



<b>ATF-LS-E19</b> <b>Basic Calibration &amp; Maintenance of the Stereo Microscope</b>	Published Online: <b>March 2018</b>
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- I. **Scope:** This method describes the procedure for basic calibration and maintenance of the stereo microscope.
  
- II. **References:**  
"Microscopy from the Very Beginning", Fredirich K. Mollring, Carl Zeiss Microscopy Laboratory, Oberkockbien, Germany.  
  
"Polarized Light Microscopy" Walter C. McCrone, et al, Ann Arbor Science Publishers Inc., Ann Arbor MI, 1978.
  
- III. **Apparatus/Reagents:**  
A wide filed stereo binocular microscope capable of manipulating small samples encountered as evidence.  
  
A source of illumination (reflected incident light source)  
  
An ocular eye piece or micrometer  
  
A stage micrometer with known graduated units.
  
- IV. **Procedures:**  
Insert eyepiece micrometer into the ocular. If the ocular piece can be focused, focus the ocular in such a manner that the scale appears with maximum sharpness.  
  
Place the stage micrometer under the stereoscope, illuminate and focus the stereoscope on the scale. Both ocular and stage micrometer should be sharply defined.  
  
Turn the eyepiece until both scales are parallel to each other.  
  
Determine how many divisions of the ocular micrometer correspond to a certain distance on the stage micrometer and calculate the length which corresponds to one division of the ocular micrometer.  
  
Example: 70 Divisions on the ocular micrometer corresponds to 0.4 mm (or 400um) on the stage micrometer.  
  
One division =  $\frac{400 \text{ um}}{70 \text{ divisions/units}} = 5.7 \text{ um}$   
  
The micrometer value determined applies only for the ocular and objective with which the calibration is made.  
  
The above procedures should be repeated for each serial power available on the individual

stereomicroscopes. Micrometer values can be taped to the microscope for reference.

Refer to the document on maintenance and calibration of measuring devices to determine how frequently to perform this procedure.

**V. Quality Assurance/Quality Control:**

Dust is practically everywhere. If the precision tracks in the microscope become dirty, maintenance should be done by a manufacturer's representative under service contract.

Dust on optical elements will degrade the image quality to some extent. The best way to avoid dust exposure is to keep the microscope covered. The microscope tube or housing should always be closed with objectives and oculars in place.

To maintain sharpness of image and contrast, objectives and oculars should be cleaned, and checked for cracks as necessary.

Dust, fingerprints or other oils can be removed with a dust free rag and breathing on the optical surface. If a solvent is necessary use as little alcohol as possible to remove oils, compressed air can be used to blow dust from optical parts as well.