

How to calibrate the Elcometer 456 Coating Thickness Gauge

Ever since Elcometer introduced the first coating thickness gauge in 1947, we have been world leaders in the design and manufacture of dry film thickness gauges and inspection equipment for the coatings industry.

More powerful, rugged and easier to use than ever before, the new Elcometer 456 coating thickness gauge is best in class.

Available as an integral, or separate gauge with a wide selection of separate probes, there are three versions of the Elcometer 456.

From the entry level Model B, to the Model T, which provides users Alpha Numeric batch memory, warning limits identifying when a reading is outside specification, and predefined calibration methods to meet ISO, SSPC PA2 and other National and International Standards.

Ready to use – straight from the box, each gauge is factory calibrated, but to get the best performance from your gauge, and make best use of the gauge's one per cent accuracy, you should calibrate your gauge to suit your specific application, using the gauge's internal calibration routines.

A range of calibration options are available on your Elcometer 456 gauge – the one you choose depends on your application.

Zero Calibration is a simple method for calibrating on smooth substrates and is sometimes referred to as 'Single Point Calibration'. Following the calibration on-screen instructions, simply place the probe on the uncoated metal substrate, making sure you have 100% contact with the surface. The gauge will adjust the calibration automatically, and you are ready to start measuring.

Smooth Calibration is a more accurate method than the single point or zero method, as the gauge is calibrated using a calibration foil and an un-coated substrate.

Calibration foils, or 'shims', are the most convenient way of creating a coating thickness standard on the substrate material, surface finish, or shape.

Smooth Calibration is the ideal method for adjusting the calibration of the coating thickness gauge to ensure the greatest possible accuracy.

With Metric and Imperial values displayed on each foil - the chosen foil should be close to, but greater than the expected dry film thickness value.

Rough, or 2 Point Calibration, is the ideal method for calibrating the gauge on rough or blasted profiled metal substrates, or for substrates where there are significant differences in the magnetic or electrical properties of the substrate.

The calibration requires 2 foils values – one should be a value above the target film thickness and one below. Simply follow the on screen instructions to calibrate your gauge.

Zero Offset Calibration is a patented calibration method to help measure film thicknesses according to ISO 19840. ISO 19840 simply states that if a blast profile is unknown, you should calibrate on smooth steel and then subtract a predefined value from the measurement taken on the coated surface.

The zero offset calibration automatically removes this value so you don't have to.

Another unique calibration on the Elcometer 456 is Auto Calibration, for those users who are regularly coating to the same target thickness.

This feature allows you to program into your gauge the foil thickness values once, and then when Auto Cal is selected, simply place the probe on the foils to quickly calibrate – ideal for rapid, error free on-site calibration.

The Elcometer 456 Model T gauge has a special Calibration Check feature which, when enabled, displays the Out of Calibration Icon on the display screen when a reading is more than 10 per cent outside the calibration foils used with the Cal routine.

Elcometer S and T models have four additional pre-defined calibration methods included for ISO, SSPC PA2, Swedish and Australian Standards. These not only define the calibration method to be used, but also set up the data collection method, as defined by the appropriate standard.

For more information a full instruction manual is available at www.elcometer.com.

There are a number of ways to increase the accuracy of your calibration. When calibrating or taking measurements with your gauge, here are some simple do's and don'ts.

1. Take more readings on each foil value or bare substrate. The gauge then averages out the readings – increasing the adjustment accuracy. Using the Up/Down soft keys you can then synchronise the average reading so it is identical to the certified value on the foil.
2. When taking readings, avoid the foil label and place the probe in the centre of the foil.
3. Use undamaged foils – it may be helpful to have spares.
4. When stacking foils to increase the foil thickness, carefully stack on the non-labelled surface.
5. Place the probe gently down perpendicularly – i.e. 90 degrees to the surface.
6. For repeatable readings you should hold the gauge like this - and the probe like this – using the heel of your hand as support.
7. Make sure the uncoated substrate is clean and rust free.

Elcometer has a range of accessories such as V-adaptors and probe placement jigs to help enhance reading accuracy in small or complex components – together with a wide range of certified foils and coated standards.

Each gauge comes complete with an Easy User Guide to help you get started.

To find out how to get the most from your gauge you can download the complete instruction manual or contact your nearest distributor at our website www.elcometer.com.