# STAGE MICROMETER FAQs

SPI Supplies
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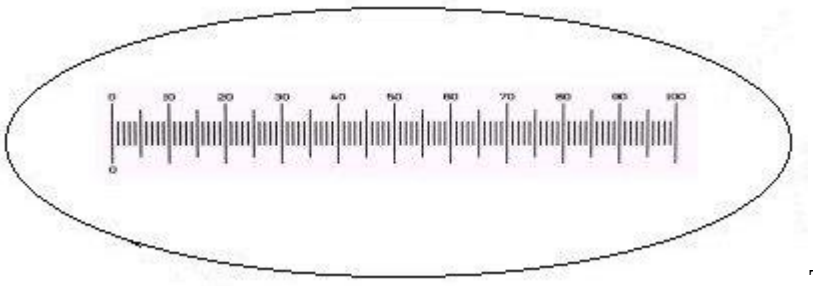
## Stage Micrometers from Pyser-SGI


These high quality stage micrometers are used for routine calibration of a variety of optical measuring instruments, from light microscopes and eye pieces to x-y stages and optical benches. The stage micrometer is actually used as a "specimen" in order to calibrate for example, an eye piece reticle. For the professional light microscope user or researcher, these are the ultimate calibration standards for their light microscopes.



This means that the stage micrometers are available "traceable" either with or without a Graticules (e.g. Pyser-SGI) certification.

**Are these stage micrometers certified?**
While these stage micrometers are not traceable to NIST through an unbroken chain of accredited laboratories, they are being offered as being traceable to the National Physical Laboratory (NPL) or UKAS (United Kingdom Accreditation Service) both of which are recognized by NIST in the USA and other standards making bodies in the rest of the world. This also means that when the micrometers are purchased "certified", the calibration is also directly traceable back to the international standard meter held in Paris at the BIPM (*Bureau international des poids et mesures*). These laboratories also have a Memorandum of Understanding with NIST and this does seem to satisfy the demands of most assessors.

**What are the various levels of certification of stage micrometers?**
For those not familiar with the terminology, there is a big difference in meaning between having a stage micrometer that is described as being "traceable" vs. one that has been "certified."

If it is "traceable", then all of the measurements validating the dimensional calibration are done using standards that are "traceable" back to standards that were directly calibrated against national standards held at one of the world's national standards making bodies such as NIST in the USA, National Research Council in Canada or the National Physical Laboratory in the UK.

For a particular stage micrometer to be "certified", some number of individual measurements are made at a laboratory that has been accredited to do such metrology testing. The mean value is reported along with the standard deviation in the individual measurements. We offer the customer the option of having any of the family of stage micrometers offered by SPI Supplies certified at either the National Physical Laboratory in the UK or at UKAS (United Kingdom Accreditation Service) also in the UK. Both agencies are "recognized" in other countries and therefore in that sense, their acceptance is the same.

So the lowest cost form of the stage micrometer product line is just our own (e.g. Pyser-SGI) statement that the products have been checked against traceable standards. The next lowest cost form is the same identical product but with a Pyser-SGI self-certification document. However, some customers prefer to have a certification by a prestigious top national agency, not one that they (e.g. NPL) has accredited to do such testing, such as UKAS. In this case, the NPL is the top agency in the UK and they have accredited UKAS laboratories to do this same type of metrology testing. The certification costs to SPI are much higher when the testing is done at NPL, presumably because of their much higher overhead and infrastructure costs, therefore the difference in the pricing.

If you are getting a calibrated stage micrometer to comply with some requirement that is part of an accreditation program, we would suggest discussing the required level of certification with your assessor; getting a higher level certification than what is going to be actually required is just throwing money to the wind (in our humble opinion, that is).

**How do I select which stage micrometer is best for me?**
The stage micrometer is available in two different forms:

**Transmitted illumination:** In this version, the scale itself is protected by a micro cover glass exactly to correspond with the specimen it replaces. The majority of microscopes are corrected for examining specimens through a cover glass by transmitted light. The calibrated distance depends on the actual product selected, and can vary from 0.1 mm to 50 mm.

**Reflected light illumination:** We would recommend this version of the product for anyone using a metallurgical light microscope. Because most metallurgical samples are examined without a glass cover slip, this stage micrometer does not have a cover glass. Hence one also has to use greater care to protect the surface from accidental damage. The calibrated distance is 1.0mm in length.

**How do I select the right length of the micrometer scale?**
The stage micrometers offered by SPI Supplies range in length from 0.1 mm all the way up to 50mm (2 inches), and with subdivisions as small as 2 µm. For some, the choice is strictly a matter of convenience. But for others who might be calibrating a microscope reticle in the eye piece, having a stage micrometer that has a scale larger than the one in the eye piece enables one to calculate measurement errors and therefore, apply a correction factor to compensate. The prices for the 20 mm are slightly higher than the 10 mm versions but for those needing them, this is a small price incrementally for the value-added.

**Are all stage micrometers created equal?**
Absolutely not! Consider the following when looking at stage micrometers:

- All SPI Supplies stage micrometers come with an engraved serial number on the slide mount.
- All SPI Supplies stage micrometers come in a stainless steel mount instead of a much more inherently less expensive aluminum mount. Most experienced users of stage micrometers prefer stainless steel for a variety of reasons, one being the heavier "feel" which makes them easier to handle.
- All SPI Supplies stage micrometers come in a polished wooden box with full cushioning in order to provide the highest level protection.
- The lines on the SPI stage micrometers have absolutely the smallest standard deviation in center-of-the-line positioning as well as the smallest standard deviation of the line width.
- Beware of "all glass" stage micrometers. Why? Well, drop it once and your expensive stage micrometer is no more.

**How do I extend the life of my stage micrometer?**
Cleanliness is the rule at all times. Keep the stage micrometer free of dust through the use of SPI Two-In-One™ OK Easy™ Dusters. And when not in use in the microscope, it should be always in a protected (e.g. "clean" environment) and if it has to be set down on a surface, do not set directly onto a laboratory bench, but put it on a SPI-Wiper™ lint-free cotton wiper. For effective and damage-free dry cleaning, we recommend using only the SPI Supplies® Brand Lens Cleaning Tissues.

**Revised: EER Date: 1/16**