Recommended Upgrades:

Camera Attachments

MiniVID WiFi

BioVID HD 1080+

Mechanical Stage

MKT-7.5.3-L-108 | Rev 1

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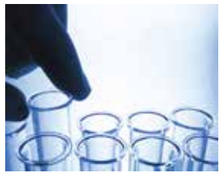
LW Scientific

Mi5 Polarizing Microscope



Model pictured:
Mi5 Polarizer

A	Diopter Adjustment
B	Head
C	Light Port Sliding Prism (trinoc only)
D	Head Retention Screw
E	Brightness Control
F	Fine Focus
G	On/Off Switch (located on rear)
H	Coarse Focus
I	Focus Friction Control (left side only)
J	Base Condenser
K	Stage
L	Slide Holder
M	Objectives
N	Nosepiece
O	Analyzer Module
P	Eyepieces
Q	Substage Abbe Condenser
R	Substage Iris Diaphragm
S	Lower Polarizing Filter

1/4 Wave Plate

Wave Plate (Red Compensator)

Quartz Wedge

Analyzer
(Upper Polarizing Filter)

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Unpacking and Setup

LW Scientific packs each Mi5 Microscope with utmost care. Examine the outer and inner containers for any visual damage. Retain all of the packing material until you have examined and tested your new microscope. If there is damage, please contact the shipping company, as our warranty does not cover shipping damage. If you are uncertain who the shipper is, contact the distributor where you purchased the microscope. Please retain all packaging material for future use.

Unpacking

1 Open the main box and take the microscope body out of the foam block. Set the microscope base on a table/bench, and carefully remove all zip ties, tissue paper, plastic wrap, and bags from the stage and body. Next, pull out the (4) objectives and the (3) eyepieces from the small inner box. Set them on the table (these will be used in the microscope assembly steps).

2 Remove the binoc or trinoc head from the foam block, and remove the eyepiece caps and tissue from the bottom of the head.

3 Carefully remove the analyzer module and accessories from foam/bubble wrap packaging and set the analyzer module next to the microscope base and head. You should now have the basic components to assemble your microscope.

Specifications

Nosepiece
Reverse quintuple nosepiece
Multiple ball bearing mounted

Head
Diopter adjustment +/-5
Inclined 30°
10X/20X Super WF HP eyepieces; numbered cross scale
Focusable eyepiece with numbered cross scale reticle
Interpupillary distance range 50-75mm

Illumination
Moveable Abbe condenser, NA 1.25
Iris Diaphram
6V/20W Clear Halogen illumination
Variable light adjustment: 0-20W output
90-240V / 50-60Hz automatic-switching power cord

Stage
Center-adjustable stage (153mm diameter)
360 degree rotation; 1 degree increments
Center adjustable
Tension control knob
Slide clips (mechanical add-on available)

Focus
Coarse adjustment: range of 22mm
Fine adjustment: graduation of 2µm
Tension control knoble)

Objectives
Infinity Plan objectives
4x, 10x, 20x, 40x
60x dry available
Anti-fungal, parfocal, parcentric, color-coded

Analyzer & Accessories
Uric Acid Control slide
Polarizing analyzer with 360 degree increments
Red Compensator lens (λ); (λ/4) lens;
Quartz Wedge Bertrand lens

Dimensions and Weight
Height: 15.6" (396 mm)
Length: 16.5" (420 mm)
Width: 8.1" (206 mm)
Weight: Trinoc: 20.5 lbs.
Binoc: 20.0 lbs.

Objectives: The following numbers are based on use with 10x/20 eyepieces.

Size	N.A.	Mag.	Field of View	Working Distance
4X	0.10	40X	5.0mm	6.73mm
10X	0.25	100X	2.0mm	4.19mm
20X	0.40	200X	1.0mm	2.14mm
40XR	0.65	400X	0.5mm	.45mm
50XR	0.95	500X	0.4mm	.29mm
60XR	0.85	600X	0.33mm	.21mm
100XR	1.25	1000X	0.2mm	.12mm

Maintenance

1. Always cover your microscope with the dust cover when not in use. When cleaning the lenses, use lens paper or a cotton swab dipped in lens cleaning solution.

2. Excess oil should be cleaned off your 100x objective and stage at once. An alcohol pad is best for removing oil from the stage and on the other metal parts, but is not recommended for use on the lenses. Use lens cleaning solution and lens paper to clean off your objectives.

3. Dust in the nosepiece or ocular tubes should be blown out using filtered air. Canned air dusters work well for this job.

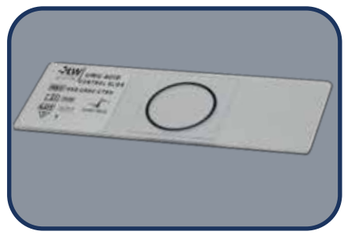
4. Whenever you remove an objective, we recommend that you place it back into the original plastic shipping vial until ready to be placed back on the microscope. **SCREW THE OBJECTIVE SECURELY INTO THE CAP OF THE HOLDER - DO NOT DROP OBJECTIVE LOOSELY INTO CONTAINER.**

5. To keep your microscope in top condition for years, LW Scientific recommends that you have the microscope professionally serviced once a year.
Warning: The 40x and 60x objectives are not sealed for oil immersion. Damage to the 40x and 60x objectives due to oil immersion is not covered under warranty.

Uric Slides

Uric acid is created when the body breaks down purine nucleotides. High concentrations of uric acid in blood serum can lead to a type of arthritis known as gout. In gout patients, crystals typically deposit in joint fluids (synovial fluid), which cause pain and swelling of the affected joint. The crystals are reviewed and identified using polarized microscopy. The forms may vary from rectangular to needle shape crystals.

The crystals seen in the enclosed preparation are prepared from uric acid. The slide contains mostly the rectangular forms with some needle shapes. This slide makes an ideal control for utilizing polarizing microscopy.
There is no expiration date on these slides.



Assembly

1. First, remove the cap from the top of the microscope base and put it back in the box.

2. Unscrew the set screw at the top of the microscope so the analyzer module can be inserted. Take the analyzer module and place it in the grooves on the top of the Microscope. Ensure that the silver pin on the back of the analyzer module aligns with the notch on the microscope base. Tighten the set screw to ensure the analyzer module is securely in place.

3. Next, take the included Allen wrench and slightly loosen the hex head screw on the top of the Analyzer Module (*be sure NOT to loosen all the way) and remove the plastic cap.

4. Take the head and carefully insert it onto the top of the analyzer module. Ensure that the flange on the head of the microscope is firmly flush with the base. Re-tighten the Allen screw to securely fasten the head to the analyzer module.*BE SURE NOT TO OVERTIGHTEN*

5. Unwrap the two eyepieces labeled “WF 10X/20mm” and insert them into the microscope head. The third eyepiece, labeled PF10X/20mm, is used for comparing crystal sizes and will be discussed in later steps.

Assembly Cont.

6 Next, take each objective and secure into place, making sure that the objectives go from lowest power to highest power while you turn the nosepiece in a clockwise rotation.

7 To install the substage abbe condenser, move the nosepiece to the 4x objective position. Raise the stage up as high as it will go, and then lower the condenser tray underneath the stage. Insert the condenser into the grooves in the tray, being sure to align the notch at the back of the tray to the centered nodule located at the back of the light condenser.

8 Now that your microscope is partially assembled, it is time to assemble the polarizing portion. Carefully remove the analyzer. Remove the end screw and place it on the counter. Insert the analyzer from the right-hand side of the scope. Gently push the analyzer through the analyzer module until you hear 2 clicks. The polarizing analyzer is now in place. Lastly, screw the end set screw back into place to ensure the analyzer cannot be pulled out.

9 Pull the Bertrand Lens to its outer position from the front of the analyzer module. This will allow a clear image while viewing through the microscope head. Finally, loosen the stage locking screw and the analyzer locking screw.

10 Plug the power cord into the back of the unit and turn the microscope on.

11 If you need to compare the size of crystals, remove one of the WF 10X/20mm eyepieces and replace it with the PF 10X/20mm eyepiece. Adjust the eyepiece so that you can easily read it. You can focus the reticule by grabbing the top-edge of the eyepiece and then twisting the lower portion.

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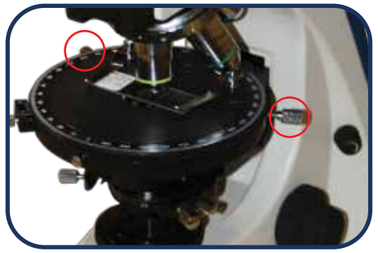
12 Place your Uric Acid Control Slide on the microscope's stage and focus on the crystals. While turning the stage, the center of rotation should be in the center of view. You can best see the center of rotation when focusing on crystals with a wide field of view under the 4x and 10x objectives. If your view is not centered, turn either screw on the back left or right sides of the stage to move the center of rotation to the center of the view.



13 To extinguish the light (full polarization), rotate the analyzer wheel until the background becomes dark. The crystals will begin to glow brightly.

14 Next, take the wave plate (also known as a red compensator) and insert into open slot. Be sure that the side with the white writing is facing up. Gently push the filter into the slot until you hear/feel a click-stop. Now the filter is in place and the background color will become pink.

15 Notice that the arrow on the wave plate is pointing to the back right, and also the zero-mark for the stage will be aligned with the arrow. This is the ZERO line.

16 Finally, begin to rotate the stage and you will see the birefringent crystals changing color.

17 Follow existing medical protocols to differentiate the crystals for accurate diagnosis.

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