DeFelsko®

Management Procedure 2551
Revision: B
Date Issued: February 7, 2014
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Calibration Procedure

Certified Plastic Shims for RTR

Table of Contents

1 Introduction and UUC Performance Requirements

1.1 This procedure describes the calibration of shims for use with the PosiTector RTR products with the following ranges:

Table 1-1 Measurement Range

Type	Measurement Range
Certified Shim	75 – 125 microns (3 – 5 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 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 Function	Range	Accuracy	Test Method
Plastic Shim	75 – 125 microns (3 – 5 mils)	± 1.25 microns (± 0.05 mils)	Height Gage

Table 2-2 Minimum Use Specification

Parameter	Range	Accuracy
Height	75 - 125 um (3 - 5 mil)	± 0.31um (± 0.012 mil)

Table 2-3 Actual Equipment Specification

Equipment Generic Name	Range	Accuracy	Manufacturer/Model #'s Applicable
Height Gage	0 - 25 mm (0 - 0.984")	± 0.10 microns (± 0.004 mils)	Heidenhain CT2501 with ND287 display

***Caution*:** The instructions in this Calibration Procedure relate specifically to the equipment and conditions listed in this section. 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:	15 minutes

3 Preliminary Operations

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

3.1 Make sure the process monitoring measurement has been performed per MP5044 before calibrating any shims.

3.2 Replace the normal rounded tip on the CT2501 with the flat tip and change the motion controller pressure setting to 1.

3.3 Take a height reading on the granite surface of the stand. Set this as the reference point by pressing “Reset” on the ND 287 display.

3.4 Inspect the shim for surface defects or cosmetic blemishes. Reject any parts that have defects.

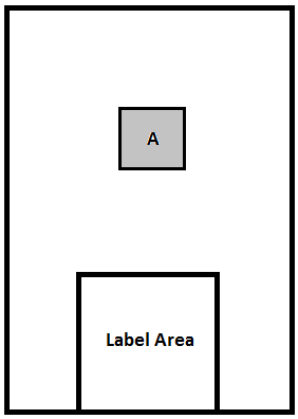
3.5 Use a Q-tip and water to clean the bottom and top surfaces of the shim. Alcohol can remove the colored coating of the shim so only use water.

4 Calibration Process

Note: Whenever a test requirement is not met as indicated in table 5-1, verify the results of the test and take corrective action <u>before</u> proceeding.

4.1 Take five readings on the shim in the area shown below as “A”.

Figure 4-1

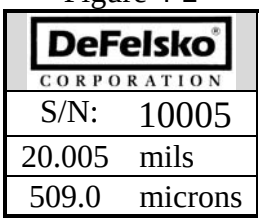


4.2 Average the five readings. Verify that the individual readings are within the allowable limits shown in columns D and E of Table 5-1.

4.3 Calculate the thickness value in mils by dividing the micron value by the constant 25.4 (1 mil = 25.4 microns).

4.4 Enter the thickness value in microns, rounded to the nearest 0.1 micron, on the DeFelsko Standard label as shown in Fig. 4-2. Enter the mils value, rounded to the nearest 0.005 mils on the label in the corresponding location. Place a clear label cover over the DeFelsko Standard label for protection.

Figure 4-2



4.5 Place the label on the shim centered width wise and even with the bottom of the label as shown in Figure 4-1.

Note: Be sure to place the label at the correct end of the standard (the one opposite where the readings were taken).

4.6 Record the micron and mil readings from the shim label on the Certificate of Calibration.

4.7 After completing all measurements be sure to put the rounded tip back on the CT2501 and change the motion controller pressure setting back to 3.

5 Performance Requirements

Note: The technician will collect the data needed to complete column B of table 5-1. The technician shall then calculate the values for column C - E as indicated in the procedure and record all information in the table. Do not write in this procedure.

Table 5-1 Performance Requirements for certified plastic shims for RTR

Nominal Shim Thickness (microns)	Individual Readings (microns)					Average (microns)	Min. Reading Allowed❶ (microns)	Max. Reading Allowed❷ (microns)
A	B					C	D	E

* For imperial readings convert using 1 mil = 25.4 microns.
❶Calculation: C – 1.25 microns.
❷Calculation: C + 1.25 microns.

Management Procedure Change Notice

Procedure Number: MP 2551
Revision Level: B
Date of Change: April 17, 2019
Title: Calibration Procedure for Certified Plastic Shims for RTR

Reason for Change:

- Increase significant digits recorded on calibration label.

Description of Change:

- Updated tables 2-2, 2-3 & 2-4
- Changes section 4.4

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

Printed Name	Signature	Date

Management Form 0010.02-05/1998