Management Procedure 2540
Revision: B
Date Issued: July 5, 2005
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Calibration Procedure

DeFelsko Corporation

PosiTector 6000 FKS
PosiTector 6000 NKS

Coating Thickness Probes

Table of Contents

1. Introduction and UUC Performance Requirements

1.1. This procedure describes the calibration of DeFelsko Coating Thickness Probes, PosiTector 6000 FKS & NKS with the following specifications:

Table 1-1 Measurement Ranges

Probe	Measurement Range
6000 FKS & NKS	0-13 mm and 0-500 mils

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

Table 1-2 UUC Calibration Requirements and Calibration Description

UUC Parameter or Function	Performance Specifications	Test Method
Accuracy Test 6000 FKS & NKS	0 to 13 mm, ± (0.02 mm + 3% of reading) 0 to 500 mils, ± (1 mil + 3% of reading)	Compared to Coating Thickness Reference Standards.

2. Measurement Standards and Support Equipment Performance Requirements

2.1. Minimum-Use-Specifications are the calculated minimum performance specifications required for the measurement standards and support equipment to be utilized for comparison measurements required in the Calibration Process.

2.2. The Minimum-Use-Specifications are developed through uncertainty analysis and are calculated through assignment of a defined and documented uncertainty ratio or margin between the specified tolerances of the UUC and the capabilities (uncertainty specifications) required of the measurement standards system.

2.3. The uncertainty ratios applied in this Calibration Procedure are 4:1 or better unless otherwise stated.

***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 2-1 Calibration Environmental and Warm-up Requirements

Measurement Standards & Support Equipment Environmental Requirements:	Temperature: 23 ± 5° C. Relative Humidity: Less than 95%
Measurement Standards & Support Equipment Warm-up and Stabilization Requirements:	Not Required

Table 2-2 Measurement Standards & Support Equipment Performance Requirements

Minimum-Use-Specification		
Range	Accuracy	Construction
0-13 mm 0-500 mils	5 microns 0.25 mils	Polystyrene

Generic Equipment Name	Actual Equipment Specification		Manufacturer/Model #'s Applicable
	Range	Accuracy	
Thickness Reference Standards	0 – 13 mm 0 - 500 mils	(2.54 μm + 0.05% of standard) ± (0.1 mil + 0.05% of standard)	DeFelsko Corporation, Thickness Calibration Standards, Model CAL-P5

3. Preliminary Operations

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

3.1. Visual Inspection

- Visually inspect the UUC for:
- Damaged LCD readout
- Probe wear or coating
- Cracked or broken case
- Missing probe cover, battery door or other parts
- Proper identification

3.2. Damage or excess wear must be repaired prior to beginning the calibration process.

Caution: Be sure to keep the probe well away from any metal surface during the RESET process.

3.3. Gage Reset

3.3.1. Hold the "+" button of the gage until it powers up and performs a Reset.

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. If the gage is to be calibrated in English units, select the "Setup" menu, then "Units" to change to mils.

4.2. Measure a flat uncoated (zero) plate at least 4"x 4"x 0.2". Use steel for a FKS probe and aluminum for a NKS probe. Compare the reading to the allowable limits in table 5-1. If it

is within limits proceed to section 4.3 otherwise follow the zeroing process in 4.2.1 – 4.2.2.

4.2.1. Select “Zero” from the main menu, press the menu/middle button and then indicate the number of readings (3) to be used to determine an average.

4.2.2. Measure the zero plate the require number of times then repeat step 4.2.

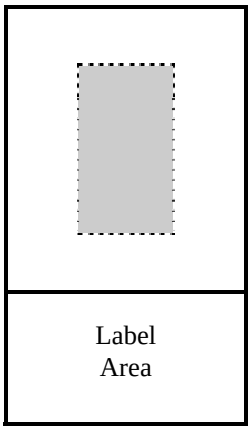
4.3. Place the Thickness Reference Standard on the same uncoated plate used to zero the probe.

4.4. Use the UUC to make readings of each standard. Verify that the readings are within the allowable limits determined in table 5-1. Record the reference standard values and the readings on the Certificate of Calibration.

Note: Record all digits displayed on the LCD. This may vary depending on the resolution mode.

4.5. In taking readings the probe shall be centered on the Coating Thickness Reference Standard as shown in the shaded area (see Figure 4-1).

Figure 4-1



5. Performance Requirements

Note: The technician will 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 6000 FKS & NKS

Nominal Thickness	Thickness on Standard Label (mm)	Actual Measurement (mm)	Min. Reading Allowed❶ (mm)	Max. Reading Allowed❷ (mm)
	A	B		
Zero Plate	0		-0.02	+0.02
1.5 mm				
2.5 mm				
6.5 mm				
12 mm				

❶Calculation: (A times 0.97) – 0.02. Round up to the nearest 0.01mm.
❷Calculation: (A time 1.03) + 0.02. Round down to the nearest 0.01mm.

For metric readings convert using 1 mil = 25.4 microns

Management Procedure Change Notice

Procedure Number: 2540
Revision Level: B
Date of Change: July 10, 2008
Title: Calibration Procedure for DeFelsko/PosiTector 6000 FKS & NKS

Reason for Change:
- Added NKS to scope of procedure
- General formatting changes

Description of Change:
- Added references to NKS throughout
- Removed section 1.3 and 1.4 - redundant
- Inserted gage reset text section 3.3 and 3.3.1
- Inserted minimum use specification table to table 2-2
- Added sections 4.1, 4.2.1 & 4.2.2
- Changed DeFelsko/PosiTector text to PosiTector
- Reformatted table 5-1

I confirm I have read and understand the procedure and the change described above.

Printed Name	Signature	Date

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