


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

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

 <p>0232 Accredited to ISO/IEC 17025:2005</p>	<h3>Indentec Hardness Testing Machines Ltd</h3> <p>Issue No: 033 Issue date: 21 December 2017</p>	
	<p>Unit 30 Navigation Drive Hurst Business Park Brierley Hill West Midlands DY5 1UT United Kingdom</p>	<p>Contact: Mr. J. Piller Tel: +44 (0)1384-484070 Fax: +44 (0)1384-481074 E-Mail: sales@indentec.com Website: www.indentec.com</p>
<p>Calibration performed by the Organisations at the locations specified below</p>		

Locations covered by the organisation and their relevant activities

Laboratory locations:

Location details		Activity	Location code
<p>Address Unit 30 Navigation Drive Hurst Business Park Brierley Hill West Midlands DY5 1UT United Kingdom</p>	<p>Local contact Mr J Piller</p>	<p>Hardness Indentors, ball Ball Indentor holders Test blocks, Brinell Test blocks, Rockwell Test blocks, Vickers Test blocks, Knoop Calibration machines, Rockwell, direct Testing machines, Rockwell, direct Calibration machines, Rockwell, Indirect Testing machines, Rockwell, indirect Calibration machines, Vickers, and Knoop direct Testing machines, Vickers, and Knoop direct Calibration machines, Vickers, and Knoop Indirect Testing machines, Vickers, and Knoop indirect Calibration machines, Brinell, direct Testing machines, Brinell, direct Calibration machines, Brinell, indirect Testing machines, Brinell, indirect</p>	<p>P</p>

Site activities performed away from the locations listed above:

Location details		Activity	Location code
<p>At Customers Premises</p>		<p>Hardness Calibration machines, Rockwell, direct Testing machines, Rockwell, direct Calibration machines, Rockwell, Indirect Testing machines, Rockwell, indirect Calibration machines, Vickers and Knoop direct Testing machines, Vickers, and Knoop direct Calibration machines, Vickers, and Knoop Indirect Testing machines, Vickers, and Knoop indirect Calibration machines, Brinell, direct Testing machines, Brinell, direct Calibration machines, Brinell, indirect Testing machines, Brinell, indirect</p>	<p>S</p>



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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
VERIFICATION OF HARDNESS MACHINES IN SERVICE				
Direct verification of Rockwell Hardness Calibration and Testing Machines	Rockwell scales: A, B, C, D, E, F, G, H, K, L, M, P, R, S, V, N, T, W, X and Y Force	See Note 1 0.12 % force	1 The calibration / verification shall be in accordance with the requirements of BS EN ISO 6508:2015 and / or ASTM E18-17 Accreditation is limited to machines manufactured by Indentec Hardness Testing Machines Ltd & Zwick Roell. Accreditation excludes Rockwell portable hardness testing machines 2 The calibration / verification shall be in accordance with the requirements of BS EN ISO 6507:2005, BS EN ISO 4545:2005 and / or ASTM E384-17 and / or ASTM E92-17 3 The calibration / verification shall be in accordance with the requirements of BS EN ISO 6506:2014 and / or ASTM E10-17 4 The calibration / verification shall be in accordance with the requirements of ASTM E18-17. The hardness of the ball holder can also be made using the Vickers hardness scale and the results converted to Rockwell hardness values. 5 The calibration / verification shall be in accordance with the requirements of ISO 6508 and ASTM E18-17 for or Rockwell and ISO 6506 and ASTM E10 for Brinell,	P & S
	Time	0.1 second		
	Length	0.1 μ m		
Indirect verification of Rockwell Hardness Calibration and Testing Machines	Rockwell scales: HRA Scale 80 to 85 70 to 80 60 to 70	See Note 1 0.15 HRA 0.16 HRA 0.28 HRA		P & S
	HRBW Scale 80 50 to 80 10 to 50	0.42 HRBW 0.87 HRBW 1.36 HRBW		
	HRC Scale 60 to 70 40 to 60 20 to 40	0.31 HRC 0.32 HRC 0.37 HRC		
	HRD Scale 70 to 80 50 to 70 40 to 50	0.17 HRD 0.25 HRD 0.27 HRD		
	HREW Scale 89 75 to 89 65 to 75	0.54 HREW 0.54 HREW 0.54 HREW		
	HRFW Scale 87 70 to 87 40 to 70	0.40 HRFW 0.40 HRFW 0.54 HRFW		
	HRGW Scale 80 40 to 80 10 to 40	0.30 HRGW 0.30 HRGW 0.76 HRGW		



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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 Calibration and Testing Machines (cont'd)	Rockwell Scales	See Note 1		P & S
	HRHW Scale			
	90	0.40 HRHW		
	80 to 90	0.40 HRHW		
	60 to 80	0.68 HRHW		
	HRKW Scale			
	70	0.40 HRKW		
	30 to 70	0.40 HRKW		
	10 to 30	0.64 HRKW		
	HRLW Scale			
	115	0.35 HRLW		
	90 to 115	0.35 HRLW		
	HRMW Scale			
	100	0.56 HRMW		
	70 to 100	0.56 HRMW		
	Rockwell Scales:	See Note 1		
	HRPW Scale			
	85	0.65 HRPW		
	40 to 85	0.91 HRPW		
	HRRW Scale			
120	0.23 HRRW			
100 to 120	0.40 HRRW			
HRSW Scale				
112	0.19 HRSW			
110 to 112	0.91 HRSW			
HRVW Scale				
104 to 120	0.20 HRVW			
80 to 104	0.61 HRVW			
HR15N Scale				
90 to 95	0.18 HR15N			
80 to 90	0.18 HR15N			
40 to 80	0.39 HR15N			
HR15TW Scale				
88 to 100	0.21 HR15TW			
80 to 88	0.21 HT15TW			
20 to 80	0.37 HR15TW			
HR15WW Scale				
89 to 100	0.53 HR15WW			
80 to 89	0.44 HR15WW			
HR15XW Scale				
88 to 100	0.33 HR15XW			
80 to 88	0.62 HR15XW			



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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 Calibration and Testing Machines (cont'd)	Rockwell scales: HR15YW Scale 94 to 100 85 to 94 HR30N Scale 77 to 85 60 to 77 40 to 60 HR30TW Scale 57 to 85 50 to 57 20 to 50 HR30WW Scale 65 to 100 40 to 65 HR30XW Scale 79 to 100 60 to 79 HR30YW Scale 88 to 100 60 to 88 HR45N Scale 67 to 75 50 to 67 10 to 50 HR45TW Scale 50 to 75 40 to 50 10 to 40 HR45WW Scale 49 to 100 10 to 49 HR45XW Scale 69 to 100 40 to 69 HR45YW Scale 82 to 100 60 to 82	See Note 1 0.63 HR15YW 1.30 HR15YW 0.27 HR30N 0.27 HR30N 0.55 HR30N 0.39 HR30TW 0.66 HR30TW 0.90 HR30TW 0.76 HR30WW 0.90 HR30WW 0.15 HR30XW 0.99 HR30XW 0.37 HR30YW 0.82 HR30YW 0.18 HR45N 0.21 HR45N 0.43 HR45N 0.40 HR45TW 0.40 HR45TW 0.73 HR45TW 0.12 HR45WW 0.29 HR45WW 0.34 HR45XW 0.81 HR45XW 0.29 HR45YW 0.94 HR45YW		P & S



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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
Direct verification of Vickers and Knoop hardness Calibration and testing machines & Indentation Measuring Devices	Vickers scales: HV 50 to HV 0.05 HK 1.0 to HK 0.05 Force Time Length	See Note 2 0.12 % force 0.1 second time 1 μ m		P & S
Indirect verification of Vickers hardness Calibration and testing machines	Vickers scales: HV 100 200 HV 100 400 HV 100 700 HV 50 200 HV 50 400 HV 50 700 HV 30 200 HV 30 400 HV 30 700 HV 20 200 HV 20 400 HV 20 700 HV 10 200 HV 10 400 HV 10 700 HV5 200 HV5 400 HV5 700 HV3 200 HV3 400 HV3 700 HV1 200 HV1 400 HV1 700 HV 0.5 200 HV 0.5 400 HV 0.5 700 HV 0.3 200 HV 0.3 400 HV 0.3 700 HV 0.2 200 HV 0.2 400 HV 0.2 700	See Note 2 1.2 HV 3.4 HV 4.1 HV 1.9 HV 3.5 HV 6.3 HV 2.0 HV 4.4 HV 9.3 HV 2.5 HV 6.2 HV 11.0 HV 3.1 HV 7.7 HV 14.9 HV 3.9 HV 11.0 HV 19.7 HV 6.9 HV 16.3 HV 31.0 HV 8.7 HV 21.4 HV 44.0 HV 5.0 HV 15.0 HV 17.0 HV 6.0 HV 16.0 HV 19.0 HV 7.0 HV 17.0 HV 20.0 HV		P & S



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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 Calibration and testing machines (cont'd)	HV 0.1 200 HV 0.1 400 HV 0.1 700	10.0 HV 30.0 HV 40.0 HV		P & S
Indirect verification of Knoop hardness Calibration and testing machines	Knoop Scales HK 0.05 200 HK 0.05 400 HK 0.05 700 Knoop Scales: HK 0.1 200 HK 0.1 400 HK 0.1 700 HK 0.2 200 HK 0.2 400 HK 0.2 700 HK 0.3 200 HK 0.3 400 HK 0.3 700 HK 0.5 200 HK 0.5 400 HK 0.5 700 HK1 200 HK1 400 HK1 700	See Note 2 8.5 HK 19.0 HK 27.0 HK See Note 2 8.0 HK 18.0 HK 25.0 HK 7.0 HK 17.0 HK 20.0 HK 6.0 HK 16.0 HK 19.0 HK 5.0 HK 15.0 HK 17.0 HK 8.7 HK 21.4 HK 44.0 HK		P & S
Direct verification of Brinell Hardness Calibration and Testing Machines	Brinell scales: From HBW 10/3000 to HBW 1/1 Force Time Length	See Note 3 0.24 % 0.1 second 10 μ m		P & S
Indirect verification of Brinell Hardness Calibration and Testing Machines	Brinell scales: Scale 10/3000 600HBW to 140 HBW Scale 10/1500 299 HBW to 55 HBW Scale 10/1000 169 HBW to 55 HBW Scale 5/750 600 HBW to 140 HBW Scale 5/250 169 HBW to 55 HBW	See Notes 3 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 2.7 HBW to 1.3 HBW		P & S



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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 Brinell Hardness Calibration and Testing Machines (cont'd)	Scale 2.5/187.5 600 HBW to 140 HBW	16 HBW to 2.9 HBW		P & S
	Scale 1/1 21.8 HBW to 3.18 HBW	1.04 HBW to 0.09 HBW		
Calibration of indenter holders	1/16" to 1/2" ball holders Ball Protrusion Ball holder hardness	See Note 4 3.5 µm 0.37 HRC		P
Calibration of indenter balls	1mm to 1/2 inch	See Note 5		
Calibration of Rockwell Standardised Hardness Blocks	Rockwell scales: HRA Scale 87 to 92 80 to 87 70 to 80 60 to 70.0	See Note 1 0.10 HRA 0.15 HRA 0.16 HRA 0.28 HRA		P
	HRBW Scale 80 to 100 50 to 80 10 to 50	 0.42 HRBW 0.87 HRBW 1.0 HRBW		
	HRC Scale 60 to 72 40 to 60 10 to 40	 0.31 HRC 0.32 HRC 0.37 HRC		
	HRD Scale 70 to 80 50 to 79 40 to 50	 0.17 HRD 0.25 HRD 0.27 HRD		
	HREW Scale 89 to 100 75 to 89 65 to 75	 0.54 HREW 0.54 HREW 0.54 HREW		
	HRFW Scale 87 to 100 70 to 87 40 to 70	 0.40 HRFW 0.40 HRFW 0.54 HRFW		
	HRGW Scale 80 to 83 40 to 80 10 to 40	 0.30 HRGW 0.30 HRGW 0.76 HRGW		
	HRHW Scale 90 to 100 80 to 90 60 to 80	 0.40 HRHW 0.40 HRHW 0.68 HRHW		



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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
Calibration of Rockwell Standardised Hardness Blocks (cont'd)	HRKW Scale 70 to 100 30 to 70	0.40 HRKW 0.40 HRKW		P
	HRLW Scale 114 to 123 90 to 114	0.35 HRLW 0.35 HRLW		
	HRMW Scale 100 to 118 68 to 100	0.56 HRMW 0.56 HRMW		
	HRPW Scale 85 to 112	0.65 HRPW		
	Rockwell Scales HRRW Scale 120 to 123 86 to 120	See Note 1 0.23 HRRW 0.40 HRRW		
	HRSW Scale 112 to 123 107 to 112	0.19 HRSW 0.91 HRSW		
	HRVW Scale 104 to 120 80 to 104	0.20 HRVW 0.61 HRVW		
	HR15N Scale 90 to 95 80 to 90 40 to 80	0.18 HR15N 0.18 HR15N 0.39 HR15N		
	HR15TW Scale 88 to 100 80 to 88 20 to 80	0.21 HR15TW 0.21 HT15TW 0.37 HR15TW		
	HR15WW Scale 89 to 100 80 to 89	0.53 HR15WW 0.44 HR15WW		
	HR15XW Scale 88 to 100 80 to 88	0.33 HR15XW 0.62 HR15XW		
	HR15YW Scale 88 to 98	0.63 HR15YW		
	HR30N Scale 77 to 87 60 to 77 40 to 60	0.27 HR30N 0.27 HR30N 0.55 HR30N		



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Calibration of Rockwell Standardised Hardness Blocks (cont'd)	HR30TW Scale 57 to 85 50 to 57 20 to 50	0.39 HR30TW 0.66 HR30TW 0.90 HR30TW		P
	HR30WW Scale 65 to 100	0.76 HR30WW		
	HR30XW Scale 79 to 100	0.15 HR30XW		
	HR30YW Scale 88 to 100	0.37 HR30YW		
	Rockwell scales: HR45N Scale 67 to 80 50 to 67 19 to 50	See Note 1 0.18 HR45N 0.21 HR45N 0.43 HR45N		
	HR45TW Scale 50 to 75 40 to 50 10 to 40	0.40 HR45TW 0.40 HR45TW 0.73 HR45TW		
	HR45WW Scale 49 to 100	0.12 HR45WW		
	HR45XW Scale 69 to 100	0.34 HR45XW		
	HR45YW Scale 82 to 100	0.29 HR45YW		
	Calibration of Vickers Reference Hardness Blocks	Vickers scales: HV0.010 35 to 45	See Note 2 4.8 HV	
HV0.025 35 to 116		11.9 HV		
HV0.050 35 to 100 HV0.050 100 to 200 HV0.050 200 to 232		6.9 HV 19.2 HV 23.9 HV		
HV0.1 35 to 100 HV0.1 100 to 200 HV0.1 200 to 300 HV0.1 300 to 400 HV0.1 400 to 464		4.9 HV 13.6 HV 24.8 HV 38.5 HV 47.7 HV		



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Calibration of Vickers Reference Hardness Blocks (cont'd)	Vickers Scales: HV0.2 35 to 100 HV0.2 100 to 200 HV0.2 200 to 300 HV0.2 300 to 400 HV0.2 400 to 500 HV0.2 500 to 600 HV0.2 600 to 700 HV0.2 700 to 800 HV0.2 800 to 900 HV0.2 900 to 927 HV0.3 35 to 100 HV0.3 100 to 200 HV0.3 200 to 300 HV0.3 300 to 400 HV0.3 400 to 500 HV0.3 500 to 600 HV0.3 600 to 700 HV0.3 700 to 800 HV0.3 800 to 900 HV0.3 900 to 1000 HV0.3 1000 to 1100 HV0.3 1100 to 1200 HV0.3 1200 to 1300 HV0.3 1300 to 1391 HV0.5 35 to 100 HV0.5 100 to 200 HV0.5 200 to 300 HV0.5 300 to 400 HV0.5 400 to 500 HV0.5 500 to 600 HV0.5 600 to 700 HV0.5 700 to 800 HV0.5 800 to 900 HV0.5 900 to 1000 HV0.5 1000 to 1100 HV0.5 1100 to 1200 HV0.5 1200 to 1300 HV0.5 1300 to 1400 HV0.5 1400 to 1500 HV0.5 1500 to 1600 HV0.5 1600 to 1700 HV0.5 1700 to 1800 HV0.5 1800 to 1900 HV0.5 1900 to 2000	See Note 2 3.5 HV 9.8 HV 17.8 HV 27.2 HV 37.8 HV 49.6 HV 62.9 HV 76.9 HV 91.3 HV 95.4 HV 2.9 HV 8.1 HV 14.6 HV 22.4 HV 31.1 HV 40.7 HV 51.4 HV 62.6 HV 74.5 HV 87.4 HV 100.7 HV 115.4 HV 129.2 HV 143.2 HV 2.3 HV 6.4 HV 11.5 HV 17.5 HV 24.4 HV 32.0 HV 40.2 HV 48.8 HV 58.3 HV 67.9 HV 78.1 HV 89.4 HV 100.8 HV 111.7 HV 124.1 HV 136.8 HV 149.3 HV 163.5 HV 177.1 HV 192.3 HV		P



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Calibration of Vickers Reference Hardness Blocks (cont'd)	Vickers Scales: HV1 35 to 100 HV1 100 to 200 HV1 200 to 300 HV1 300 to 400 HV1 400 to 500 HV1 500 to 600 HV1 600 to 700 HV1 700 to 800 HV1 800 to 900 HV1 900 to 1000 HV1 1000 to 1100 HV1 1100 to 1200 HV1 1200 to 1300 HV1 1300 to 1400 HV1 1400 to 1500 HV1 1500 to 1600 HV1 1600 to 1700 HV1 1700 to 1800 HV1 1800 to 1900 HV1 1900 to 2000 HV2 35 to 100 HV2 100 to 200 HV2 200 to 300 HV2 300 to 400 HV2 400 to 500 HV2 500 to 600 HV2 600 to 700 HV2 700 to 800 HV2 800 to 900 HV2 900 to 1000 HV2 1000 to 1100 HV2 1100 to 1200 HV2 1200 to 1300 HV2 1300 to 1400 HV2 1400 to 1500 HV2 1500 to 1600 HV2 1600 to 1700 HV2 1700 to 1800 HV2 1800 to 1900	See Note 2 1.7 HV 4.6 HV 8.4 HV 12.7 HV 18.0 HV 23.0 HV 28.8 HV 35.1 HV 41.8 HV 48.8 HV 56.1 HV 64.1 HV 71.9 HV 80.4 HV 88.8 HV 97.5 HV 107.5 HV 116.7 HV 125.7 HV 135.8 HV 1.3 HV 3.4 HV 6.1 HV 9.3 HV 12.8 HV 16.7 HV 20.9 HV 25.4 HV 30.2 HV 35.3 HV 40.5 HV 46.1 HV 51.9 HV 57.7 HV 63.7 HV 70.1 HV 77.0 HV 83.7 HV 90.5 HV		P



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Calibration of Vickers Reference Hardness Blocks (cont'd)	Vickers Scales: HV2.5 35 to 100 HV2.5 100 to 200 HV2.5 200 to 300 HV2.5 300 to 400 HV2.5 400 to 500 HV2.5 500 to 600 HV2.5 600 to 700 HV2.5 700 to 800 HV2.5 800 to 900 HV2.5 900 to 1000 HV2.5 1000 to 1100 HV2.5 1100 to 1200 HV2.5 1200 to 1300 HV2.5 1300 to 1400 HV2.5 1400 to 1500 HV2.5 1500 to 1600 HV2.5 1600 to 1700 HV2.5 1700 to 1800 HV2.5 1800 to 1900 HV3 35 to 100 HV3 100 to 200 HV3 200 to 300 HV3 300 to 400 HV3 400 to 500 HV3 500 to 600 HV3 600 to 700 HV3 700 to 800 HV3 800 to 900 HV3 900 to 1000 HV3 1000 to 1100 HV3 1100 to 1200 HV3 1200 to 1300 HV3 1300 to 1400 HV3 1400 to 1500 HV3 1500 to 1600 HV3 1600 to 1700 HV3 1700 to 1800 HV3 1800 to 1900 HV5 35 to 100 HV5 100.1 to 200 HV5 200.1 to 300 HV5 300.1 to 400 HV5 400.1 to 500	See Note 2 1.2 HV 3.1 HV 5.5 HV 8.3 HV 11.5 HV 15.0 HV 18.8 HV 23.0 HV 27.0 HV 31.6 HV 36.4 HV 41.4 HV 46.5 HV 51.9 HV 57.6 HV 63.4 HV 69.3 HV 75.1 HV 81.5 HV 1.1 HV 2.9 HV 5.1 HV 7.7 HV 10.7 HV 13.9 HV 17.4 HV 21.1 HV 25.1 HV 29.2 HV 33.5 HV 38.1 HV 42.9 HV 47.9 HV 52.9 HV 58.0 HV 63.6 HV 69.1 HV 74.9 HV 0.9 HV 2.3 HV 4.1 HV 6.2 HV 8.6 HV		P



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Calibration of Vickers Reference Hardness Blocks (cont'd)	Vickers Scales:	See Note 2		P
	HV5 500 to 600	11.2 HV		
	HV5 600 to 700	13.9 HV		
	HV5 700 to 800	16.6 HV		
	HV5 800 to 900	19.9 HV		
	HV5 900 to 1000	23.0 HV		
	HV5 1000 to 1100	26.4 HV		
	HV5 1100 to 1200	30.1 HV		
	HV5 1200 to 1300	33.8 HV		
	HV5 1300 to 1400	37.6 HV		
	HV5 1400 to 1500	41.2 HV		
	HV5 1500 to 1600	46.1 HV		
	HV5 1600 to 1700	49.8 HV		
	HV5 1700 to 1800	54.0 HV		
	HV5 1800 to 1900	58.6 HV		
	HV10 35 to 100	0.7 HV		
	HV10 100 to 200	1.8 HV		
	HV10 200 to 300	3.1 HV		
	HV10 300 to 400	4.7 HV		
	HV10 400 to 500	6.3 HV		
	HV10 500 to 600	8.2 HV		
	HV10 600 to 700	10.2 HV		
	HV10 700 to 800	12.5 HV		
	HV10 800 to 900	14.7 HV		
	HV10 900 to 1000	17.1 HV		
	HV10 1000 to 1100	19.5 HV		
	HV10 1100 to 1200	22.1 HV		
	HV10 1200 to 1300	24.8 HV		
	HV10 1300 to 1400	27.7 HV		
	HV10 1400 to 1500	30.7 HV		
	HV10 1500 to 1600	33.7 HV		
	HV10 1600 to 1700	36.6 HV		
	HV10 1700 to 1800	39.8 HV		
	HV10 1800 to 1900	41.5 HV		
	HV20 35 to 100	0.6 HV		
	HV20 100 to 200	1.4 HV		
	HV20 200 to 300	2.5 HV		
	HV20 300 to 400	3.8 HV		
	HV20 400 to 500	4.7 HV		
	HV20 500 to 600	6.1 HV		
	HV20 600 to 700	8.3 HV		
	HV20 700 to 800	9.5 HV		
	HV20 800 to 900	11.5 HV		
	HV20 900 to 1000	14.3 HV		
	HV20 1000 to 1100	16.2 HV		
HV20 1100 to 1200	19.6 HV			
HV20 1200 to 1300	20.5 HV			
HV20 1300 to 1400	22.4 HV			
HV20 1400 to 1500	25.6 HV			
HV20 1500 to 1600	27.5 HV			
HV20 1600 to 1700	30.4 HV			
HV20 1700 to 1800	34.8 HV			
HV20 1800 to 1900	35.5 HV			



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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
Calibration of Vickers Reference Hardness Blocks (cont'd)	Vickers Scales: HV30 35 to 100 HV30 100 to 200 HV30 200 to 300 HV30 300 to 400 HV30 400 to 500 HV30 500 to 600 HV30 600 to 700 HV30 700 to 800 HV30 800 to 900 HV30 900 to 1000 HV30 1000 to 1100 HV30 1100 to 1200 HV30 1200 to 1300 HV30 1300 to 1400 HV30 1400 to 1500 HV30 1500 to 1600 HV30 1600 to 1700 HV30 1700 to 1800 HV30 1800 to 1900 HV50 35 to 100 HV50 100 to 200 HV50 200 to 300 HV50 300 to 400 HV50 400 to 500 HV50 500 to 600 HV50 600 to 700 HV50 700 to 800 HV50 800 to 900 HV50 900 to 1000 HV50 1000 to 1100 HV50 1100 to 1200 HV50 1200 to 1300 HV50 1300 to 1400 HV50 1400 to 1500 HV50 1500 to 1600 HV50 1600 to 1700 HV50 1700 to 1800 HV50 1800 to 1900 HV100 35 to 100 HV100 100 to 200 HV100 200 to 300 HV100 300 to 400 HV100 400 to 500 HV100 500 to 600 HV100 600 to 700 HV100 700 to 800 HV100 800 to 900 HV100 900 to 1000 HV100 1000 to 1100 HV100 1100 to 1200 HV100 1200 to 1300	See Note 2 0.5 HV 1.2 HV 2.1 HV 3.1 HV 4.2 HV 5.3 HV 6.6 HV 8.0 HV 9.4 HV 10.8 HV 12.4 HV 14.8 HV 15.6 HV 17.3 HV 19.2 HV 21.0 HV 22.8 HV 24.7 HV 26.8 HV 0.4 HV 1.1 HV 1.8 HV 2.6 HV 3.5 HV 4.5 HV 5.5 HV 6.6 HV 7.5 HV 8.9 HV 10.1 HV 11.5 HV 12.8 HV 14.3 HV 15.7 HV 17.1 HV 18.6 HV 20.1 HV 21.7 HV 0.4 HV 0.9 HV 1.5 HV 2.1 HV 2.8 HV 3.6 HV 4.4 HV 5.2 HV 6.1 HV 7.0 HV 8.0 HV 9.0 HV 10.0 HV		P



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Indentec Hardness Testing Machines Ltd

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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
Calibration of Vickers Reference Hardness Blocks (cont'd)	Vickers Scales: HV100 1300 to 1400 HV100 1400 to 1500 HV100 1500 to 1600 HV100 1600 to 1700 HV100 1700 to 1800 HV100 1800 to 1900	See Note 2 11.0 HV 12.1 HV 13.2 HV 14.3 HV 15.5 HV 16.7 HV		P
Certification of reference Vickers hardness measurements & Vickers Reading Blocks	All ranges See note 2	1 µm		P
Calibration of Knoop hardness reference blocks	Knoop Scales HK0.005 35 to 100 HK0.005 100 to 178	See note 2 9.6 HK 21.2 HK		P
Calibration of Knoop hardness reference blocks (cont'd)	Knoop Scales HK0.010 35 to 100 HK0.010 100 to 200 HK0.010 200 to 300 HK0.010 300 to 356 HK0.025 35 to 100 HK0.025 100 to 200 HK0.025 200 to 300 HK0.025 300 to 400 HK0.025 400 to 500 HK0.025 500 to 600 HK0.025 600 to 700 HK0.025 700 to 800 HK0.025 800 to 889 HK 0.050 35 to 100 HK 0.050 100 to 200 HK 0.050 200 to 300 HK 0.050 300 to 400 HK 0.050 400 to 500 HK 0.050 500 to 600 HK 0.050 600 to 700 HK 0.050 700 to 800 HK 0.050 800 to 900 HK 0.050 900 to 1000 HK 0.1 35 to 100 HK 0.1 100 to 200 HK 0.1 200 to 300 HK 0.1 300 to 400 HK 0.1 400 to 500 HK 0.1 500 to 600 HK 0.1 600 to 700 HK 0.1 700 to 800 HK 0.1 800 to 900 HK 0.1 900 to 1000	See note 2 7.1 HK 18.5 HK 33.2 HK 42.4 HK 5.2 HK 13.2 HK 23.1 HK 34.4 HK 46.3 HK 60.3 HK 74.9 HK 92.3 HK 106.1 HK 4.3 HK 10.5 HK 17.8 HK 26.4 HK 36.2 HK 46.2 HK 57.5 HK 68.9 HK 80.3 HK 94.6 HK 3.6 HK 8.5 HK 14.3 HK 20.9 HK 28.0 HK 35.6 HK 43.8 HK 52.8 HK 61.9 HK 71.3 HK		P



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Calibration of Knoop hardness reference blocks (cont'd)	Knoop Scales HK 0.2 35 to 100 HK 0.2 100 to 200 HK 0.2 200 to 300 HK 0.2 300 to 400 HK 0.2 400 to 500 HK 0.2 500 to 600 HK 0.2 600 to 700 HK 0.2 700 to 800 HK 0.2 800 to 900 HK 0.2 900 to 1000 HK 0.3 35 to 100 HK 0.3 100 to 200 HK 0.3 200 to 300 HK 0.3 300 to 400 HK 0.3 400 to 500 HK 0.3 500 to 600 HK 0.3 600 to 700 HK 0.3 700 to 800 HK 0.3 800 to 900 HK 0.3 900 to 1000 HK 0.5 35 to 100 HK 0.5 100 to 200 HK 0.5 200 to 300 HK 0.5 300 to 400 HK 0.5 400 to 500 HK 0.5 500 to 600 HK 0.5 600 to 700 HK 0.5 700 to 800 HK 0.5 800 to 900 HK 0.5 900 to 1000 HK 1 35 to 100 HK 1 100 to 200 HK 1 200 to 300 HK 1 300 to 400 HK 1 400 to 500 HK 1 500 to 600 HK 1 600 to 700 HK 1 700 to 800 HK 1 800 to 900 HK 1 900 to 1000	See Note 2 3.1 HK 7.1 HK 11.7 HK 17.0 HK 22.6 HK 28.7 HK 34.9 HK 41.8 HK 48.9 HK 56.0 HK 3.1 HK 6.5 HK 10.6 HK 15.2 HK 20.1 HK 25.4 HK 31.0 HK 36.9 HK 43.0 HK 49.5 HK 2.6 HK 5.8 HK 9.5 HK 13.5 HK 17.8 HK 22.1 HK 26.8 HK 31.7 HK 36.9 HK 42.8 HK 2.4 HK 5.2 HK 8.3 HK 11.6 HK 15.2 HK 18.9 HK 22.7 HK 26.6 HK 30.9 HK 35.6 HK		P
Certification of reference Knoop hardness measurements & Knoop Reading Blocks	All ranges See note 2	1 μ m		P



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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
Calibration of Brinell Reference Hardness Blocks	<p>Brinell Scales:</p> <p>Force diameter index $(F/D^2) = 30$</p> <p>10/3000 600HBW to 650 HBW 10/3000 500HBW to 600 HBW 10/3000 400HBW to 500 HBW 10/3000 300HBW to 400 HBW 10/3000 200HBW to 300 HBW 10/3000 95HBW to 200 HBW</p> <p>5/750 600HBW to 650 HBW 5/750 500HBW to 600 HBW 5/750 400HBW to 500 HBW 5/750 300HBW to 400 HBW 5/750 200HBW to 300 HBW 5/750 95HBW to 200 HBW</p> <p>2.5/187.5 600HBW to 650 HBW 2.5/187.5 500HBW to 600 HBW 2.5/187.5 400HBW to 500 HBW 2.5/187.5 300HBW to 400 HBW 2.5/187.5 200HBW to 300 HBW 2.5/187.5 95HBW to 200 HBW</p> <p>1/30 600HBW to 650 HBW 1/30 500HBW to 600 HBW 1/30 400HBW to 500 HBW 1/30 300HBW to 400 HBW 1/30 200HBW to 300 HBW 1/30 95HBW to 200 HBW</p> <p>Force diameter index $(F/D^2) = 15$</p> <p>10/1500 270HBW to 300HBW 10/1500 230HBW to 270HBW 10/1500 200HBW to 230HBW 10/1500 170HBW to 200HBW 10/1500 140HBW to 170HBW 10/1500 110HBW to 140HBW 10/1500 70HBW to 110HBW 10/1500 55HBW to 70HBW</p> <p>Force diameter index $(F/D^2) = 10$</p> <p>10/1000 200HBW to 218 HBW 10/1000 170HBW to 200 HBW 10/1000 140 HBW to 170 HBW 10/1000 110HBW to 140HBW 10/1000 90HBW to 110HBW 10/1000 55HBW to 90HBW</p> <p>5/250 200HBW to 218HBW 5/250 170HBW to 200HBW 5/250 140 HBW to 170HBW 5/250 110HBW to 140HBW 5/250 90HBW to 110HBW 5/250 55HBW to 90HBW</p>	<p>See Note 3</p> <p>4.3 HBW 4.0 HBW 3.3 HBW 2.7 HBW 2.0 HBW 1.4 HBW</p> <p>5.3 HBW 4.9 HBW 4.1 HBW 3.3 HBW 2.5 HBW 1.7 HBW</p> <p>5.3 HBW 4.9 HBW 4.1 HBW 3.3 HBW 2.1 HBW 1.7 HBW</p> <p>6.0 HBW 5.5 HBW 4.4 HBW 3.4 HBW 2.5 HBW 1.7 HBW</p> <p>2.0 HBW 1.8 HBW 1.5 HBW 1.3 HBW 1.1 HBW 1.1 HBW 1.1 HBW 1.1 HBW</p> <p>1.4 HBW 1.3 HBW 1.1 HBW 1.1 HBW 1.1 HBW 1.1 HBW</p> <p>1.9 HBW 1.7 HBW 1.5 HBW 1.2 HBW 1.1 HBW 1.1 HBW</p>		P



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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
Calibration of Brinell Reference Hardness Blocks (cont'd)	Brinell Scales:	See Note 3		P
	Force diameter index $(F/D^2) = 30$			
	2.5/62.5 200 HBW to 218 HBW	1.8 HBW		
	2.5/62.5 100 HBW to 200 HBW	1.7 HBW		
	2.5/62.5 47 HBW to 100 HBW	1.1 HBW		
	1/10 200 HBW to 218 HBW	2.0 HBW		
	1/10 100 HBW to 200 HBW	1.8 HBW		
	1/10 47 HBW to 100 HBW	1.1 HBW		
	Force diameter index $(F/D^2) = 5$	See note 3		
	10/500 100 HBW to 109 HBW	1.1 HBW		
	10/500 70 HBW to 100 HBW	1.1 HBW		
	10/500 47 HBW to 70 HBW	1.1 HBW		
	5/125 100 HBW to 109 HBW	1.1 HBW		
	5/125 70 HBW to 100 HBW	1.1 HBW		
	5/125 47 HBW to 70 HBW	1.1 HBW		
	2.5/31.25 100 HBW to 109 HBW	1.1 HBW		
	2.5/31.25 47 HBW to 100 HBW	1.1 HBW		
	1/5 100 HBW to 109 HBW	1.1 HBW		
	1/5 47 HBW to 100 HBW	1.1 HBW		
	Force diameter index $(F/D^2) = 2.5$			
10/250 20HBW to 55HBW	1.1 HBW			
5/62.5 20.0HBW to 55.0HBW	1.1 HBW			
2.5/15.625 20.0HBW to 55.0HBW	1.1 HBW			
1/2.5 20.0HBW to 55.0HBW	1.1 HBW			
Force diameter index $(F/D^2) = 1.25$				
10/125 20HBW	1.1 HBW			
5/31.25 20HBW	1.1 HBW			
2.5/7.8125 20HBW	1.1 HBW			
Force diameter index $(F/D^2) = 1$				
10/100 20HBW	1.1 HBW			
5/25 20HBW	1.1 HBW			
2.5/6.25 20HBW	1.1 HBW			
1/1 20HBW	1.1 HBW			



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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
Certification of reference Brinell hardness measurements & Brinell Reading Blocks	All ranges See note 3	1 μm		P
END				