SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

UNITED STANDARDS LAB, INC.
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CALIBRATION

Valid To: March 31, 2019 Certificate Number: 2290.01

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

I. Dimensional

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Micrometers[3]	Up to 36 in	(0.60*R* + 10*L*) µin	Gage blocks
Calipers[3]	Up to 60 in	(0.60*R* + 8.0*L*) µin	Gage blocks
Gage Blocks	Up to 20 in	(4.0 + 2.2*L*) µin	Mechanical comparator
Height Gages[3]	Up to 24 in	(12 + 3.2*L*) µin	Gage blocks
Indicators[3]	Up to 4 in	(0.60*R* + 6.0*L*) µin	Dial indicator checker, gage blocks
Micrometer Standards	Up to 24 in	(50 + 2.0*L*) µin	Standard measuring machine
Optical Comparators[3] – Magnification Travel Squareness Angle	 10× to 100× (4 to 12) in Up to 3 in 0° to 360°	 710 µin (130 + 3.0*L*) µin 170 µin 2.3”	Glass scale, gage blocks

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Protractors[3]	Up to 360°	4” or 0.1°	Angle blocks
Pin Gages	Up to 1 in	30 µin	P&W Supermicrometer™, gage blocks
Master Plug Gages	Up to 6 in	(10 + 3.0*L*) µin	P&W Supermicrometer™, gage blocks
Plain Ring Gages	(0.04 to 10) in	(15 + 2.5*L*) µin	Internal comparator, gage blocks
Profilometers[3] – Indirect Verification of Ra Measurement	120 µin @ 0.03 in cut-off	5.0 µin	Master specimens
Square and Angle Plates	Up to 18 in	71 µin	Cylindrical square
Surface Plates[3] –			
Flatness	(6 × 6) in to (72 × 144) in	(30 + 10*A*) µin	Autocollimator
Repeat Reading	Up to 0.002 in	28 µin	Repeat-O-Meter
Thread Wires	(4 to 80) pitch	20 µin	Measuring machine, gage blocks
Thread Plugs –			
Pitch Diameter	Up to 10 in	(100 + 2.0*L*) µin	P&W Supermicrometer™, using 3-wire method
Major Diameter	Up to 10 in	(60 + 3.0*L*) µin	
Thread Rings –			
Functional Diameter	Up to 1 in	300 µin	Setting plugs
Minor Diameter	Up to 1 in	600 µin	Plain plugs

II. Mechanical

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Balances	(1 to 220) g 230 g to 5 kg	(0.12 + 0.003*X*) mg (0.12 + 0.003*X*) mg	Class 2, 3 weights
Scales	(1 to 100) lbs (100 to 2000) lbs	(8.5 + 5*X*) mg (8.5 + 5*X*) mg	Class 6 weights
Indirect Verification of Rockwell Hardness and Rockwell Superficial Hardness Testers[3]	HRBW: Low Med High HRC: Low Med High HR30N: Low Med High HR30TW: Low Med High	 1.3 HRBW 1.3 HRBW 1.7 HRBW 0.89 HRC 1.0 HRC 1.2 HRC 1.1 HR30N 1.2 HR30N 1.3 HR30N 1.3 HR30T 1.3 HR30T 1.7 HR30T	ASTM E18

[1] This laboratory offers commercial calibration service and field calibration service.

[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. CMCs 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 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 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.

[4] In the statement of CMC, *L* is the numerical value of the nominal length of the device measured, *A* is the area of the unit under test in square feet and *R* is the resolution of the device measured.

[5] In the statement of CMC, *X* is the numerical value of the device measured in g or lb.

Accredited Laboratory

A2LA has accredited

UNITED STANDARDS LAB, INC.

Minneapolis, MN

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 the requirements of ANSI/NCSLI Z540-1-1994 and R205 – Specific Requirements: Calibration Laboratory Accreditation Program. 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 15th day of June 2017.

President and CEO
For the Accreditation Council
Certificate Number 2290.01
Valid to March 31, 2019

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