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

CAL-LABS
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CALIBRATION

Valid To: June 30, 2025 Certificate Number: 1672.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations[1, 6]:

I. Dimensional

Parameter/Equipment	Range	CMC[2] (±)	Comments
Caliper Checker	Up to 6 in Up to 14 in	40 µin 60 µin	Gage blocks, height master, electronic indicator
Calipers[3] –			
Dial & Digital	Up to 12 in (12 to 24) in (24 to 48) in (48 to 60) in	0.0004 in 0.0005 in 0.0009 in 0.0013 in	Gage blocks, ring gage
Vernier	Up to 24 in (24 to 48) in (48 to 60) in	0.001 in 0.001 in 0.002 in	
Jaw Parallelism			
Dial & Digital	Up to 60 in	0.0004 in	Cylindrical plug
Vernier		0.0006 in	

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Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Cylindrical Plugs[3] –			
Class X, XX	Up to 1 in (1 to 2) in (2 to 3) in (3 to 4) in (4 to 5) in	9 µin 13 µin 15 µin 17 µin 24 µin	Gage blocks, universal Supermicrometer™
Class Y, Z, ZZ or Unmarked	Up to 1 in (1 to 3) in (3 to 5) in	20 µin 40 µin 50 µin	
Cylindrical Rings[3]	(0.040 to 0.250) in (>0.250 to 1) in (>1 to 3) in (>3 to 10) in	10 µin 9 µin (10 + 1.5*D*) µin (10 + 2.8*D*) µin	Gage blocks, master rings, universal Supermicrometer™
Pin Gages –			
Class ZZ	Up to 1 in	0.0001 in	Digital micrometer
Gage Blocks –	(0.050 to 1) in (1 to 2) in (2 to 3) in (3 to 4) in	4 µin 5 µin 7 µin 8 µin	Gage block comparator, master gage block
Fixed Points	5 in 6 in 7 in 8 in 10 in 12 in 16 in 20 in	14 µin 15 µin 18 µin 19 µin 22 µin 26 µin 33 µin 41 µin	Electronic indicator, master gage blocks
Height Gages –			
Dial, Digital	Up to 40 in	0.0004 in	Height master, gage blocks, electronic indicator
0.000 050 in Resolution	Up to 24 in	0.000 14 in	
Scriber Parallelism	All	0.0001 in	

Parameter/Equipment	Range	CMC[2] (±)	Comments
Height Masters –			
Column	(1 to 3) in (4 to 9) in (10 to 12) in	10 µin 20 µin 30 µin	Master gage blocks, electronic indicator
Head (Travel Range)	Up to 1.0 in	20 µin	
Indicator Calibrator[3]	Up to 2 in	30 µin	Gage blocks (grade 0), electronic indicator, optical flat
Indicators[3]	Up to 1 in Up to 0.001 in	40 µin 20 µin	Gage blocks, height gage
Micrometers[3] –			
Head Accuracy, O.D., Blades, Point, Spline, Tube, Anvil, Disc, Interchangeable, Bench, ID	Up to 1 in (>1 to 3) in (>3 to 6) in	60 µin 70 µin 80 µin	Gage blocks
Indicating, Snap Gage/Dial Comparator	±0.0025 in	30 µin	
Flatness	Up to 36 in	20 µin	Optical parallel
Parallelism	Up to 1 in (1 to 4) in	50 µin 70 µin	Gage blocks, cylindrical plug
High Accuracy 0.000 005 in Resolution			
Head Accuracy	Up to 1 in	15 µin	Gage blocks
Parallelism	Up to 1 in	20 µin	

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Micrometer Heads	Up to 2 in	30 µin	Gage blocks, Mahr/electronic indicator
Micrometer Standards	Up to 4 in (5 to 11) in	30 µin (30 + 2*L*) µin	Laser, P&W measuring machine
Microscopes[3] – Metallurgical, Scope with Reticle			
Scale Factor/Magnification	Up to 100x Up to 200x Up to 500x Up to 1000x	0.20 % of scale factor 0.35 % of scale factor 0.83 % of scale factor 1.8 % of scale factor	Stage micrometer, up to 0.2 in
Vision System	10x to 50x (0.2500 in) 100x (0.1300 in) 200x (0.0600 in) 500x (0.0200 in) 1000x (0.0100 in) 1250x (0.0030 in) 1500x (0.0025 in) 2000x (0.0020 in)	0.000 18 in 0.000 11 in 80 µin 60 µin 50 µin 60 µin 60 µin 60 µin	Stage micrometer, up to 0.2 in
Keyence			
Wide Field High Precision	Up to 0.5000 in 0.1000 in	59 µin 30 µin	Class XX Pins
Toolmakers, Up to 6 in Stage Travel	20 µin resolution	70 µin	Stage micrometer
Optical Comparator[3] –			
Stage Travel	Up to 6 in	0.000 15 in	Glass scales
Magnification	10x to 31.25x 50x to 62x 100x	0.025 % of mag 0.048 % of mag 0.075 % of mag	Glass scales with screen overlay scale
Angular/Protractor	(0 to 360)°	3.0'	True square
Chart Alignment	Up to 30 in diameter	0.0001 in	Stage micrometer

Parameter/Equipment	Range	CMC[2, 5] (±)	Comments
Riser Blocks	6 in 12 in	17 µin 28 µin	Gage blocks, electronic indicator
Rulers	Up to 24 in (>24 to 72) in	0.0009 in 0.0010 in	P & W measuring machine
Flexible Film	Up to 24 in	0.0006 in	
Stage Micrometers / Glass Scales	Up to 12 in	50 µin	Microscope, laser
Supermicrometer[TM, 3] –			
Spindle Meter (Comparator) Parallelism Flatness	Up to 1 in	20 µin 10 µin 20 µin 20 µin	Gage blocks, optical parallels
Tailstock Force	8 oz 16 oz 40 oz	10 % 6.6 % 3.9 %	
Surface Plate, Granite[3] –			
Repeatability	(12 in × 12 in) to (72 in × 144 in)	40 µin	Repeat-o-meter
Flatness	Up to (9 in × 12 in)	30 µin	Electronic gage head, amplifier
	(12 in × 12 in) to (18 in × 24 in)	60 µin	Planekator
	(24 in × 24 in)	80 µin	
	(24 in × 36 in) to (36 in × 48 in)	90 µin	Autocollimator
	(36 in × 60 in) to (48 in × 60 in)	120 µin	
	(48 in × 72 in) to (48 in × 96 in)	190 µin	
	(72 in × 96 in) to (72 in × 144 in)	210 µin	

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Thread Wires, Working 60°	(4 to 80) TPI (0.3 to 6.0) mm	20 µin 0.5 µm	Gage blocks, Supermicrometer™
Thread Wires, Master	(4 to 80) TPI (0.3 to 6.0) mm	13 µin 0.32 µm	Gage blocks, universal Supermicrometer™
Thread Plug Gages, 60° –			
Pitch Diameter	Up to 1 in (1 to 4) in	90 µin (90 + 4*D*) µin	Three wire method using Supermicrometer™
Major Diameter	Up to 1 in (1 to 4) in	60 µin (55 + 7*D*) µin	Gage blocks using Supermicrometer™

II. Mechanical

Parameter/Equipment	Range	CMC[2] (±)	Comments
Indirect Verification of Rockwell Hardness & Rockwell Superficial Hardness Testers[3]	HRA: (20 to 65) HRA (70 to 78) HRA (80 to 84) HRA HRBW: (40 to 59) HRBW (60 to 79) HRBW (80 to 100) HRBW HRC: (20 to 30) HRC (35 to 55) HRC (60 to 65) HRC HREW: (70 to 79) HREW (84 to 90) HREW (93 to 100) HREW HR15N: (70 to 77) HR15N (78 to 88) HR15N (90 to 92) HR15N	 0.5 HRA 0.4 HRA 0.3 HRA 0.7 HRBW 0.8 HRBW 0.6 HRBW 0.5 HRC 0.4 HRC 0.4 HRC 0.6 HREW 0.7 HREW 0.6 HREW 0.5 HR15N 0.6 HR15N 0.5 HR15N	ASTM E18

Parameter/Equipment	Range	CMC[2] (±)	Comments
Indirect Verification of Rockwell Hardness & Rockwell Superficial Hardness Testers[3] (cont)	HR30N: (42 to 50) HR30N (55 to 73) HR30N (77 to 82) HR30N HR45N: (20 to 31) HR45N (37 to 61) HR45N (66 to 72) HR45N HR15TW: (74 to 80) HR15TW (81 to 86) HR15TW (87 to 93) HR15TW HR30TW: (43 to 56) HR30TW (57 to 69) HR30TW (70 to 83) HR30TW HR45TW: (13 to 32) HR45TW (33 to 52) HR45TW (53 to 73) HR45TW	 0.8 HR30N 0.6 HR30N 0.6 HR30N 0.6 HR45N 0.7 HR45N 0.5 HR45N 0.7 HR15TW 0.8 HR15TW 0.6 HR15TW 0.6 HR30TW 0.7 HR30TW 0.5 HR30TW 0.7 HR45TW 0.6 HR45TW 0.7 HR45TW	ASTM E18

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

[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. 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, D is the numerical value of the nominal diameter of the device measured in inches.

[5] In the statement of CMC, the value is defined as the percentage of reading, unless otherwise noted.

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

Accredited Laboratory

A2LA has accredited

CAL-LABS

La Mirada, 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 9th day of August 2023.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1672.01
Valid to June 30, 2025

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