


# Schedule of Accreditation

issued by

## United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines, Middlesex, TW18 3HR, UK

 <p><b>UKAS</b> CALIBRATION 7525</p> <p>Accredited to <b>ISO/IEC 17025:2005</b></p>	<p><b>Struers Ltd</b></p> <p>Issue No: 006 Issue date: 26 May 2017</p>	
	<p>Unit 11 Evolution Whittle Way Catcliffe Rotherham S60 5BL</p>	<p>Contact: Lee Cobb Tel: +44 (0) 845 604 6664 Fax: +44 (0) 845 604 6651 E-Mail: info@struers.co.uk Website: www.struers.com</p>
<p>Calibration performed by the Organisation at the locations specified below</p>		

### Locations covered by the organisation and their relevant activities

#### Laboratory locations:

Location details	Activity	Location code
<p><b>Address</b> Unit 11 Evolution Whittle Way, Catcliffe Rotherham S60 5BL</p> <p><b>Contact Lee Cobb</b></p>	<p>Hardness Testing machines, Rockwell, direct Testing machines, Rockwell, indirect Testing machines, Vickers, and Knoop direct Testing machines, Vickers, and Knoop indirect Testing machines, Brinell, direct Testing machines, Brinell, indirect</p> <p>Accreditation is limited to those machines manufactured for and by the Struers Group of Companies and by EmcoTest Prüfmaschinen GmbH.</p>	P

#### Site activities performed away from the locations listed above:

Location details	Activity	Location code
<p><b>Any customer's premises</b>      <b>Contact Lee Cobb</b></p>	<p>Hardness Testing machines, Rockwell, direct Testing machines, Rockwell, indirect Testing machines, Vickers, and Knoop direct Testing machines, Vickers, and Knoop indirect Testing machines, Brinell, direct Testing machines, Brinell, indirect</p> <p>Accreditation is limited to those machines manufactured for and by the Struers Group of Companies and by EmcoTest Prüfmaschinen GmbH.</p>	S



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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
CERTIFICATION OF HARDNESS MACHINES IN SERVICE			Note 1 Accreditation is limited to those machines manufactured for and by the Struers Group of Companies and by EmcoTest Prüfmaschinen GmbH.	
Direct verification of Rockwell Hardness Testing Machines	Rockwell scales: A, B, C, D, E, F, G, H, K, N and T Y	See note 2	Note 2 The calibration/ verification shall be in accordance with the requirements of BS EN ISO 6508:2005 (Withdrawn) and ASTM E18-12.	P & S
	Force	0.12 % force		
	Time	0.1 second		
Indirect verification of Rockwell Hardness Testing Machines	Rockwell scales: HRA Scale 86 to 85 70 to 79 60 to 69	See note 2 0.15 HRA 0.16 HRA 0.28 HRA	Note 3 The verification shall be in accordance with the requirements of BS EN ISO 6507:2005, BS EN ISO 4545:2005, ASTM E92-16 & ASTM E384-16	P & S
	HRB Scale 80 51 to 79 10 to 50	0.42 HRB 0.87 HRB 1.36 HRB		
	HRC Scale 60 to 70 40 to 59 20 to 39	0.31 HRC 0.32 HRC 0.37 HRC	Note 4 The verification shall be in accordance with the requirements of BS EN ISO 6506:2005 and ASTM E10-12.	P & S
	HRD Scale 70 to 80 50 to 69 40 to 49	0.17 HRD 0.25 HRD 0.27 HRD		
	HRE Scale 89 75 to 88 65 to 87	0.54 HRE 0.54 HRE 0.54 HRE		
	HRF Scale 87 70 to 86 40 to 69	0.40 HRF 0.40 HRF 0.54 HRF		
	HRG Scale 80 40 to 79 10 to 39	0.30 HRG 0.30 HRG 0.76 HRG		



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Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC)  Expressed as an Expanded Uncertainty ( $k=2$ )	Remarks	Location Code
Indirect verification of Rockwell Hardness Testing Machines (cont'd)	Rockwell Scales:	See note 2		P & S
	HRH Scale			
	90	0.40 HRH		
	80 to 89	0.40 HRH		
	60 to 79	0.68 HRH		
	HRK Scale			
	70	0.40 HRK		
	30 to 69	0.40 HRK		
	10 to 29	0.64 HRK		
	HRL Scale			
	115	0.35 HRL		
	90 to 114	0.35 HRL		
	HRM Scale			
	100	0.56 HRM		
	70 to 99	0.56 HRM		
	HRP Scale			
	85	0.65 HRP		
	40 to 84	0.91 HRP		
	HRR Scale			
	120	0.23 HRR		
100 to 119	0.40 HRR			
HRS Scale				
112	0.19 HRS			
110 to 111	0.91 HRS			
HRV Scale				
104 to 81	0.20 HRV			
80 to 103	0.61 HRV			
HR15N Scale				
90 to 95	0.18 HR15N			
80 to 89	0.18 HR15N			
40 to 79	0.39 HR15N			
HR15T Scale				
88 to 100	0.21 HR15T			
80 to 87	0.21 HT15T			
20 to 79	0.37 HR15T			
HR15W Scale				
89 to 100	0.53 HR15W			
80 to 88	0.44 HR15W			
HR15X Scale				
88 to 100	0.33 HR15X			
80 to 87	0.62 HR15X			
HR15Y Scale				
94 to 100	0.63 HR15Y			
85 to 93	1.30 HR15Y			



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Indirect verification of Rockwell Hardness Testing Machines (cont'd)	Rockwell Scales: HR30N Scale 77 to 85 60 to 76 40 to 59	See note 2  0.27 HR30N 0.27 HR30N 0.55 HR30N		P & S
	HR30T Scale 57 to 85 50 to 56 20 to 49	0.39 HR30T 0.66 HR30T 0.90 HR30T		
	HR30W Scale 65 to 100 40 to 64	0.76 HR30W 0.90 HR30W		
	HR30X Scale 79 to 100 60 to 78	0.15 HR30X 0.99 HR30X		
	HR30Y Scale 88 to 100 60 to 87	0.37 HR30Y 0.82 HR30Y		
	HR45N Scale 67 to 75 50 to 66 10 to 49	0.18 HR45N 0.21 HR45N 0.43 HR45N		
	HR45T Scale 50 to 75 40 to 49 10 to 39	0.40 HR45T 0.40 HR45T 0.73 HR45T		
	HR45W Scale 49 to 100 10 to 47	0.12 HR45W 0.29 HR45W		
	HR45X Scale 69 to 100 40 to 68	0.34 HR45X 0.81 HR45X		
	HR45Y Scale 82 to 100 60 to 81	0.29 HR45Y 0.94 HR45Y		
Direct verification of Vickers and Knoop Hardness Testing machines & Indentation Measuring Devices	Vickers scales: HV -100 to HV 0.05 HK 1.0 to HK 0.05 Force	0.12 % force		P & S
	Time	0.1 second time		
	Length	1 $\mu$ m		



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Measured Quantity Instrument or Gauge	Range	Calibration and Measurement Capability (CMC)  Expressed as an Expanded Uncertainty ( $k=2$ )	Remarks	Location Code
Indirect verification of Vickers Hardness Testing machines	Vickers scales:	See note 3		P & S
	HV 100 200	1.2 HV		
	HV 100 400	3.4 HV		
	HV 100 700	4.1 HV		
	HV 50 200	1.9 HV		
	HV 50 400	3.5 HV		
	HV 50 700	6.3 HV		
	HV 30 200	2.0 HV		
	HV 30 400	4.4 HV		
	HV 30 700	9.3 HV		
	HV 20 200	2.5 HV		
	HV 20 400	6.2 HV		
	HV 20 700	11.0 HV		
	HV 10 200	3.1 HV		
	HV 10 400	7.7 HV		
	HV 10 700	14.9 HV		
	HV5 200	3.9 HV		
	HV5 400	11.0 HV		
	HV5 700	19.7 HV		
	HV3 200	5.0 HV		
	HV3 400	13.1 HV		
	HV3 700	24.3 HV		
	HV2.5 200	5.7 HV		
	HV2.5 400	14.5 HV		
	HV2.5 700	27.3 HV		
	HV2 200	6.9 HV		
	HV2 400	16.3 HV		
	HV2 700	31.0 HV		
	HV1 200	8.7 HV		
	HV1 400	21.4 HV		
	HV1 700	44.0 HV		
	HV 0.5 200	5.0 HV		
	HV 0.5 400	15.0 HV		
	HV 0.5 700	17.0 HV		
	HV 0.3 200	6.0 HV		
	HV 0.3 400	16.0 HV		
HV 0.3 700	19.0 HV			
HV 0.2 200	7.0 HV			
HV 0.2 400	17.0 HV			
HV 0.2 700	20.0 HV			



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Indirect verification of Vickers Hardness Testing machines continued	HV 0.1 200	10.0 HV		
	HV 0.1 400	30.0 HV		
	HV 0.1 700	40.0 HV		
	HV 0.05 200	38.6 HV		
	HV 0.05 400	55.5 HV		
Indirect verification of Knoop Hardness Testing machines	Knoop Scales	See note 3		
	HK 0.05 200	8.5 HK		
	HK 0.05 400	19.0 HK		
	HK 0.05 700	27.0 HK		
Indirect verification of Knoop Hardness Testing machines (cont'd)	Knoop Scales	See note 3		P & S
	HK 0.1 200	8.0 HK		
	HK 0.1 400	18.0 HK		
	HK 0.1 700	25.0 HK		
	HK 0.2 200	7.0 HK		
	HK 0.2 400	17.0 HK		
	HK 0.2 700	20.0 HK		
	HK 0.3 200	6.0 HK		
	HK 0.3 400	16.0 HK		
	HK 0.3 700	19.0 HK		
	HK 0.5 200	5.0 HK		
	HK 0.5 400	15.0 HK		
	HK 0.5 700	17.0 HK		
	HK1 200	8.7 HK		
HK1 400	21.4 HK			
HK1 700	44.0 HK			
Direct verification of Brinell Hardness Testing Machines	Brinell scales: From HBW 10/3000 to HBW 1/1 Force	0.24 %		P & S
	Time	0.1 second		
	Length	10 $\mu$ m		
Indirect verification of Brinell Hardness Testing Machines	Brinell scales: Scale 10/3000 600HBW to 140 HBW	See note 4 8.0 HBW to 2.2 HBW		P & S
	Scale 10/1500 299 HBW to 55 HBW	4.1 HBW to 1.2 HBW		
	Scale 10/1000 169 HBW to 55 HBW	2.3 HBW to 1.2 HBW		



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Indirect verification of Brinell Hardness Testing Machines continued	Scale 5/750 600 HBW to 140 HBW  Scale 5/250 169 HBW to 55 HBW  Scale 2.5/187.5 600 HBW to 140 HBW  Scale 1/1 21.8 HBW to 3.18 HBW	9.8 HBW to 2.4 HBW  2.7 HBW to 1.3 HBW  16 HBW to 2.9 HBW  1.04 HBW to 0.09 HBW		
END				