Richter Optica

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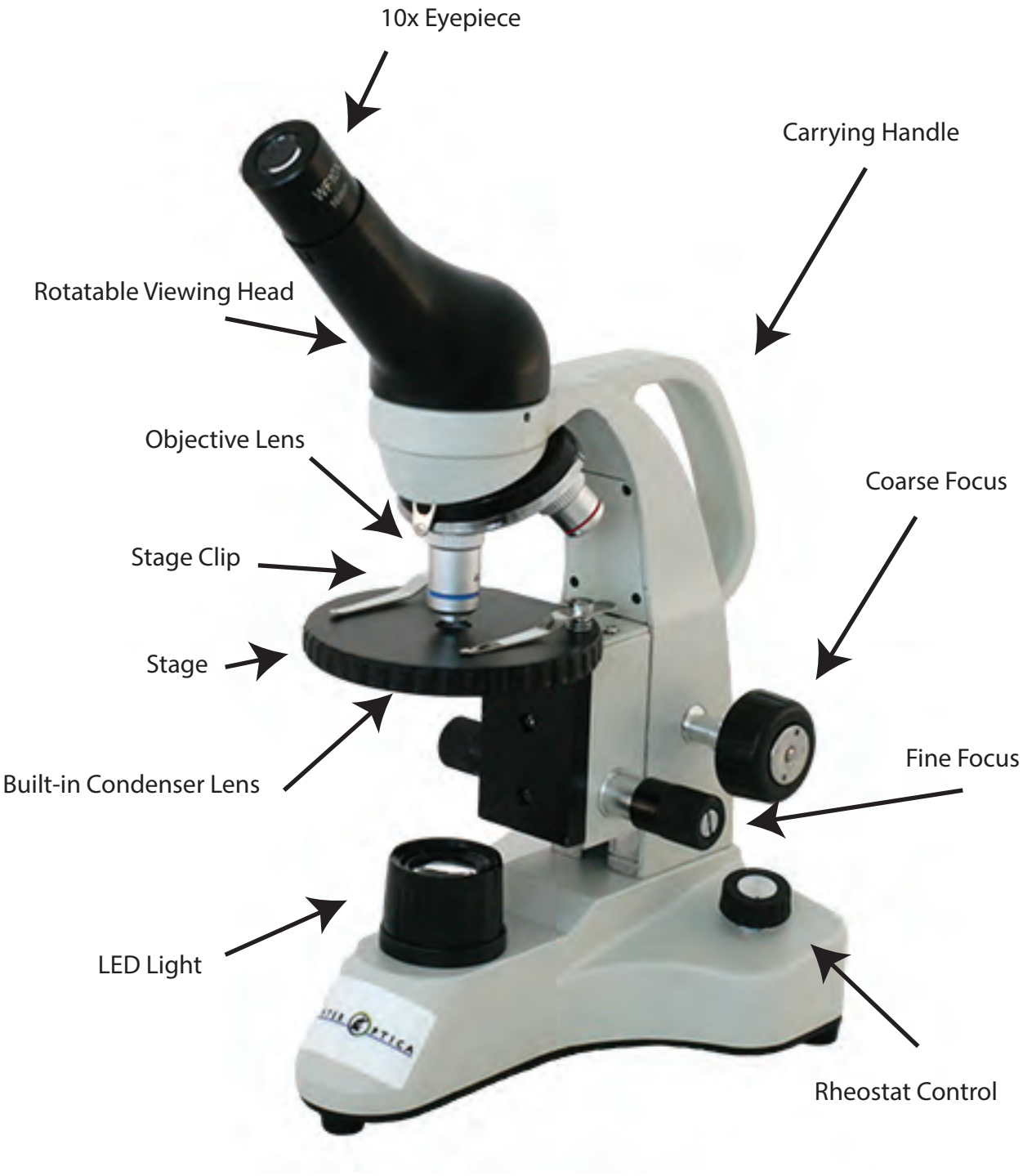
Instructions for Model:
MDS1
Compound Microscope



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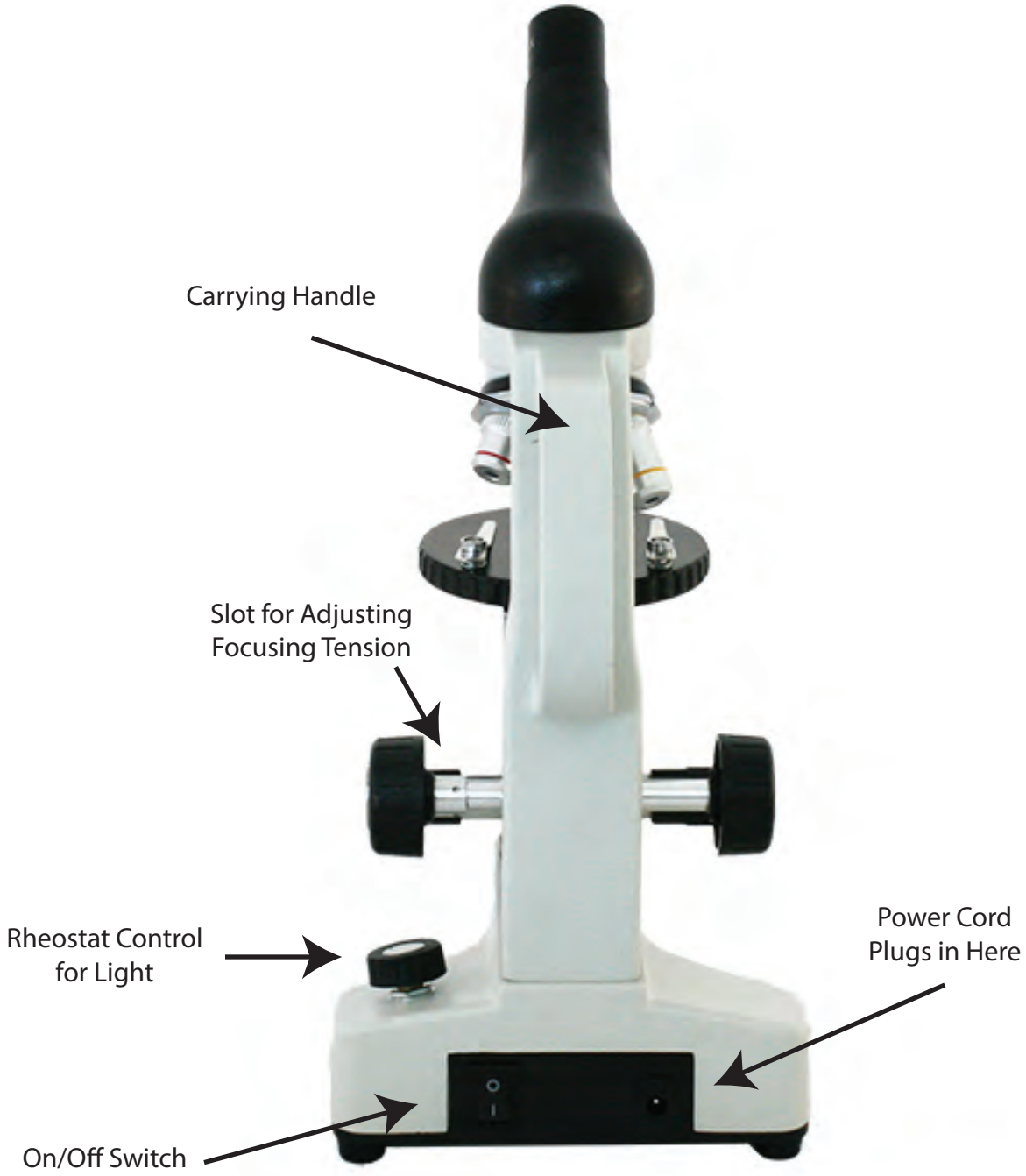


MDS1 Compound Microscope

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.

UNPACKING

Do not discard styrofoam container or packing materials until you are sure shipment is complete and undamaged (retain stryrofoam 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 clarity is reduced.

DESCRIPTION OF COMPONENTS

A. EYEPIECE: Lens closest to the eye. Magnifies the primary image formed by the objective lens. Microscope includes 10x (FN 16mm) eyepiece.

B. OBJECTIVE LENS: Lens closest to the specimen, forms the first magnified image of the specimen. Microscope includes 4x, 10x, 40x objective lenses.

C. NOSEPIECE: Revolving turret designed to hold objective lenses, permits changes of magnification by rotating different powered objective lenses into the optical path.

D. STAGE CLIPS: Two locked on clips hold specimen slide in place on stage.

E. STAGE: Platform of the microscope where the specimen slide is placed.

F. COARSE-FOCUS KNOB: Located on each side of the arm, raises or lowers the stage to bring the specimen tage into focus.

G. FINE-FOCUS KNOB: (located just below coarse focusing knobs) permit more precise image adjustment.

H. LAMP HOUSE ILLUMINATION: Microscope is provided with a built-in LED illuminator.

I. RECHARGER: Microscope includes a power cord / recharger. The microscope can be operated off the rechargeable batteries or the power cord.

CHANGING MAGNIFICATION:

a. Magnification is changed by rotating the nosepiece until a different lens is moved into the optical path. Always turn the turret until you hear it "click". This indicates that the lens is properly positioned.

b. The standard lenses that are provided with your microscope are a widefield 10x eyepiece, a widefield 16x eyepiece, 4x, 10x and 40x objectives. The 40x objective has a special spring retractable mechanism which retracts slightly when the front of the lens comes in contact with the specimen slide. See chart below for magnification options.

MAGNIFICATION SPECIFICATION CHART

Objective	**Color Code Ring**	**Magnification with WF10x Eyepiece**
4x	Red	40x
10x	Yellow	100x
40x retractable	Blue	400x

c. Also note that each objective has a color ring. This allows you to quickly change magnification by referring to an easily observed color rather than to a number.

d. The microscope has been parfocalled at the factory, which allows the user to easily change from one magnification to another requiring little or no adjustment of the fine focus knobs.

e. As you increase the magnification, the field of view (area of specimen seen through the microscope) will decrease. That is why it is easier to find the specific area of interest on the specimen by starting with the lowest 4x objective lens , before increasing magnification with the 10x or 40x objective lens.

f. *NOTE:* Care must be taken when rotating the 40x objective lens into place. This lens has a spring retractable mechanism which retracts slightly into its housing if the front of the lens strikes the specimen slide. With fine focus adjustment at mid-range, the rack stop has been adjusted at the factory to assure the 40x lens will clear the thickness of a normal specimen slide and cover slip. However, if the rack stop has been improperly adjusted, or if you are using a thicker than 0.17mm cover slip, moving the 40x lens too quickly could cause damage to the front lens element or to the slide.

WORKING CONDITIONS:

This microscope is a precision optical instrument. Follow the guidelines below for optimal use and care.

Keep the microscope out of prolonged direct sunlight.
Working temperature should be between 32˚ and 100˚F.
Keep the microscope out of dusty environments and cover with a dust cover when not in use or store in a cabinet.
Use the microscope on a flat and sturdy work surface.

TECHNICAL SPECIFICATIONS:

Total Magnification = 40x, 100x, 400x
Mechanical tube length = 132mm
Parfocal Distance = 30mm
Monocular inclined viewing head 45˚
Included Eyepiece: WF10x, 16mm
Illumination: LED, Rechargeable

MICROSCOPE OPERATION:

Place the microscope on a stable work surface.

Select the desired eyepiece and slide into the eyetube.

Before first use, connect the power cord to charge the batteries.

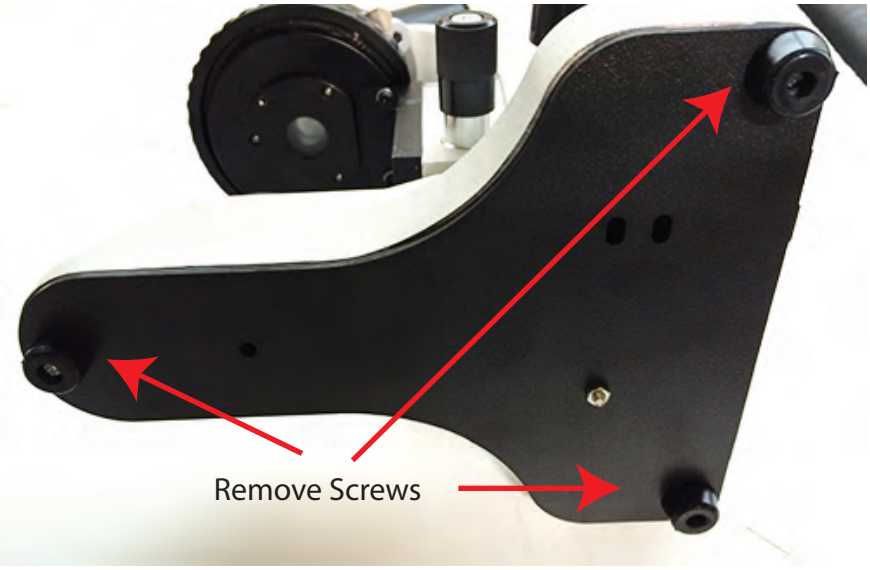
Turn on the microscope and adjust the rheostat control.

Place a specimen slide under the stage clips and rotate the 4x objective lens into position. Make sure the stage is centered above the light.
When the 4x objective is in focus, move up to the 10x or 40x lens.

Focus by first adjusting the coarse focus knob, and then the fine focus knob.

CARE and MAINTENANCE:

When the microscope is not in use, turn the power switch off. When not charging the microscope, unplug it.
Use a piece of silk or absorbant cotton soaked with microscope cleaning solution to clean the body of the microscope.
Cover the microscope with a dust cover with not in use.
Use a blower or lens tissue to clean the objective lenses.
Clean the microscope surface with a soft cloth and for tough stains use a neutral detergent. Do NOT use solvents such as alcohol or ether as this may damage the paint on the body of the microscope.
Store the microscope in a cool and dry place to keep mildew from building on the lenses or moving parts.



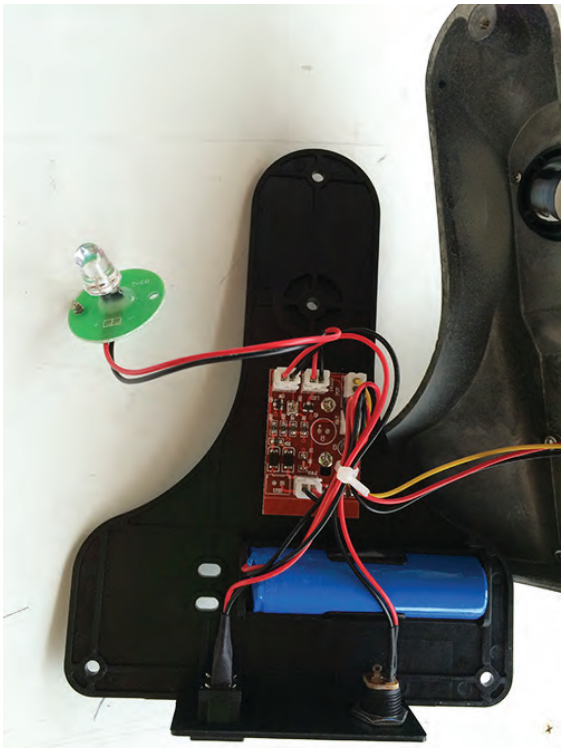
BULB REPLACEMENT:

Turn off the microscope and unplug it.

Unscrew the 3 rubber feet from the base to remove the base plate.

Remove the LED lamp and replace it with part # MDS1-001.

Screw the base plate back on with the rubber feet.

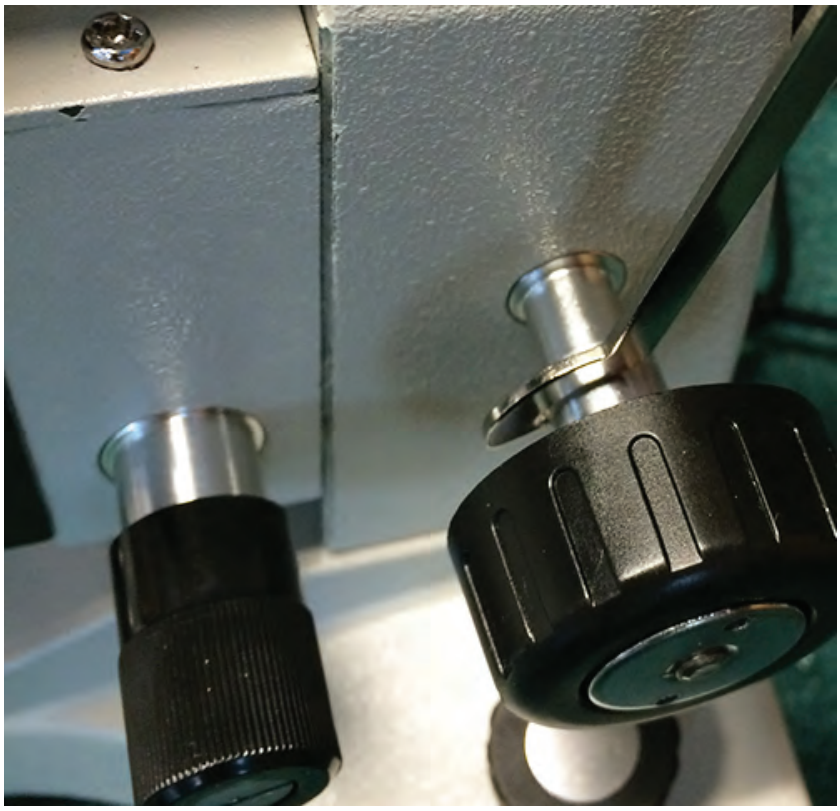


FOCUSING TENSION ADJUSTMENT:

Included with the microscope is a focus tension adjustment tool. If the stage starts to drift (slowly fall) and samples are falling out of focus, the tension adjusment needs to be adjusted. Insert the tool into the slot on the coarse focus knob and rotate.

Turning one direction will tighten the tension and turning the opposite will loosen the tension.

If it becomes hard to turn the focus knob, loosen the tension slightly with the tool.



MICROSCOPE TROUBLESHOOTING:

PROBLEM	POSSIBLE CAUSE	SOLUTION
Uneven brightness in field of view	Nosepiece is not clicked into position.	Rotate nosepiece into position.
	Stage is not centered over light.	Slide stage into position.
	Dust on sample, eyepiece or objective.	Clean slide, eyepiece and objectives.
Specs in field of view	Dirt on lenses.	Clean eyepiece and objectives.
	Dirt on slide or cover slip.	Clean slide and cover slip.
Resolution is not good or image is not sharp	Cover slip is not in place.	Apply cover slip to slide.
	Cover slip is too thick.	Use standard 0.17mm cover slip.
	Prepared slide is upside down.	Turn slide so cover slip faces up.
	Dirt on lenses.	Clean eyepiece and objectives.
Unable to focus at higher magnifications	Slide is upside down.	Place slide so cover slip faces up.
	Cover slip is too thick.	Use standard 0.17mm cover slip.
	Objective is not screwed in all the way.	Tighten objective lens in nosepiece.
Light won't turn on.	Microscope is not plugged in or charged.	Plug microscope in.
	Rheostat control is turned down.	Adjust rheostat control.
	Power switch is off.	Turn microscope power switch on.
	Bulb burned out.	Replace LED bulb.