

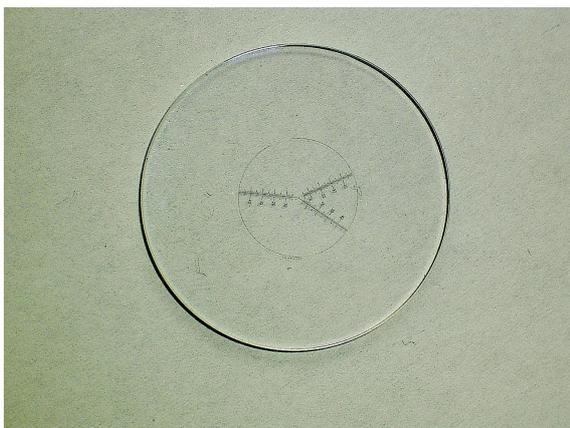
## Reticles - Measurements with Stereo Microscopes

Stereo microscopes are not only used for observing small objects and its processing but also for scientific and industrial measurements. For this purpose, scaled measuring plates are inserted in the ocular. Not every ocular lens is designed for this. However, most microscope manufacturers offer specially designed measuring oculars. These must match the tube of the microscope model. For adjustable oculars the reticle is individually aligned to the microscope image. For one-piece oculars the correct distance is preset as a standard. Such oculars are significantly cheaper. However, people wearing glasses are not able to make corrections and it may be necessary for them to wear their glasses. This is not a hindrance for occasional measurements.



Left: Bright 25 mm adjustable measuring ocular by ZEISS. People who wear glasses can adjust the focus individually.

Right: Unscrewed with insert ring for the reticle  $\varnothing$  26 mm.



Left: Reticle with angle partition for the bee wing.  
Per bracket = 5 mm  
= 50 parts,  $\varnothing$  26 mm  
(Item-No. 2.43)  
Smaller diameters are accordingly ground by opticians.

Thus, scale and microscope image are both displayed in focus in the measurement ocular. However, the reading value depends on the enlargement performance of the lens. For example, with the ocular 10x and lens 1x,

10 graduation marks = 1 mm, with the lens 2x, 20 graduation marks = 1 mm.

Therefore, stereo microscopes with a greater magnification area offer more measurement options (i.e.: Zoom-Microscope Item-No. 2.00 with continuous magnification area 10 to 40x).

Depending on what is required, measuring plates or reticles are available in various ready-made designs or they have to be especially made. I ordered a custom-made reticle for the bee wing with angle partitioning (Y-shape, especially made for Cubitalindex-measurements). 1 mm is divided into 10 graduation marks so that standard measurements can also be performed on the Y-line sections as is the case with level graduation. This reticle is only suitable for Items 2.30/2.40 due to its larger measurement.

In contrast, the measurement oculars for Item 1.04 and 2.00 feature a straight measuring line which is 14 mm in length. Each millimeter has 10 parts respectively 10 graduation marks.



Measuring ocular 10x20 (Item.-No. 2.41) for complete unit 1.04 and SMZ-Zoom 2.00 with straight reticle.



Measuring ocular 10x23 (Item-No. 2.42) With angle scale for Stereo Microscope K 400 and Discussion Microscope 2.40.