



User's manual



OptiMIC

Warning !



- Gently handle this material, it is sensitive to shocks.
- Cable ducts must be free from defects.
- A humid environment can harm the equipment.
- Checks can be performed by anyone but only a specifically trained person is authorized to perform a corrective action.

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Specific features of the various microscopes

- A. Fastenings: chuck mount (cylindrical or tapered)
Microscopes: MA 111 / 112 / 117 / 118



example of cylindrical chuck

- B. Fastenings: tube mount (located between the elbow and the lens)
Microscopes: MA 113 / 116 / 118 / 119 / 121 / 130

- C. Eyepieces: this refers to the part of the microscope where the eye rests. This element is adjustable and adapts to the vision of each human being.



example of eyepiece

- D. Elbows: They come in different angles to best suit the ergonomics of each workstation.
90° = MA 116
110° = MA 117
120° = MA 113 and MA 130
135° = MA 118
180° = MA 121



example of an 120° elbow

- E. Illuminators (LED): These are optional and can be attached to the objective. Some are integrated into the microscope, and have the advantage of reducing the size of the construction. They are designated by an E.



example of an LED illuminator

- F. Goniometers: Most of our microscopes don't include them, but we can fit them to almost all our models on request. This angle-measuring instrument is designated by a G.



example of a goniometer

- G. Interchangeable lenses: They can be interchangeable, so you can buy a microscope and several lenses.

This applies to: MA 111 / MA 112 / MA 112-2 / MA 113 / MA 116 / MA 118 / MA 121



example of Ø18 interchangeable lens

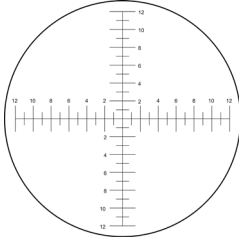
- H. Fixed lenses: integrated inside the microscope.
This applies to: MA 112E / MA 117SZ / MA 117E

- I. Fixed "zoom" lenses: They can be "zoom". This makes it possible to change the field of view without changing the working distance. These lenses are designated by a Z.



example of Z1 zoom (6.5X)

- J. Reticles: Reticles for microscopes with small fields of view are generally supplied with R1 reticles (crosses and 12 circles). Reticles for large field-of-view microscopes are generally supplied with R 2-1-4-2 reticles (crosses and 38 circles). Other reticles are also available. Please note: reticles are not interchangeable.

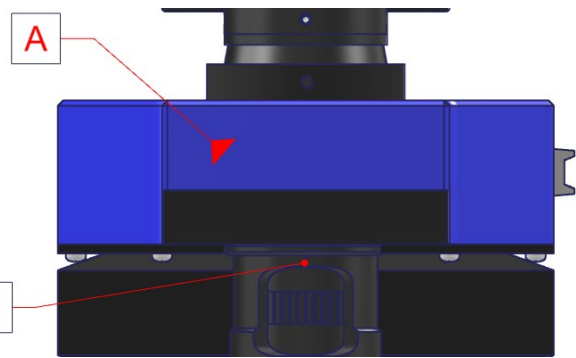
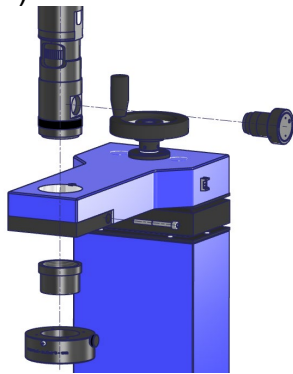


example of a reticle

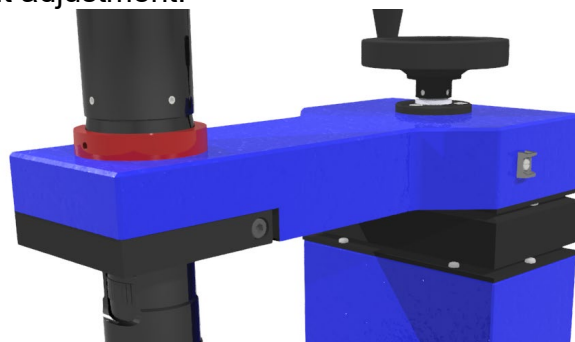
Procedures

1.0 Mounting the optics

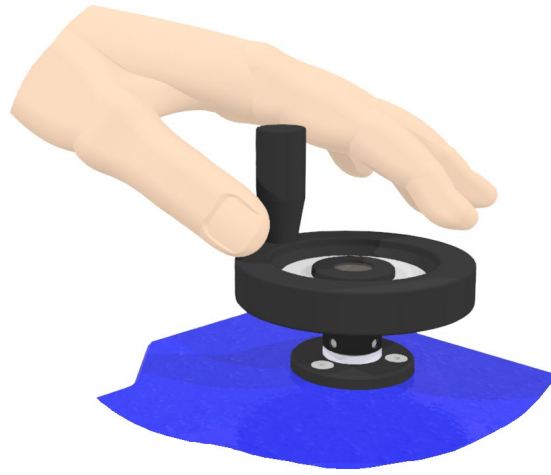
- Fix the optic in its gripping \emptyset , with the reference line of the optic towards the operator. Orient your zoom index so that it is within 5° of your X-axis. (if necessary, first remove the coaxial illuminator) and/or unscrew the magnification blocking screw 11) as well as the ring illuminator)



- If necessary, add a ring (shown here in red) to the $\emptyset 6$) or 8) so that you can rotate your optics without losing height adjustment.



- Move your optical drive (normally a Z-axis column) as close as possible to your horizontal axis (normally on the glass of an XY table) until you have a sharp image (see box below).



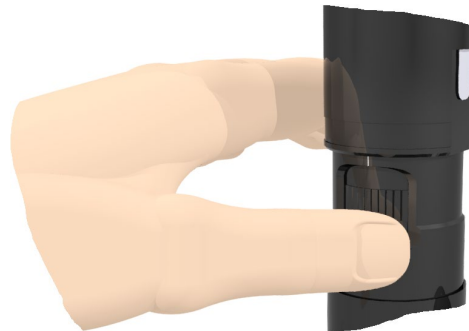
Replace any parts you may have disassembled.

Sharp image

To obtain a sharp image on screen, physically move your optics until the image is sharp, then continue your movement until the image is blurred. Then move back, past the sharp image, until you have a blurred image again. Finally, return to the halfway point to get a perfectly sharp image.

2.0 Controlling the sharpness of a zoom lens

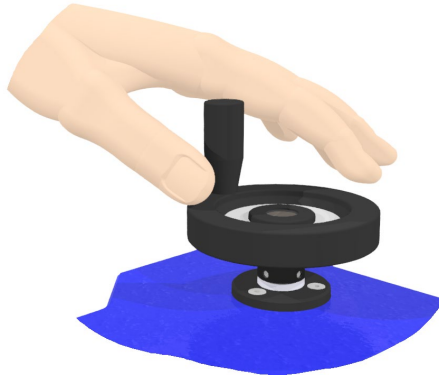
- Set zoom magnification 10) to maximum.



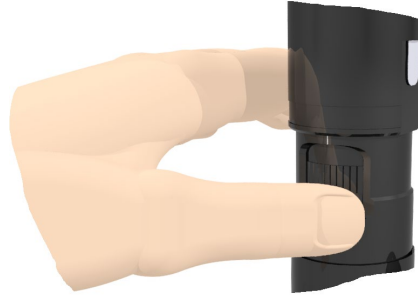
- Adjust the brightness of the diascope illuminator (green backlight).



- Move the optics vertically until the image is sharp (see box above).



- Set magnification to minimum using the ring for magnification changes 10).



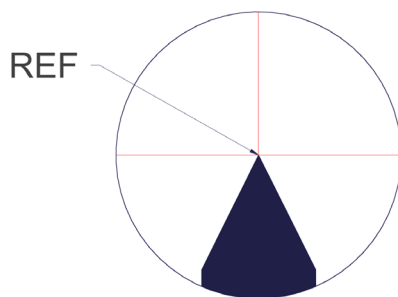
The image should remain sharp. If this is not the case, repeat the operation.

3.0 Check reticle alignment in relation to displacement

When setting up a microscope, or after the chaotic movement of a machine equipped with optics, it's essential to ensure that your reticle is perfectly aligned with the axes of movement to avoid measurement error.

Here's how to do it:

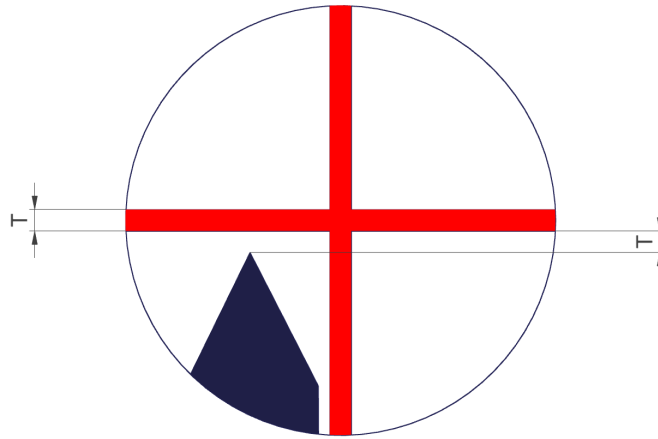
- Set the sharpness to a REF reference point (e.g. your calibration glass or a flat, pointed object). REF will be your reference point.



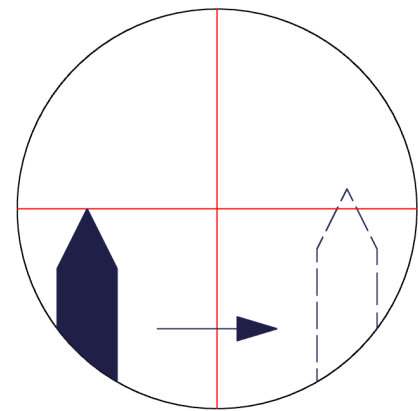
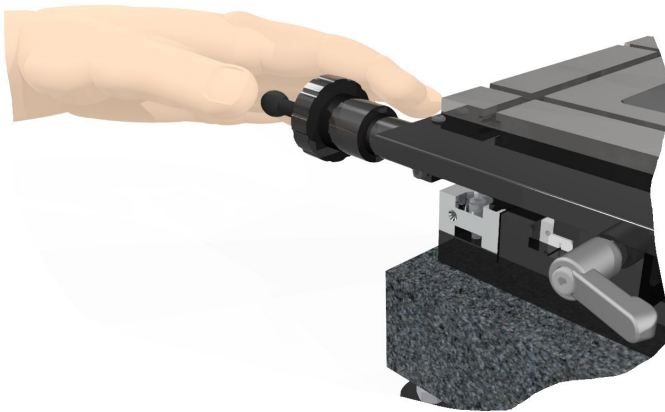
- Set the lens to its lowest magnification (if zooming) using the ring for magnification changes 10)



- Position your projected line slightly (space T) above your REF reference over the greatest distance you can travel (on a measuring table; usually the X axis).

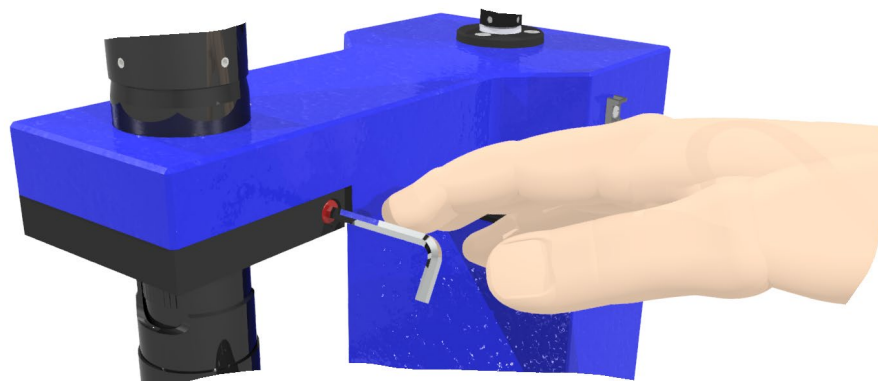


- Physically move your REF reference (left-hand side of illustration) to the other end of the image (right-hand side of illustration). If your REF reference always has the same T space as in the illustration above, you're perfectly aligned. If your REF reference is above or below your line (right-hand side of illustration), this means you're not aligned, and you need to move on to point 3.2 to take corrective action.

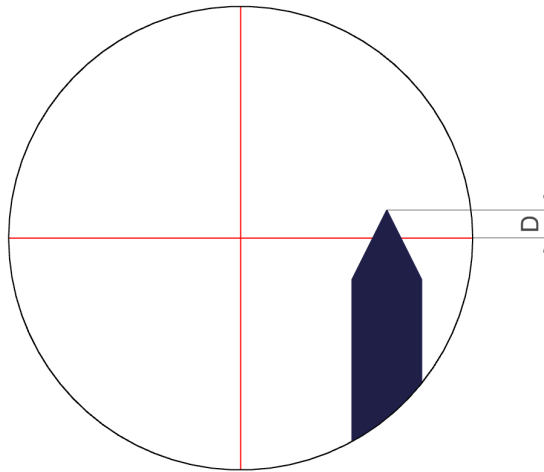


3.1 Corrective action on reticle alignment in relation to displacement

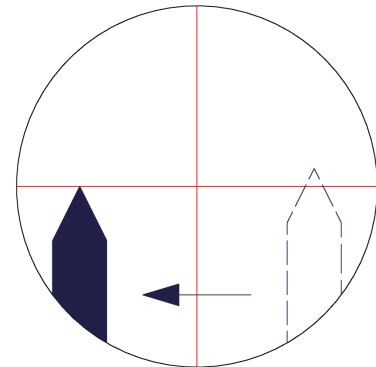
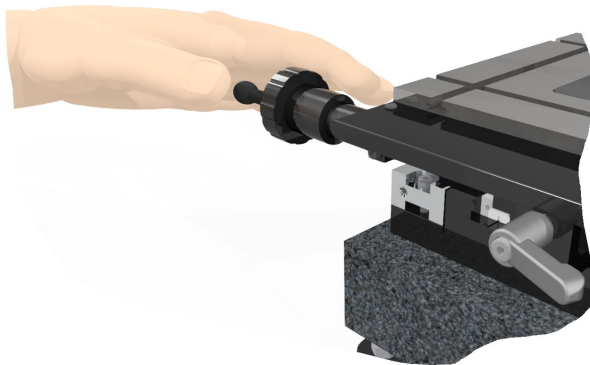
- Slightly loosen the clamp screw (in red) so that the lens can be rotated without losing object sharpness.



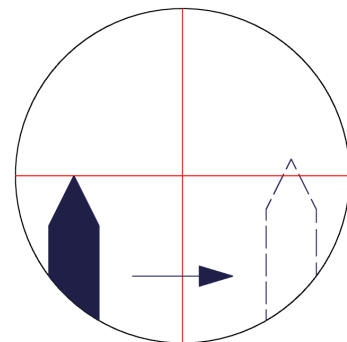
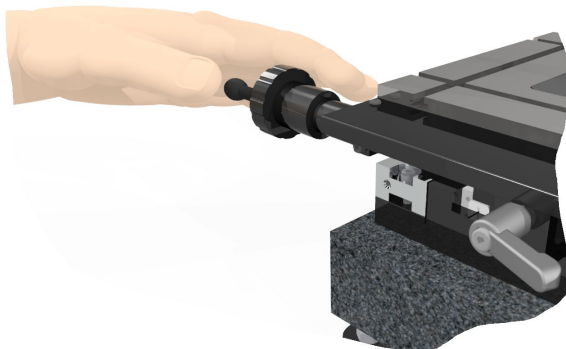
- Rotate the entire lens until you have corrected **half** of the "D" defect detected.



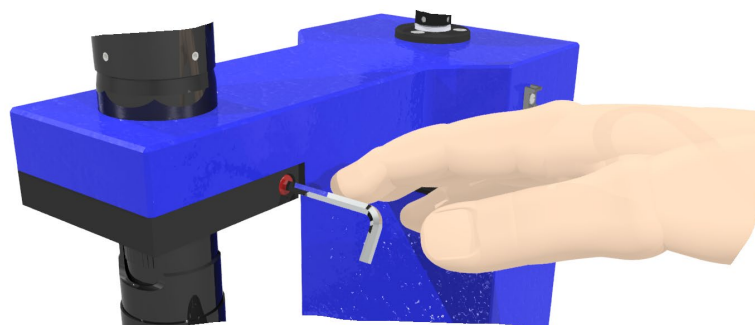
- Return to original position



- Physically move your REF reference (left-hand side of illustration) to the other end of the image (right-hand side of illustration). If your REF reference always has the same T space as in the illustration above, you're perfectly aligned. If your REF reference is above or below your line (right-hand side of illustration), this means you're not aligned, and you need to move on to point 3.2 to take corrective action.

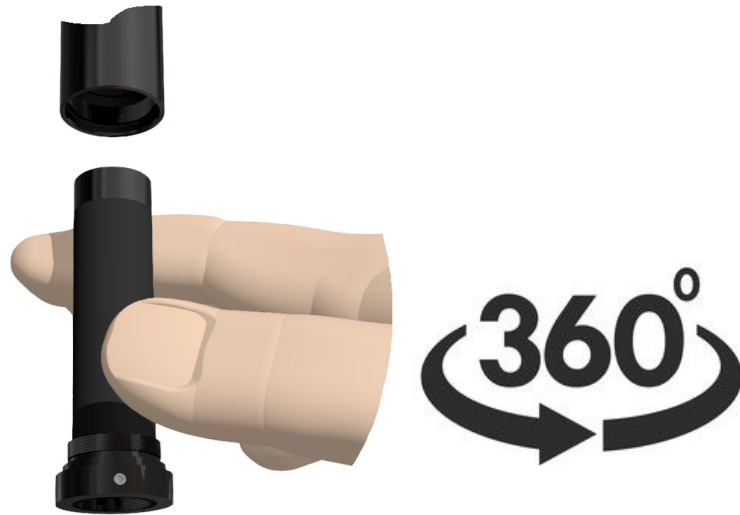


- Make sure the optic is securely fixed in its grip.

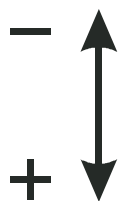
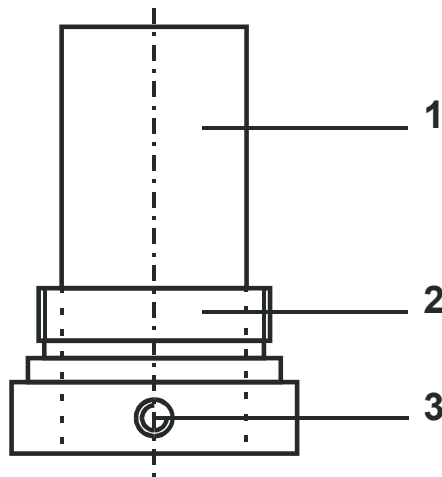


4.0 Changing an interchangeable lens

Unscrew the knurled or non-knurled lens at the end of the microscope (opposite the eyepiece) and replace it with another lens. Screw back on firmly.



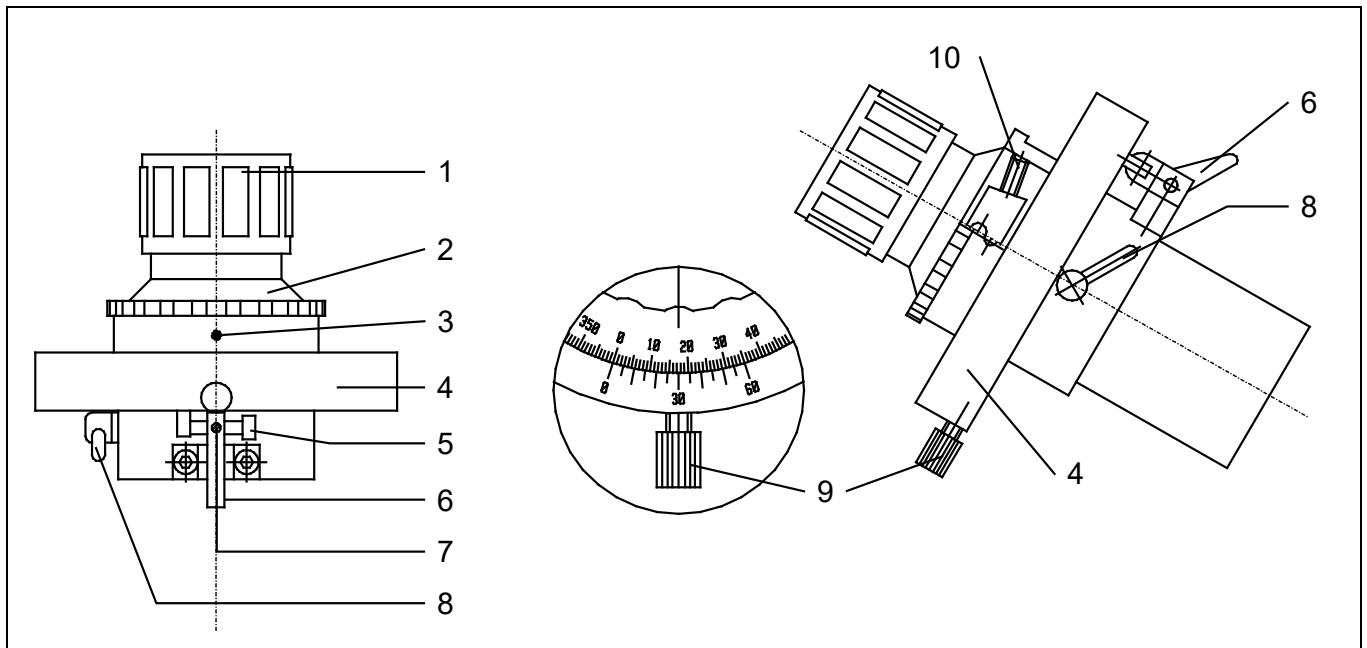
4.1 Precise adjustment of interchangeable lens magnification



- Place a standard piece under the optics
- Release screws (3)
- Move the movable sleeve (1) vertically in its housing (2) in the direction of the arrow until the desired magnification is reached.
- Lock screws (3)

5.0 Operating a goniometer microscope

The microscope with goniometer was centered and checked before shipment. However, it is advisable to check its centering when putting it into service, as shocks may have upset the optics during transport.



5.1 Assembly of a goniometer microscope

Place the microscope in its holder and, if equipped with illuminator, switch it on.

Turn the diopter ring (1) until the reticle appears sharp to your eye.

Adjust image sharpness in relation to a reference object (by moving the microscope or reference objects up or down).

5.1 Checking the centering of a goniometer microscope

1. Align the vertical line of the rotating reticle ("G" goniometer) with the vertical line of the reference part.
2. Rotate goniometer (2) 180°. Vertical lines should now coincide. (If not, proceed to point 5.3 "recentering").
3. Align the horizontal line of the rotating reticle (goniometer "G") with the horizontal line of the reference part.
4. Rotate goniometer (2) 180°. Horizontal lines should now coincide. (If not, proceed to point 5.3).

5.2 Recentering a goniometer microscope

Caution: Any centering error, i.e. the distance between the crosshair and the reference part, must be corrected on both sides by half the value found, i.e. half with the crosshair and half with the reference part.

1. Loosen the protection ring locking screw (3) and unscrew the protection ring.
2. To correct half the vertical or horizontal centering error, turn the 2 screws (10).

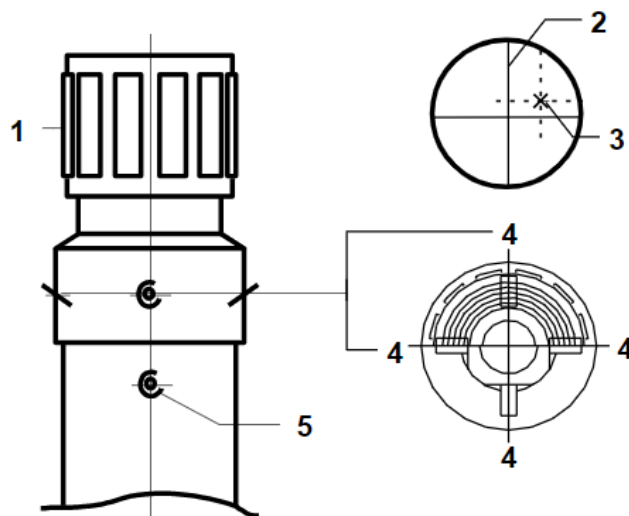
Caution: These 2 screws, horizontal or vertical, must always be moved simultaneously, i.e. loosen one screw and tighten the opposite one.

3. Turn the rotary cross 180°. The lines should now coincide. If not, repeat step 2.
4. Refit protective ring.

5.3 Adjusting the zero position of a goniometer microscope

1. Position stop lever (6) (see drawing).
2. Loosen locking screw (9) on vernier ring (4).
3. Turn vernier ring (4) to the left until it stops.
4. Set goniometer to 0° position. The vertical line of the rotating reticle and the reference part should coincide. If not, continue as follows:
 - Unscrew screw (7).
 - Tilt stop lever (6) back.
 - Turn the goniometer until the vertical line coincides with the line on the reference part.
 - Lock goniometer with lever (8).
 - Set vernier ring (4) to 0° position and secure with screw (9).
 - Loosen screw (5) on stop lever (6) by approx. 2mm.
 - Tilt stop lever (6) forward and screw in screw (5) to stop.
 - Retighten screw (7).

6.0 Centering the reticle of a tube microscope



6.1 Recentering the reticle of a tube microscope

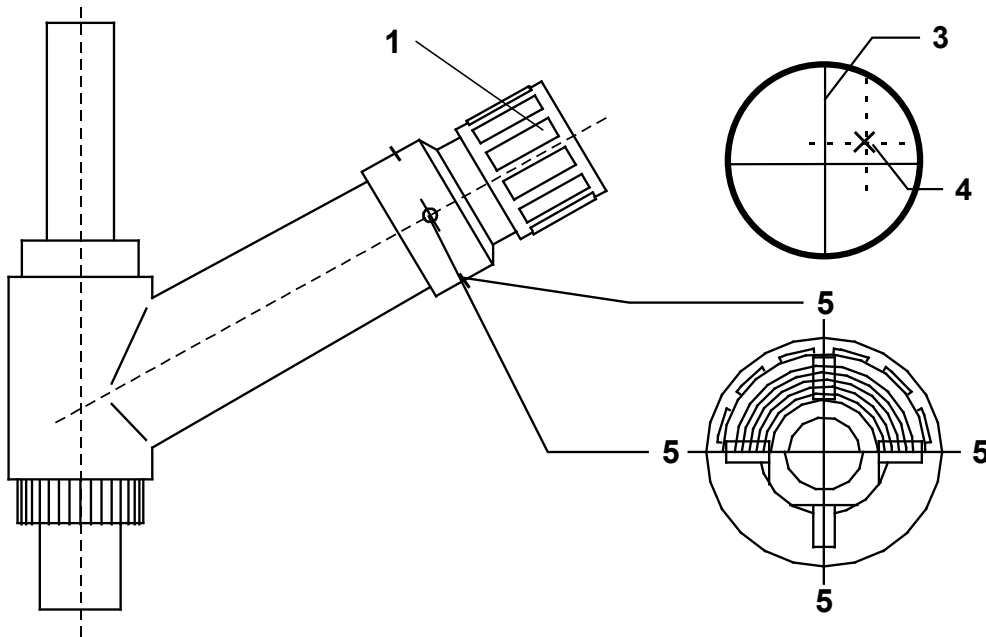
Any centering error, i.e. the distance between the crosshair (2) and the reference part or centering hole (3), is corrected with the crosshair (2) using the 2 screws (4), either horizontal or vertical.

Caution: These 2 screws (4), horizontal or vertical, must always be moved simultaneously, i.e. loosen one screw and tighten the opposite one.

6.2 Reticle orientation of a tube microscope

Loosen screws (5). Turn eyepiece head (1). Retighten screws (5) after adjustment. Recheck reticle centering and, if necessary, refer to point 6.1.

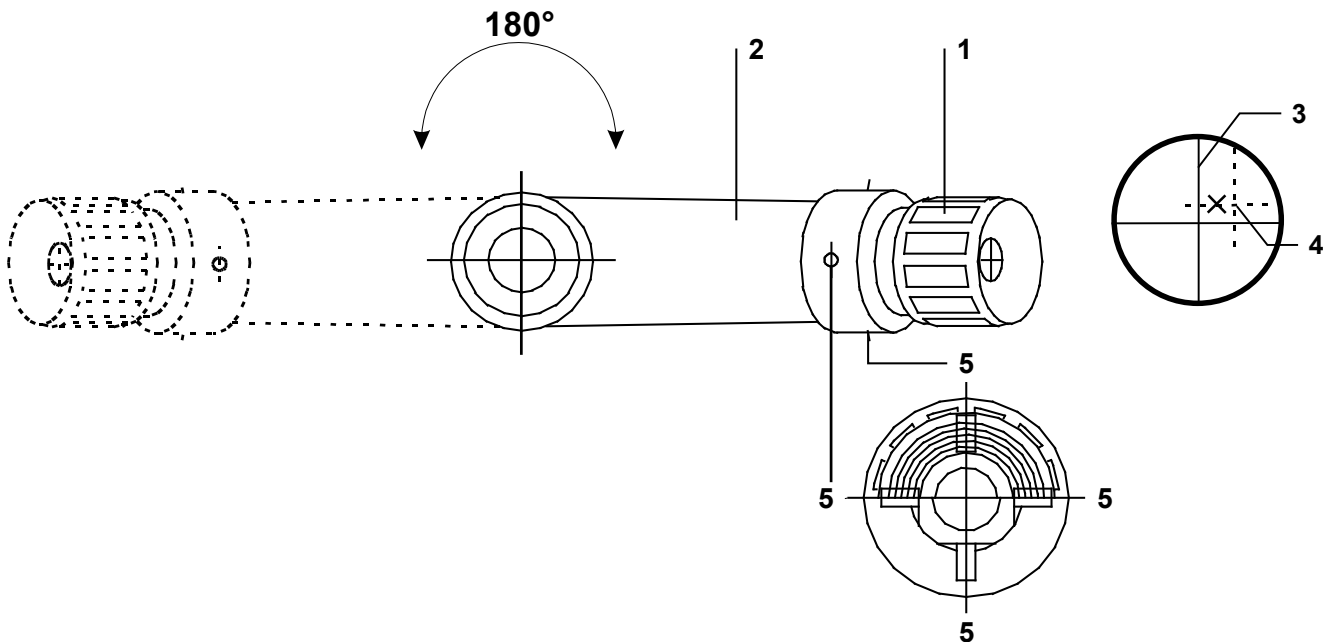
6.3 Centering the reticle of a fixed-chuck mount microscope



Any centering error, i.e. the distance between the crosshair (3) and the reference part or centering hole (4), is corrected by acting on the 2 screws (5), either horizontal or vertical.

Caution: These 2 screws (5), horizontal or vertical, must always be moved simultaneously, i.e. loosen one screw and tighten the opposite one.

6.4 Centering the reticle of a rotating chuck mount microscope



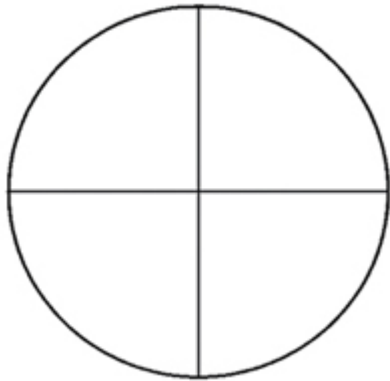
1. Position microscope (2).
2. Align microscope reticle with reference part - or hole.
3. Rotate microscope 180°.
4. Any centering error, i.e. the distance between the crosshairs (3) and the reference part (4), must be corrected by half the value (X) on either side, i.e. half with the crosshairs (3) and half with the reference part (4). To do this, move the reticle using the 2 horizontal or vertical screws (5) placed opposite each other.

Caution: These 2 screws (5), horizontal or vertical, must always be moved simultaneously, i.e. loosen one screw and tighten the opposite one.

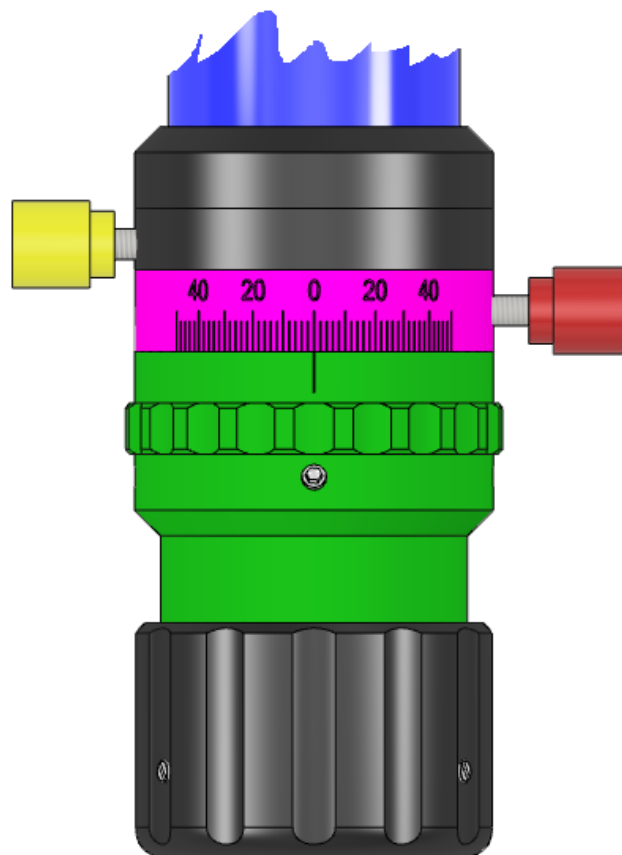
1. Rotate microscope 180°.
2. If the error is not fully corrected, repeat steps 2 - 5.

6.5 Using a rotating eyepiece

Some eyepieces allow you to orientate your reticle around the optical axis.



The most advanced of these have a scale and a 0 setting for their index.



To align your reticle with your part, unscrew the red screw, orient the pink vernier, then screw again.

To align your index with your 0; unscrew the yellow screw, orient the green index, then screw back in.

7.0 Illuminators control

To control illuminators with RJ connectors (e.g. MA 114-029 / 114-033 / 212-92 and some coaxial lights), please use [MA 356-041](#).



RJ type connector



8.0 Cleaning

Use a dry cloth if there are stains on the eyepiece or lens. If there is grease, use an eyeglass wipe.



For all other cases, please contact our technical department:

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