


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

21 - 47 High Street, Feltham, Middlesex, TW13 4UN, UK

 UKAS CALIBRATION 0517 Accredited to ISO/IEC 17025:2005	MD Calibration Services	
	Issue No: 021	Issue date: 30 November 2009
	Unit 11 Cunliffe Drive Industrial Estate Kettering Northants NN16 8LD	Contact: Mr J D Smith Tel: +44 (0)1536 515633 Fax: +44 (0)1536 515632 E-Mail: sales@mdcalibration.co.uk Website: www.mdcalibration.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 Unit 11 Cunliffe Drive Industrial Estate Kettering Northants NN16 8LD Local contact Mr J D Smith	Dimensional	A

Site activities performed away from the locations listed above:

Location details	Activity	Location code
At customers premises Mr J D Smith	Dimensional	B



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DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty ($k=2$)	Remarks	Location Code																			
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED																							
LENGTH		Class (See notes)	Class C uncertainties apply to the measurement of length of gauges by comparison with grade K standards of length of similar materials. Class C uncertainties apply to grade 0, 1 and 2 gauges to BS 4311:2007 and BS EN ISO 3650:1999. 1. All calibrations must be carried out in accordance with the requirement of the stated standards and with procedures agreed by UKAS.																				
Gauge blocks Inch (Steel tungsten carbide)	As BS 4311:2007 Up to 0.4 in Above 0.4 in up to 1 in 2 in 3 in 4 in	<table border="0"> <tr> <td><u>C</u></td> <td><u>D</u></td> <td><u>E</u></td> <td rowspan="6">} μ in</td> </tr> <tr> <td>3</td> <td>4</td> <td>6</td> </tr> <tr> <td>4</td> <td>5</td> <td>8</td> </tr> <tr> <td>5</td> <td>7</td> <td>10</td> </tr> <tr> <td>6</td> <td>8</td> <td>12</td> </tr> <tr> <td>7</td> <td>10</td> <td>14</td> </tr> </table>		<u>C</u>	<u>D</u>	<u>E</u>	} μ in	3	4	6	4	5	8	5	7	10	6	8	12	7	10	14	A
<u>C</u>	<u>D</u>	<u>E</u>		} μ in																			
3	4	6																					
4	5	8																					
5	7	10																					
6	8	12																					
7	10	14																					
Millimetre (Steel, tungsten carbide)	As BS EN ISO 3650:1999 Up to 10 Above 10 up to 25 30, 40, 50 60, 70, 75 80, 90, 100	<table border="0"> <tr> <td><u>C</u></td> <td><u>D</u></td> <td><u>E</u></td> </tr> <tr> <td>.08</td> <td>.10</td> <td>.15</td> </tr> <tr> <td>.10</td> <td>.13</td> <td>.20</td> </tr> <tr> <td>.12</td> <td>.17</td> <td>.25</td> </tr> <tr> <td>.15</td> <td>.21</td> <td>.30</td> </tr> <tr> <td>.18</td> <td>.25</td> <td>.35</td> </tr> </table>		<u>C</u>	<u>D</u>	<u>E</u>	.08	.10	.15	.10	.13	.20	.12	.17	.25	.15	.21	.30	.18	.25	.35		
<u>C</u>	<u>D</u>	<u>E</u>																					
.08	.10	.15																					
.10	.13	.20																					
.12	.17	.25																					
.15	.21	.30																					
.18	.25	.35																					
Gauge block accessories	As BS 4311:Part 2:1994	0.3	A																				
Gap Gauges (Plain parallel)	As BS 969:1982 From 1 up to 100 Above 100 up to 200 Above 200 up to 300	3 5 8	A																				
Feeler Gauges Paint thickness setting foils	As BS 957:2008	1	A																				
Graduated rules	Up to 2 m	5 + (10 x length in m) μ m	A																				
Scales precision, Linear	Up to 400 mm		A																				
Thread measuring cylinders	As BS 5590:1978 and specials As BS 3777: 1964	0.5	A																				
Thread vee groove jaw blades	Down to 0.6 (40 T.P.I.)	3	A																				
Vee grooved end pieces		3	A																				
Balls (Steel and TC)	Up to 10 mm Above 10 up to 20 Above 20 up to 50	0.5 0.8 1.0	A																				
Thread measuring Vee pieces (Prisms)	As MOY/SCMI/33	Within schedule requirements	A																				



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Measured Quantity Instrument or Gauge	Range	Best Measurement Capability Expressed as an Expanded Uncertainty ($k=2$)	Remarks	Location Code
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH (cont'd)				
Micrometers			2. In addition to specified items other similar items, including parts of measuring instruments and machines, may be calibrated (see note 1) to the uncertainties stated. Where items or part calibrated is of lower quality due to wear, errors in geometry or form poor surface texture, or where any other factor that adversely affects the measurement capability, greater uncertainties must be considered. 3. 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. 4. Single start, symmetrical thread forms only. 5. Single and multi-start symmetrical and asymmetrical thread forms.	
External	As BS 870:2008	Heads: 2.0 between any two points. Setting and extension rods: $1 + (5 \times \text{length in m})$		A
Internal	As BS 959:2008			A
Depth	As BS 6468:2008			A
Length gauges, flat and spherical ended (excluding length bars)	Up to 1000 mm	$1 + (5 \times \text{length in m})$ Minimum 1.5		A
Micrometer Heads	As BS 1734:1951	1.0		A
Micrometers Height Setting	Up to 300	Heads: 1.2 between any two points Stepped column: 1.6 Overall performance: 2.0		A
Riser Blocks for Above Item	150 300	2.5 5		A
Micrometers Bore (three point)	Up to 200 diameter	Overall performances 5		A
Micrometer Bench		Overall performances 2.0		A
Ultrasonic Test Blocks	As BS 2704:1978	$1 + (8 \times \text{length in m})$	A	
PLAIN PLUG & RING GAUGES				
Plain plug gauges (parallel), cylindrical setting standards and rollers	From 1 up to 50 diameter Above 50 up to 100 diameter Above 100 up to 150 diameter Above 150 up to 200 diameter Above 200 up to 300 diameter Above 300 up to 400 diameter	0.5 0.8 1 1.2 1.6 2.0 on diameter	A	



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PLAIN PLUG & RING GAUGES (cont'd)				
Plain plug gauges (taper) including check plugs				A
Taper up to 1 in 8 on diameter	From 6 up to 50 diameter Above 50 up to 100 diameter	3 4		A
Taper above 1 in 8 and up to 1 in 3 on diameter	From 6 up to 50 diameter Above 50 up to 100 diameter	5 6		A
Plain ring gauges (parallel) and setting standards	From 1 up to 10 diameter Above 10 up to 25 diameter Above 25 up to 50 diameter Above 50 up to 100 diameter Above 100 up to 150 diameter Above 150 up to 200 diameter Above 200 up to 300 diameter	1 0.8 1 1.5 2 3 3.5		A
Plain ring gauges (taper)				A
Taper up to 1 in 8 on diameter	From 6 up to 150 diameter	6	on diameter	
Taper above 1 in 8 and up to 1 in 3 on diameter	From 6 up to 150 diameter	8		



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
SCREW THREAD GAUGES				
Screw plug gauges (parallel) including check and setting plugs See Note 5	From 1 up to 100 diameter Above 100 up to 150 diameter Above 150 up to 175 diameter	2.5 } 5 } on pitch } pitch 1.5 8 } diameter }		A
Screw plug gauges (taper) including check plugs but excluding API screw thread gauges See Note 4	From 6 up to 175 diameter	7 } flank angle: $2 + \left(\frac{800}{M \times P} \right)$		A
Screw ring gauges (parallel) including check and setting plugs See Note 5	From 1 up to 14 diameter From 6 up to 100 diameter Above 100 up to 150 diameter	By check plugs 5 } on pitch } 6 } diameter }	Minutes of arc where M is projector magnification and P is pitch in mm	A
Screw ring gauges (taper) - Ground Threads only and excluding API screw thread See Note 4	From 6 up to 150 diameter	9 } on pitch }		A
OTHER MEASURING INSTRUMENTS, EQUIPMENT AND MACHINES				
Vernier caliper (external, internal and depth)	As BS 887:2008 Up to 1000 callipers Depth 600	Overall performance $10 + (30 \times \text{length in m})$		A
Vernier height gauges	As BS 1643:2008 up to 1000			A
Dial gauges and dial test indicators	As BS 907:2008 and BS 2795:2008	1.0		A
Comparators (external)	As BS 1054: 1975 up to 5000 magnifications	1% of range Minimum 0.2		A
Receiver position and profile gauges, jigs and fixtures	500 x 400 x 300	Length and diameter = $3 + (10 \times \text{length in m})$ Angle = 1 minute of arc		A
Toolmakers microscopes	As MOY/SCM1/2 Up to 150 x 150	1 + 100/M with eye piece or 135/M with screen Where M is the total magnification		A,B
Linear measuring machines (vertical and horizontal, general single axis)	Up to 1000	$0.5 + (4 \times \text{length in m})$		A,B
Paint coating thickness meters	Up to 5	8		A



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OTHER MEASURING INSTRUMENTS, EQUIPMENT AND MACHINES (cont'd)				
Electronic height gauges with microprocessor control	Up to 1 m	1 + (5 x length in m)		A,B
Thread Diameter Measuring	As NPL MOY/SCM1/9 and MOY/SCM1/12 up to 300	Overall performance 1.5		A
ANGLE				
Right Angle and Box Angle Plates	As BS 5535:1978 400 x 300 x 500	Squareness: 3 + (1 per 100 mm) Parallelism: See note 3 1 + (1 per 100 mm)		A
Bevel protractors and protractors	As BS 1685:2008	1 minute + 1 vernier division		A
Spirit levels	As BS 3509:1962 and BS 958:1968	Mean sensitivity 10% of nominal Minimum 0.5 seconds of arc		A
Electronic indicating levels	Up to 20 minutes of arc	1 % of range Minimum 0.5 seconds of arc		A
Squares				
Blade type	As BS 939:2007 up to 300 Above 300 up to 450 Above 450 up to 600	3 5 7		A
Cylindrical	As BS 939:2007 up to 300 Above 300 up to 450	2 4	See note 3	A
Block	As BS 939:2007 up to 300 Above 300 up to 450	3 5		A
Vee Blocks	As BS 3731:1987 up to 150	Dependant on size and grade From 1.5 up to 5		A
Sine Bars and Tables	As BS 3064:1978 and up to 500 length	Linear dimensions 1 + (10 x length in m) Overall performance 3 seconds of arc		A
Compound and sine tables	With tables or equivalent up to 500 length	Overall performance: 5 seconds of arc		A



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ANGLE (cont'd)				
Autocollimators	60 minutes of arc 10 minutes of arc	1 second of arc or more depending on resolution, quality and overall performance		A
FORM				
Optical Parallels	Up to 30 diameter	0.5		A
Optical Flats	Up to 75 diameter	0.1 	See note 3	A
Eginneers Parallels	As BS 906:Parts 1 & 2:1992 Up to 50 x 100 x 400	From 1.5 up to 5 Dependent on size and grade		A
Profile projectors	Up to 100 magnifications	Magnification 125 at screen Linear 6.0 Angular 3 mins of arc		A,B
Radius gauges	Up to 50	20		A
Surface Plates				A,B
Granite Cast Iron	 As BS 817:1988	1.5 + (0.8 x diagonal in M) See note 3		
TORQUE				
Hand torque tools	As BS EN ISO 6789:2003 From 0.1 N.m up to 1500 N.m	1% of full scale reading (See Notes)		A
END				