User Manual

Binocular Compound Microscope

Model M825

MicroscopeNet.com

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i. Caution

1. Find the “UP” sign and place the Styrofoam container on your table or bench so that the arrow is pointing upward. Open the shipping carton carefully to prevent any accessory items (i.e. objectives or eyepieces) from dropping and being damaged.
2. Do not discard the molded Styrofoam container. The container should be retained should the microscope ever requires reshipment.
3. Keep the instrument out of direct sunlight, high temperature or humidity, and dusty environments. Ensure that the microscope is located on a smooth, level and firm surface.
4. If any specimen solutions or other liquids splash onto the stage, objective or any other component, disconnect the power cord immediately and wipe up the spillage. Otherwise, the instrument may be damaged.
5. All electrical connectors (power cord) should be inserted into an electrical surge suppressor to prevent damage due to voltage fluctuations.
6. Confirm that the input voltage indicated on your microscope corresponds to your line voltage. The use of a different input voltage other than that as indicated will cause severe damage to the microscope.

ii. Care and Maintenance

1. Do not attempt to disassemble any component including eyepieces, objectives or focusing assembly.
2. Keep the instrument clean; remove dirt and debris regularly. Accumulated dirt on metal surfaces should be cleaned with a damp cloth. More persistent dirt should be removed using a mild soap solution. Do not use organic solvents for cleansing.
3. The outer surface of the optics should be inspected and cleaned periodically using an air stream from an air bulb. If dirt remains on the optical surface, use a soft cloth or cotton swab dampened with a lens cleaning solution (available at camera stores). All optical lenses should be swabbed using a circular motion. A small amount of absorbent cotton wound on the end of a tapered stick makes a useful tool for cleaning recessed optical surfaces. Avoid using an excessive amount of solvents as this may cause problems with optical coatings or cemented optics or the flowing solvent may pick up grease making cleaning more difficult. Oil immersion objectives should be cleaned immediately after use by removing the oil with lens tissue or a clean, soft cloth.
4. Store the instrument in a cool, dry environment. Cover the microscope with the dust cover when not in use.

1 Components Illustration

1. Eyepiece
2. Eyepiece Tube
3. Diopter Ring
4. Viewing Head
5. Slide Holder
6. Stage
7. Condenser
8. Light Collector
9. Set Screw
10. Nosepiece
11. Objective
12. Stand
13. Coarse Focus Knob
14. Fine Focus Knob
15. Translation Knobs
16. Intensity Dial
17. Base

2 Installation

2.1 Installation of the binocular viewing head

1) Loosen the set screw on the top of the stand and remove the plastic cover on the top.
2) Remove the cap on the dovetail of the binocular viewing head.
3) Seat the dovetail of viewing head into the socket on the top of the stand and tighten the set screw.

Caution: Do not release the head from your hand grip until you are sure the head is installed securely.

2.2 Installation of the eyepieces

1) Remove the protective caps from the eyepiece tubes.
2) Insert the eyepieces into the eyepiece tubes.

2.3 Installation of the objectives

1) Adjust the coarse focus knob until the mechanical stage is at its lowest position.
2) Install the 4x objective into the nosepiece. Then in a clock-wise direction, rotate the nosepiece and install each succeeding higher magnification objective.

Note:

- Inspect the objectives frequently for dirt or oil; clean if necessary.
- Use the 10X objective to initially focus the image of your specimen.
- When changing the objective magnification, rotate the objective nosepiece until you hear a “click” sound. This ensures the objective is centered in the optical light path.

2.4 Installation of the light filter

1) Swing out the filter holder which is located underneath the condenser.
2) Insert the light filter into the holder, swing the holder back in.

3 Operation

3.1 Adjusting illumination

1) Insert the power cord into the power socket on the microscope and connect it to the power outlet.
2) Turn on the main switch at the back of the microscope. 3) Rotate the intensity dial to increase or decrease the brightness.

3.2 Placing specimen

1) Place the slide on the mechanical stage.
2) Use the slide holder to gently secure the slide.
3) Turn the X and Y translation knobs to position the specimen for viewing.

Caution: Be sure not to allow an objective to touch a specimen slide when changing objectives.

3.3 Focusing

1) With the 10X objective in position, raise the mechanical stage using the coarse focus knob until the specimen is close to the objective.
2) Turn the coarse focus knob until the specimen is in focus. Then use the fine focus knob to obtain a sharp image. You may now switch to another magnification objective.

Tips: To prevent your specimen slide from making contact with an objective, turn the 100X objective in position and rotate the focus stop lever clock-wise all the way to the end so that the 100X objective will not contact the specimen while the stage is adjusted to its highest position.

3.4 Adjusting interpupillary distance

While observing with both eyes, hold the left and right eyepiece tubes then swing them around the center axis. The interpupillary distance is correct when the left and right fields of view converge completely into one image.

3.5 Adjusting eyepiece diopter

1) Using the 10x objective and your left eye only, observe your specimen through the eyepiece and bring it into focus by adjusting the focus knobs.
2) Then observe the specimen with your right eye only through the right eyepiece. If the specimen is not in focus, turn the diopter ring on the eyepiece tube until a sharp image is obtained.

3.6 Adjusting condenser

1) Turn the condenser focus knob to raise or lower the condenser.
2) The condenser is raised when using high magnification objectives and lowered when using low magnification objectives.

Note:

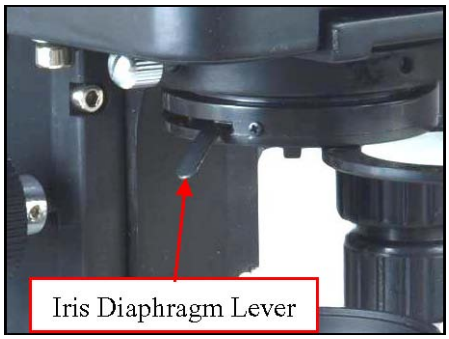
- The centering of the condenser and the light axis of the objective are factory adjusted.

Do not attempt re-adjustment.

- The highest position of the condenser has been factory adjusted. Do not attempt to re-adjustment.

3.7 Adjusting iris aperture diaphragm

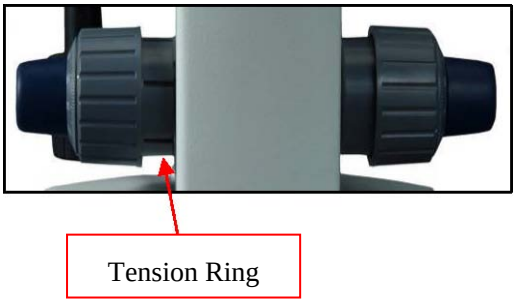
Move the iris diaphragm lever left or right to adjust the aperture size.



Note: The iris diaphragm is designed to adjust the aperture size, not to adjust brightness. Generally, opening the diaphragm to 70-80% of the N.A. value of the respective objective will provide an image of acceptable quality. If you want to observe the image of the iris diaphragm, remove one eyepiece and look through the tube. You will see a dark circle encroaching on the bottom of the tube.

3.8 Adjusting focus knob tension

The tightness of the focus knob tension has been pre-set at the factory. If the mechanical stage drops by itself, rotate the tension adjustment ring located inside the focus knob on the power switch side until the tension is in maintained. Tension Ring



4 Specifications

Model	M825
Total Magnification	40X, 64X, 100X, 160X, 400X, 640X, 1000X, 1600X
Objective Tube Length	160mm
Viewing Head	30º inclined, 360º swiveling Siedentopf binocular viewing head Interpupillary distance 55-75mm Adjustable diopter on right eyepiece tube
Eyepieces	1 pair of WF10X 1 pair of WF16X
Nosepiece	Reversed revolving quadruple
Objectives	Achromatic 4X, 10X, 40X(spring), 100X(spring, oil)
Condenser	Abbe, NA=1.25, w/ iris aperture diaphragm and filter holder Rack and pinion adjustment
Focus Mechanism	Coaxial coarse and fine focusing knobs on both sides w/ focus stop, tension adjustable
Stage	Double layer mechanical stage Dimension: 5-1/2” x 5-1/2” (140mmx140mm) Translation range: 3” x 2” (75mm X 50mm)
Illumination	Transmitted: 6V/20W Halogen, Variable intensity
Power Supply	AC 110V, 60HZ (US and Canada plug)
Dimension	12-1/2” x 11-1/2” x 15-3/4” (32cm x 29cm x 40cm)
Net weight	13 lb (6.34 kg)

5 Troubleshooting Guide

OPTICAL PROBLEMS

Problem	Cause	Solution
Darkness at the periphery or uneven brightness in the field of view	Revolving nosepiece not in click stop position	Revolve the nosepiece to click-stop position by swinging the objective correctly into the optical path
	The bulb of light source is not at the center	Adjust the position of the bulb if possible
Dirt or dust on the view	Dirt or dust on the eyepiece, condenser, objective, collector lens or specimen	Clean the lens with a camera cleaning kit
	No slide cover attached to the slide	Attach a 0.17mm slide cover
	Slide cover is too thick or thin	Use a slide cover of the appropriate thickness (0.17mm)
	Slide may be upside down	Turn slide over so the cover-glass faces up
Poor image quality	Immersion oil is on a dry objective (especially the 40x)	Check the objectives, clean if necessary
	No immersion oil used with 100x objective	Use immersion oil
	Air bubbles in immersion oil	Remove bubbles
	Condenser aperture is closed or open too much	Open or close properly
	Condenser is positioned too low	Position the condenser upward

ELECTRICAL PROBLEMS

Problem	Cause	Solution
Lamp does not light when switched on	No electrical power	Check power cord connection
	Lamp bulb burnt out	Replace bulb
	Fuse blown out	Replace fuse

IMAGE PROBLEMS

Problem	Cause	Solution
Image moves while focusing	Specimen rises from stage surface	Secure the specimen in the slide holder
	Revolving nosepiece is not in the click-stop position	Revolve the nosepiece to the click-stop position
Image tinged yellow	Blue filter not used	Use daylight blue filter
	Lamp intensity is too low	Adjust the light intensity by rotating the intensity control dial
Image is too bright	Lamp intensity is too high	Adjust the light intensity by rotating the intensity control dial
Insufficient brightness	Lamp intensity is too low	Adjust the light intensity by rotating the intensity control dial
	Aperture diaphragm closed too far	Open to the proper setting
	Condenser position too low	Position the condenser upward

IMAGE PROBLEMS

Problem	Cause	Solution
Image will not focus with high power objectives	Slide upside down	Turn the slide over so the cover glass faces up
	Cover glass is too thick	Use a 0.17mm cover glass
High power objective contacts slide when changed from low power objective	Slide upside down	Turn the slide over so the cover glass faces up
	Cover glass is too thick	Use a 0.17mm cover glass
	Diopter adjustment is not set properly	Readjust the diopter settings
Slippage of focus when using the coarse focusing knob Fine focus is ineffective	Tension adjustment is set too low	Increase the tension on the focusing knobs
	Tension adjustment is set too high	Loosen the tension on the focusing knobs