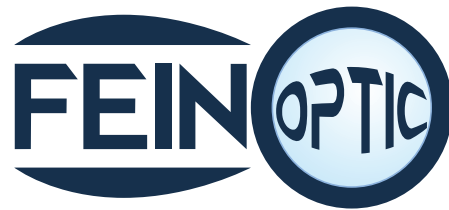
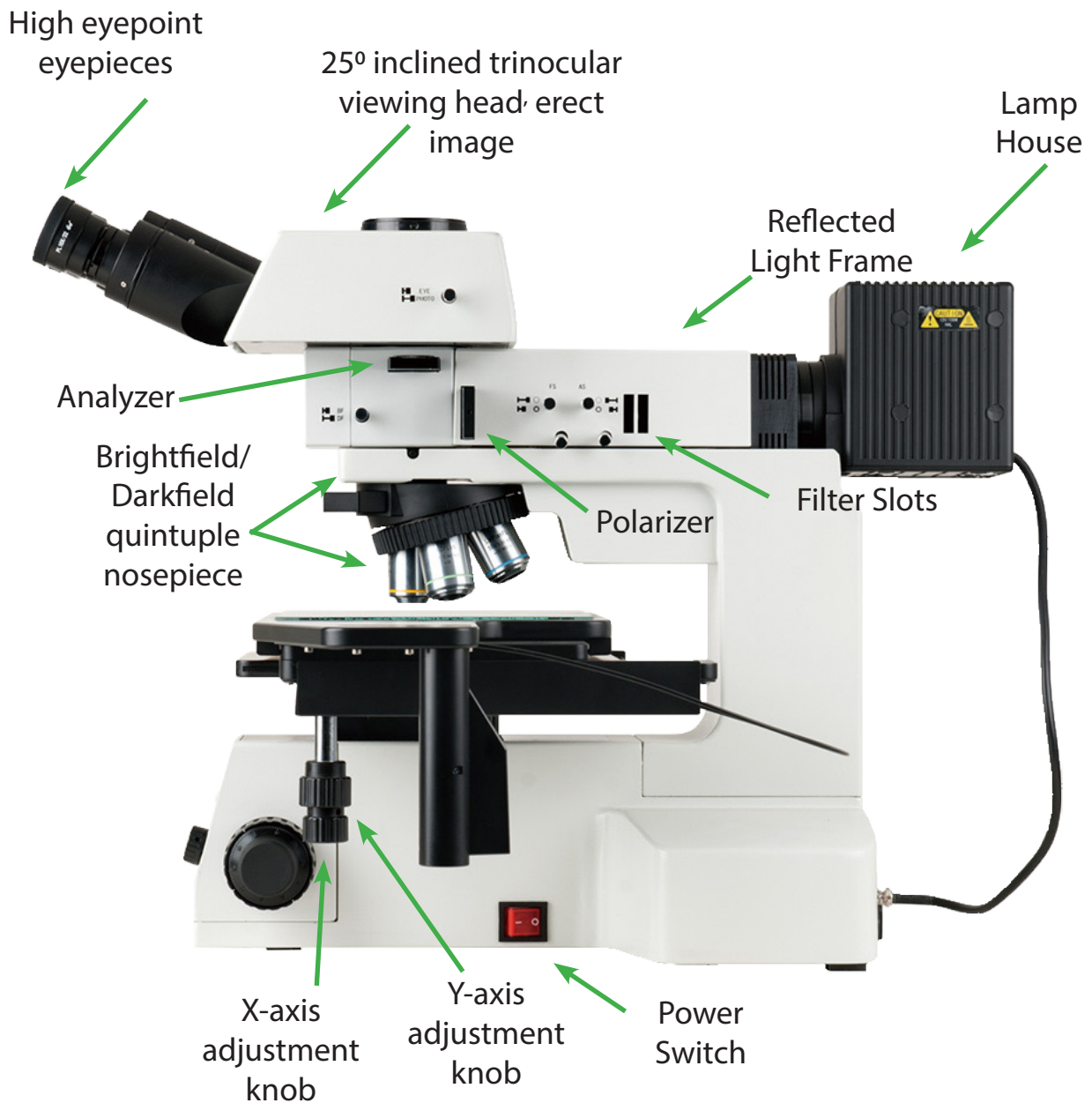


M46 Metallurgical Microscope Semiconductor Inspection User's Manual

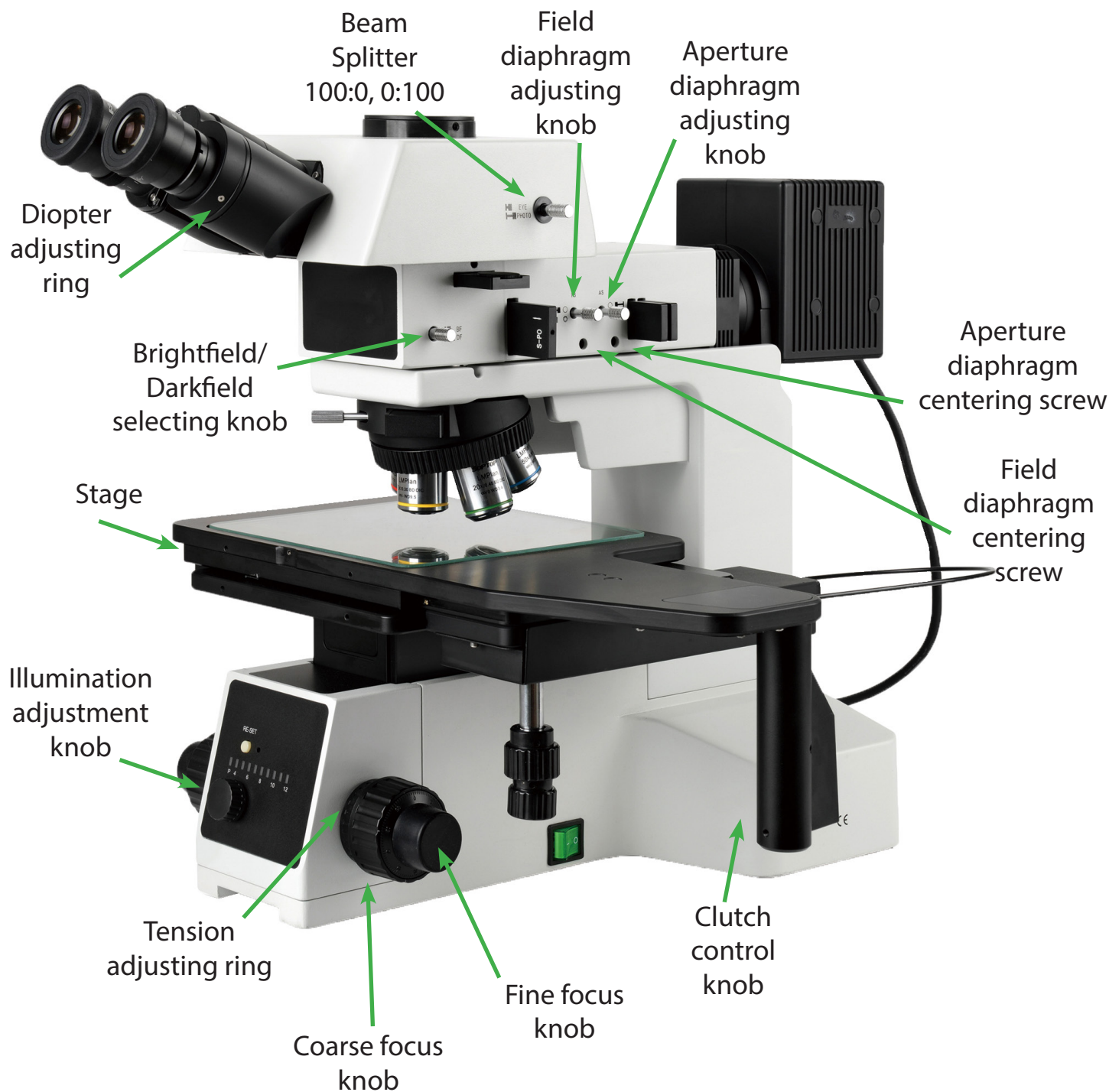


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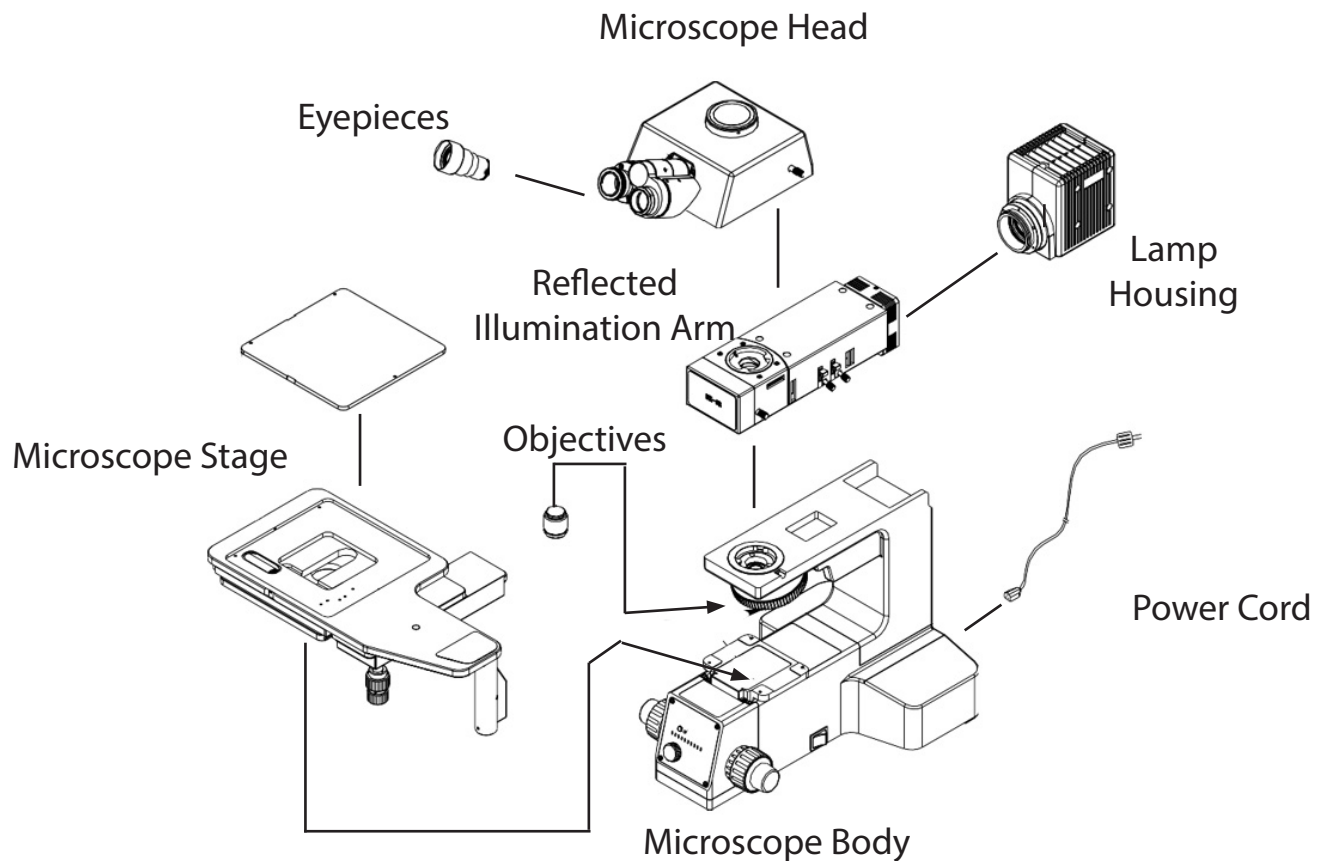
M46 Microscope Components



M46 Microscope Components



M46 Semiconductor Inspection Microscope Assembly



- Connect the reflected illumination arm to the microscope body.
- Connect the lamp housing to the reflected illumination arm.
- Connect the microscope head to the reflected illumination arm.
- Insert the eyepieces into the eyetubes.
- Attach the microscope stage to the microscope frame.
- Screw the objective lenses into the nosepiece.
- Plug the microscope into the outlet with the power cord.

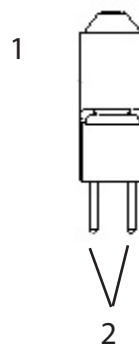
Assemble and Replace the Transmitted Light Halogen Bulb



Before replacing or installing the bulb, make sure power is cut off to the microscope and the bulb and bulb base are cool to the touch.

Remove the bulb (1) with clean a soft tissue. Insert the bulb pins (2) into the jack on the bulb holder. The bulb should be vertical after assembly.

****Do NOT touch the bulb with fingers.**
If fingerprints are left on the bulb, clean with a soft cloth.
Only replace bulb with Fein Optic 12V/100W Halogen bulb.



Assemble and Replace the Reflected Light LED

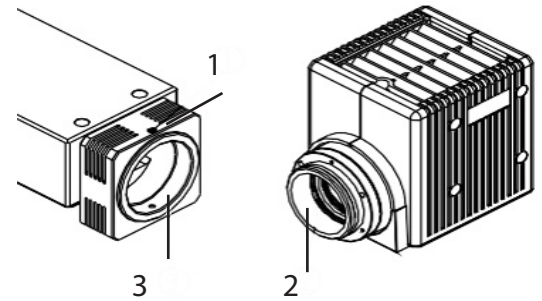


If the LED reflected light needs to be replaced the entire LED module will be replaced. Disconnect the old LED module as shown at right, and reconnect the new LED module. Assembly instructions are listed on next page.

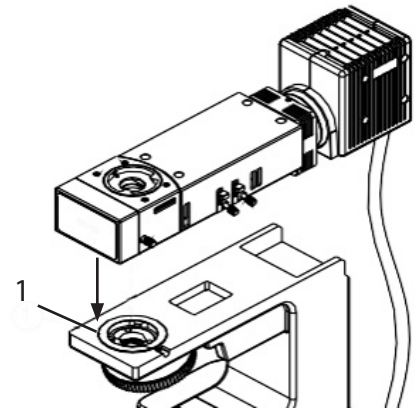




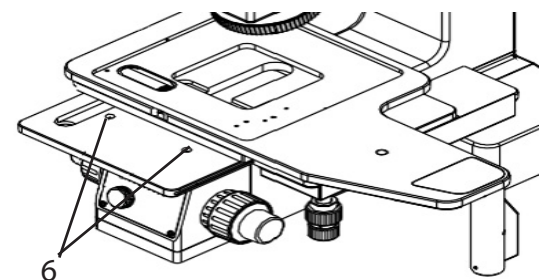
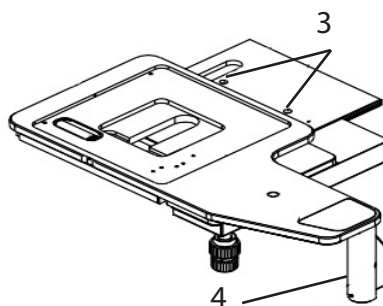
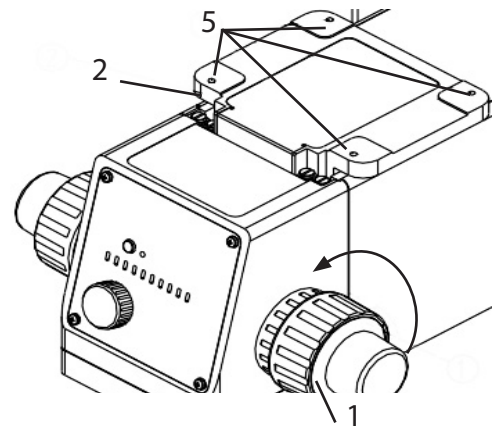
Assemble the Reflected Illuminator arm by loosening the set screw (1) and slide the lamp house (2) into the illumination arm (3) and secure in place by tightening the set screw (1).



Loosen the set screw (1), set the illumination arm into the microscope body and secure with the set screw (1).



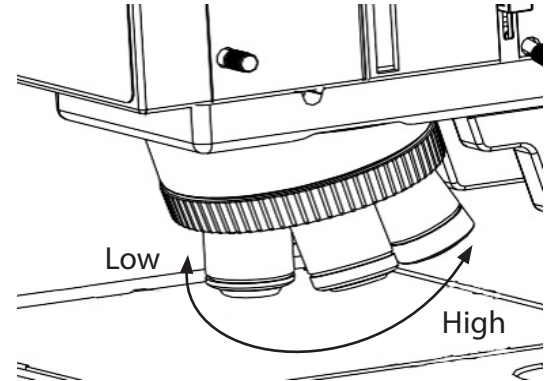
To set the mechanical stage, turn the coarse knob (1) in the direction of the arrow to position the stage holder (2) to the lowest position. Carefully position the stage onto the stage holder (2), making sure the clutch (4) is on the right hand side. Move the top layer of the stage until the holes (3) appear. Align holes (3) and (5) so they are superimposed. Lock with screws. Move the top layer of the stage in the opposite direction to reveal holes (6). Then lock in place with screws. Check to make sure the stage is positioned correctly and locked in place with screws.



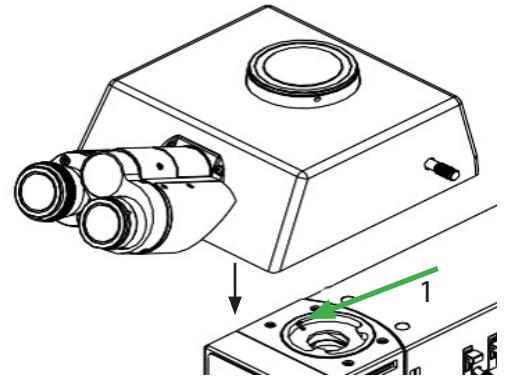
M46 Semiconductor Inspection Microscope Assembly



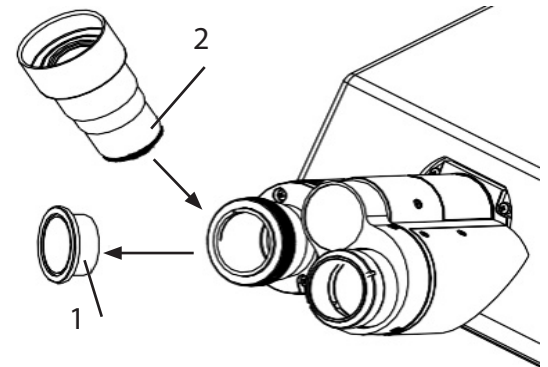
Install the objective lenses by first turning the coarse focus knob to bring the stage into the lowest position. Install the objective into the nosepiece from low magnification to high magnification in the direction shown in the image to the right.



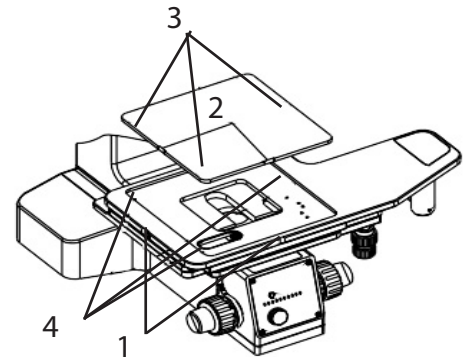
Assemble the microscope head by loosening the set screw (1), then position the microscope head into the dovetail on the illumination arm ensuring the eyepieces are facing forward. Secure the head in place with the set screw (1).



Remove the eyepiece tube covers (1) and insert the eyepieces (2) into the eyetubes until the bottom of the eyepieces is touching the lip of the eyetubes.

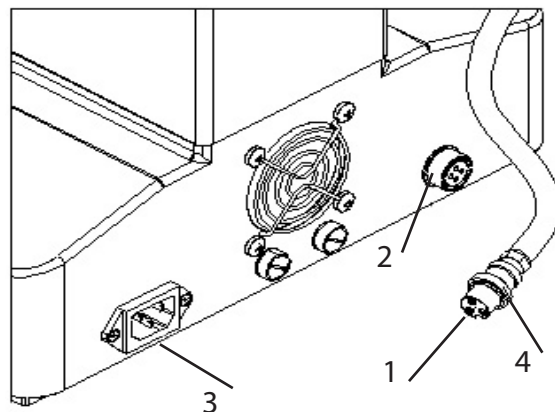


Set the stage insert by loosening the set screws (1). Position the stage insert (2) with the larger beveled edge upwards. Position so hole (3) and hole (4) are superimposed. Secure in place with set screws (1).





Make sure the main power switch is in the "O" off position. Match the plug of the light box power cord connector (1) with the socket of the microscope connector (2), and insert it into connector (2) thoroughly. Then screw down the nut (4). Insert one end of the power cord into the power socket (3) of the microscope.



Do not use strong force when the power cord is bent or twisted to avoid damage.

Only use the power cord supplied with the microscope. Should the power cord become damaged, use a replacement cord with the same specifications.

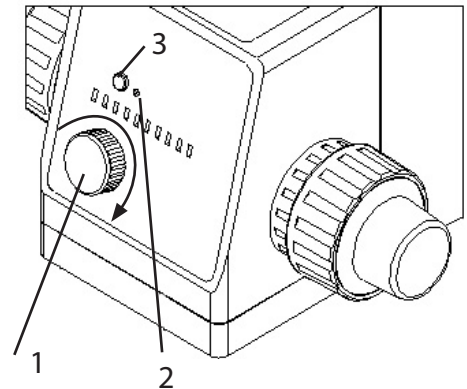
Only connect the power cord to a compatible outlet and ensure the instrument is electrically grounded.

M46 Microscope Operation Instructions

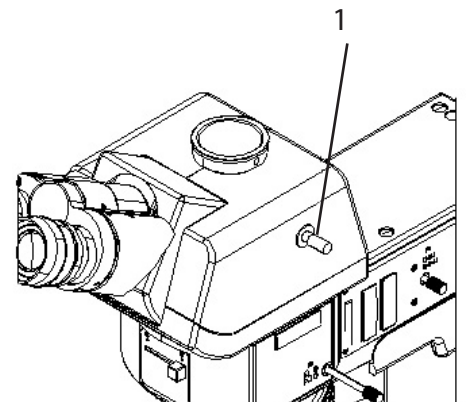


With the microscope powered on, turn the light adjustment knob (1) until the illumination is comfortable for observation. Turn the light adjustment knob clockwise to increase the light intensity and turn counter clockwise to decrease the light intensity.

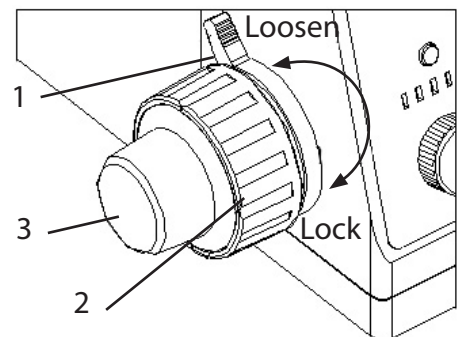
Reset the light intensity by pressing the light intensity reset button (3). Adjust the light intensity by rotating the setting screw (2) with a compatible tool. Rotate clockwise to increase intensity and rotate counter clockwise to decrease intensity.



To select the light path, push the beam splitter (1) to the innermost position allowing the light to be directed to the eyepieces for viewing through the eyepieces. Pull the beam splitter to the outermost position allowing the light to be directed to the trinocular port for viewing with a microscope camera.

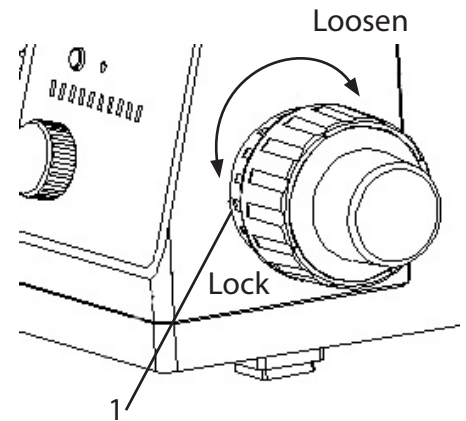


To adjust the focus, place a sample on the stage and position the 5x objective lens into the light path. Loosen the coarse adjusting limit knob (1) and adjust the left diopter adjustment ring to zero. Observe the right eyepiece with the right eye. Rotate the coarse focusing knob (2) until the sample appears in the field of view, then lock the coarse adjusting limit knob. Rotate the fine focusing knob (3) to bring the sample into crisper focus.

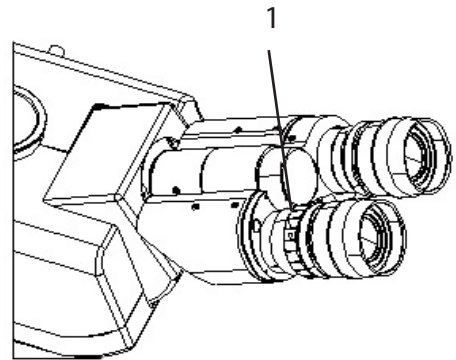




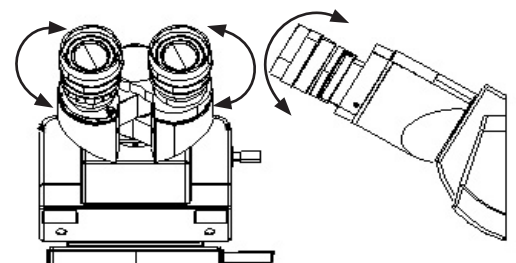
If the handle is heavy when using the coarse focus or the specimen moves out of focus, it may be necessary to tighten the focus knob tension. This can be done by rotating the tension adjustment ring (1) according to the arrows.



After the image is clear in the right eyepiece, observe the specimen through the left eyepiece with the left eye. If the image is not in focus, rotate the diopter adjustment ring (1) until the image is clear. There are ± 5 diopters on the diopter adjustment ring with the value aligned with the scale of your eye's diopter. The dot "•" on the left side can also indicate the setting. When using the diopter adjustable eyepiece, first set the eyepiece diopter to zero. The eyepiece diopter can continue to be adjusted while operating the microscope to achieve a clear image.

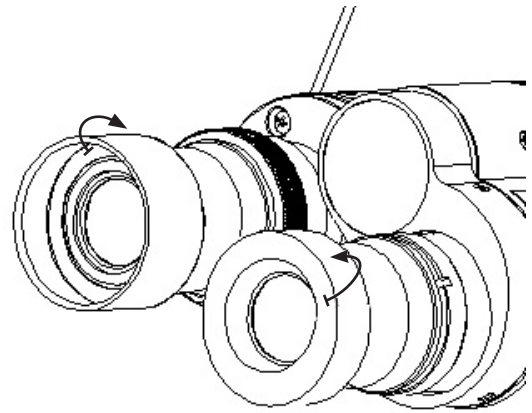


Adjust the interpupillary distance by holding the base of the eyepiece on the left and right and pull them up or down to adjust to your sitting position. Hold the base of the eyepieces and rotate them around the axis to adjust the interpupillary distance until there is one field of view and comfortable for observation.



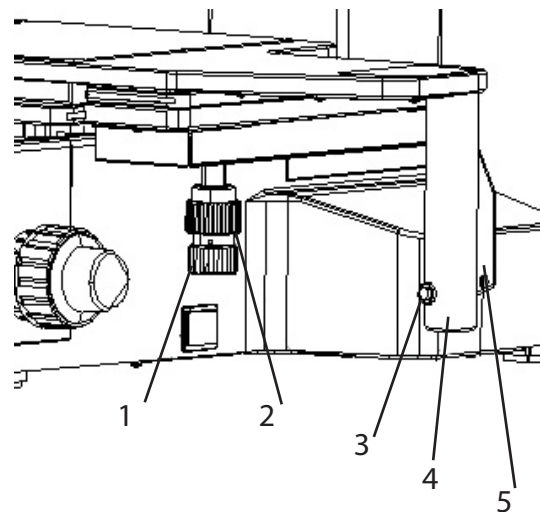


Turn down the eyecups if the observer is wearing glasses to prevent the glasses touching the eyepieces and avoid damaging the glasses and eyepieces. Open the eyecups if the user doesn't wear glasses to prevent stray light from disturbing the observation.



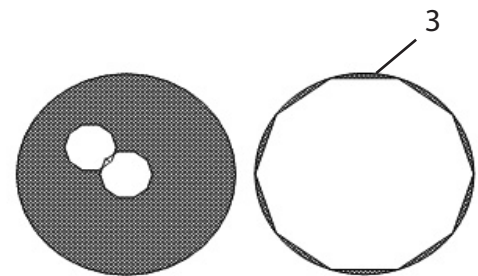
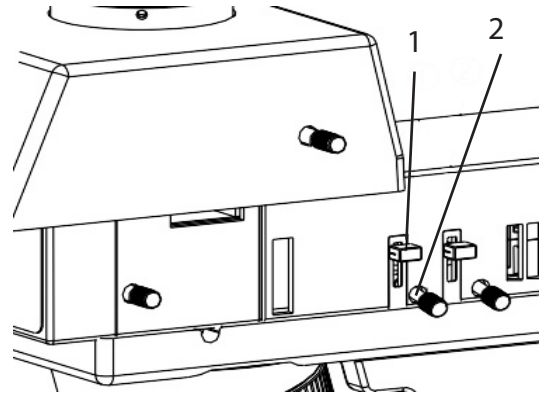
To adjust the stage, place the sample on the stage and move the 5x objective into the light path. Rotate the X-axis moving knob (2) and the Y-axis moving knob (1) of the stage, to move the sample to the center position (aligned with the center of the objective).

If the position of the sample to be moved when the multi-sample is observed is far from the center of the objective lens, the platform fast-moving function can be used. The specific operation method is as follows: First press and hold the clutch lever (5) toward the handle (5), then release it, then the handle (4) can quickly move in both directions of the platform XY. To turn off the fast-moving function, press the shift speed switch button (3), reset the clutch lever (5), and the fast moving function stops. Mechanical platform X, Y axis movement range is 158 x 158mm.

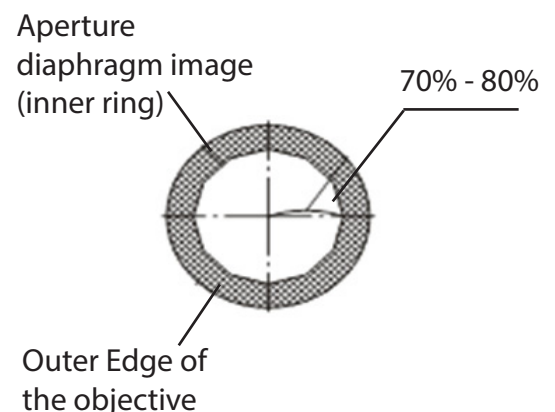
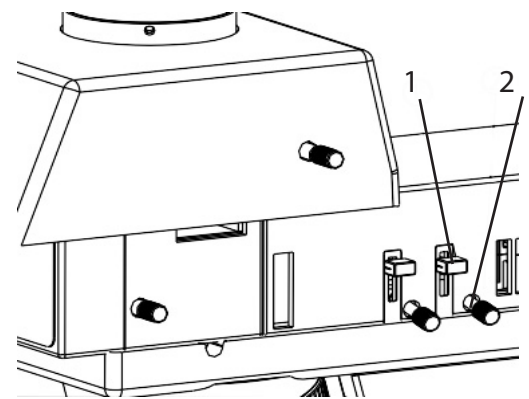




To adjust the field diaphragm, pull the field diaphragm adjustment knob (1) to the lowest position. The image of the field diaphragm can be observed in the view through the eyepieces. Adjust the two field diaphragm centering screws (2) until the image of the field diaphragm is in the center of the field of view. Gradually open the field diaphragm until the image of the field diaphragm is overlaid with the field of view (3).

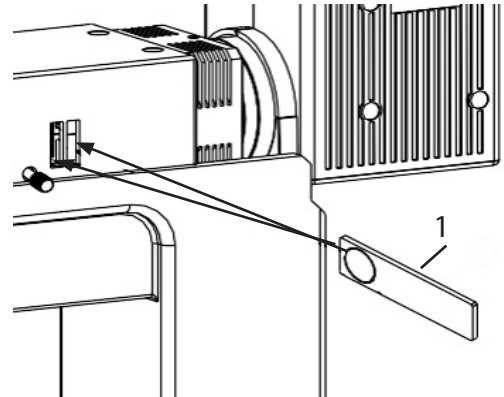


Adjusting the aperture diaphragm is performed the same way as the field diaphragm. Use the aperture diaphragm knob (1) and the centering screw (2) same as mentioned in previous steps.





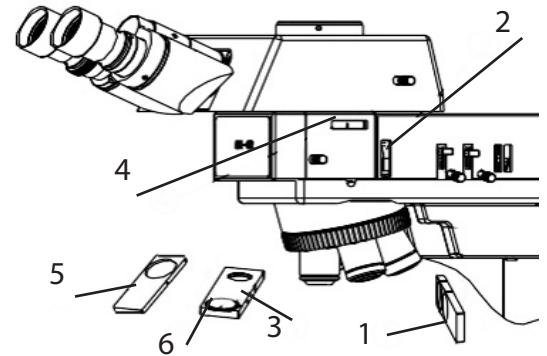
When using an external color filter, first remove any dust caps. Insert the filter slider (1) into the filter holder. When filters are not in use, replace the dust cap to prevent dust build up in the filter slots.



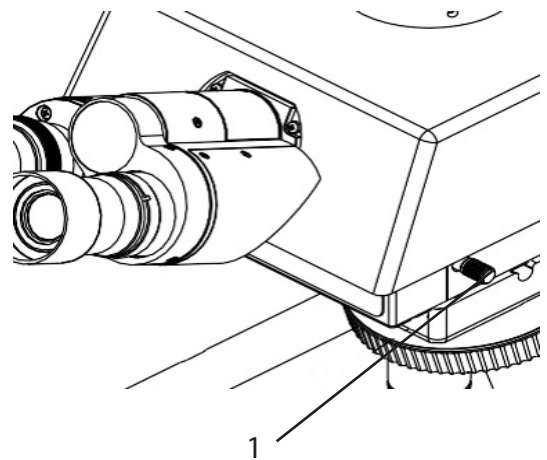
The simple polarizer device includes the polarizer and the analyzer. Remove any color filters when using the polarizer. Remove any dust caps, then insert the polarizer (1) into the filter slot (2).

Remove the dust cap (3) from the analyzer slot (4), insert the 360° rotating analyzer (3) or fixed analyzer (5) into the analyzer slot (4) until it is fully seated within the slot.

The polarizer and the analyzer are orthogonal when the 360° rotating analyzer is in the zero position, or when the fixed analyzer is used. Dialing the rotatable analyzer drive plate (6) can change the orthogonal state of the polarized light.

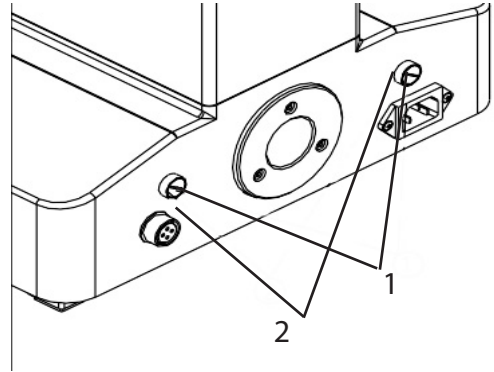


Switching between brightfield and darkfield observation is achieved by adjusting the BF/DF adjusting pole. Push the pole in for brightfield and pull the pole out for darkfield. When in darkfield observation adjust the aperture diaphragm and the view field diaphragm to the largest position.

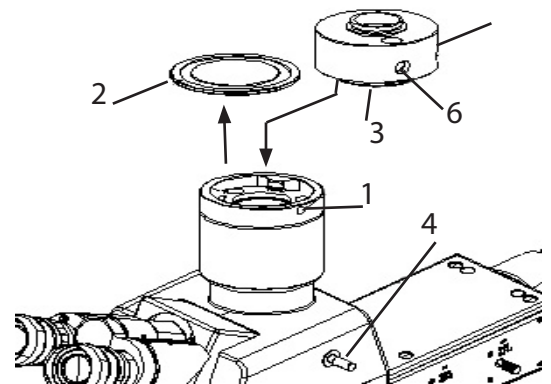




Replace the fuse by first making sure the microscope power switch is in the "O" off position and unplug the microscope. Using a compatible screw driver remove the screws (1) from the fuse holder (2). Install a new fuse and replace screws to secure fuse holder in place. Fuse rating is 250V, 8A.



Install the c-mount adapter to attach a microscope camera by loosening the lock screw (1) and remove the dust cap (2). Remove the two dust caps of the adapter (3). Insert the adapter into the trinocular head and tighten the lock screw (1). Connect the camera to the adapter. Move the beam splitter to the outermost position which allows the light to travel up the trinocular tube for observation with the camera. If the image is unclear, loosen the lock screw (5) adjust the focusing screw (6) until the image is clear, then tighten the lock screw (5).



M46 Microscope Troubleshooting:

TROUBLE	POSSIBLE CAUSE	SOLUTION
The bulb is bright but it is dark in field of view	Field diaphragm is not large enough.	Adjust the field diaphragm.
	Polarizer or analyzer is in use.	Remove polarizer and analyzer.
The side of the field of view is dark or not even	The nosepiece is not in the right position.	Turn the nosepiece into position.
	Stain or dust has accumulated on the lens (objectives or eyepieces).	Clean the lens.
	The color filter, polarizer, or analyzer is not in the right position.	Insert them or move out of the light path.
	Bright and darkfield selecting pole is not in the right position.	Pull it to the right position.
	Beam splitter is not in the right position.	Pull it to the right position.
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.
Unclear Image	The specimen is not vertical to the objective.	Adjust it.
	The aperture is not opened correctly.	Adjust it.
	Stain or dust has accumulated on the lens of eyepiece.	Clean the lens.
	Bright and darkfield selecting pole is not in the right positions.	Pull it to the right position.
	Beam splitter is not in the right position.	Pull it to the right position.
One side of the image is dark or the image moves while focusing.	The specimen slide is not fixed.	Fix it with clips.
	The nosepiece is not in the right position.	Turn the nosepiece into the right position.
The eyes feel tired easily. The right field of view doesn't superpose with the left one.	Interpupillary distance is incorrect.	Adjust the interpupillary distance.
	Diopter adjustment is incorrect.	Adjust the diopter.
	The eyepiece for the right eye is different from the left one.	Use the same eyepieces.

M46 Microscope Troubleshooting:

TROUBLE	POSSIBLE CAUSE	SOLUTION
The objective touches the sample while turning the nosepiece from low magnification to high.	Stage is too high.	Lower it to an appropriate position.
Coarse focusing knob is too tight.	Tensions adjustment ring is too tight.	Loosen it to an appropriate position.
Stage declines itself and cannot stay on the focal plane.	Tension adjustment ring is too loose.	Tighten it to an appropriate position.
Coarse focusing knob cannot rise.	The coarse limit knob is locked.	Loosen the coarse limit knob.
The image moves obviously when touching the stage.	The stage is fastened incorrectly.	Fasten the stage correctly.
The bulb doesn't work.	No power supply.	Check the connection of the power supply.
	The bulb is not installed correctly.	Install it correctly.
	The bulb burned out.	Replace it.
The bulb burns out often.	The wrong bulb is used.	Replace it with the correct bulb.
The illumination is not bright enough.	The wrong bulb is used.	Replace it with the correct bulb.
	The use of light adjustment knob is wrong.	Adjust it correctly.
The bulb flickers or the brightness is not stable.	The bulb will burn out soon.	Replace it with a new one.
	The wire doesn't connect well.	Connect it correctly.

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