

**Standard Calibration Criteria – Dimensional Offerings**

Decision Rules – Guard Banding (Height Gauges to BS EN ISO 14253 ONLY)

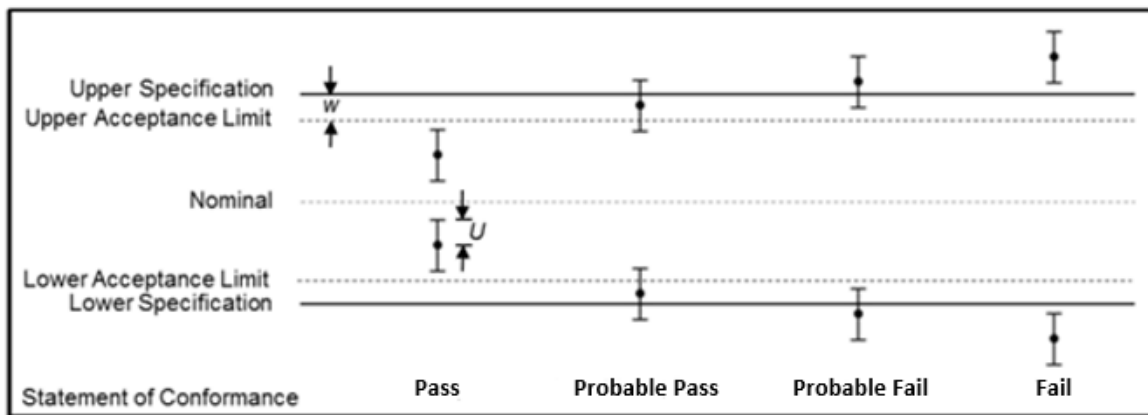
Conformity is reported using guard banding as detailed below:

Result	Symbol	Explanation
Pass <sup>1</sup>	None	The result is within the specified limits provided even when including the measurement uncertainty.
Probable Pass	!	The result is within the specified limits, however when including the measurement uncertainty, the result may be outside of the limits. However, compliance with the specified limits is more likely than non-compliance.
Probable Fail	^	The result is outside the specified limits, however when including the measurement uncertainty, the result may be inside of the limits. However, non-compliance with the specified limits is more likely than compliance.
Fail	F	The result is outside the specified limits provided even when including the measurement uncertainty.
No Conformity	@	The Calibration uncertainty is greater than the specified limit, therefore conformity can not be provided. Calibration will also be marked as limited calibration.

**Notes**

<sup>1</sup> = The absence of a compliance annotation can also mean that the measurement taken does not have any specified limits. In this instance, the calibration result would also be classified as a "PASS".

**Example of Guard Banding:**



U = 95% expanded measurement uncertainty

Decision Rules – Simple Acceptance (Excluding Height Gauges to BS EN ISO 14253)

Conformity is reported using simple acceptance as stated in JCGM106:2012 Section 8.2 where the acceptance limit is equal to the tolerance limit provided that the tolerance uncertainty ratio (TUR) is equal to

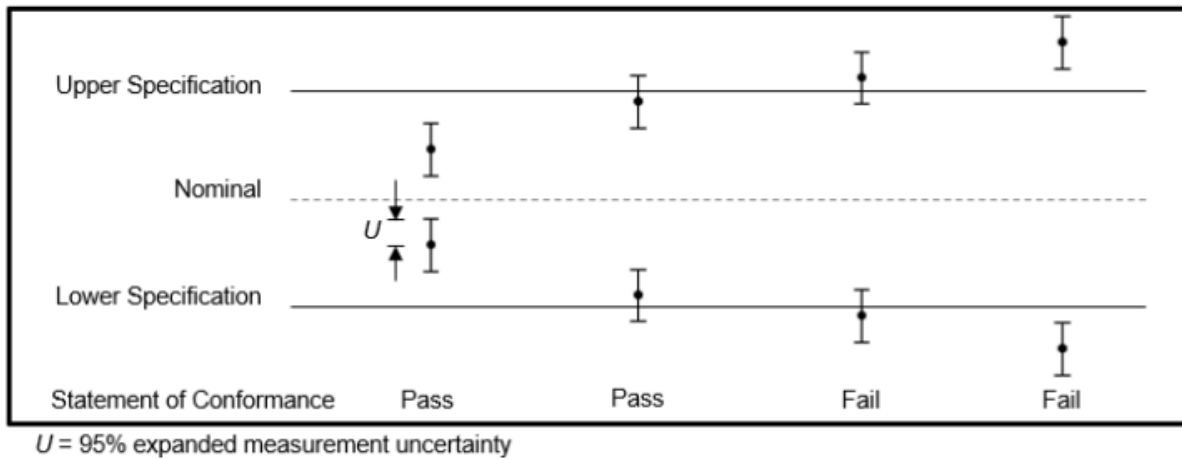
or greater than 1.0. The associated symbols which appear on the certificate are detailed in the below table:

Result	Symbol	Explanation
Pass <sup>1</sup>	None	The measured result is within the specified limits.
Fail	F	The measured result is outside the specified limits.
No Conformity	@	The Calibration uncertainty is greater than the specified limit, therefore conformity cannot be provided (TUR is equal to or greater than 1.0). Calibration will also be marked as limited calibration.

**Notes**

<sup>1</sup> = The absence of a compliance annotation can also mean that the measurement taken does not have any specified limits. In this instance, the calibration result would also be classified as a "PASS".

**Example of Simple Acceptance:**



[Standard Calibration Criteria](#)

Assuming no special criteria have been identified by the customer during the contract review / quotation process. The below criteria will be followed as standard by the laboratory to carry out dimensional calibrations.

- ✓ Calibration certificates will be in an electronic format. It will be digitally signed and emailed to the customer shortly after the completion of the calibration. If timescales are required for the provision of the certificate, these must be highlighted at the enquiry stage.
- ✓ All dimensional equipment will be required to acclimatize within the calibration laboratory for a period no less than 2 hours prior to calibration being performed depending on the size of the instrument or gauge.

### **Calibration Foils/Shims & Thread Measuring Wires/Cylinders**

- ✓ These are measured at an uncompressed state. The measuring force used is reported.
- ✓ Thread measuring cylinders will be measured towards the middle of the cylinder, i.e. the front and back of the thread cylinder will not be measured as per standard.

### **External, Internal, Depth, & Bore Micrometers**

- ✓ If these were found to be out of tolerance at zero. The micrometer head/s will be calibrated i.e. provided with "As Found" results. Following this, the micrometer will be adjusted with "After Reset" results provided.
- ✓ If there are two scales visible, the scale that is marked on the instrument as the description by the manufacturer will be the scale that is calibrated. If no default description markings are visible, the metric scale will then be the set default scale that is calibrated.
- ✓ For Depth Micrometers, the squareness of the measuring stock face to the spindle will not be measured by default (including extension rods) unless otherwise stated.

### **Pin Gauges**

- ✓ These are calibrated to the customer or manufacturer's specification if available, otherwise measured results will be provided for these only i.e. no tolerances.
- ✓ If a pin gauge fails calibration, we will advise replacement of the pin/s within the set and not the entirety of the set.
- ✓ Polarity (+/-) of measurements will be a positive (+) number if a minus (-) symbol is not present.

### **Parallel Plain Setting Ring Gauges**

- ✓ Calibrated at Mid-Plane, Above Centre and Below Centre. These checks will be carried out at 0°, 45° Clockwise and 45° Counterclockwise. They will be calibrated in accordance with BS 4064: 1966 otherwise BS 4065: 1966.
- ✓ Roundness is not determined for parallel plain setting ring gauges unless otherwise stated.

### **Parallel Plain Plug & Rings Gauges (Go/Not Go)**

- ✓ These are calibrated in accordance with BS 969: 2008 &/OR ISO 286: 2010 where appropriate.
- ✓ Roundness is not determined for parallel plain ring gauges unless otherwise stated.

### **Single-Ended Parallel Plain Plug Gauges (Go/Not Go)**

- ✓ These are calibrated without a tolerance band i.e. measured values if the opposite end i.e. Go or Not-Go end has not been provided.

### **DTI's**

- ✓ DTI Plungers are calibrated to BS 907:2008 and measured in the linear direction ONLY unless otherwise stated.
- ✓ DTI Levers will be calibrated to BS 2795:1981 and measured in the linear direction ONLY unless otherwise stated.

### **Digital/Dial/Vernier Calipers and Depth Gauges**

- ✓ These will all be calibrated to manufacturers specification otherwise default GPS specification in

accordance with BS EN ISO 13385-1:2019 and BS EN ISO 13385-2:2020 Verification Standards.

- ✓ If these were found to be offset at zero, the instrument would be adjusted prior to continuing the calibration.

### Digital/Dial/Vernier & Electronic Height Gauges

- ✓ These are calibrated to manufacturer's specification otherwise to customer requirements in cases where the manufacturer's specification is not available. The customer must specify the tolerances required for the instrument.
- ✓ We cannot contact the **Height Gauge** manufacturer in request for the ideal flatness required for a surface table as stated in BS EN ISO 13225-2012. By default, these will be calibrated on a Grade 0 granite surface table to comply against section 5.2 of BS EN ISO 13225-2012.
- ✓ If the instrument was found to be offset at zero, the instrument would be adjusted prior to continuing the calibration.
- ✓ Polarity (+/-) of measurements will be a positive (+) number if a minus (-) symbol is not present, this includes squareness measurements.