Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

0231

Accredited to ISO/IEC 17025:2017

Foundrax Engineering Products Ltd

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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 Wessex Park Somerton Somerset TA11 6SB **Local contact** Alex Austin	Calibration of Brinell Reference blocks Calibration of Rockwell Reference blocks Direct and Indirect Verification of Brinell Machines including portable machines and Indentation Measuring Equipment Direct & Indirect verification of Rockwell Hardness Calibration machines Verification of ball Indenters	P

Site activities performed away from the locations listed above:

Location details	Activity	Location code
At Customers Premises	Direct and Indirect Verification of Brinell Machines including portable machines and Indentation Measuring Equipment	S

Calibration and Measurement Capability (CMC)

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS				
Calibration of Reference Hardness Blocks: Brinell scales	Ratio (F/D^2) = 30 10/3000 500 HBW to 653 HBW 10/3000 400 HBW to 500 HBW 10/3000 370 HBW to 400 HBW 10/3000 330 HBW to 370 HBW 10/3000 300 HBW to 330 HBW 10/3000 270 HBW to 300 HBW 10/3000 230 HBW to 270 HBW 10/3000 200 HBW to 230 HBW 10/3000 170 HBW to 200 HBW 10/3000 96 HBW to 170 HBW 5/750 500 HBW to 653 HBW 5/750 400 HBW to 500 HBW 5/750 370 HBW to 400 HBW 5/750 330 HBW to 370 HBW 5/750 300 HBW to 330 HBW 5/750 270 HBW to 300 HBW 5/750 230 HBW to 270 HBW 5/750 200 HBW to 230 HBW 5/750 170 HBW to 200 HBW 5/750 96 HBW to 170 HBW 2.5/187.5 500 HBW to 653 HBW 2.5/187.5 400 HBW to 500 HBW 2.5/187.5 370 HBW to 400 HBW 2.5/187.5 330 HBW to 370 HBW 2.5/187.5 300 HBW to 330 HBW 2.5/187.5 270 HBW to 300 HBW 2.5/187.5 230 HBW to 270 HBW 2.5/187.5 200 HBW to 230 HBW 2.5/187.5 170 HBW to 200 HBW 2.5/187.5 96 HBW to 170 HBW Ratio (F/D^2) = 15 10/1500 270 HBW to 299 HBW 10/1500 230 HBW to 270 HBW 10/1500 200 HBW to 230 HBW 10/1500 170 HBW to 200 HBW 10/1500 140 HBW to 170 HBW 10/1500 110 HBW to 140 HBW 10/1500 99 HBW to 110 HBW 10/1500 55 HBW to 99 HBW	See Note 1 4.8 HBW 2.7 HBW 2.3 HBW 2.1 HBW 1.9 HBW 1.7 HBW 1.5 HBW 1.3 HBW 1.1 HBW 0.93 HBW 4.4 HBW 3.6 HBW 3.1 HBW 2.8 HBW 2.5 HBW 2.3 HBW 2.0 HBW 1.7 HBW 1.5 HBW 1.2 HBW 4.4 HBW 3.6 HBW 3.1 HBW 2.8 HBW 2.5 HBW 2.3 HBW 2.0 HBW 1.7 HBW 1.5 HBW 1.2 HBW See Note 1 1.7 HBW 1.5 HBW 1.3 HBW 1.1 HBW 0.93 HBW 0.75 HBW 0.63 HBW 0.46 HBW	Note 1 The calibration shall be in accordance with the requirements of BS EN ISO 6506-3:2014 and/or ASTM E10-23.	P P

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS (cont'd)				
Calibration of Reference Hardness Blocks: Brinell scales (cont.)	Ratio (F/D^2) = 10 10/1000 140 HBW to 169HBW 10/1000 110 HBW to 140HBW 10/1000 90 HBW to 110HBW 10/1000 55 HBW to 90HBW 5/250 140 HBW to 169HBW 5/250 110 HBW to 140HBW 5/250 90 HBW to 110HBW 5/250 55 HBW to 90HBW Ratio (F/D^2) = 5 10/500 90 HBW to 100 HBW 10/500 55 HBW to 90 HBW	See Note 1 0.93 HBW 0.75 HBW 0.60 HBW 0.44 HBW 1.2 HBW 1.0 HBW 0.80 HBW 0.58 HBW See Note 1 0.57 HBW 0.44 HBW		P P
Brinell reference indentation reading blocks	0.6 mm up to 6 mm diameter	1.8 μm on indentation diameter	Using a high resolution measuring system	P
Direct verification of indentation measuring equipment for Brinell hardness	0.6 mm to 6.0 mm	See Note 2 1.4 μm	Note 2 The calibration shall be in accordance with the requirements of BS EN ISO 6506-2:2018 and /or BS EN ISO 6506-3:2014 and/or ASTM E10-23.	P & S
Verification of Brinell ball indenters	1 mm to 10 mm	See note 3	Note 3 The verification shall be in accordance with the requirements of BS EN ISO 6506-2:2018 and/or ASTM E10-23.	P
Direct & Indirect verification of Brinell Hardness Calibration Machines, Hardness Testing Machines and Indentation Measuring devices	Brinell scales: HBW 10/3000 to HBW 2.5/187.5 Force 30 kN to 1 kN Time 2 s to 30 s Scale 10/3000 653 HBW to 96 HBW Scale 10/1500 299 HBW to 55 HBW Scale 10/1000 169 HBW to 55 HBW Scale 5/750 653 HBW to 96 HBW	See Note 4 0.2 % 0.1 s See Note 4 8.0 HBW to 2.2 HBW 4.1 HBW to 1.2 HBW 2.3 HBW to 1.2 HBW 9.8 HBW to 2.4 HBW	Note 4 The calibration shall be in accordance with the requirements of BS EN ISO 6506-2:2018 or BS EN ISO 6506-3:2014 and/or ASTM E10-23.	P & S S

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS (cont'd)				
Direct & Indirect verification of Brinell Hardness Calibration Machines, Hardness Testing Machines and Indentation Measuring devices	Scale 5/250 169 HBW to 55 HBW	2.7 HBW to 1.3 HBW		
	Scale 2.5/187.5 653 HBW to 96 HBW	16 HBW to 2.9 HBW		
	Scale 2.5/62.5 135.8 HBW	3.0 HBW		
Direct verification of Rockwell Hardness Calibration machines	Rockwell scale: A, B, C, D, E, F, G, H, K, L, M, P, R, S and V	See Note 5	Note 5 The calibration shall be in accordance with the requirements of BS EN ISO 6508-3:2015 and/or ASTM E18-22.	P
	Force 9.806 N to 1471 N	0.06 %		
	Depth 10 µm to 250 µm	0.09 µm		
	Time 1 s to 25 s	0.1 s		
Verification of Rockwell ball indenters	1.5875 mm to 12.7 mm	See Note 6	Note 6 The verification shall be in accordance with the requirements of BS EN ISO 6508-2:2015 and/or BS EN ISO 6508-3:2015 and/or ASTM E18-22.	P
Calibration of Rockwell Standardised Hardness Blocks	HRA Steel Scale 80 to 86.5 70 to 78 20 to 65	See Note 7 0.28 HRA 0.26 HRA 0.28 HRA	Note 7 The calibration shall be in accordance with the requirements of BS EN ISO 6508-3:2015 and/or ASTM E18-22.	P
	HRBW Scale 80 to 120 51 to 79 10 to 50	 0.42 HRBW 0.87 HRBW 1.36 HRBW		
	HRC Scale 60 to 70 40 to 59 20 to 39	 0.31 HRC 0.32 HRC 0.37 HRC		
	HRD Scale 70 to 80 50 to 69 40 to 49	 0.25 HRD 0.25 HRD 0.27 HRD		
	HREW Scale 75 to 89 65 to 74	 0.54 HREW 0.54 HREW		

Measured Quantity Instrument or Gauge	Range	Expanded Measurement Uncertainty (k = 2)	Remarks	Location Code
HARDNESS (cont'd)				
Calibration of Rockwell Standardised Hardness Blocks (cont'd)	HRFW Scale 87 70 to 86 40 to 69 HRGW Scale 80 40 to 79 10 to 39 HRHW Scale 90 80 to 89 60 to 79 HRKW Scale 70 30 to 69 10 to 29 HRL Scale 115 90 to 114 HRM Scale 100 70 to 99 HRP Scale 85 40 to 84 HRR Scale 120 100 to 119 HRS Scale 112 110 to 111 HRV Scale 104 80 to 103	 0.40 HRFW 0.40 HRFW 0.54 HRFW 0.30 HRGW 0.30 HRGW 0.76 HRGW 0.40 HRHW 0.40 HRHW 0.68 HRHW 0.40 HRKW 0.40 HRKW 0.64 HRKW 0.35 HRL 0.35 HRL 0.56 HRM 0.56 HRM 0.65 HRP 0.91 HRP 0.23 HRR 0.40 HRR 0.19 HRS 0.91 HRS 0.20 HRV 0.61 HRV		
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: $Q[a, b] = [a^2 + b^2]^{1/2}$