

Calibration Procedure

PosiTector SPG Surface Profile Gage

Table of Contents

1	Introduction and UUC Performance Requirements	2
	Table 1-1	2
2	Measurement Standards and Support Equipment Performance Requirements.....	2
	Table 2-1 UUC Accuracy Requirements and Description	2
	Table 2-2 Minimum Use Specification	2
	Table 2-3 Actual Equipment Specification	2
	Table 2-4 Calibration Environmental and Warm-up Requirements	3
3	Preliminary Operations	3
4	Calibration Process.....	3
	Figure 4-1 Measurement Area for Reference Standards.....	4
5	Performance Requirements	4
	Table 5-1 Performance Requirements and Calibration Data for PosiTector SPG.....	4

1 Introduction and UUC Performance Requirements

1.1 This procedure describes the calibration of DeFelsko Corporation PosiTector SPG probe and gage.

Table 1-1

Measurement Range
0 - 500 microns (0 - 20 mils)

1.2 The unit being calibrated will be referred to as the UUC (unit-under-calibration).

2 Measurement Standards and Support Equipment Performance Requirements

2.1 The UUC accuracy requirements are based upon the published UUC performance specifications.

2.2 The test uncertainty ratio applied in this Calibration Procedure is 4:1 unless otherwise stated.

2.3 The Minimum-Use-Specifications are the minimum test equipment specifications required to meet all the UUC accuracy requirements and the test uncertainty ratio applied.

Table 2-1 UUC Accuracy Requirements and Description

Range	Performance Specifications	Test Method
0 - 500 microns (0 - 20 mils)	\pm (5 microns + 5% of reading) \pm (0.2 mils + 5% of reading)	Compared to Reference Standards

Table 2-2 Minimum Use Specification

Range	Accuracy
0 - 500 microns (0 - 20 mils)	\pm 1.25 microns (\pm 0.05 mils)

Table 2-3 Actual Equipment Specification

Equipment Generic Name	Range	Accuracy	Manufacturer/Model #'s Applicable
Reference Standards	0 - 25.4 mm (0-1")	\pm 1.25 microns (\pm 0.05 mils)	DeFelsko

Caution: The instructions in this Calibration Procedure relate specifically to the equipment and conditions listed in Section 2. If other equipment is substituted, the information and instructions must be interpreted accordingly.

Table 2-4 Calibration Environmental and Warm-up Requirements

Measurement Standards & Support Equipment Environmental Requirements:	Temperature: $23 \pm 5^\circ \text{C}$. Relative Humidity: Less than 95%
Measurement Standards & Support Equipment Warm-up and Stabilization Requirements:	Not Required

3 Preliminary Operations

Note: Review the entire document before starting the calibration process.

3.1 Visual Inspection

3.1.1 Visually inspect the UUC for, but not limited to:

- Loose probe tip
- probe tip wear or damage
- Dirty or damage probe base plate

3.1.2 Damage or excess wear shall be repaired prior to beginning the calibration process.

3.2 Gage Reset

3.2.1 When the gage is powered down, simultaneously hold the center and “+” buttons of the gage until the reset symbol (circular arrow) appears.

Caution: Be sure to keep the probe off any surface during the RESET process.

3.3 Probe Zero

3.3.1 Select the Main Menu ZERO function and measure the bare glass plate. One measurement is sufficient.

3.3.2 Perform a zero check by measuring the same standard. If the gage does not read within ± 3 microns (± 0.1 mils), repeat the Main Menu ZERO function.

4 Calibration Process

Note: Whenever the test requirement is not met, verify the results of each test and take corrective action before proceeding.

4.1 Review the Performance Requirements Table 5-1.

4.2 Using the appropriate Certificate of Calibration template for the UUC, record the thickness from the Reference Standard labels.

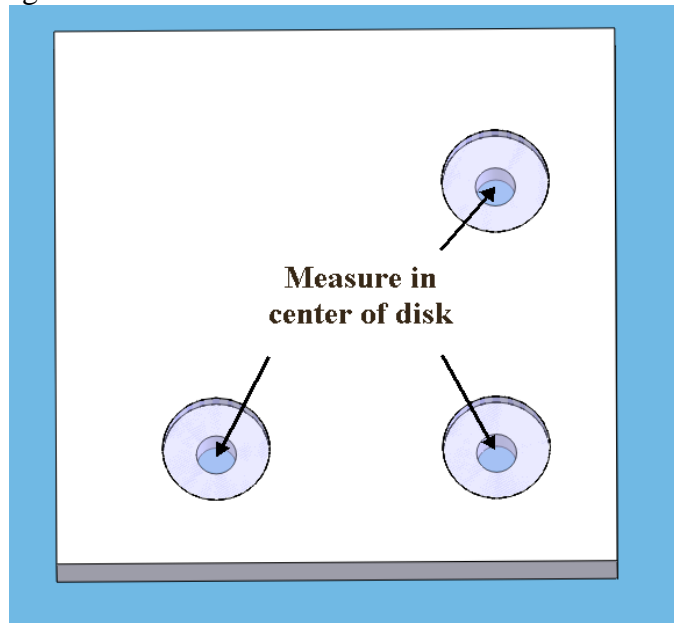
4.3 Determine the allowed range of readings for the UUC using the calculation methods shown in Table 5-1.

4.4 Use the UUC to take readings of all the reference standards. Verify that the readings are within the allowable limits determined in 4.3. Record the readings on the Certificate of Calibration.

Note: Record all digits displayed on the LCD.

4.5 In taking readings the probe tip shall be located on the Reference Standard as shown below.

Figure 4-1 Measurement Area for Reference Standards



5 Performance Requirements

Note: The technician shall collect the data needed to complete columns A and B of the appropriate table below. Do not write in this procedure.

Table 5-1 Performance Requirements and Calibration Data for PosiTector SPG

Thickness on Standard Label (microns)	Min. Reading Allowed ^① (microns)	Max. Reading Allowed ^② (microns)	Gage Measurement (microns)
A			B

① Calculation: $(A \times 0.95) - 5$. Round up to the nearest 1 micron.

② Calculation: $(A \times 1.05) + 5$. Round down to the nearest 1 micron.

* For imperial/metric readings convert using 1 mil = 25.4 microns