



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540-1-1994

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CALIBRATION

Valid To: September 30, 2026

Certificate Number: 7337.01

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the organization's compliance with R205 – A2LA's Calibration Program Requirements), accreditation is granted to this laboratory to perform the following calibrations^{1, 6}:

I. Chemical

Parameter/Equipment	Range	CMC ^{2, 7} (±)	Comments
pH Measuring Equipment ³	4.01 pH 7.0 pH 10.0 pH	0.026 pH 0.024 pH 0.038 pH	pH buffer solutions
Conductivity ³ – Liquid	(>10 to 100) µS (>100 to 1413) µS (>1413 to 10 000) µS (>10 000 to 100 000) µS	0.83 % rdg + 0.047 µS 0.42 % rdg + 0.46 µS 0.48 % rdg + 0.45 µS 0.34 % rdg + 14 µS	Conductivity solutions

II. Dimensional

Parameter/Equipment	Range	CMC ² (±)	Comments
Calipers ³	(0 to 4) in (>4 to 15) in (>15 to 19) in (>19 to 29) in (>24 to 40) in	210 µin 220 µin 230 µin 240 µin 250 µin	Gage blocks

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
Micrometers ³	Up to 4.75 in (>4.75 to 6.75) in (>6.75 to 9.75) in (>9.75 to 11.75) in (>11.75 to 15.75) in (>15.75 to 19.75) in (>19.75 to 26.25) in (>26.25 to 30.5) in (>30.5 to 36.25) in (>36.25 to 40) in	55 μin 67 μin 75 μin 82 μin 92 μin 110 μin 130 μin 140 μin 150 μin 160 μin	Gage blocks
Anvil/Spindle Flatness ³	Up to 2 in	6.1 μin	Optical flat and monochromatic light
Gage Blocks	Up to 0.7 in (>0.7 to 0.95) in 1 in 2 in 3 in 4 in	3.7 μin 3.9 μin 4.7 μin 6.2 μin 7.7 μin 9.8 μin	By mechanical comparison with master blocks
Height Gages ³	Up to 3 in (>3 to 5) in (>5 to 7) in (>7 to 9) in (>9 to 11) in (>11 to 15) in (>15 to 19) in (>19 to 23) in (>23 to 27) in (>27 to 36) in (>36 to 39) in (>39 to 40) in	37 μin (13 + 7.7L) μin (33 + 3.8L) μin 61 μin (29 + 3.8L) μin (55 + 1.8L) μin 96 μin 110 μin 120 μin 130 μin 140 μin 150 μin	Gage blocks
Length Indicators ³ (Dial, Digital, Test, and Bore)	Up to 2 in (>2 to 4) in (>4 to 5) in (>5 to 6) in (>6 to 9) in (>9 to 12) in	10 μin 5L μin 7.7L μin 39 μin 49 μin 5.8L μin	Gage blocks

Parameter/Equipment	Range	CMC ^{2, 4} (\pm)	Comments
Cylindricals – OD Pins, Plugs, Master Disc Outside Diameter	Up to 4 in (>4 to 6) in (>6 to 10) in	34 μ in 50 μ in (30 + 4L) μ in	P&W Supermicrometer™
Thread Plug Gages – Simple Pitch Diameter Major Diameter	(5 to 7) TPI (8 to 10) TPI (11 to 14) TPI (16 to 28) TPI (30 to 80) TPI Up to 4 in (>4 to 6) in (>6 to 10) in	110 μ in (93 + 0.8L) μ in (82 + 0.9L) μ in (73 + 1.0L) μ in (65 + 1.1L) μ in 34 μ in 50 μ in (30 + 4L) μ in	P&W Supermicrometer™ with thread wires P&W Supermicrometer™
Surface Plate ³ – Flatness Repeat Reading	Up to 17 in <i>DL</i> (>17 to 25.5) in <i>DL</i> (>25.5 to 86.5) in <i>DL</i> (>86.5 to 161) in <i>DL</i> Up to (6 ft x 12 ft)	25 μ in 1.9 <i>DL</i> 50 μ in (24 + 0.3 <i>DL</i>) μ in 26 μ in	Electronic level system Repeat-o-meter
Optical Comparator Microscope, and Vision Machines ³ – X-Y Linearity Angle Squareness	Up to 1 in (>1 to 2.1) in Up to 90° 90°	520 μ in 530 μ in 0.0028° 0.0026°	Glass master Angle blocks True square
Crimp Tools ³ Go/No Go Crimp Height Wire Pull	Up to 1 in Up to 0.2 in (20 to 200) lbf	600 μ in 600 μ in 0.55 lbf	Pin gages Crimp micrometer Pull tester

Parameter/Equipment	Range	CMC ² (±)	Comments
Protractors ³	Up to 90° 90°	0.0028° 0.0026°	Angle blocks True square
Length Measuring Machines			
Anvil Parallelism ³	Up to 1 in	2.4 μin	Precision sphere
Force ³	Up to 80 ozf	0.16 ozf	Precision load cell
Repeatability ³	Up to 20 in	0.037 μin	Gage block

III. Mechanical

Parameter/Equipment	Range	CMC ^{2,5} (±)	Comments
Scales and Balances ³	(1 to 500) mg	0.012 mg	Comparison to precision weights
	1 g	0.039 mg	
	2 g	0.039 mg	
	5 g	0.040 mg	
	10 g	0.059 mg	
	20 g	0.090 mg	
	50 g	0.16 mg	
	100 g	0.32 mg	
	200 g	0.64 mg	
	500 g	1.6 mg	
	1 kg	120 mg	
	1.5 kg	120 mg	
	2 kg	230 mg	
	2.5 kg	230 mg	
	3 kg	350 mg	
	3.5 kg	350 mg	
	(0.0625 to 0.25) oz	0.000 053 oz	
	0.5 oz	0.000 12 oz	
	1 oz	0.000 22 oz	
	2 oz	0.000 45 oz	
	4 oz	0.000 94 oz	
	8 oz	0.0019 oz	
	1 lb	0.000 18 lb	
	(2 to 500) lb	0.012 %	

Parameter/Equipment	Range	CMC ^{2, 5, 8} (±)	Comments
Calibration of Force Gages Fixed Points	(0.0625 to 0.25) ozf 0.5 ozf 1 ozf 2 ozf 4 ozf 8 ozf 1 lbf (2 to 500) lbf	0.000 053 ozf 0.000 12 ozf 0.000 22 ozf 0.000 45 ozf 0.000 94 ozf 0.0019 ozf 0.000 18 lbf 0.012 %	Comparison to Class F weights, compression and tension
Pressure Gages and Transducers – Pneumatic ³ Hydraulic ³	 (-14 to 0) psi (>0 to 15) psi (15 to 100) psi (100 to 1000) psi Up to 10 000 psi	 0.17 psi 0.041 psi 0.0025 psi 0.0025 % 0.039 % + 0.21 psi	 Pressure transducer Dead weight tester Pressure transducer
RPM ³ – Measure	(5 to 9.999) RPM (10 to 100) RPM (>100 to 90 000) RPM	0.0015 RPM 0.015 RPM 0.014 %	Laser tachometer
Indirect Verification of Rockwell Hardness and Rockwell Superficial Hardness Tester ³	HRA: Low Medium High HRBW: Low Medium High HRC: Low Medium High HR15N: Low Medium High	0.46 HRA 0.34 HRA 0.27 HRA 0.76 HRBW 0.72 HRBW 0.59 HRBW 0.40 HRC 0.42 HRC 0.36 HRC 0.45 HR15N 0.56 HR15N 0.40 HR15N	Indirect verification per ASTM E18

Parameter/Equipment	Range	CMC ² (±)	Comments
Indirect Verification of Rockwell Hardness and Rockwell Superficial Hardness Tester ³ (cont)	HR15TW: Low Medium High	0.64 HR15TW 0.63 HR15TW 0.40 HR15TW	Indirect verification per ASTM E18
	HR30N: Low Medium High	0.59 HR30N 0.58 HR30N 0.51 HR30N	
	HR30TW: Low Medium High	0.50 HR30TW 0.53 HR30TW 0.45 HR30TW	
	HR45N: Low Medium High	0.49 HR45N 0.56 HR45N 0.50 HR45N	
	HR45TW: Low Medium High	0.63 HR45TW 0.62 HR45TW 0.52 HR45TW	

IV. Thermodynamics

Parameter/Equipment	Range	CMC ^{2, 5, 8} (±)	Comments
Temperature Measuring Equipment ³ – Liquid in Glass Thermometers, Dial, RTDs, and Thermocouples	(30 to 50) °C (>50 to 350) °C	1.3 °C 0.28 % + 1.2 °C	Master PRT display with probe, temperature bath

Parameter/Equipment	Range	CMC ^{2, 4, 8} (\pm)	Comments
Temperature – Measure ³	(-40 to 0) °C (>0 to 200) °C (>200 to 500) °C (>500 to 660) °C	1.2 °C 0.31 % + 1.2 °C 0.16 % + 1.5 °C 0.44 % + 0.10	Master PRT display with probe
	(>660 to 1200) °C	0.49 %	Fluke process calibrator with T/C
Relative Humidity – Measure ³	(10 to 90) % RH	1.5 % RH	Vaisala HMP 70 series
Ovens, Chambers, Freezers, Incubators, and Furnaces ³	(-40 to 0) °C (>0 to 200) °C (>200 to 500) °C (>500 to 660) °C	1.2 °C 0.31 % + 1.2 °C 0.16 % + 1.5 °C 0.44 % + 0.10	PRT with readout
	(>660 to 1200) °C	0.49 %	Fluke process calibrator with T/C

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. 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 in inches; and DL is the diagonal length of the unit under test in inches.

⁵ In the statement of CMC, percentages are to be read as percent of reading, unless noted otherwise.

⁶ This scope meets A2LA's P112 Flexible Scope Policy.

⁷ The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.



Accredited Laboratory

A2LA has accredited

APPLIED TECHNICAL SERVICES, LLC

Sacramento, CA

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of ANSI/NCSL 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 April 2017).



Presented this 20th of November 2024.

A blue ink signature of Trace McInturff, written over a horizontal line.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 7337.01
Valid to September 30, 2026
Revised September 4, 2025

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