating voltage.

2. MAINTENANCE

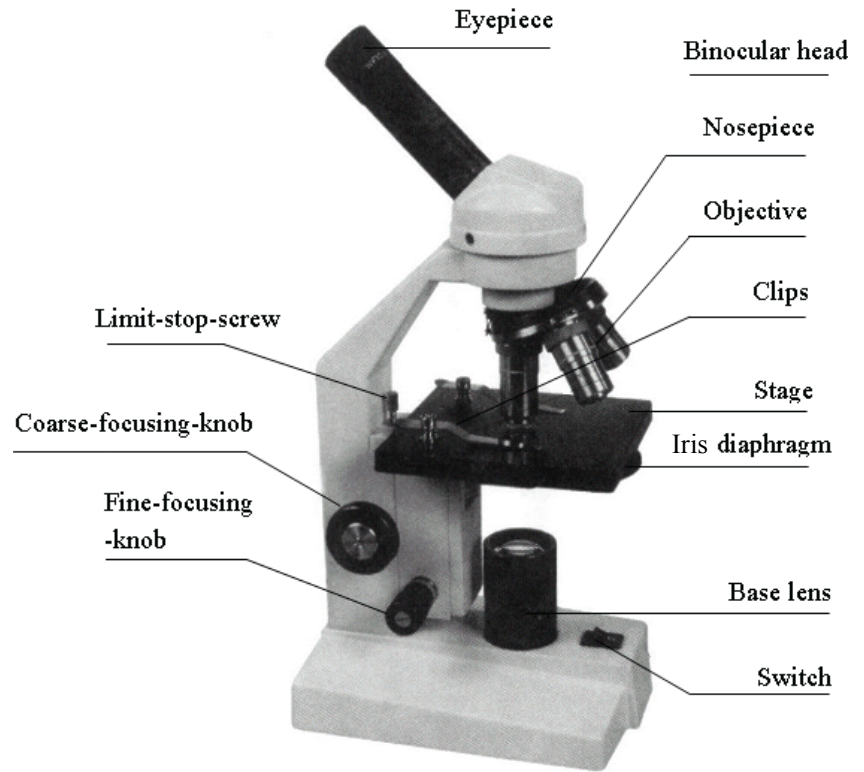
- (1.) All glass surfaces must always be kept clean. Fine dust on the optical surface should be blown off by means of a hand blower or gently wiped off with a soft lens tissue. Carefully wipe off oil or fingerprints on the lens surfaces with tissue moistened with a small amount of 3:7 mixture of alcohol and ether.
- (2.) Do not use organic solution to wipe the surface of the other components. These parts, especially the plastic parts, should be cleaned with a neutral detergent.
- (3.) Do not take down or assemble it yourself.
- (4.) After use, cover the microscope with the dustcover provided, and keep it in a dry and clean place for preventing rust.

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1. NOMENCLATURE



M-100FL

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2. OPERATION

The microscope is housed in a moulded styrofoam container. First take the container out of the carton, and lay the container on its side. Open the container carefully and don't let the optical items drop down, avoiding them being damaged. Check carefully to ensure the arm and accessories are intact.

Install the objective into the microscope nosepiece from the lowest magnification to the highest, in a clockwise direction from the rear. Insert the eyepiece into the eyepiece tube.

2-1 *Set the specimen slide*

Place the specimen to be studied on a glass slide, and fix it with the slide-holder of the mechanical stage. If we use the movable specimen holder, fix the specimen by slide-holder of the movable specimen holder. Adjust its position by the switch of the movable specimen holder.

2-2 *Set illumination*

For the microscope with built-in electrical illuminator, insert the plug of the main cable into the power socket and turn on the light switch to get the specimen illuminated.

2-3 *Adjust focus*

Adjust the coarse-focusing-knob to bring the slide into focus. Then lock the limit-stop-screw to avoid impact between the objective and slide. Adjust the fine-focusing-knob to get the image sharper and clearer.

2-4 *Adjust diaphragm*

Turn the disc diaphragm to select a aperture to get the background brightness suitable.

2-5 *Choose the objective*

Turn the nosepiece to choose the objective. Objective selected should be set vertically right to the slide. Generally, first use the objective 4X to focus to reveal general structural image. Then use the high power objective to reveal smaller details.

2-6 *Change the lamp*

Before changing the lamp, first pull the plug out off the electrical socket and wait for a while until the lamp cools down to avoid being burnt. Then screw off the base lens in an anti-clockwise direction and insert a new lamp and screw on the base lens.

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BIOLOGICAL MICROSCOPE GENERAL
SPECIFICATIONS (FOR OPTIONS)

Parts	Install	Model	
	Specifications	M-100F	M-100FL
Methylene Chloride	WF10X/18mm	•	•
	WF10X/18mm with pointer		
	WF10X/18mm with reticle		
	WF15X/13mm		
	WF20X/10mm		
Huygens Eyepiece	H5X/ H6X		
	H10X		
	H12.5X		
	H15X/ H16X		
195 Objective	4X/0.10	•	•
	10X/0.25	•	•
	40XS/0.65	•	•
	60XS/0.85		
	100XS/1.25(oil)		
45°View Head	Dual viewing head	•	•
	Monocular head 360°rotating	•	•
	Binocular head 360°rotating		
Stand	Metal base and stand	•	•
Movable White Specimen Holder	Binocular head 360°rotating		
	Metal base and stand		
Nosepiece	Triple nosepiece	•	•
	Quadruple nosepiece		
Stage	110mmX120mm	•	•
	Built-in movable stage 125mmX130mm		
Polarized Set			
Clips		•	•
Condenser	Single N.A.0.65	•	•
	AbbeN.A.1.25		
Diaphragm	Five-aperture disc diaphragm	•	•
	Iris diaphragm		
Lamp	ϕ42mm mirror	•	
	Built-in illuminator		•
Illumination	Tungsten bulb 115V/20W		
	Halogen bulb 230V/20W		•
Filter	Blue/Yellow/Green		

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4. PARAMETER/TECHNICAL TERMS

4-1 OBJECTIVE

Type	Magnification	Numerical aperture (N.A)	Medium	Parfocal distance (mm)	Magnification mark (color ring)
DIN achromatic objective 195mm	4x	0.10	Air	45	Red
	10x	0.25	Air	45	Yellow
	40x	0.65	Air	45	Light blue
	60x	0.85	Air	45	Deep blue
	100x	1.25	Cedar oil	45	White

4-2 EYEPIECE

Type	Wide field				Huygens		
Magnification	10x	15x	20x	5x/6x	10x	12.5x	15x/16x
Field of view (mm)	φ18	φ13	φ11	φ15	φ12	φ10	φ8

4-3 ELECTRIC CERTIFICATION

100V~120V power supply : 100V~120V±10%, 50/60Hz
Lamp: 110V/20W tungsten lamp
These units have UL certification.

4-4 PARAMETER

- (1) Total magnification:
- (2) Field of view: 20X~1600X
- (3) Mechanical tube length: φ0.08~φ4.5mm
- (4) Object to primary image distance: 160mm
195mm

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4. PARAMETER/TECHNICAL TERMS

4-5 TECHNICAL TERMS

- (1) Total magnification=(magnification of objective) X (magnification of eyepiece)
- (2) Field of view=(line field of view of the eyepiece selected) ÷(magnification of the objective selected)
- (3) N.A.= $n \cdot \sin \alpha$ (max), N.A.is very important parameter which marks the features of the objective and condenser. The “n” is the refractive index of the medium (air or immersion oil) between the cover glass of the objective and the specimen. The “ α ” is the half of the aperture angle. The N.A.is bigger, the resolution of the objective is higher.
- (4) Object to primary image distance: the distance between the object plane to the primary image plane. The conjugate distance is fixed.
- (5) Mechanical tube length: The distance between the objective shoulder and the ocular shoulder.



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5. TROUBLESHOOTING

Symptom	Cause	Remedy
Optics		
(1)The side of the field of view is dark or not even	The nosepiece is not in the right position	Turn the nosepiece into the right position
	Stain or dust has accumulated on the condenser, objective, eyepieces, base, lens	Clean the lens
(2)Stain or dust is observed in the field of view	Stains have accumulated on the specimen	Clean the specimen
	Stains have accumulated on the lens	Clean the lens
(3)Unclear image	No cover glass on the specimen slide	Add the cover glass
	The cover glass is not standard	Use a standard cover glass with thickness 0.17mm
	The specimen faces down	Make it face up
	The immersion oil has accumulated on the dry objective	Clean thoroughly
	The immersion oil is not used for oil objective 100XR	Use immersion oil
	Air bubble in the immersion	Get rid of the air bubble
	Use wrong immersion oil	Use a correct one
	The aperture is not opened to correct size	Adjust the iris diaphragm
	Stains or dust has accumulated on the lens in the inlet of the head	Clean lens
	The condenser is not in the right position	Adjust the condenser
4)One side of the field of view is dark or the image moves while focusing	The specimen slide is not fixed	Fix with clips
	The nosepiece is not in the right position	Turn the nosepiece into the right position
(5)The field of view is not bright enough	The iris diaphragm is not bigger enough	Adjust the iris diaphragm
	The condenser is not in the right position	Adjust the condenser
	Stain or dust has accumulated on the condenser, objective, eyepieces, base lens	Clean lens
(6)The image color is not true	No filter is used	Use correct filter

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5. TROUBLESHOOTING (CONT)

Symptom	Cause	Remedy
Optics		
(1) The image is not focused while using high power objective	The cover glass faces down	Place cover glass to face up
	The cover glass is not standard	Use a standard cover glass with thickness of 0.17mm
(2) The objective touches the cover glass when turning the nosepiece	The cover glass faces down	Put the cover glass to face up
	The cover glass is not standard	Use a standard cover glass with thickness of 0.17mm
(3) Cannot move the slide smoothly	The slide is not fixed correctly	Adjust it correctly
	The movable specimen holder is not fixed properly	Tighten it
Electrics		
(1)The bulb does not work	No power supply	Check the connection of the power cable
	The bulb is not inserted correctly	Tighten it
	The bulb burnt out	Replace it
	The fuse burnt out	Replace it
(2)The bulb burnt out usually	The voltage is too high	Use correct power supply
	Use a wrong bulb	Replace with a correct one
(3)The fuse burnt out usually	The bulb will burn out soon	Replace with a new one
	The wire doesn't connect all right	Connect correctly