DeFelsko®

Management Procedure 2543
Revision: B
Date Issued: June 6, 2013
Date Revised: December 11, 2018

Calibration Procedure

DeFelsko Corporation

PosiTector 6000 FNGS

Coating Thickness Probe

Table of Contents

1 Introduction and UUC Performance Requirements 2
Table 1-1 Measurement Ranges 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 4
5 Performance Requirements 5
Table 5-1 Performance Requirements and Calibration Data for PosiTector 6000 FNGS 5
Management Procedure Change Notice 6

1 Introduction and UUC Performance Requirements

1.1 This procedure describes the calibration of DeFelsko Corporation PosiTector 6000 FNGS probe with the following specification:

Table 1-1 Measurement Ranges

Probe	Measurement Range
6000 FNGS	0 – 63.5 mm (0 – 2.5 in)

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

UUC	Performance Specifications		Test Method
6000 FNGS	0 – 63.5 mm (0 – 2.5 in)	± (0.2 mm + 3% of reading) ± (0.01 in + 3% of reading)	Compared to Reference Standards

Table 2-2 Minimum use specification

Range	Accuracy
0 – 63.5 mm (0 – 2.5 in)	± 0.05 mm (± 2.5 mils)

Table 2-3 Actual Equipment Specification

Equipment Generic Name	Range	Accuracy	Manufacturer / Model #'s Applicable
Certified Polystyrene Blocks	13 – 19 mm (500 - 750 mils)	± (0.0025 mm + 0.05% of thickness) ± (0.1 mil + 0.05% of thickness)	DeFelsko Corporation, STD-P8

***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 ± 5° 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:

- damaged LCD readout
- probe wear or coating
- cracked or broken case
- missing probe cover, battery door, or other parts
- proper identification

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 unit is powered down, simultaneously hold the "+" and middle buttons for several seconds then release them. The reset symbol will then appear.

Caution: Be sure to hold the probe in the air and well away from any metal surface during the RESET process.

3.3 Probe Zero

3.3.1 While holding the probe in the air, select the Cal Settings "Zero" function and then indicate the number of readings (1) to be used.

3.3.2 Measure the middle of a flat uncoated (zero) 1018 steel plate at least 7" x 7" x 0.25".

3.3.3 Re-measure the zero plate. If the reading is within +/-0.2 mm (10 mil) continue, otherwise repeat steps 3.3.1 and 3.3.2.

3.4 Material Adjustment

3.4.1 From the Settings menu select 2 pt adjust.

3.4.2 Place the 13 mm (500mil) polystyrene block in the center of the same uncoated plate used to zero the probe and take a reading. Adjust the displayed value to the value of the block. Note: The gage adjusts in 0.2 mm or 10 mil increments.

3.4.3 Stack two more 13 mm (500 mil) blocks and the 19 mm (750 mil) block onto the existing block 13 mm block for a total thickness of 58 mm (2250 mil). Take a reading and adjust the displayed value to the total value of the 4 blocks.

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.

Note: The probe calibration may be verified in either normal or high-resolution mode. Accuracy is the same for both modes.

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

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

4.4 Stack the appropriate blocks, in the center of the same uncoated plate used to zero the probe, to take readings at the following thicknesses: 19 mm (750 mil), 32 mm (1250 mil), 45 mm (1750 mil) and 58 mm (2250 mil). Verify that the readings are within the allowable limits determined in section 4.3. Record the readings on the Certificate of Calibration.

Note: Record all digits displayed on the LCD. This may vary depending on the resolution mode. In taking readings the probe shall be centered on the Reference Standards.

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 FNGS

Thickness on Reference Standard Label (mm)	Min. Reading Allowed❶ (mm)	Max. Reading Allowed❷ (mm)	Actual Probe Measurement (mm)
A			B

❶Calculation (A times 0.97) – 0.2. Round up to the nearest even 0.1 mm increment

❷Calculation (A times 1.03) + 0.2. Round down to the nearest even 0.1 mm increment.

*For imperial/metric readings convert using 1 mil = 0.0254 mm

Management Procedure Change Notice

Procedure Number: MP 2543
Revision Level: B
Date of Change: December 11, 2018
Title: Calibration Procedure for PosiTector 6000 FNGS

Reason for Change:

- Align procedure to match units of published specifications

Description of Change:

- Updated probe measurement range to match published specifications.
- Throughout procedure changed 12.7 mm to 13 mm.
- Section 3.2.1 updated reset procedure.
- Section 3.3.2 updated minimum zero plate dimensions.
- Sections 3.4.3 and 4.4 updated stacked plate thicknesses.

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

Printed Name	Signature	Date

Management Form 0010.02-05/1998