

Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 0244 Accredited to ISO/IEC 17025:2005	Cromwell Metrology	
	Issue No: 029 Issue date: 27 October 2010	
	A Division of Cromwell Tools Ltd. 65 Chartwell Drive Wigston Leicester LE18 2FS	Contact: Mr T Astill Tel: +44 (0)116-2572396 Fax: +44 (0)116-2888843 E-Mail: astillt@cromwell.co.uk Website: www.cromwell.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	Local contact	
Address A Division of Cromwell Tools Ltd. 65 Chartwell Drive Wigston Leicester LE18 2FS	Local contact Mr T Astill	Dimensional Torque A

Site activities performed away from the locations listed above:

Location details	Activity	Location code
At customer's premises	Mr T Astill	Dimensional B



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DETAIL OF ACCREDITATION

Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC) Expressed as an Expanded Uncertainty ($k=2$)	Remarks	Location Code												
RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED																
LENGTH			NOTES													
Gauge blocks		Class (See notes)	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. 1. All linear calibrations may be given in inch units. 2. Calibration may also be given in lbf.in and lbf.ft. 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. Single start, symmetrical thread forms only. 5. Single and multi-start, symmetrical thread forms only. 6. 1 mm to 3 mm diameter range relates to functional test of size using check plugs. 7. Functional test of size using setting plugs.	A												
Inch (Steel and 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	<table border="0"> <tr><td>C</td><td rowspan="6">μ inches</td></tr> <tr><td>3.0</td></tr> <tr><td>4.0</td></tr> <tr><td>5.0</td></tr> <tr><td>6.0</td></tr> <tr><td>7.0</td></tr> </table>		C	μ inches	3.0	4.0	5.0	6.0	7.0	A					
C	μ inches															
3.0																
4.0																
5.0																
6.0																
7.0																
Millimetre (Steel, tungsten carbide and ceramic)	As BS EN ISO 3650:1999 0.25 to 10 10 to 25 30, 40, 50 60, 70, 75 80, 90, 100	<table border="0"> <tr><td>C</td><td></td></tr> <tr><td>0.080</td><td></td></tr> <tr><td>0.10</td><td></td></tr> <tr><td>0.12</td><td></td></tr> <tr><td>0.15</td><td></td></tr> <tr><td>0.18</td><td></td></tr> </table>		C		0.080		0.10		0.12		0.15		0.18		A
C																
0.080																
0.10																
0.12																
0.15																
0.18																
Plain plug gauges (parallel) cylindrical setting standards and rollers	1 to 50 diameter 50 to 100 100 to 150 150 to 200 200 to 300	<table border="0"> <tr><td>0.50</td><td rowspan="6">] on diameter</td></tr> <tr><td>0.80</td></tr> <tr><td>1.2</td></tr> <tr><td>1.5</td></tr> <tr><td>2.0</td></tr> </table>	0.50] on diameter	0.80	1.2	1.5	2.0	A							
0.50] on diameter															
0.80																
1.2																
1.5																
2.0																
Thread measuring cylinders		As BS3777:1964 and BS 5590:1978 and specials 0.1 to 5.0 diameter	0.50	A												
Plain plug gauges (taper)			A													
Taper up to 1 in 8 on diameter	3 to 50 diameter 50 to 100	<table border="0"> <tr><td>3.0</td><td rowspan="2">] on diameter</td></tr> <tr><td>4.0</td></tr> </table>	3.0] on diameter	4.0											
3.0] on diameter															
4.0																
Taper above 1 in 8 and up to 1 in 3 on diameter	3 to 50 diameter 50 to 100	<table border="0"> <tr><td>5.0</td><td rowspan="2">] on diameter</td></tr> <tr><td>6.0</td></tr> </table>	5.0] on diameter	6.0											
5.0] on diameter															
6.0																
Plain ring gauges (parallel)	1 to 10 diameter 10 to 100 100 to 200 200 to 300	<table border="0"> <tr><td>2.5</td><td rowspan="4">] on diameter</td></tr> <tr><td>1.0</td></tr> <tr><td>1.5</td></tr> <tr><td>2.0</td></tr> </table>	2.5] on diameter	1.0	1.5	2.0	A								
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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
LENGTH (Cont'd)				
Plain ring gauges (taper)				A
Taper up to 1 in 8 on diameter	3 to 50 diameter 50 to 100 100 to 200	4.0 5.0 6.0] on diameter	A
Taper above 1 in 8 and up to 1 in 3 on diameter	3 to 50 diameter 50 to 100 100 to 200	6.0 7.0 8.0		
Length gauges, flat and spherical ended	25 to 1400	1.0 + (5.0 x length in m)		A
Plain gap gauges (parallel)	1 to 100 100 to 200 200 to 300 300 to 400	2.0 3.0 4.0 5.0		A
Screw plug gauges (parallel) including check and setting plugs See Note 5	1 to 100 diameter 100 to 200	3.0 4.0] on pitch diameter	A
Screw plug gauges (taper) See Note 4	5 to 100 diameter 100 to 200	5.0 8.0		
Screw ring gauges (parallel) See Notes 5 and 6	1 to 100 diameter 100 to 200	5.0 6.0] on pitch diameter	
Screw ring gauges (taper) See Note 4	5 to 100 diameter 100 to 200	7.0 10		
Screw thread pitch	0.2 to 8	1.5		
Screw thread flank angles	0° to 52°	5.0 minutes of arc		
Screw thread adjustable calliper gauges (parallel)	1 to 100 diameter	See Notes 5 and 7		A
Engineers Steel Rules	As BS 4372:1968 0 to 2000	5.0 + (10 x length in m)		A
Parallels	As BS 906:1972 5 to 50 x 100 x 400	1.2 to 5.0		A
Vee blocks	As BS 3731:1987 20 to 150 diameter, vee capacity	2.5 to 5.0		A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
ANGLE				
Squares	As BS 939:2007			A
Blade type	50 to 300 300 to 600	3.0 5.0	on squareness See note 3	A
Cylindrical	75 to 300 300 to 600	2.0 4.0		
Block	50 to 300 300 to 600	3.0 5.0		
Sine bars	As BS 3064:1978 100 to 300			A
Sine tables	As BS 3064:1978 100 to 500		Linear dimensions: 1.0 + (10 x length in m) Overall Performance: 3.0 Seconds of arc	
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) See note 3	A
Spirit levels	As BS 3509:1962 and BS 958:1968 2 seconds of arc to 60 minutes of arc nominal sensitivity		Mean sensitivity 10% of nominal Minimum of 0.50 seconds of arc	A
FORM				
Flatness	3 to 75 diameter	0.20		A
Surface plates Granite Cast iron	As BS 817:2008 and above 160 x 100 to 4000 x 6000	1.5 + (0.80 x diagonal in m) See Note 3		A & B
Radius gauges	0.1 to 50	50		A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES				
Micrometers				
Micrometers External	As BS 870:2008 0 to 1500	Heads 2.0 between any two points. Setting and extension rods 1.0 + (5.0 x length in m)		A
Internal	As BS 959:2008 0 to 1000			
Depth	As BS 6468:2008 0 to 300			
Three point bore	3 to 200	Overall performance 3.0		A
Micrometer heads	As BS 1734:1951 0 to 100	1.0		A
Height setting micrometer	0 to 300	Heads : 2.0 between any two points Stepped column: 2.0 Overall performance: 3.0		A
Riser blocks for above	150 300	2.0 3.0		A
Vernier gauges Caliper	As BS 887:2008 0 to 2000	Overall performance 10 + (30 x length in m)		A
Height	As BS 1643:2008 0 to 1500			
Depth	As BS 6365:2008 0 to 600			
Electronic height gauges	0 to 1000	1.0 + (5.0 x length in m)		A & B
Vee grooved cylindrical setting standards	0 to 100 diameter	3.0		A
Displacement transducers (linear)	0 to 100	1.0		A



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RANGE IN MILLIMETRES AND UNCERTAINTY IN MICROMETRES UNLESS OTHERWISE STATED				
MEASURING INSTRUMENTS AND MACHINES (cont'd)				
Dial gauges and dial test indicators	As BS 907:2008 and BS 2795:1981 0 to 50 50 to 100	1.0 2.0		A
Bevel protractors	As BS 1685:2008 0 to 360 degrees	2.0 minutes of arc		A
Comparators (external)	As BS 1054:1975 250 to 20 000 magnifications	1% of range Minimum 0.10		A
Feeler Gauges	As BS 957:2008 0.02 to 1.00	3.0		A
TORQUE				
Hand torque tools See note 2	As BS EN 6789:2003 0.05 N.m to 1000 N.m	1.0% of applied torque		A
END				