Spot Check Verification

Quickly check for common errors in math, data entry, and calibration.

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Overview

The *Epsilon Shunt Calibration System* is supplied with every new strain-gaged extensometer*; devices will have a green band on the socket**. In addition to its use as a *calibration* reference (not covered here), the shunt is a useful tool for *Spot Check Verification.* †

* Older devices (manufactured before Nov. 2017) may have a *Shunt Calibration Module* or may not include a shunt feature.

** Instron test systems: green band may not be present. Instron software may be used to engage the internal shunt through software rather than using the physical shunt. Methods are equivalent.

† High level (0-10VDC) *76xx* and *Epsilon ONE®* systems include equivalent voltage reference systems. See manuals for details.

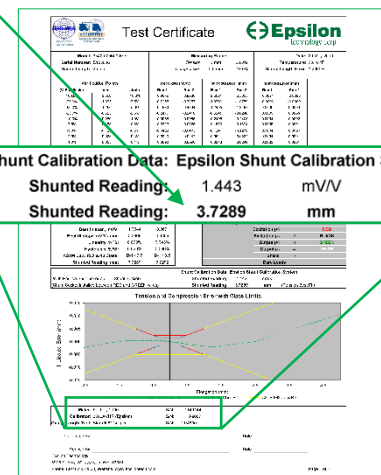## What spot check verification is and isn't

Spot check verification is a useful method to quickly identify certain common errors in math, data entry, and calibration of the user's electronics, which commonly cause large errors in the indicated readings of >1% of full scale, often >100% of full scale. <u>Errors in gauge length, measuring range, and specimen cross-section geometry are the most common problems</u>.

> *Example: The elastic modulus in a test seems to be reading ~5-6% low. Spot check verification confirms that the strain indicator in the software is reading 3.946mm vs **3.729mm**, 5.8% high. Upon examination, the calibration service provider had defined the full-scale range in software as 0.5" (12.7mm), not 12.0mm (the proper value for the extensometer according to its test certificate), causing a scaling error of +5.8%.*

Errors < 1% of full scale are typically nonsignificant (*e.g. moving the extensometer while performing a spot check*) or are too small to diagnose using a spot check (*e.g. minor alignment and adjustment issues, etc.*), and some problems that can affect strain readings will not be indicated by a spot check. <u>Spot check verification is not sufficient to determine that an extensometer system is within tolerance.</u> A mechanical calibrator (*Model 3590VHR*) is recommended for full verification.

Method

With the extensometer connected and stable at the gauge length or zero point, zero the reading in software. Insert the Epsilon Shunt to induce an output equivalent to moving the extensometer through a known displacement. Compare the indicated reading to the corresponding *Shunted Reading* indicated on the extensometer's Test Certificate.

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