

# PosiTector® **6000 FNDS** probe for Duplex Coatings

## Instruction Manual Addendum

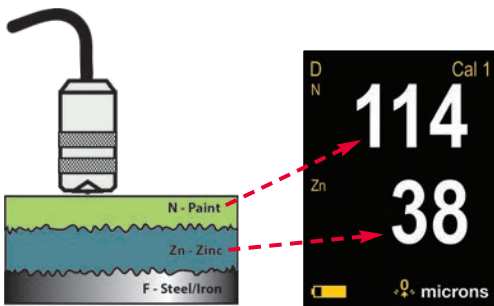


When attached to either a PosiTector Standard or Advanced body, the **PosiTector 6000 FNDS** probe measures the individual thicknesses of both the paint and the zinc layers in a duplex coating system with a single reading.

Duplex coating systems use a combination of two corrosion protection systems – typically paint or powder coating over galvanized steel (hot-dip, electro or zinc spray metallizing). The resultant corrosion protection is superior to either protection system used independently.

### Duplex Mode

In Duplex mode, the Gage utilizes both magnetic (ferrous) and eddy current (non-ferrous) principles simultaneously to calculate and display the individual paint and zinc layer thicknesses. The magnetic principle is used to measure the combined paint/zinc thickness over the ferrous substrate and the eddy current principle is used to measure the paint thickness over the non-ferrous zinc coating. The zinc thickness is calculated by subtracting the paint thickness from the combined paint/zinc thickness measurement.



$N = \text{Paint Thickness}$   
 $Zn = \text{Zinc Thickness}$

When enabled (default), the Gage will display two measurement values (as shown above). To disable, uncheck **Duplex** within the **Setup** Menu. Alternatively, press the ▲ navigation button to toggle Duplex On/Off (when Memory is OFF).

When disabled, the Gage will operate like a conventional combination ferrous/non-ferrous instrument (similar to the PosiTector 6000 FNS probe). Ideal for measuring non-magnetic coatings over steel and non-conductive coatings over non-ferrous metal substrates.

## How to Measure

The **PosiTector 6000** powers up when the center navigation button ≡ is pressed. To preserve battery life, the instrument powers down after approximately 5 minutes of no activity. All settings are retained.

1. Remove the protective rubber cap from the probe.
2. Power-up the Gage by pressing the center navigation ≡ button.
3. Place the probe on the surface to be measured. When a measurement is calculated, the Gage BEEPS and the measurement is displayed.

**NOTE:** A “---” dashed line value and a low tone indicates the Gage was unable to calculate the zinc layer thickness


4. Lift the probe AT LEAST 2 inches (5 cm) between readings or leave the probe on the surface in the same location for continuous measurements.

Verify accuracy on reference standards at the beginning and the end of each shift, or if the gage is dropped or suspected of giving erroneous readings.

The first time a part is measured, and any time the process changes, check zero on both the bare steel substrate and on the uncoated zinc surface. Adjust if necessary (see **Calibration Adjustment**).

## Calibration Adjustment

Adjustment, or calibration adjustment is the act of aligning the Gage's thickness readings to match that of a known sample in order to improve the effectiveness of the Gage on a specific surface or in a specific portion of its measurement range.


**PosiTector 6000 FNDS** probes are factory calibrated and perform an automatic self-check each time a measurement is taken. For many hot-dip galvanized applications, no further adjustment is necessary from the factory calibration. The  symbol disappears whenever a calibration adjustment is made.

## F Zero Adjustment

Ensure Duplex Mode is turned off, then measure the uncoated steel substrate (if available). If the average of several "F" readings is not within tolerance of "0", perform a **Zero** adjustment.


1. Select **Zero** from the **Cal Settings** menu.

**NOTE:** If Duplex Mode is on, an **F Zero** adjustment can be done by selecting **F Zero** from the Cal Settings menu.

2. Press  to select the number of readings to be used to obtain an average, typically 3 to 10 readings. The greater the variation between readings, the more zero readings should be taken to obtain an average.
3. Repeatedly measure the uncoated steel part. The Gage will wait two seconds after placing the probe on the surface to allow the user to correctly position the probe. After the last measurement, the Gage will calculate a Zero which represents the average of all the **F Zero** readings taken.

## Zn Zero Adjustment

Ensure Duplex Mode is turned on, then measure the unpainted zinc surface (if available). If the average of several "N" readings is not within tolerance of "0", perform a **Zn Zero** adjustment.

1. Select **Zn Zero** from the **Cal Settings** menu.
2. Press  to select the number of readings to be used to obtain an average, typically 3 to 10 readings. The greater the variation between readings, the more readings should be taken to obtain an average.
3. Repeatedly measure the unpainted galvanized part. The Gage will wait two seconds after placing the probe on the surface to allow the user to correctly position the probe.

After the last measurement, the Gage will calculate a Zero which represents the average of all the **Zn Zero** readings taken.

## N 1 Pt Adjustment

For rough zinc surfaces (i.e. zinc spray metallizing), it may be desirable to adjust the Gage to a known thickness, such as a shim placed over the zinc, rather than adjusting it to zero. This ensures the Gage measures the thickness of paint over the metallizing “peaks”. Ensure Duplex Mode is turned on.

1. Select **N 1 Pt Adjust** from the **Cal Settings** menu.
2. Press  $\oplus$  to select the number of readings to be used to obtain an average, typically 3 to 10 readings. The greater the variation between readings, the more readings should be taken to obtain an average.
3. Repeatedly measure the known thickness reference on the unpainted galvanized part. The Gage will wait two seconds between readings to allow the user to correctly position the probe on the surface. After the last measurement, the Gage will calculate and display the reading which represents the average of all the measurements taken. If the expected reading is not obtained (within tolerance), lift the probe from the surface and adjust the reading down  $\ominus$  or up  $\oplus$  to the expected thickness and press  $\equiv$ .

**NOTE:** The reference thickness should be similar to the expected paint thickness.

Probe Specifications	Mils	Microns
Minimum Zinc Thickness	0.5 mil	13 $\mu\text{m}$
Paint Layer Accuracy	$\pm (0.05 \text{ mil} + 1\%)$ <b>0-2 mils</b> $\pm (0.1 \text{ mil} + 1\%)$ <b>&gt; 2 mils</b>	$\pm (1 \mu\text{m} + 1\%)$ <b>0-50 <math>\mu\text{m}</math></b> $\pm (2 \mu\text{m} + 1\%)$ <b>&gt; 50 <math>\mu\text{m}</math></b>
Zinc Layer Accuracy	$\pm (0.1 \text{ mil} + 1\%)$ <b>0.5-2 mils</b> $\pm (0.2 \text{ mil} + 1\%)$ <b>&gt; 2 mils</b>	$\pm (2 \mu\text{m} + 1\%)$ <b>13-50 <math>\mu\text{m}</math></b> $\pm (4 \mu\text{m} + 1\%)$ <b>&gt; 50 <math>\mu\text{m}</math></b>

For full specifications refer to [www.defelsko.com/p6000/p6000\\_probe\\_details.htm](http://www.defelsko.com/p6000/p6000_probe_details.htm)

For more detailed instructions, see the included PosiTector *6000 Instruction Manual*. PosiTector *6000 FNDS* probes are compatible with all PosiTector Advanced models and Standard models with color display.

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