Address:800 S Wineville Avenue, Ontario, CA 91761,USA
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B1921-04 Education Intermediate Compound Microscopes Instructions

Contents *B1921-04*

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Before use *B1921-04*

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 emerge in the sun directly. Keep it in a dry and clean place. Avoid high temperature and acute shake. Following environment is required: Indoor temperature: 0℃～40℃, Max relative humidity: 85%.

(3) Avoiding impact the definition of the image, do not leave feculence and fingerprints on the lens surfaces.

(4) Before using, examine to ensure the power supply 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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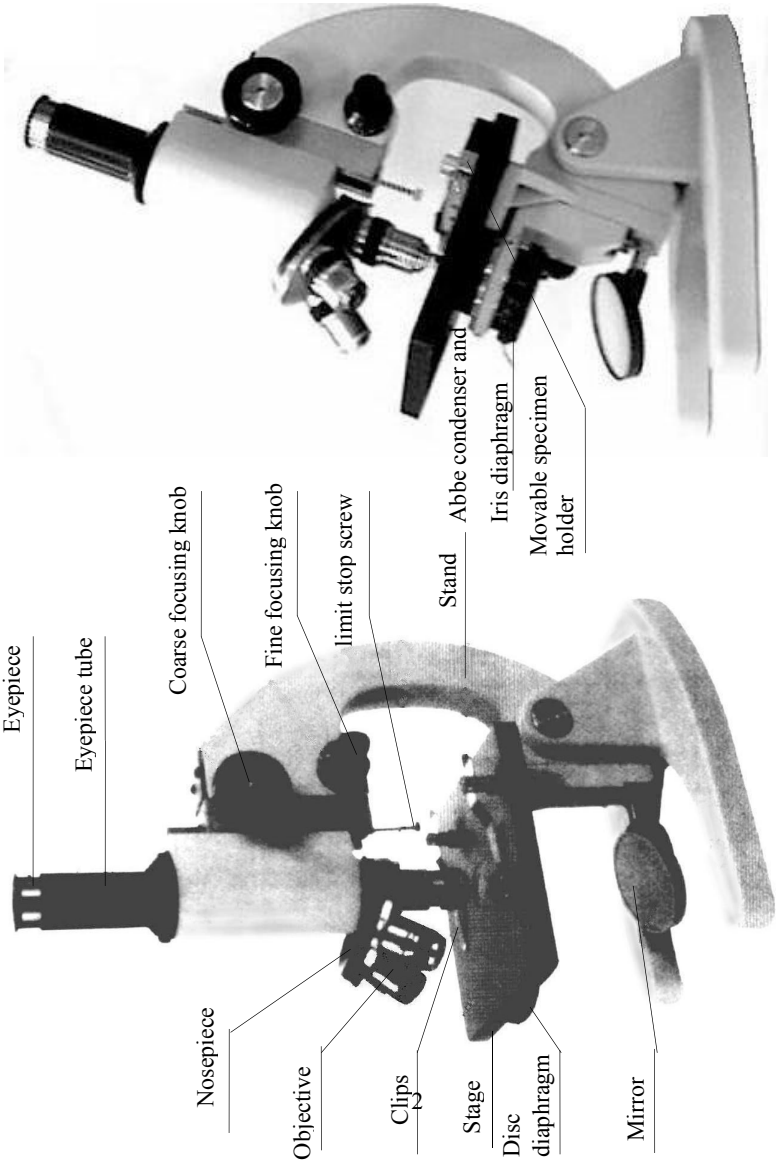
1. Nomenclature B1921-04



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2.Operation B1921-04

The microscope is housed in a molded styrofoam container.

First take the container out of the carton, and keep 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 well.

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

2-1 Angle of observation

Adjust the angle by one hand pressing the U base and the other hand pulling the stand to a comfortable position for observation.

2-2 Set the specimen slide

Place a specimen to be studied on a glass slide, and fix it by the slide-holders 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.

2-3 Set illumination

For the microscope only with mirror, turn the mirror to get the field of view illuminated.

If we use the attachable light, first take down the mirror from the stand, then insert the attachable light and adjust it.

2-4 Adjust focus

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

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clear.

2-5 Adjust condenser

For the microscope with Abbe condenser, turn the Abbe condenser up or down to get the image brightness suitable for observacation.

2-6 Adjust diaphragm

For the microscope with disc diaphragm, turn the diaphragm to select a aperture to get the background brightness suitable.

For the microscope with iris diaphragm, adjust the aperture of the iris diaphragm to get the background brightness suitable.

2-7 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.

When using the oil objective 100XR, a little of immersion oil must be put between the objective and the cover glass. In addition, only when the Abbe condenser is on the arm, the 100XR objective could be used.

2-8 Change the lamp

Before changing the lamp, first pull the plug out off the electrical socket, then wait for a while until the lamp cools down to avoid being burnt.

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3.General specifications B1921-04

B1921-04 Microscope General specifications(For option)

Install		Model
Parts	Specifications	B1921-04
Huygens eyepiece	H5X	●
	H6X	
	H10X	●
	H12.5X	
	H15X	
	H16X	●
WF eyepiece	WF10X/18mm	
	WF10X/18mm with pointer	
	WF10X/18mm with reticle	
	WF15X/13mm	
	WF20X/10mm	
185 objective	4X/0.10	
	10X/0.25	●
	40XS/0.65	●
	60XS/0.85	
	100XS/1.25(oil)	●
Monocular head		●
Stand	Metal base and stand	●
Nosepiece	Triple nosepiece	●
	Quadruple nosepiece	
Stage	110mmX120mm	●
Clips		
Movable specimen holder (60x30mm)	Black holder	
	White holder	●
Condenser	Single NA0.65	
	Abbe.NA1.25	●
Diaphragm	Five-aperture disc diaphragm	
	Iris diaphragm	●
Illumination	ϕ50mm mirror	●
	Attachable light	
Bulb	115V/20W	
	230V/20W	
Filter	blue/yellow/green	●

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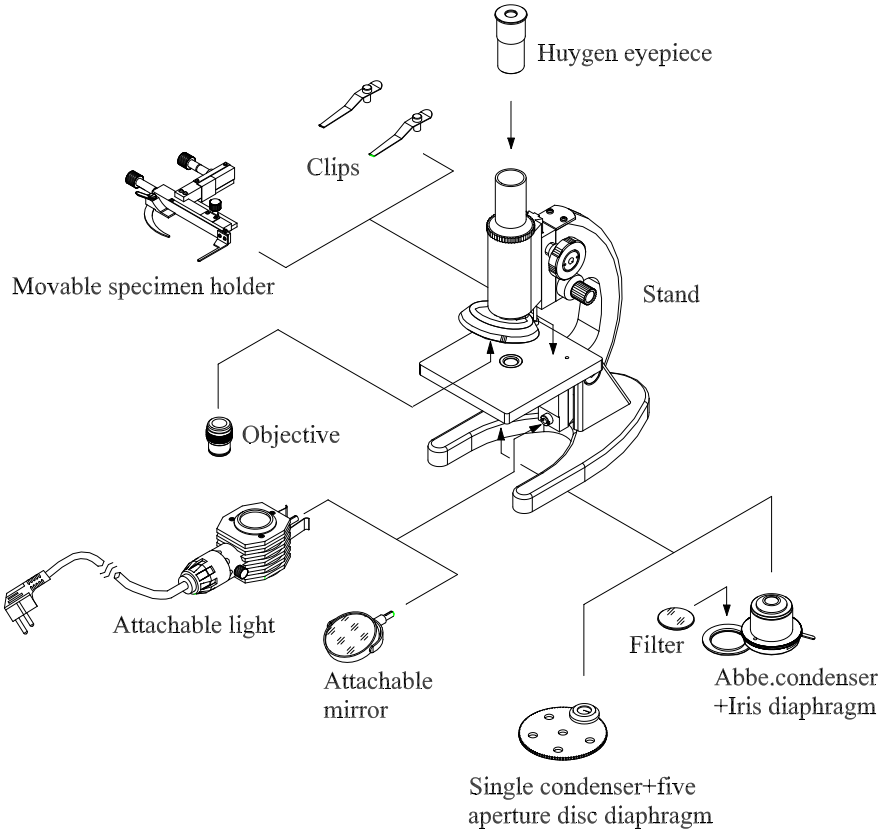
4.Configuration drawing *B1921-04*



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5.Parameter/technical terms B1921-04

5-1 Objective

Type	Magnification	Numerical aperture (N.A)	Medium	Parfocal distance (mm)	Magnification market (color ring)
DIN achromatic objective 185mm	4X	0.10	air	35	Red
	10X	0.25	air	35	Yellow
	40X	0.65	air	35	Light blue
	60X	0.85	air	35	Deep blue
	100X	1.25	Cedar oil	35	White

5-2 Eyepiece

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

5-3 Electrics

The electrics are assembled according to customer's order. There are two kinds for option.

220V～240V power supply : 220V～240V±10%, 50/60Hz

Lamp: 230V/20W

The electrics have gained the CE and GS certification.

100V～120V power supply : 100V～120V±10%, 50/60Hz

Lamp: 115V/20W

The electrics have gained the UL certification.

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5.Parameter/technical terms *B1921-04*

5-4 Parameter

(1) Total magnification: 20X～1600X

(2) Field of view: ø 0.08mm ～ ø4.5mm

(3) Mechanical tube length: 160mm

(4) Object to primary image distance: 185mm

5-5 *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·sinα (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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6.Troubleshooting *B1921-04*

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.
	Stain or dust has accumulated on the lens in the inlet of the head.	Clean the 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 big 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 the lens.

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6.Troubleshooting *B1921-04*

Symptom	Cause	Remedy
Optics		
	The brightness-adjust-knob is not in the right position.	Adjust the brightness-adjust-knob.
(6)The image color is not true.	No filter is used.	Use correct filter.
Mechanics		
(1) The image is not focused while using high power objective.	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 0.17mm.
(2) The objective touches the cover glass while 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 0.17mm.
(3)Can not 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.	Insert it correctly.
	The bulb 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 field of view is not bright enough.	Use a wrong bulb.	Replace with a correct one
	The voltage is too low.	Increase the voltage.
(4)The bulb flickers or the brightness is not stable.	The bulb will burn out soon.	Replace with a new one.
	The wire doesn't connect all right.	Connect correctly.