



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

CAL-LABS
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CALIBRATION

Valid To: June 30, 2027

Certificate Number: 1672.01

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. Dimensional

Parameter/Equipment	Range	CMC ² (±)	Comments
Caliper Checker	Up to 6 in Up to 14 in	34 µin 62 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	

Parameter/Equipment	Range	CMC ^{2, 4} (\pm)	Comments
Cylindrical Plugs ³ – Class X, XX Class Y, Z, ZZ or Unmarked	Up to 1 in (1 to 2) in (2 to 3) in (3 to 4) in (4 to 5) in Up to 1 in (1 to 3) in (3 to 5) in	9 μ in 13 μ in 15 μ in 17 μ in 24 μ in 22 μ in 36 μ in 48 μ in	Gage blocks, universal Supermicrometer™
Cylindrical Rings ³	(0.040 to 0.250) in (>0.250 to 1) in (>1 to 3) in (>3 to 10) in	10 μ in 9 μ in (10 + 1.5D) μ in (10 + 2.8D) μ in	Gage blocks, master rings, universal Supermicrometer™
Pin Gages – Class ZZ Class Z	Up to 1 in Up to 1 in	93 μ in 22 μ in	Digital micrometer Supermicrometer™
Gage Blocks – Fixed Points	(0.050 to 1) in (1 to 2) in (2 to 3) in (3 to 4) in 5 in 6 in 7 in 8 in 10 in 12 in 16 in 20 in	3.6 μ in 5.3 μ in 6.5 μ in 8.1 μ in 14 μ in 15 μ in 18 μ in 19 μ in 22 μ in 26 μ in 34 μ in 41 μ in	Gage block comparator, master gage block Electronic indicator, master gage blocks
Height Gages – Dial, Digital 0.000 050 in Resolution Scriber Parallelism	Up to 40 in Up to 24 in All	0.0004 in 0.000 14 in 0.0001 in	Height master, gage blocks, electronic indicator

Parameter/Equipment	Range	CMC ² (±)	Comments
Height Masters – Column Head (Travel Range)	(1 to 3) in (4 to 9) in (10 to 12) in Up to 1.0 in	14 µin 23 µin 28 µin 19 µin	Master gage blocks, electronic indicator
Indicator Calibrator ³	Up to 2 in	27 µin	Gage blocks (grade 0), electronic indicator, optical flat
Indicators ³	Up to 1 in Up to 0.001 in	45 µin 15 µin	Gage blocks, height gage
Electronic Indicators ³	0.000 10 x 0.000 005 in 0.0003 x 0.000 010 in 0.003 x 0.0001 in	3.5 µin 7.9 µin 69 µin	Master gage blocks Gage blocks
Micrometers ³ – Head Accuracy, O.D., Blades, Point, Spline, Tube, Anvil, Disc, Interchangeable, Bench, ID Indicating, Snap Gage/Dial Comparator Flatness Parallelism High Accuracy 0.000 005 in Resolution Head Accuracy Parallelism	Up to 1 in (>1 to 3) in (>3 to 6) in ±0.0025 in Up to 36 in Up to 1 in (1 to 4) in Up to 1 in Up to 1 in	61 µin 70 µin 80 µin 30 µin 20 µin 50 µin 70 µin 12 µin 20 µin	Gage blocks Optical parallel Gage blocks, cylindrical plug Gage blocks

Parameter/Equipment	Range	CMC ^{2, 4} (\pm)	Comments
Micrometer Heads	Up to 2 in	27 μ in	Gage blocks, Mahr/electronic indicator
Micrometer Standards	Up to 4 in (5 to 11) in	30 μ in (30 + 2L) μ in	Laser, P&W measuring machine
Microscopes ³ – Metallurgical, Scope with Reticle			
Scale Factor/Magnification	Up to 100x	0.20 % of scale factor	Stage micrometer, up to 0.2 in
	Up to 200x	0.35 % of scale factor	
	Up to 500x	0.83 % of scale factor	
	Up to 1000x	1.8 % of scale factor	
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 μ in 60 μ in 50 μ in 60 μ in 60 μ in 60 μ in	Stage micrometer, up to 0.2 in
Keyence			
Wide Field High Precision	Up to 0.5000 in 0.1000 in	86 μ in 70 μ in	
Toolmakers, Up to 6 in Stage Travel	20 μ in resolution	69 μ in	
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	Master 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	51 µin	Microscope, laser
Supermicrometer ^{TM, 3} – Spindle Meter (Comparator) Parallelism Flatness Tailstock Force	Up to 1 in 8 oz 16 oz 40 oz	14 µin 8 µin 16 µin 17 µin 10 % 6.6 % 3.9 %	Gage blocks, optical parallels
Surface Plate, Granite ³ – Repeatability Flatness	(12 in × 12 in) to (72 in × 144 in) Up to (9 in × 12 in) (12 in × 12 in) to (18 in × 24 in) (24 in × 24 in) (24 in × 36 in) to (36 in × 48 in) (36 in × 60 in) to (48 in × 60 in) (48 in × 72 in) to (48 in × 96 in) (72 in × 96 in) to (72 in × 144 in)	40 µin 30 µin 60 µin 80 µin 90 µin 0.000 12 in 0.000 19 in 0.000 21 in	Repeat-o-meter Electronic gage head, amplifier Planekator Autocollimator

Parameter/Equipment	Range	CMC ^{2, 4} (\pm)	Comments
Thread Wires 60°	(4 to 80) TPI (0.25 to 6.0) mm	13 μ in 0.33 μ m	Universal Supermicrometer TM , master cylinder
Thread Plug Gages, 60° – Pitch Diameter Major Diameter	Up to 1 in (1 to 4) in Up to 1 in (1 to 4) in	90 μ in (90 + 4D) μ in 60 μ in (55 + 7D) μ in	Three wire method using Supermicrometer TM Gage blocks using Supermicrometer TM

II. Mechanical

Parameter/Equipment	Range	CMC ² (\pm)	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	0.47 HRA 0.36 HRA 0.32 HRA 0.70 HRBW 0.76 HRBW 0.60 HRBW 0.43 HRC 0.42 HRC 0.38 HRC 0.59 HREW 0.66 HREW 0.60 HREW 0.48 HR15N 0.62 HR15N 0.45 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	0.73 HR30N 0.61 HR30N 0.60 HR30N 0.55 HR45N 0.67 HR45N 0.50 HR45N 0.72 HR15TW 0.74 HR15TW 0.55 HR15TW 0.55 HR30TW 0.65 HR30TW 0.50 HR30TW 0.70 HR45TW 0.63 HR45TW 0.64 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 Miranda, 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 12th day of June 2025.

A blue ink signature of Mr. Trace McInturff.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1672.01
Valid to June 30, 2027

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