



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

TRI-STATE INSTRUMENT SERVICE, INC.
8411 Clinton Park Drive
Ft. Wayne, IN 46825
Lynn A. Stroble Phone: 260 456 4545

CALIBRATION

Valid To: August 31, 2026

Certificate Number: 1622.01

In recognition of the successful completion of the A2LA evaluation process (including an assessment of the organization's compliance with 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, 4} ($\pm$)	Comments
Bench Micrometers ³	Up to 4 in	(11 + 1L) μ in	Gauge blocks
Bore Gages – Internal Diameter (Hole Test – 3 Point)	Up to 0.1 in travel	40 μ in	Micrometer heads & custom fixture
	(0.0625 to 8) in	(65 + 1.5D) μ in	Ring gages
Dial Indicator – Calibrator & Micrometer Heads	Up to 1 in	5.4 μ in	Heidenhain CT-2501
	Up to 2 in	(10 + 1.0L) μ in	Heidenhain CT-6001
Calipers ³	(0.01 to 12) in (12 to 48) in	330 μ in (330 + 6.0L) μ in	Gauge blocks Mic standards
Chamfer Check ³	(0.02 to 2) in	500 μ in	Special ring gages

Parameter/Equipment	Range	CMC ^{2, 4} ($\pm$)	Comments
Height Gages – High Resolution LH-600 Type	Up to 24 in (24 to 40) in 24 in w/ ≤ 0.001 in resolution Up to 39 in < 0.0001 in resolution	$(130 + 2.5L) \mu\text{in}$ $(170 + 2.5L) \mu\text{in}$ $(25 + 2.0L) \mu\text{in}$ $(14 + 2.0L) \mu\text{in}$	Webber bar & high- resolution height gage
Height Masters, Digi-Checks, Hite-Indicator	Up to 24 in	$(14 + 2.0L) \mu\text{in}$	Webber bar & high- resolution height gage
Indicators ³ – Dial & Digital Test	< 0.1 in (0.1 to 1) in (1 to 2) in (2 to 4) in (0.001, 0.0005, 0.0001) in (0.01, 0.005, 0.001) mm	$5 \mu\text{in}$ $15 \mu\text{in}$ $24 \mu\text{in}$ $(40 + 17L) \mu\text{in}$ $20 \mu\text{in}$ 0.0005 mm	Heidenhain Micrometer heads & custom fixture
Micrometers – Outside – Spindle Only ³ Depth ³ Inside Thread V-Anvil	(Up to 12) in (12 to 40) in Up to 12 in (0.25 to 24) in Up to 2 in (0.09 to 4) in	$(33 + 2.0L) \mu\text{in}$ $(75 + 2.0L) \mu\text{in}$ $(150 + 8.0L) \mu\text{in}$ $(150 + 1.5L) \mu\text{in}$ 75 μin 100 μin	Gauge Blocks & micrometer standards Gage blocks CMM or LH-600 Thread plugs CMM & pin gages
Calibration Masters – Mikemaster Outside Diameter Kalmaster Depth Master	Up to 3 in (0.5 to 12) in Up to 12 in Up to 12 in	15 μin $(20 + 3.2D) \mu\text{in}$ $(25 + 1.5L) \mu\text{in}$ $(25 + 1.5L) \mu\text{in}$	THV ULM LH-600 & Webber bar LH-600 & Webber bar

Parameter/Equipment	Range	CMC ^{2,4} ($\pm$)	Comments
Levels – Electronic Levels	Up to 15 in length Up to 100 arc sec.	100 μ in/ft 1.3 arc sec.	Special level checker
Standards – Micrometer Thread Micrometer	Up to 24 in (> 24 to 40) in Up to 4 in	(15 + 5L) μ in (110 + 1.5L) μ in (50 + 2L) μ in	ULM LH-600 & Webber bar ULM
Squares	Up to 30 in	(120 + 15L) μ in	CMM
Sine Bars (Up to 10 in) – Angle Parallelism Flatness	Up to 45 °	0.000 85 ° 25 μ in 25 μ in	CMM
Surface Finish	Up to 500 Ra μ in patch	2.3 μ in Ra	Reference master
Surface Finish Testers – Ra Parameter Linearity Repeatability	Up to 400 Ra Up to 400 Ra Actual	2.5 μ in Ra 2.5 μ in Ra 0.6 resolution	Reference master
Optical Comparators ³ – Magnification Linear Travel Squareness	Up to 100 X Up to 12 in (12 to 20) in X to Y Axis	0.01 % magnification 240 μ in 320 μ in 100 μ in	Glass scales, length standards, angle blocks, squares

Parameter/Equipment	Range	CMC ^{2, 4} ($\pm$)	Comments
Video Measurement ³			
X, Y Axis	Up to 20 in	$(125 + 2L.95T) \mu\text{in}$	Glass scales
Z Axis	Up to 8.0 in	$(82 + 2L.95T) \mu\text{in}$	gauge blocks
Major Diameter –			
Pin Gages	(0.011 to 1) in	10 μin	THV
Reversible Wires	Up to 1 in	7 μin	THV
Plain Plugs	Up to 2 in (2 to 12) in	$(7 + 1D) \mu\text{in}$ $(7 + 1.5D) \mu\text{in}$	THV ULM
XX – Tolerance Plug	Up to 2 in	5 μin	THV
Inside Diameter – Ring Gages	(0.04 to 4) in (4 to 12) in	$(7 + 0.5D) \mu\text{in}$ $(7 + 1.5D) \mu\text{in}$	Diamet, P&W internal ULM
Rules –			
Steel	Up to 48 in (> 48 to 120) in	$(120 + 4L) \mu\text{in}$ $(200 + 6L) \mu\text{in}$	CMM & video system
Glass	Up to 24 in	$(20 + 2L) \mu\text{in}$	
Thread Gages –			
Standard Work & Set Plugs – Pitch Diameter	Up to 8 in	$(45 + 2D) \mu\text{in}$	Custom bench micrometer, thread wires
Adjustable Ring Gages	(0.04 to 8) in	150 μin	Set plugs
Adjustable & Solid Ring Gage – Pitch Diameter	(0.5 to 8) in	91 μin	2 point P.D. ULM

Parameter/Equipment	Range	CMC ^{2, 4} ($\pm$)	Comments
Surface Plates ³ – Flatness Grade AA, A, & B Repeatability	(10 to 108) in Diagonal Up to 0.002 in	(29 + 1D) μ in 20 μ in	Electronic level system Repeat-o-meter
Spheres & Precision Balls	Up to 4 in	(5 + 1D) μ in	THV / ULM
Optical Parallels – Parallelism Length – Thickness Flatness – Parallels Optical Flats	Up to 1 in Thick Up to 4 in Diameter Up to 4 in Diameter	5 μ in 5 μ in 5 μ in	Heidenhain Three optical flat method comparison to master
Length – Between Two Planes (Step Length)	(0.01 to 1.5) in	32 μ in	Heidenhain
Plain Tapered Plugs – External Diameter 0.75 TPF All Tapers	(0.01 to 4) in (0.01 to 8) in	49 μ in 25 μ in	Custom bench micrometer & rolls Standard measuring machine, gauge blocks & rolls
Plain Tapered Rings – Internal Diameter 0.75 TPF All Tapers	(0.04 to 4) in (0.04 to 8) in	71 μ in 81 μ in	CMM
External Tapered Thread Plug – Pitch Diameter Major Diameter	(0.047 to 4) in (0.1 to 4) in	72 μ in 44 μ in	Custom bench micrometer Custom bench micrometer

Parameter/Equipment	Range	CMC ^{2, 4} ($\pm$)	Comments
Internal Tapered Thread Plug Pitch Diameter	(0.06 to 4) in	91 μ in	Tapered master plug & Heidenhain (stand-off method)
Master Thread Wire – Inch Metric	Up to 0.2 in Up to 5.0 mm	4.4 μ in 0.11 μ m	ULM & gauge blocks
Thread Wires – Inch Metric	(4 to 120) TPI (0.2 to 10) Pitch	5.9 μ in 0.15 μ m	Master wire & THV
Gage Block	Up to 4 in Above 4 in to 20 in	(2.4 + 0.5L) μ in (3.0 + 1.0L) μ in	CT-6001 Heidenhain w/ master gauge blocks single point measurement
Geometry ⁵ – Length 1D 2D 3D Angles Diameter/Radius Straightness	Up to 28 in 20 in x 38 in 20 in x 28 in x 16 in Up to 360 ° Up to 12 in Up to 50 in	(30 + 4L) μ in (40 + 4L) μ in (40 + 4L) μ in 15 sec (40 + 4L) μ in 50 μ in per 12 in	Various measuring devices including but not limited to: video, CMM, height gage, gauge blocks, ULM, THV, optical comparators, masters, etc.
Radius Gages	Up to 2 in	150 μ in	Optical/video comparator

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. 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 nominal length in inches; D is the nominal diameter in inches; T is the temperature deviation from 68°F expressed in $|\text{inches}| (82 + 2L \{ .95 \} T) \mu\text{in}$; Example: 2.0" @70°F = **(82 μin + 7.6 μin) or 89.6 μin .**

⁵ For Geometry measurements the best CMC may vary depending upon the type of measuring equipment utilized.

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



Accredited Laboratory

A2LA has accredited

TRI-STATE INSTRUMENT SERVICE, INC.

Ft. Wayne, IN

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 16th day of October 2024.

A blue ink signature of Trace McInturff.

Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1622.01
Valid to August 31, 2026
Revised June 16, 2026

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