

PosiTest[®] **PC** ✓ **Powder Checker** Uncured Coating Thickness Gage

Instruction Manual v. 3.0



DeFelsko[®]
The Measure of Quality

Introduction

The **PosiTest PC Powder Checker** is a hand-held, non-contact coating thickness gage that uses high-frequency ultrasound to predict the cured thickness of uncured powder coatings.

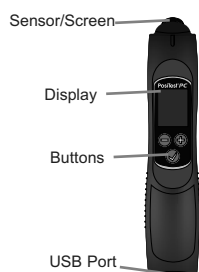
PosiTest PC Contents

- PosiTest PC gage
- Zero Fixture
- Replacement probe screen
- 4 AAA alkaline batteries
- Instruction manual
- Hard shell carrying case
- USB Cable
- PosiSoft Desktop reporting software
- Two (2) year warranty

Quick Start

1. **POWER-UP** the **PosiTest PC** by pressing the  button.
2. **ZERO** the gage using the supplied Zero Fixture (pg. 4).
3. **MEASURE** the applied powder (pg. 4).
4. **ADJUST** to the specific powder if necessary (pg. 8).

NOTE: To preserve battery life, the **PosiTest PC** will power down after approximately 5 minutes of no activity. All settings are retained.



The USB Port has several functions:

- Gage updates (pg. 10)
- USB Keyboard Mode / live stream readings (pg. 10)
- Download stored readings to PosiSoft Desktop (pg. 10)
- Allows the gage to be operated without batteries when connected to a suitable USB power supply

Menu Navigation

Press the $\ominus$ and $\oplus$ buttons simultaneously to enter the gage menu. Navigate between menu items using the $\ominus$ or $\oplus$ buttons. Use the $\checkmark$ to select the highlighted menu item.

The following menu items are displayed:



Memory Mode: Turns Memory Mode ON. The gage will store and maintain a running average for up to 999 readings. Stored measurements can be downloaded to PosiSoft Desktop Software (pg. 10). When **Memory Mode** is ON, the following menu options appear:



RESET Memory Mode. All stored readings and the running average will be cleared from gage memory.



Turns **Memory Mode** OFF

NOTES: **Memory Mode** is unavailable when **USB Keyboard Mode** is active

While in **Memory Mode**, press the $\ominus$ button to discard the last reading



Zero: Zeroes the instrument using the supplied Zero Fixture (pg. 4)



1-Point Adjustment: Adjusts the gage to a known thickness of powder (see *Adjustment Techniques*, pg. 8)



2-Point Adjustment: Adjusts the gage to two known thicknesses of powder if the 1-Point Adjustment does not improve accuracy (see , pg. 9)



Display Brightness: Adjusts the gage display brightness using the $\ominus$ and $\oplus$ buttons.

mils
μm

Units: Toggles the display units between mils and microns.



Sound: Turns the built-in speaker ON or OFF . When set to OFF, a red speaker icon will appear in the gage display.



Scan Mode: In this mode, the gage will continuously take readings, and only add a reading to memory when the button is released. Ideal for quickly analyzing large areas. (See *Scan Mode*, pg. 6)



USB Keyboard Mode: When enabled and connected to a computer, the **PosiTest PC** will be recognized as a keyboard. Readings are sent to the computer as they are taken, emulating keystrokes. (pg. 10)

NOTE: Memory Mode is unavailable when in USB Keyboard Mode.



Gage Reset: Restores the gage to default settings, clears stored memory and calibration adjustments.



Power Off: Powers down the gage. Alternatively, the gage will automatically power down after approximately 5 minutes of no activity. All settings are retained.

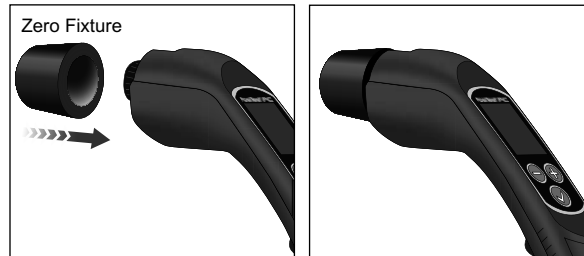
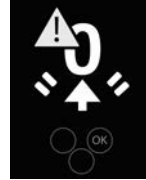


Exit Menu: Exits the gage menu and returns to the main measurement screen.

Zeroing

For best accuracy, perform a **Zero** at the beginning of every shift to compensate for temperature and humidity changes. It is also required after a Gage Reset or whenever the "Zero Probe" graphic is displayed.

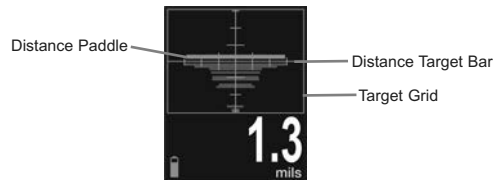
1. Select **Zero** from the Gage menu.
2. Place the probe tip in the supplied **Zero Fixture**.
3. Press the  button and hold the **Zero Fixture** on the probe until the hourglass icon disappears and a green check mark is displayed. If the zero fails, a red X will display. Repeat the **Zero** process.



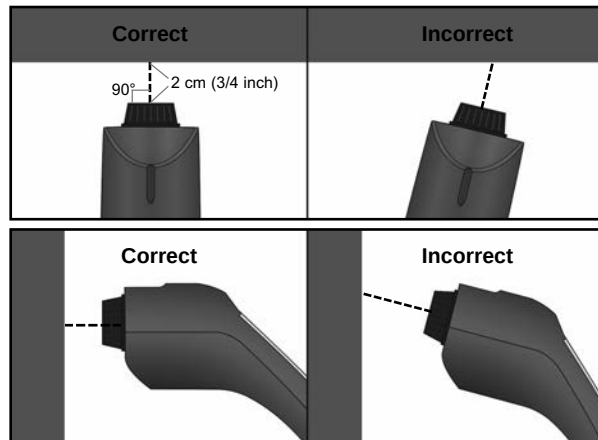
NOTE: The **Zero** process can take up to 10 seconds

How to Measure

Power-up the **PosiTest PC** by pressing the  button. With the gage at least 10 cm (4 inches) away from the coated part, press and hold the  button. A target grid will appear on the display:



While watching the gage display, move the probe tip closer to the target, aligning the **Distance Paddle** with the **Distance Target Bar**. The optimum distance for measurement is 2 cm (3/4 inch) between the probe tip and the surface of the applied powder. Ensure the **PosiTest PC** is held perpendicular to the surface.



The instrument will take a measurement when:

- a. The **Distance Paddle** is near the **Distance Target Bar**. This indicates that the instrument is the correct distance away from the part.
- b. The **Distance Paddle** is as wide as possible. This indicates that the instrument is being held perpendicular to the surface.

For best results use **Memory Mode** (pg. 2) to generate averages. The average of a series of measurements is often a more meaningful prediction of cured thickness than a single reading.

If a thickness result does not appear after 5-6 seconds, release the measurement  button and try again.

Small and/or erratically swinging parts may present measurement challenges. Steady the part whenever possible. If erroneous readings continually result, change the measurement strategy by rotating the gage, altering its alignment to the part, or by

measuring a different location on the part. If a valid measurement cannot be calculated, one of the following messages will be displayed:

- 0 A good reading, but the predicted cured thickness is less than the minimum range.
- +++ A good reading, but the predicted cured thickness is greater than the maximum range.
- An indeterminate or invalid reading.

Single Reading Mode (default)

The gage will automatically display the predicted cured thickness after analyzing the powder. To take another reading, release the  button, then press and hold the  again.

Scan Mode

Press and hold the  button. The gage continuously analyzes the powder and displays the predicted cured thickness until the  button is released. The last valid measurement is added to memory when the  button is released if Memory mode is on.

Maintenance

The probe screen protecting the sensor of the **PosiTest PC** can be unscrewed for cleaning. Accumulated powder should be carefully removed from the screen by no more than 0.2 MPa (20 - 30 psi) of compressed air.

- Do not blow air directly into the sensor.
- Replacement screens are available for purchase.

Calibration and Adjustment

The **PosiTest PC** probe is factory calibrated and performs an automatic self-check each time it calculates a measurement. For most powder measurement applications, no further adjustment is necessary. Simply **Zero** the gage (pg. 4) at the beginning of each shift, then measure.

The **PosiTest PC's** factory calibration accurately predicts cured powder thickness for a wide range of powder coatings. However, some powder formulations may require a *Calibration Adjustment*.

Begin by performing a *Verification of Accuracy* to determine if there is a need for an adjustment. If the average of several thickness results is outside the combined tolerances of the two measuring instruments (**PosiTest PC** and dry film thickness instrument) then two adjustment techniques are available to correct the variance (see *Adjustment Techniques*).

Verification of Accuracy

Before first use on a new powder and periodically thereafter, an accuracy check should be performed. This ensures the gage measures properly by comparing predicted thickness values with actual cured thickness values.

1. **Zero** the probe (pg. 4).
2. Spray powder onto a flat, smooth metal sample.
3. Measure the uncured powder with the **PosiTest PC**.
4. Cure the powder.
5. Measure cured thickness with a magnetic or eddy current coating thickness gage such as the **PosiTest DFT** or **PosiTector 6000**.
6. Compare results.

A successful verification requires that the average of a series of measurements by both instruments be within their combined tolerances. If not, adjust the **PosiTest PC** using one of the methods described in *Adjustment Techniques* (pg 8).

Adjustment Techniques

If the average of a series of measurements by both instruments (**PosiTest PC** and dry film thickness instrument) is not within combined tolerances, the **PosiTest PC** can be adjusted using one of two methods:

1-Point Adjust – The first and most common choice.

2-Point Adjust – Used only if a 1 Pt Adjust does not sufficiently improve accuracy.

1-Point Adjust

1. Spray approximately 75 microns (3 mils) of powder onto a flat, smooth metal sample.
2. Select **1-Pt Adjust** $\frac{1}{*}$ from the gage menu.
3. Take at least 3 uncured powder measurements with the **PosiTest PC**. Press the $\ominus$ button to discard the last reading if it should not be included in the average of the measurements.
4. Select **OK** to confirm and store the average of the measurements.
5. Cure the powder. The instrument will power off after 5 minutes of inactivity, but the uncured powder measurements will be retained.
6. Measure cured thickness with a magnetic or eddy current dry-film thickness gage. Record the results.
7. Power-up the instrument, and select **1-Pt Adjust** $\frac{1}{*}$ from the gage menu and then select the $\frac{7}{4}$ option.



NOTE: This only appears if 1 pt adjustment readings have been stored



8. Adjust the displayed reading lower $\ominus$ or higher $\oplus$ to match the cured thickness value. Select **OK** to store the adjustment.
9. Verify accuracy (pg. 7) to ensure the instrument is measuring within tolerance.

2-Point Adjust

1. Spray powder onto two flat, smooth metal samples. Apply approximately 40 microns (1.5 mils) on the first, and 75 microns (3 mils) on the second.
2. Select **2-Pt Adjust**  from the gage menu.
3. Take at least 3 uncured powder measurements on the first (thin) powder sample with the **PosiTest PC**. Press the  button to discard the last reading if it should not be included in the average of the measurements.
4. Select **OK** to confirm and store the average of the measurements.
5. Take at least 3 uncured powder measurements on the second (thick) powder sample with the **PosiTest PC**. Press the  button to discard the last reading if it should not be included in the average of the measurements.
6. Select **OK** to confirm and store the average of the measurements.
7. Cure the powder on both panels. The instrument will power off after 5 minutes of inactivity, but the uncured powder measurements will be retained.
8. Measure cured thickness on both panels with a magnetic or eddy current coating thickness gage. Record the results.
9. Select **2-Pt Adjust**  from the gage menu and then select the  option.
10. Adjust the displayed reading for the first (thin) sample lower  or higher  to match the cured thickness values. Select **OK** to store the adjusted measurement value.
11. Adjust the displayed reading for the second (thick) sample lower  or higher  to match the cured thickness values. Select **OK** to store the adjusted measurement value.
12. Verify accuracy (pg. 7) to ensure the instrument is measuring within tolerance.



PosiSoft Desktop

PosiSoft Desktop - Powerful desktop software (PC/Mac) for downloading, viewing, printing and storing measurement data. Includes a customizable, templated PDF Report Generator.

Gage Update

The **PosiTest PC** gage can be updated by the user.

To perform an update, the Gage must be connected with the USB cable to an internet connected computer running PosiSoft Desktop.

If an update is available, a prompt will appear in PosiSoft for the user to perform an update.

Ensure that stored measurements are downloaded to Desktop before updating the gage.



DO NOT unplug the Gage during the update operation.

USB Keyboard Mode / Live Stream Measurements

When enabled, the **PosiTest PC** will be recognized as a USB keyboard device when connected to a computer. This mode is compatible with any software that accepts keystrokes. Readings are sent to the computer as they are taken, emulating keystrokes. Can be used in both **Single Reading Mode** and **Scan Mode**. Memory Mode is unavailable when in USB Keyboard Mode.

Technical Data

Measuring Range	20-100 microns 0.8-4.0 mils
Accuracy	± 5 microns ± 0.2 mil
Resolution	1 micron 0.1 mil
Measurement Time	2-5 seconds
Measurement Distance to Powder	19 mm 0.75 inch
Measurement Area	2 mm 0.08 inch
Temperature Range	0 to +50°C +32° to +120°F
Gage Size	241 x 50 x 50 mm 9.5 x 2.0 x 2.0 in.
Gage Weight (without batteries)	140 g 4.9 oz

Conforms to: ASTM D7378

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Returning for Service

Before returning the instrument for service...

1. Install new or newly recharged batteries in the proper alignment as shown within battery compartment.
2. Examine the probe tip screen for dirt or damage. Replacement screens are available for purchase.
3. Perform a **Reset** (pg. 3) and **Zero** (pg. 4).

IMPORTANT:

If you must return the Gage for service, describe the problem fully and include measurement results, if any. Be sure to also include the probe, your company name, company contact, telephone number and fax number or email address.
