DeFelsko®

Management Procedure 2550
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Calibration Procedure

DeFelsko Corporation

PosiTector RTRH and RTRP

Replica Tape Reader Probes

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1 Introduction and UUC Performance Requirements

1.1 This procedure describes the calibration of the profile height of the DeFelsko Corporation PosiTector RTRH and RTRP replica tape reader probes with the following specification:

Table 1-1 Measurement Ranges

Unit	Measurement Range*
PosiTector RTRH & RTRP	20 - 115 microns (0.8 – 4.5 mils)

* Note the PosiTector RTR measures the average maximum peak-to-valley profile height of Press-O-Film™ replica tape. Values are reported as either H or H_L. H readings represent the average maximum peak-to-valley profile height. H_L readings represent the linearized peak-to-valley profile height measurement that has been adjusted for the non-linearity of replica tape.

1.2 Peak density and H_L of the PosiTector RTRP replica tape reader are not calibrated.

1.3 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	Parameter	Performance Specifications		Test Method
RTRH & RTRP	H	20 – 115 microns (0.8 – 4.5 mils)	± 5 microns (± 0.2 mils)	Certified Shim

Table 2-2 Minimum use specification

Parameter	Range	Accuracy
H	20 – 115 microns (0.8 – 4.5 mils)	± 1.25 microns (± 0.05 mils)

Table 2-3 Actual Equipment Specification

Parameter	Equipment Generic Name	Range	Accuracy	Manufacturer / Model #'s Applicable
H	Certified Shim	75 - 125 um (3 – 5 mils)	± 1.25 um (± 0.05 mils)	DeFelsko CSSRTR

***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:

- Contamination on the measuring surfaces
- Damage to the buttons or probe housing
- Misalignment of the measuring surfaces
- Proper identification
- For body/probe combinations review the body for damage

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

3.2 Probe Cleaning

3.2.1 Ensure the UUC is powered off.

3.2.2 Place a card reader cleaning card between the measuring surfaces.

3.2.3 Squeeze both buttons of the probe simultaneously to close the measuring head.

3.2.4 While keeping the buttons depressed, move the cleaning card back and forth several times.

Note: The cleaning card can be used multiple times but it may need to be moistened with isopropyl alcohol after the package has been open for several minutes.

3.2.5 Inspect the measuring surfaces. If there is any contamination, repeat the cleaning process.

3.3 Gage Reset:

3.3.1 When the UUC is powered down, simultaneously hold the "+" and middle buttons until the reset symbol appears.

3.3.2 When the UUC prompts you, depress both probe buttons simultaneously to perform a probe zero. Make sure to hold the buttons until you hear the UUC beep.

3.3.3 Enter the "Cal Settings" menu and verify that "Linearize" is not selected.

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 Depress both probe buttons simultaneously without a shim in the probe to zero the probe. This must be done before every measurement.

4.3 Insert the 75 micron (3 mil) shim between the measurement surfaces and depress both probe buttons simultaneously. Any movement of the shim during the measurement process will impact the measurement, so let go of the shim once the probe is holding it.

4.4 After the measurement is complete, hold the shim and release the probe buttons. Record the H measurement value.

Note: The PosiTector RTR measures the average maximum peak-to-valley profile height of Press-O-Film™ replica tape. The gage subtracts 50.8 microns (2 mils) from measurements to compensate for the thickness of the polyester film on the Press-O-Film™. When measuring shims all readings will be 50.8 microns (2 mils) lower than actual.

4.5 Repeat steps 4.2 – 4.4 with the 125 micron (5 mil) shim.

5 Performance Requirements

Table 5-1 Performance Requirements and Calibration Data for PosiTector RTRH & RTRP

Shim Value (microns)	Adjusted Shim Reading❶ (microns)	Min. Reading Allowed❷ (microns)	UUC Reading (microns)	Max. Reading Allowed❸ (microns)
A	B			
			H =	
			H =	

❶Calculation: A – 50.8
❷Calculation: (B – 5). Round up to the nearest micron.
❸ Calculation (B + 5). Round down to the nearest micron.
To convert from microns to mils divide by 25.4

Management Procedure Change Notice

Procedure Number: MP 2550
Revision Level: F
Date of Change: April 5, 2023
Title: Calibration Procedure for PosiTector RTRH & RTRP

Reason for Change:

- Change to “Cal Settings” menu

Description of Change:

- In step 3.3.3 – changed “unselect “Linearize”” to “verify that “Linearize” is not selected”
- Removed the Cal Setting step to select the proper tape grade (was step 4.2)

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

Printed Name	Signature	Date

Management Form 0010.02-05/1998