



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION

Valid To: July 31, 2024

Certificate Number: 1030.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations^{1, 7}:

I. Dimensional

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments
1-2-3 Blocks	1", 2", 3" up to 2", 4", 6"	$(12 + L) \mu\text{in}$	LMM, gage blocks
Angle Blocks & Angle Gages (Stamped)	Up to 90°	0.10°	Optical comparator
Calipers ³	Up to 80 in	$(260 + 28L) \mu\text{in} + 0.6R$	Master ring gage, gage blocks
Caliper – Inside ³	Up to 5 in	$490 \mu\text{in} + 0.6R$	Plain rings
Caliper Checker	Up to 24 in	$(9 + 2L) \mu\text{in}$	Gage block & amp
Chamfer Gage	Up to 2 in	990 μin	Chamfer rings

Parameter/Equipment	Range	CMC ^{2,6} (\pm)	Comments
Crest Check Plug Gage Steps Taper Diameter	Up to 2 in Up to 4 in	290 μin 16 μin	Optical comparator LMM & gage blocks
Depth Gage – Caliper Style ³ Indicator Style ³ Tire Tread ³	Up to 40 in Up to 4 in Up to 2 in	520 $\mu\text{in} + 0.6R$ (20 + 4L) $\mu\text{in} + 0.6R$ 580 μin	Gage blocks
Feeler / Thickness Gage ⁴	Up to 0.05 in	17 μin	LMM
Gage Blocks ⁴	(0.005 to 1.0) in (1.0 to 5.0) in (5.0 to 20) in	5 μin (2.8 + L) μin (9 + L) μin	Gage block comparator, gage blocks
Height Gage ⁴	Up to 60 in	(100 + 2L) $\mu\text{in} + 0.6R$	Gage blocks
Height Master Micrometer Head Steps	Up to 2 in Up to 24 in	23 $\mu\text{in} + 0.6R$ (11 + 2L) μin	Gage blocks & amp
Indicators Dial Bore Gages ³ Drop Indicators Test Indicators ³	Up to 4 in Up to 4 in Up to 0.1 in	(17 + L) $\mu\text{in} + 0.6R$ (20 + 4L) $\mu\text{in} + 0.6R$ 28 $\mu\text{in} + 0.6R$	Indicator checker Indicator checker Indicator checker
Indicator Checker Micrometer Type I-Checker	Up to 2 in Up to 4 in	(43 + 2L) μin (10 + 1L) μin	Gage blocks & amp
LMM – Linear Measuring Machine ³	Up to 240 in	(8 + 1.3L) μin	Gage blocks
LVDT Probe	Up to 0.002 in	(13 + L) μin	MTI digital indicator checker
Micrometer Master ⁴	Up to 6 in	(18 + 2L) μin	LMM, gage blocks

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments
Micrometers – Depth ³ Inside ⁴ Inside (Caliper Style) ³ Outside ³ Thread ³ V-Anvil ³	Up to 12 in Up to 60 in Up to 5 in Up to 30 in Up to 7 in Up to 2 in	(34 + 1.5L) μin + 0.6R (34 + 1.5L) μin + 0.6R (34 + 1.5L) μin + 0.6R (34 + 1.5L) μin + 0.6R (34 + 1.5L) μin + 0.6R (34 + 1.5L) μin + 0.6R	Gage blocks LMM, gage blocks Master rings Gage blocks & ball Gage blocks Gage pins & balls
Micrometer – Depth Master	Up to 12 in	34 μin	Gage blocks & amp
Micrometer Standard ⁴	(1 to 15) in (15 to 50) in	(26 + 0.4L) μin (16 + 2L) μin	LMM, gage blocks Gage block comparator, gage blocks
Optical Comparator ³			
Magnification	5x, 10x, 25x, 31.25x 50x, 62.5x, 100x	(200 + 10L) μin	Magnification checker, gage balls
Linear Axis X&Y	Up to 6 in (6 to 24) in	(200 + 10L) μin 34L μin	Glass scale
Squareness	Up to 12 in	(200 + 10L) μin	
Radius	Up to 12 in	180 μin	
Angularity	Up to 90°	0.3°	
Pin Gages ⁴			
Class ZZ to Z	Up to 1 in	15 μin	Laser micrometer
Class Y to XX	Up to 10 in	(9 + 5L) μin	LMM, gage blocks
Protractor			
Analog & Digital	Up to 90°	0.057° + 0.6R	Angle blocks

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Right Angle (Angle Plate)	Up to 24 in	100 μin	Square master, master square
Radius Gage (Stamped) ⁴	(0.0156 to 1.0) in	370 μin	Optical comparator
Ring Gages – Plain ⁴ XX to ZZ	(0.03 to 1.00) in (1.00 to 6.00) in (6.00 to 10.00) in	10 μin (7 + 4L) μin (10 + 9.6L) μin	LMM, master ring gages
Riser ⁴	Up to 24 in	18 μin	Long block comparator, gage blocks
Ruler ⁴	Up to 90 in	(0.6R + 10L) μin	Gage blocks
Snap Gages Caliper Style – ID ³ Caliper Style – OD ³	Up to 5 in Up to 5 in	(10L + 0.6R) μin (10L + 0.6R) μin	Ring gages Gage blocks
Spheres ⁴	Up to 2.3125 inches	(10 + 9.6D) μin	LMM, gage blocks
Square – Combination	Ruler Angles Protractor	(0.6R + 10L) μin 0° 06'00" 0° 06'00"	Gage blocks Optical comparator Angle blocks
Square – Solid & Cylinder	Up to 24 in	130 μin	Square master, master square
Surface Plate Flatness Repeatability	Up to 32 sq/ft Up to 0.001 in	(100 + 2.1L) μin 20 μin	Planekator Repeat-o-meter

Parameter/Equipment	Range	CMC ^{2,6} (±)	Comments
Tape Measure	Up to 360 in	0.08 in	Gage blocks
60° Thread Plug ⁴ – (Working & Setting)			
Pitch Diameter	Up to 4 in	$(29 + 2L) \mu\text{in}$	LMM, thread wires, gage blocks
Major Diameter	Up to 4 in	$(19 + 2L) \mu\text{in}$	LMM, gage blocks
Depth (Notch)	Up to 2 in	270 μin	Optical comparator
60° Thread Plug ⁴ – Pipe Thread			
Pitch Diameter	Up to 4 in	$(54 + 2L) \mu\text{in}$	LMM, gage blocks, thread wires
Step	Up to 2 in	250 μin	Optical comparator
60° Thread Ring – Pipe			
Stand Off Thickness	Up to 0.1 in Up to 4 in	60 μin 30 μin	Master thread plugs LMM
60° Thread Ring – Split (Adjustable)	Pitch Up to 2 in Minor Up to 2 in	300 μin 300 μin	Master thread gages Master plug gages
Thread Wire ⁴	Up to 0.3 in	10 μin	LMM
Torque Wheel	2.5 in wheel 5.0 in wheel 10.0 in wheel 40.0 in arm	50 μin 50 μin 120 μin 120 μin	LMM, gage blocks LMM, gage blocks Height gage, LMM, Gage blocks, Micro-Cal

Parameter/Equipment	Range	CMC ^{2, 6} (±)	Comments
Vision System ³ Linear Axis X & Y	Up to 6 in (6 to 24) in	(130 + 10L) μin (170 + 10L) μin	Glass scale
V-Blocks, Box Parallel	Up to 12 in	150 μin	Square master, master square

II. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Durometer Calibration (A, B, C, D, M, O, DO, OO) – Indenter Extension & Shape:			Direct verification method per ASTM D2240
Diameter	Diameter of the Top & Base of the Frustum	500 μin	Verification of these dimensional features is by optical projection under magnification
Radius	Tip Radius	500 μin	
Angle	Cone Angle	0.15°	
Extension	Length of Frustum from Tip to Base	500 μin	
Indenter Display	(0 to 90) Durometer Points	500 μin	Durometer calibrator
Spring Calibration Force	Up to 660 g	0.6 g	Verification of the spring force is by dead weights

Parameter/Equipment	Range	CMC ² (±)	Comments
Indirect Verification of Rockwell & Rockwell Superficial Hardness Testers ³	<p>HRA: (20 to 65) HRA (70 to 78) HRA (80 to 84) HRA</p> <p>HRBW: (40 to 59) HRBW (60 to 79) HRBW (80 to 100) HRBW</p> <p>HRC: (20 to 30) HRC (35 to 55) HRC (60 to 65) HRC</p> <p>HRFW: (60 to 75) HRFW (80 to 90) HRFW (94 to 100) HRFW</p> <p>HR15N: (70 to 77) HR15N (78 to 88) HR15N (90 to 92) HR15N</p> <p>HR30N: (42 to 50) HR30N (55 to 73) HR30N (77 to 82) HR30N</p> <p>HR45N: (20 to 31) HR45N (37 to 61) HR45N (66 to 72) HR45N</p> <p>HR15TW: (74 to 80) HR15TW (81 to 86) HR15TW (87 to 93) HR15TW</p> <p>HR30TW: (43 to 56) HR30TW (57 to 69) HR30TW (70 to 83) HR30TW</p> <p>HR45TW: (13 to 32) HR45TW (33 to 52) HR45TW (53 to 73) HR45TW</p>	<p>0.7 HRA 0.7 HRA 0.8 HRA</p> <p>0.7 HRBW 0.6 HRBW 1.4 HRBW</p> <p>0.8 HRC 0.8 HRC 0.6 HRC</p> <p>0.7 HRFW 0.9 HRFW 0.6 HRFW</p> <p>0.7 HR15N 0.8 HR15N 0.8 HR15N</p> <p>1.1 HR30N 1.0 HR30N 1.2 HR30N</p> <p>1.3 HR45N 1.3 HR45N 1.1 HR45N</p> <p>1.3 HR15TW 1.0 HR15TW 1.0 HR15TW</p> <p>1.4 HR30TW 1.0 HR30TW 1.0 HR30TW</p> <p>1.4 HR45TW 1.0 HR45TW 1.0 HR45TW</p>	Indirect verification per ASTM E18

Parameter/Equipment	Range	CMC ^{2, 5} (\pm)	Comments
Force Gages	(0.5 to 500) lbf	2 %	NIST Class F mass standards (dead weights)
Scales	(0.5 to 1000) lb	2 %	Mass standards (dead weights)
Torque Transducers	(10 to 1000) lbf·in (20 to 600) lbf·ft	1 % 1 %	Mass standards, loading arm/wheel
Torque Wrenches	(10 to 1000) lbf·in (20 to 250) lbf·ft (60 to 600) lbf·ft	2 % 2 % 2 %	Torque transducer

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 Calibration and Measurement Capability Uncertainty (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 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 Metric equivalent devices are available for this parameter.

⁵ In the statement of CMC, the percentage is to be defined as percent of reading unless otherwise noted.

⁶ In the statement of CMC, L is the numerical value of the nominal length of the device measured in inches; D is the diameter in inches; R is the numerical value of the resolution of the device in microinches.

⁷ This scope meets A2LA's *P112 Flexible Scope Policy*.



Accredited Laboratory

A2LA has accredited

INSPECTION MEASUREMENT COMPANY

Wyoming, MI

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 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 22nd day of July 2022.

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

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1030.01
Valid to July 31, 2024

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