Calibration Procedure

DeFelsko Corporation

PosiTest DFTC-B, DFTC-C, DFTF-B & DFTF-C

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1. Introduction and UUC Performance Requirements

1.1 This procedure describes the calibration of DeFelsko Corporation PosiTest DFTC-B, DFTC-C, DFTF-B & DFTF-C Gages. All gages have the following ranges:

<table>
<thead>
<tr>
<th>Model</th>
<th>Measurement Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFTC-B</td>
<td>0-1000 microns</td>
</tr>
<tr>
<td>DFTC-C</td>
<td>(0-40 mils)</td>
</tr>
<tr>
<td>DFTF-B</td>
<td></td>
</tr>
<tr>
<td>DFTF-C</td>
<td></td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Model</th>
<th>Range</th>
<th>Performance Specifications</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>DFTC-B</td>
<td>0-1000 microns</td>
<td>± (2 μm + 3% of reading)</td>
<td>Compared to Reference Standards</td>
</tr>
<tr>
<td>DFTC-C</td>
<td>(0-40 mils)</td>
<td>± (0.1 mils + 3% of reading)</td>
<td></td>
</tr>
<tr>
<td>DFTF-B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DFTF-C</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1000 microns</td>
<td>± 0.50 microns</td>
</tr>
<tr>
<td>(0 - 40 mils)</td>
<td>(± 0.025 mils)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equipment Generic Name</th>
<th>Range</th>
<th>Accuracy</th>
<th>Manufacturer/Model #’s Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coating Thickness</td>
<td>0 - 1000 microns</td>
<td>± 0.43 microns</td>
<td>DeFelsko Corporation, STD-S2</td>
</tr>
<tr>
<td>Reference Standards</td>
<td>(0 - 40 mils)</td>
<td>(± 0.017 mils)</td>
<td></td>
</tr>
<tr>
<td>0 - 500 microns</td>
<td>± 0.43 microns</td>
<td>(± 0.017 mils)</td>
<td>DeFelsko Corporation, STD-A2</td>
</tr>
<tr>
<td>(0 - 20 mils)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Measurement Standards &amp; Support Equipment Environmental Requirements:</th>
<th>Temperature: 23 ± 5°C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement Standards &amp; Support Equipment Warm-up and Stabilization Requirements:</td>
<td>Relative Humidity: Less than 95%</td>
</tr>
<tr>
<td>Not Required</td>
<td></td>
</tr>
</tbody>
</table>

3 Preliminary Operations

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

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

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

3.3 Gage Reset:
3.3.1 For –B version gages: Turn gage on by depressing the probe. Perform a Reset by pressing and releasing both buttons simultaneously 3 times.

3.3.2 For –C version gages: Turn on the gage by pressing either button. Enter the menu by pressing both buttons simultaneously. Use the “-” or “+” buttons to select the reset symbol (curled yellow arrow) and then press both buttons simultaneously to reset the gage.

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

3.4 Gage Zero

3.4.1 For –B version gages: Perform a Zeroing operation by pressing and releasing both buttons simultaneously. When the display blinks “0” measure the ferrous (steel) uncoated Reference Standard. Re-measure the uncoated Reference Standard and verify the reading is within ± 2 microns (0.1 mils)

3.4.2 For –C version gages: Enter the menu by pressing both buttons simultaneously. Use the “-” or “+” buttons to select the “0” symbol and then press both buttons simultaneously. Follow the screen prompt to measure the ferrous (steel) uncoated Reference Standard. Re-measure the uncoated Reference Standard and verify the reading is within ± 2 microns (0.1 mils).

3.4.3 For DFTC-* products, repeat step 3.4.1 or 3.4.2 for the non-ferrous (Aluminum) uncoated Reference Standard.

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 Record the thickness of the Reference Standards being used and determine the allowed range of readings for the UUC using the calculation methods shown in Table 5-1.

4.3 Use the UUC to take readings of all the reference standards. Verify that the readings are within the allowable limits determined in table 5-1. Record the readings.

*Note*: In taking readings the probe tip shall be centered on point A of the Reference Standard as shown below. Record all digits displayed on the LCD.

Figure 4-1 Measurement Area for Reference Standards
## Performance Requirements

Table 5-1 Performance Requirements and Calibration Data for PosiTest DFTC-B, DFTC-C, DFTF-B & DFTF-C

<table>
<thead>
<tr>
<th>Thickness on Standard Label (microns)</th>
<th>Min. Reading Allowed</th>
<th>Max. Reading Allowed</th>
<th>Gage Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Ferrous</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Non-Ferrous</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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1. Calculation: \((A \times 0.97) - 2\). Round up to the nearest 1 micron.
2. Calculation: \((A \times 1.03) + 2\). Round down to the nearest 1 micron.

* For imperial/metric readings convert using 1 mil = 25.4 microns
Management Procedure Change Notice

Procedure Number: 2575
Revision Level: C
Date of Change: October 30, 2017
Title: Calibration Procedure for PosiTest DFTC-B, DFTC-C, DFTF-B & DFTF-C

Reason for Change:
- New version product

Description of Change:
- Changed DFT Ferrous and Combo references to DFTC-B, DFTC-C, DFTF-B & DFTF-C
- Made sections 3.3.1 and 3.3.1 for B version products
- Added section 3.3.2 and 3.4.2 for C version products
- Figure 4-1 removed reference to square reference standard

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

<table>
<thead>
<tr>
<th>Printed Name</th>
<th>Signature</th>
<th>Date</th>
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