Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

0333

Accredited to ISO/IEC 17025:2017

Crown Windley Ltd

Issue No: 037 **Issue date:** 12 April 2024

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Calibration performed by the Organisations at the locations specified below

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details	Activity	Location code
Address Beaufort House Beaufort Court Mansfield Road Derby Derbyshire DE21 4FS **Local contact** Mr G Glynn	Dimensional	A

Site activities performed away from the locations listed above:

Location details	Activity	Location code
At customers premises	Dimensional	B

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH				
Parallels	5 to 50 x 100 x 400	1.5 to 5.0 Dependent on size and grade. See Note 2	As BS 906:Parts 1 and 2:1972	
ANGLE				
Block Squares	50 to 750	2.0 on squareness See Notes 2 and 3	As BS 939:2007	A
Right angle and box angle plates	50 to 600 Squareness: Parallelism: Flatness:	 3.0 + (1.0 per 100 mm) 1.0 + (1.0 per 100 mm) 1.0 + (1.0 per 100 mm) See Note 2	As BS 5535:1978	A
Sine bars and tables	0 to 500	Linear dimensions 1.0 + (10 x length in m) Overall performance: 3.0 seconds of arc	As BS 3064:1978	A
Sine centres	0 to 300 length or between centres	Linear dimensions 1.0 + (10 x length in m) Overall performance 5.0 seconds of arc	As laboratory procedure: "SINE BARS & SINE TABLES"	A
Compound sine tables	100 to 500 Tables or equivalent.		As laboratory procedure: "SINE BARS & SINE TABLES"	A
FORM				
Surface Plates Granite and Cast iron	160 x 100 to 2500 x 1600 Flatness of working surface: Local variation of working surface:	 1.5 + (0.8 x diagonal in m) See Note 2 2.0	As BS 817:2008	A, B
Straightedges				A, B
Cast Iron	300 to 5000	1.0 + (2.0 x length in m) See Note 2	As BS 5204:Part 1:1975	
Steel or Granite	300 to 2000		As BS 5204:Part 2:1977	

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MEASURING INSTRUMENTS AND MACHINES				
Electronic Digital Height Gauges (including setting masters)	0 to 1000	Length: 3.0 + (5.0 x length in m) Squareness: 2.0 + (10 x length in m)	As laboratory procedure: "PERFORMANCE CALIBRATION OF DIGITAL ELECTRONIC HEIGHT GAUGES"	A, B
Electronic Digital Height Gauge Setting Masters	0 to 25.4	1.2	As laboratory procedure: "PROCEDURE FOR THE CALIBRATION OF A SETTING GAUGE"	A
Cartesian co-ordinate measuring machines (CMM)	Length measurement: E 0 to 2000 (longest diagonal)	1.2 + (1.4 x length in m)	As ISO 10360-2:2001 (Withdrawn) Using end standards	B
	Single stylus probing test: P	0.58	Using a 10 mm to 50 mm diameter test sphere	
Cartesian co-ordinate measuring machines (CMM)	Length measurement: E_L 0 mm to 2000 mm (longest diagonal)	1.2 + (1.4 x length in m)	As ISO 10360-2:2009 Using end standards	B
	Single stylus probing test: $P_{Form.Sph.1\times25:SS:Tact}$ $P_{Size.Sph.1\times25:SS:Tact}$	0.42 0.64	As ISO 10360-5:2020 Using a 10 mm to 51 mm diameter test sphere. Test value uncertainties calculated in line with ISO/TS 17865:2016	
	Single stylus probing test: P_{FTU}	0.58	As ISO 10360-5:2010 (Withdrawn) Using a 10 mm to 50 mm diameter test sphere.	

NOTES:
1: Calibrations can also be given in inch units.

2: The uncertainty quoted is for the departure from flatness, straightness, or squareness, ie the distance separating the two parallel planes which just enclose the surface under consideration.

3: Reference squares calibrated by first principles.

END

Appendix - Calibration and Measurement Capabilities

Introduction

The definitive statement of the accreditation status of a calibration laboratory is the Accreditation Certificate and the associated Schedule of Accreditation. This Schedule of Accreditation is a critical document, as it defines the measurement capabilities, ranges and boundaries of the calibration activities for which the organisation holds accreditation.

Calibration and Measurement Capabilities (CMCs)

The capabilities provided by accredited calibration laboratories are described by the Calibration and Measurement Capability (CMC), which expresses the lowest measurement uncertainty that can be achieved during a calibration. If a particular device under calibration itself contributes significantly to the uncertainty (for example, if it has limited resolution or exhibits significant non-repeatability) then the uncertainty quoted on a calibration certificate will be increased to account for such factors.

The CMC is normally used to describe the uncertainty that appears in an accredited calibration laboratory's schedule of accreditation and is the uncertainty for which the laboratory has been accredited using the procedure that was the subject of assessment. The measurement uncertainty is calculated according to the procedures given in the GUM and is normally stated as an expanded uncertainty at a coverage probability of 95 %, which usually requires the use of a coverage factor of $k = 2$. An accredited laboratory is not permitted to quote an uncertainty that is smaller than the published measurement uncertainty in certificates issued under its accreditation.

Expression of CMCs - symbols and units

It should be noted that the percentage symbol (%) represents the number 0.01. In cases where the measurement uncertainty is stated as a percentage, this is to be interpreted as meaning percentage of the measurand.
Thus, for example, a measurement uncertainty of 1.5 % means $1.5 \times 0.01 \times q$, where q is the quantity value.

The notation Q[a, b] stands for the root-sum-square of the terms between brackets: $Q[a, b] = [a^2 + b^2]^{1/2}$