


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

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

 <p><b>0339</b></p> <p>Accredited to <b>ISO/IEC 17025:2017</b></p>	<h3>Harris Gauges Limited</h3>	
	<b>Issue No: 020</b>	<b>Issue date: 27 August 2021</b>
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<b>Calibration performed at the above address only</b>		

### 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			
<b>LENGTH</b>			
Gauge Blocks		Class See Note 1	
Inch (Steel)	As BS 4311-1:2007 0.01 inch to 0.4 inch. 0.4 inch to 1 inch 2 inch 3 inch 4 inch	<u>C</u> 3.0 4.0 5.0 $\mu$ 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.
Millimetre (Steel)	As BS EN ISO 3650:1999 0.25 to 10 10 to 25 30, 40, 50 60, 70, 75 80, 90, 100	<u>C</u> 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
Plain plug gauges (parallel)	1 to 50 diameter 50 to 100 100 to 150	1.0 on diameter 1.5 2.0	By comparison 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 comparison 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 comparison to reference standards
Plain gap gauges (parallel)	0.5 to 100 100 to 200	3.0 5.0	By comparison to reference standards
Vee blocks	20 to 150 diameter, vee capacity	2.5 to 5.0	As BS 3731:1987 By comparison 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 5.0 See Note 3	As BS 939:2007 By comparison 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 comparison to reference angles and datum surfaces
MEASURING INSTRUMENTS AND MACHINES			
Micrometers			By comparison to reference standards
External	0 to 1200	Heads 2.0 between any two points.	As BS 870:2008
Internal	0 to 1200	Setting and extension rods	As BS 959:2008
Depth	0 to 300	1.0 + (8.0 x length in m)	As BS 6468:2008
Micrometer heads	0 to 100	1.0	As BS 1734:1951 By comparison 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 comparison to master setting ring gauges
Bore indicators	3 to 150	Overall performance 5.0	By comparison to reference standards
Internal and External Calliper Gauges	3 to 150	Overall performance 5.0	By comparison to reference standards
Feeler Gauges	0.03 to 1.0	3.0	As BS 957:2008 Using a length measuring instrument
Dial gauges and dial test indicators	0 to 50	1.0	As BS 907:2008 and BS 2795:1981 By comparison 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 comparison 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)			
Vernier type gauges including dial and digital			
Calliper	0 to 1200	Overall performance 10 + (30 x length in m)	As BS 887:2008 By comparison to reference standards
Height	0 to 1200	Overall performance 15 + (10 x length in m)	As ISO13225:2012 and BS 1643:2008 By comparison to reference standards and datum surfaces
Depth	0 to 300	Overall performance 10 + (30 x length in m)	As BS 6365:2008 By comparison 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.			
END			



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