Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

0339

Accredited to ISO/IEC 17025:2017

Harris Gauges Limited

Issue No: 022 **Issue date**: 13 May 2022

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Calibration performed at the above address only

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED			
LENGTH			
Gauge Blocks		Class S*ee* Note 1	
Inch (Steel & Tungsten carbide)	As BS 4311-1:2007 0.01 inch to 0.4 inch. 0.4 inch to 1 inch 2 inch 3 inch 4 inch	C 3.0 4.0 5.0 μ inches 6.0 7.0	Note 1. Class C uncertainties apply to the measurement of length of gauges by comparison with grade K standards of length of a similar material.
	Variation in length of the above gauge blocks	TBC	
Millimetre (Steel & Tungsten carbide)	As BS EN ISO 3650:1999 0.25 to 10 10 to 25 30, 40, 50 60, 70, 75 80, 90, 100	C 0.080 0.10 0.12 0.15 0.18	Class C uncertainties apply to new and used grade 0, 1 and 2 gauges to BS 4311-1:2007 and BS EN ISO 3650:1999
	Variation in length of the above gauge blocks	TBC	
Plain plug gauges (parallel)	1 to 50 diameter 50 to 100 100 to 150	1.0 on diameter 1.5 2.0	By comparision to reference standards using a length measuring machine
Plain ring gauges (parallel) and setting standards	2 to 10 diameter 10 to 100 100 to 200	1.5 on diameter 1.0 2.0	By comparision to master ring gauges using a length measuring machine
Length gauges, flat and spherical ended (excluding length bars)	25 to 600	1.0 + 8.0 x (length in m)	By comparision to reference standards
Plain gap gauges (parallel)	0.5 to 100 100 to 200	3.0 5.0	By comparision to reference standards
Vee blocks	20 to 150 diameter, vee capacity	2.5 to 5.0	As BS 3731:1987 By comparision datum surfaces

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED			
ANGLE			
Squares, Blade type	50 to 300 300 to 600	3.0 On squareness See Note 3 5.0	As BS 939:2007 By comparision to reference squares and datum surfaces
Bevel protractors	0 to 360 degrees	6.0 minutes of arc 2.0 Flatness, Straightness and Parallelism: See note 3	As BS 1685:2008 By comparision to reference angles and datum surfaces
MEASURING INSTRUMENTS AND MACHINES			
Micrometers			By comparision to reference standards
External	0 to 1200	Heads 2.0 between any two points. Setting and extension rods 1.0 + (8.0 x length in m)	As BS 870:2008
Internal	0 to 1200		As BS 959:2008
Depth	0 to 300		As BS 6468:2008
Micrometer heads	0 to 100	1.0	As BS 1734:1951 By comparision to reference standards
Bore micrometers (three point)	3 to 10 diameter 10 to 50 diameter 50 to 100 diameter 100 to 150 diameter	3.0 2.5 3.0 4.0	By comparision to master setting ring gauges
Bore indicators	3 to 150	Overall performance 5.0	By comparision to reference standards
Internal and External Calliper Gauges	0 to 150	Overall performance 5.0	By comparision to reference standards
Feeler Gauges	0.03 to 1.0	3.0	As BS 957:2008 Using a length measuring instrument
Digital and dial gauges and digital and dial test indicators (Excluding LVDT type)	0 to 50	1.0	As BS 907:2008 and BS 2795:1981 and in-house method. By comparision to reference standards or length measuring machine
Comparators (external)	250 to 20 000 magnifications	1.0 % of range Minimum 0.10	As BS 1054:1975 By comparision to reference standards

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Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED			
MEASURING INSTRUMENTS AND MACHINES (cont'd)			
Digital, dial and vernier type calliper gauges	0.01 to 50 50 to 200 200 to 400 400 to 600 600 to 800 800 to 1000 Partial surface contact error (E)	1.0 See note 4 3.0 6.0 10 13 16	As BS EN ISO 13385-1:2019 By comparision to reference standards
	3 to 50 Shift error (S) internal jaws	2.5	
	3 to 50 Shift error (S) depth and step	2.5	
Vernier type gauges including dial and digital			
Calliper	0 to 1200	Overall performance 10 + (30 x length in m)	As BS 887:2008 By comparision to reference standards
Height	0 to 1200	Overall performance 15 + (10 x length in m)	As ISO13225:2012 and BS 1643:2008 By comparision to reference standards and datum surfaces
Depth	0 to 300	Overall performance 10 + (30 x length in m)	As BS 6365:2008 By comparision to reference standards and datum surfaces

Notes

1. Class C uncertainties apply to the measurement of length of gauges by comparison with grade K standards of length of a similar material. Class C uncertainties apply to new and used grade 0, 1 and 2 gauges to BS 4311-1:2007 and BS EN ISO 3650:1999.

2. All linear calibrations may be given in inch units.

3. 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.

4. The stated uncertainties have been calculated in accordance with the relevant standard method and relate to the test value uncertainty. The uncertainty quoted excludes contributions relating to the instrument under test.

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: $Q[a, b] = [a^2 + b^2]^{1/2}$