SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

CONTINENTAL CALIBRATION CO., INC.
43 Shell Street
Beachwood, NJ 08722
Daniel Yarnell Phone: 973 208 1002

CALIBRATION

Valid To: January 31, 2017 Certificate Number: 1535.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations[1]:

I. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Indirect Verification of Rockwell and Rockwell Portable Hardness Testing Machines[3] –	HRA: Low Medium High HRBW: Low Medium High HRC: Low Medium High HREW: Low Medium High HRFW: Low Medium High	 0.45 HRA 0.22 HRA 0.21 HRA 1.1 HRBW 0.67 HRBW 0.48 HRBW 0.41 HRC 0.34 HRC 0.32 HRC 0.48 HREW 0.61 HREW 0.57 HREW 0.39 HRFW 0.28 HRFW 0.38 HRFW	Indirect Verification per ASTM E18 & ASTM E110

Parameter/Equipment	Range	CMC[2] (±)	Comments
Indirect Verification of Rockwell Hardness Testing Machines[3]	HR15N: Low Medium High HR30N: Low Medium High HR45N: Low Medium High HR15TW: Low Medium High HR30TW: Low Medium High HR45TW: Low Medium High	 0.43 HR15N 0.26 HR15N 0.25 HR15N 0.48 HR30N 0.35 HR30N 0.31 HR30N 0.51 HR45N 0.20 HR45N 0.20 HR45N 0.46 HR15TW 0.36 HR15TW 0.36 HR15TW 0.54 HR30TW 0.52 HR30TW 0.37 HR30TW 0.67 HR45TW 0.65 HR45TW 0.42 HR45TW	Indirect Verification per ASTM E18
Indirect Verification of Brinell Hardness Testing Machines (Portable and Fixed) at Test Condition(s)[3, 4] – 10/3000/15	 (125 to 400) HBW > 400 HBW	 4.5 HBW 11 HBW	Indirect Verification per ASTM E10 & ASTM E110

Parameter/Equipment	Range	CMC[2] (±)	Comments
Indirect Verification of Microindentation Hardness Testing Machines[3] –			Indirect Verification per ASTM E384
Knoop/Vickers (≤ 1 kgf)	(100 to 250) HK > 650 HK	6 HK 11 HK	
Vickers (> 1 kgf)	(100 to 240) HV (240 to 600) HV > 600 HV	1 HV 7 HV 19 HV	

[1] This laboratory performs field, commercial calibration service only.

[2] Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMC's represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC Uncertainty due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

[3] Field calibration service is available for this calibration and this laboratory meets A2LA *R104 – General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC Uncertainty found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC Uncertainty.

[4] The notation HBW 10/3000/15 gives the conditions of the verification: the 10 is the indenter diameter in millimeters, the 3000 is the test force in kilogram-force, and the 15 is the force application duration in seconds.

Accredited Laboratory

A2LA has accredited

CONTINENTAL CALIBRATION CO., INC.

Beachwood, NJ

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets any additional program requirements in the field of calibration. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 16th day of June 2015.

President & CEO
For the Accreditation Council
Certificate Number 1535.01
Valid to January 31, 2017

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.