

Richter Optica

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Instructions for Model: HSX1 High School Microscope

RICHTER PTICA





Thank you for your purchase of a Richter Optica microscope. The information in this manual is provided to answer most questions that can arise when operating your microscope and to help you avoid unnecessary maintenance expenses in the future.

Please carefully read instructions before operating microscope. Nomenclature used to describe components and controls are identified on opposite page.

UNPACKING

Do not discard styrofoam container or packing materials until you are sure shipment is complete and undamaged (retain styrofoam shipping container to store your microscope when it is not in use). Remove all tape and packing material used to protect microscope during shipment. Make certain lens surfaces do not come in contact with dirt, fingerprints or oil. Damage of lens surfaces occur when they come in contact with such contaminants, and image quality is reduced.

BEFORE USE

When moving the microscope, use both hands and only lay on flat, even surfaces. Damage will occur by holding the stage, focusing knobs or head when moving the microscope. Hold carrying handle when moving the microscope.

For safety, make sure the power switch is always turned to the off position "O" before replacing the bulb or fuse and wait until both the bulb and bulb holder have cooled down.

Replacement bulb: Single 3w LED bulb. Part # U2-001.

SETTING UP THE INSTRUMENT

Avoid placing the instrument in locations exposed to direct sunlight, dust, vibration, high humidity and where it is difficult to unplug the power supply cord.

MAINTENANCE

- 1. Wipe lenses only with lens paper.
- 2. Never disassemble the microscope other than to change the bulb (instructions on page 6). Disassembling the microscope will affect performance and void warranty.
- 3. Cover microscope with dust cover provided after each use.

ASSEMBLING THE MICROSCOPE

1. POWER CORD:

Connect the power cord to the wall outlet (110~240V). Insert 3 AA batteries into compartment in base on the bottom of microscope.

2. ADJUST ILLUMINATION:

Turn the main power switch to the on position. Adjust the light intensity by rotating the rheostat control knob.

3. ADJUST IRIS DIAPHRAGM: Adjust the lever on the iris diaphragm, closing it down when using the 4x objective and opening it up when using the 100x objective.



USING THE MICROSCOPE

1. Coarse & Fine Focusing

Focusing is performed with the coarse and fine focus knobs located on the left and right of the microscope stand. The direction of vertical movement of the stage corresponds to the direction the focus knobs are turned.

Never attempt either of the following actions, since doing so will damage the focusing mechanism:

- Rotating the left or right knob while holding the other stationary.
- Turning the coarse and fine focus knobs further than their limit.
- 2. Using the Mechanical Stage

Place a slide in the slide holder by pressing the finger lever to open the spring-loaded slide holder. Once the slide is in place move the stage with the X and Y drop-down knobs located on the right side of the microscope stage.

3. Adjust Focusing

Shift the 4x objective into the light path until it clicks into position. Rotate the coarse focusing knob until the image is clear in the field of view. Rotate the fine focus knob to achieve a finely focused image.

4. Adjusting the Iris Diaphragm

The iris diaphragm allows light to pass through the condenser and is used to create optimal contrast and resolution in images. Without a slide on the stage, look through the eyepiece. Adjust the iris diaphragm lever so the iris is just at the outer edge of the image you see through the microscope. Each time you use a different objective lens, adjust the iris diaphragm.



TROUBLESHOOTING: Optical

PROBLEM	POSSIBLE CAUSE
Dust or dirt in field of view.	Dust or dirt on objective, illuminator or eyepiece.
Poor image (low contrast or resolution)	Iris diaphragm is not set properly.
	No cover glass in place.
	Too thick or thin cover glass being used.
	Greasy residue on eyepiece or lens.
	Illumination is set too low.
Uneven Focus	Stage has drifted. Adjust coarse tension adjustment so stage will not fall out of field of view.
	Specimen is not secured in position on stage.
	Specimen is tilted on the stage.
Focusing is not possible with high magnification objective lens.	Slide is upside down.
	Cover glass is too thick.
High magnification objective (100x) strikes the specimen when changing from low to high magnification.	Slide is upside down.
	Cover glass is too thick.
	Rack stop needs to be adjusted.
Eye strain or fatigue.	Illumination needs to be adjusted with iris diaphragm and/or rheostat control.

TROUBLESHOOTING: Electrical

PROBLEM	POSSIBLE CAUSE
Lamp does not turn on and light up.	Power cord not plugged in or batteries need replacing.
	Light is burned out.
	Fuse is burned out.
Inadequate brightness.	Rheostat knob needs adjustment.
Lamp blows out immediately.	Incorrect bulb being used.
Lamp flickers.	Connector wires are not secured.
	Lamp near end of life.
	Lamp not securely plugged into socket.

CARE AND MAINTENANCE

Do Not Disassemble

- 1. Disassembly may significantly affect the performance of the instrument, may result in electric shock or injury, and will void the warranty.
- 2. Never attempt to dismantle any parts other than described in this manual. If you notice any malfunction, contact your Richter Optica representative.

Cleaning the Microscope

- 1. Do not use organic solvents such as ether, alcohol or paint thinner on painted surfaces or plastic components. Doing so could result in discoloration of surfaces.
- 2. When cleaning lenses do not use any solvents other than absolute alcohol, as they may damage lens bonding cement.
- 3. Do not use petroleum benzene when cleaning components such as lenses.
- 4. Absolute alcohol and petroleum benzene are highly flammable. Keep away from open flames and when turning power switch on and off.
- 5. For stubborn dirt, dampen a piece of gauze with diluted neutral detergent and wipe gently.

When Not In Use

- 1. When not in use, cover the instrument with a dust cover and store in a place low in humidity where mold is not likely to form.
- 2. Proper handling of the microscope will ensure years of trouble free service.
- 3. If repair becomes necessary, please contact Richter Optica at info@richter-optica.com.

LED Light Bulb Replacement

- 1. Unplug the microscope.
- 2. Unscrew the single screw in the center of the bottom of the base plate (image at right).
- 3. When opening the base take care as wires will be connected to the microscope frame and pulling the frame too far from the base could disconnect wires.
- 4. The LED bulb has 2 wires soldered to it (see below).
- 5. Unscrew the bulb from its base and remove the soldered wires. Take note of which colored wire is next to the "+" and "-" symbols.
- 6. Take the new bulb and solder the wires so they are in a similar position to the "+" and "-" symbols as the old bulb.
- 7. Screw the bulb back into place.
- 8. Replace the base plate and tighten the screw.





