Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

UKAS CALIBRATION **0233** **Accredited to ISO/IEC 17025:2017**	**Thomas Salvesen Enterprises Ltd (Trading as Opus Metrology)** **Issue No:** 050 **Issue date:** 05 October 2026	
	15 Maylan Road **Earlstrees Industrial Estate** **Corby** **Northamptonshire** **NN17 4DR**	**Contact: Mr M Phillips** **Tel: +44 (0)1536-204681** **Fax: +44 (0)1536-205272** **E-Mail: sales@opus.co.uk** **Website: www.opus.co.uk**

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 15 Maylan Road Earlstrees Industrial Estate Corby Northamptonshire NN17 4DR	**Local contact** Mr M Phillips	Dimensional	A

Site activities performed away from the locations listed above:

Location details		Activity	Location code
At customer's premises	Mr M Phillips	Dimensional	B

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(trading as Opus Metrology)

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Calibration performed by the Organisation at the locations specified

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			NOTES	
Gauge blocks		Class (see notes)	1. All linear calibrations may be given in inch units.	A
Inch (Steel, tungsten carbide & ceramic)	As BS 4311-1:2007 0.01 inch to 0.4 inch. 0.4 inch up to 1 inch Size 2 inch Size 3 inch Size 4 inch	A B C D 1.0 2.0 3.0 4.0 1.5 2.5 4.0 5.0 2.5 3.5 5.0 7.0 3.0 4.5 6.0 8.0 3.5 5.0 7.0 10 μ inch	2. Features and associated parts of these gauges / fixtures can be measured to the uncertainties given for equivalent items listed in this schedule	
Millimetre (Steel, tungsten carbide & ceramic)	As BS EN ISO 3650:1999 0.1 to 10 10 to 25 30, 40, 50 60, 70, 75 80, 90, 100	A B C D .030 .050 .080 .10 .040 .060 .10 .13 .060 .090 .12 .17 .070 .11 .15 .21 .090 .13 .18 .25	3. The uncertainties stated apply to the calibration of tungsten carbide balls and for all other balls when the roundness error does not exceed 0.13 μm on radius.	
	100 to 2000	0.20 + (1.0 x length in m)		
Interferometry **Class A** uncertainties apply to the measurement of length by interferometry of grade K standards of length to BS 4311:2007 and BS EN ISO 3650:1999 when they are measured twice, wrung to a platen by each of the two measuring faces in turn, and the mean of these two measurements stated. **Class B** uncertainties apply to the measurement of length by interferometry of grade K standards of length to BS 4311:2007 and BS EN ISO 3650:1999 when they are measured once, wrung to a platen by, if not otherwise specified, the left hand (unmarked) measuring face. **Comparison** **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 4311:2007 and BS EN ISO 3650:1999. **Class D** uncertainties represent the best capability for the measurement of length of gauges by comparison with K grade standards of length of a dissimilar material.			4. The uncertainty quoted is for the departure from flatness, straightness, or squareness, i.e. the distance separating the two parallel planes which just enclose the surface under consideration. 5. Single start, symmetrical thread forms only. 6. Single and multi-start symmetrical thread forms only.	
Length bars Inspection, workshop and Grades 1 and 2	As BS 1790:1961 and BS 5317:1976 10 to 2000	0.20 + (1.0 x length in m)		A
Gauge block accessories	As BS 4311-2:2009 0 to 100	0.30		A
Length bar accessories	As BS 1790:1961 and BS 5317:1976 0 to 100	0.30		A

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 (cont'd)				
Thread measuring cylinders	As BS ISO 16239:2013, BS3777:1964, BS 5590:1978 and specials 0.1 to 5.0 diameter	0.50	Using a length measuring machine and end standards.	A
Plain plug gauges (parallel), cylindrical setting standards, gear measuring cylinders and rollers.	1 to 25 diameter 25 to 100 100 to 150 150 to 200 200 to 400	0.80 1.0 1.3 2.0 4.0 on diameter	Using a length measuring machine and end standards.	A
Paint thickness setting foils	0.01 to 8	2.0	Using a length measuring machine	A
Plain ring gauges (parallel) and setting standards	1 to 10 diameter 10 to 25 25 to 50 50 to 100 100 to 150 150 to 300	1.0 0.80 1.0 1.5 2.0 2.5 on diameter	Using a length measuring machine and reference standards.	A
Plain gap gauges (parallel)	1 to 100 diameter 100 to 200 200 to 300	2.0 3.0 4.0	By comparison with end standards.	A
Length gauges, flat and spherical ended	1 to 2000	0.60 + (3.0 x length in m)	By comparison with end standards.	A
Screw plug gauges (parallel) including check and setting plugs See Note 6	1 to 100 diameter 100 to 200 200 to 300	3.0 5.0 8.0 on pitch diameter	Using a length measuring machine and standards.	A
Screw plug gauge (taper) See Note 5	2 to 100 diameter 100 to 200	4.0 8.0		
Screw ring gauges (parallel) See Note 5	2 to 100 diameter 100 to 200	4.0 6.0 on pitch diameter		
Screw pitch	0.2 to 8	1.5	Using a length measuring machine.	A
Screw flank angle	0° to 52°	5.0 minutes of arc	Using a projector	A

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 (cont'd)				
Receiver, position and profile gauges, jigs and fixtures	0 to 450 x 400 x 300	3.0 + (10 x length in m) See Note 2	In house methods based on first principles measurements.	A
Parallels	As BS 906:1972 5 to 50 x 100 x 400	1.2 to 5.0		A
Engineers Steel Rules	As BS 4372:1968 0 to 2000	5.0 + (10 x length in m)		A
Precision scales & graticules	0 to 400	1.0 + (5.0 x length in m)	By comparison with a linear reference scale.	A
Stage Micrometers	0 to 10	1.0 + (5.0 x length in m)	By comparison with a linear reference scale.	A
ANGLE				
Squares	As BS 939:2007			A
Cylindrical	75 to 450 450 to 600	2.0 4.0	On squareness See Note 4	
Block	50 to 450	2.0		
Angle plates and box angle plates	As BS 5535:1978 50 to 600	Squareness: 3.0 + (1.0 per 100 mm) Parallelism: 1.0 + (1.0 per 100 mm)		A
Sine bars	As BS 3064:1978 100 to 300	Linear dimensions: 1.0 + (10 x length in m) Overall Performance: 3.0 Seconds of arc		A
Sine tables	As BS 3064:1978 100 to 500			A
Sine centres	100 to 500 length between centres	Linear dimensions: 1.0 + (10 x length in m) Overall performance: 5.0 seconds of arc	By comparison with angular and linear reference artefacts.	A
Compound sine tables	With tables or equivalent of 100 to 500			
Bevel protractors	As BS 1685:2008 0° to 360°	6.0 minutes of arc		A
Combination sets	0° to 360° (Protractor) 0 to 500 (Rule)	30 minutes of arc 5.0 + (10 x length in m)	By comparison with angular and linear reference artefacts.	

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
ANGLE (cont'd)				
Combination Angle gauges	0° to 90°	1.0 second of arc	By comparison with angular reference standards	A
Polygons	3 to 40 sides	1.0 second of arc	By comparison with angular reference standards	A
FORM				
Surface plates Granite Cast iron	As BS 817:2008 and above 160 x 100 to 4000 x 4000	1.5 + (0.80 x diagonal in m) See Note 1		A & B
Straightedges				A & B
Cast iron	As BS 5204:Part 1:1975 300 to 8000	1.0 + (2.0 x length in m) See Note 1		
Steel, Granite	As BS 5204:Part 2:1977 300 to 2000			
Optical flats	10 to 100 diameter 100 to 150	0.10 See Note 4 0.12	By comparison.	A
Optical parallels	10 to 100 diameter	0.10 See note 4	By comparison	A
Steel, tungsten carbide and ceramic balls	1 to 100 diameter	0.80 On diameter See Note 3	By comparison with end standards	A
MEASURING INSTRUMENTS AND MACHINES				
Gauge block comparators		0.050	By comparison with end standards	A
Micrometers				A
External	As BS 870:2008 0 to 600	Heads 2.0 between any two points. Extension rods 1.00+ (3.0 x length in m)		
	Zero Reading Flatness Parallelism	1.0 0.20 0.70		
Depth	As BS 6468:2008 0 to 300	Heads 2.0 between any two points. Extension rods 1.00+ (3.0 x length in m)		
	Zero Reading Flatness	1.0 0.20		

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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES (cont'd)				
Three point bore	3 to 150	Overall performance 5.0	By comparison	A
Micrometer heads	As BS 1734:1951 0 to 100 Flatness	1.0 0.20		A
Height setting micrometer	0 to 300	Heads: 1.2 between any two points Stepped column: 1.6 Overall performance: .2.0	By comparison with end standards	A
Riser blocks for above	150 300	1.0 2.0		A
Vernier gauges Caliper	As BS 887:2008 0 to 750	Overall performance 10 + (30 x length in m)		A
Height	As ISO13225:2012 BS 1643:2008 (withdrawn) 0 to 750			
Depth	As BS 6365:2008 0 to 600			
	Zero Reading Flatness Parallelism Flats	10.0 2.0 5.0		
Dial gauges and dial test indicators	As BS 907:2008 and BS 2795:1981 0 to 50	1.0		A
Vertical measuring	0 to 1000	1.0	By comparison with end standards.	A & B
Horizontal measuring	0 to 750	0.30 + (4.0 x length in m)	By comparison with end standards	A & B
Thread diameter measuring	As NPL MOY/SCMI//9 0 to 300	Overall performance: 1.5		A
Spirit levels	As BS 3509:1962 and BS 958:1968 5 seconds of arc to 60 minutes of arc nominal sensitivity	Mean sensitivity 10 % of nominal Minimum of 0.50 seconds of arc		A
Clinometers	0° to 360°	10 seconds of arc	Using small angle generator.	A
Electronic indicating levels	0 to 10 minutes of arc	1.0 % of range Minimum 0.50 seconds of arc	Using small angle generator.	A

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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES (cont'd)				
Autocollimators - Optical, photo-electric and digital	0 to 60 minutes of arc	0.25 seconds of arc	Using small angle generator.	A
Profile projectors	10 to 100 magnifications	125 at the screen 6.0 linear 4.0 minutes of arc	By comparison with angular and linear reference artefacts.	A & B
Electronic height gauges	Up to 1000	1.0 + (5.0 x length in m)	By comparison with end standards.	A & B
Indexing tables	0° to 360°	0.50 seconds of arc	Based on published methods using error separation.	A
Rotary tables	100 to 450 capacity	Overall angular performance 2.0 seconds of arc.	By comparion with angular reference artefacts	A & B
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: $Q[a, b] = [a^2 + b^2]^{1/2}$