



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

LEADER CORPORATION
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CALIBRATION

Valid To: June 30, 2023

Certificate Number: 3692.01

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, 3} (\pm)	Comments ⁴
External Straight Thread Plug Gages –			Comparison using:
Pitch Diameter	(0.05 to 4) in	$(63 + 1.1D) \mu\text{in}$	P&W Supermicrometer, gage blocks, thread wire
	(4 to 16) in	$(61 + 2D) \mu\text{in}$	Gage blocks, thread wire, mikrokator
Major Diameter	Up to 4 in	$(38 + 1.2D) \mu\text{in}$	P&W Supermicrometer, gage blocks
	(4 to 16) in	$(22 + 3.7D) \mu\text{in}$	Gage blocks, mikrokator
Thread Plug Gages and Thread Ring Gages –			Comparison using:
Flank Angle	Up to 90°	2.4'	Optical comparator
Thread Lead	Up to 1 in	$(240 + 25L) \mu\text{in}$	Optical comparator, gage blocks

Parameter/Equipment	Range	CMC ^{2,3} (\pm)	Comments
External Taper Thread Plug Gages – Pitch Diameter Major Diameter	 (0.062 to 8) in Up to 8 in	 (140 + 1.0D) μ in (55 + 0.8D) μ in	Comparison using: Mikrokator, gage blocks, thread wire, sine block Mikrokator, gage blocks, sine block
Internal Straight Thread – Pitch Diameter (0.5 to 80 TPI) Minor Diameter	 Up to 16 in (0.1 to 1) in (1 to 16) in	 (190 + 1.3D) μ in (130 + 4.1D) μ in (85 + 15D) μ in	Comparison using: Master plug Gage pins, gage blocks
Internal Taper Thread Ring Gages – Pitch Diameter Minor Diameter	 Up to 8 in (0.05 to 8) in	 (100 + 2.9D) μ in (100 + 1.4D) μ in	Comparison using: Taper master gage plug set, height gage Taper master plug
External Taper Plug – Major Diameter Step Length	 (0.05 to 8) in (0.05 to 4) in	 (120 + 2.3D) μ in (210 + 1.0L) μ in	Comparison using: Mikrokator, gage blocks, taper sine block Mahr digimar
Internal Taper Ring – Minor Diameter Step Length	 (0.05 to 8) in (0.05 to 4) in	 (100 + 0.94D) μ in (210 + 1.0L) μ in	Comparison using: Master taper plug Mahr digimar

Parameter/Equipment	Range	CMC ^{2,3,7} (±)	Comments ⁴
Cylindrical External Plug Gages – Diameter	(0.01 to 16) in (0.01 to 8) in	(18 + 8.8D) μin (19 + 2.8D) μin	Comparison using: Mikrokator, gage blocks P&W Supermicrometer
Cylindrical Ring Gages – Diameter	(0.1 to 8) in	(12 + 4D) μin	Comparison using master rings, comparison equipment, UMM
Dimension Over Roll – Measure	Up to 8 in	(120 + 0.7L) μin	Comparison using roll gage, gage blocks, pins
Spline Gage Plug – MOW	(0.05 to 16) in (0.05 to 9) in	(46 + 3.5D) μin (52 + 3.5D) μin	Comparison using: Mikrokator, gage blocks, gear measuring wires P&W Supermicrometer
Spline Gage Ring – MBW	(0.2 to 16) in	(150 + 11D) μin	Comparison using gage blocks, gage measuring wires
Involute – Measure Profile Index Lead Runout	(0.2 to 6) in (0.2 to 6) in (0.2 to 6) in (0.2 to 6) in	120 μin 99 μin 97 μin 130 μin	Comparison using gear inspection system

II. Dimensional Testing/Calibration¹

Parameter/Equipment	Range	CMC ^{2,3,7} (\pm)	Comments
Length ⁵ – 1D – Measure	Up to 14 in	(210 + 1.1L) μ in	Mahr height gage
3D – Measure Linear	Up to (14 x 16 x 12) in	(280 + 29L) μ in	CMM
Volumetric	Up to (14 x 16 x 12) in	450 μ in	
Length ⁵ – Measure	Up to 14 in	(10 + 5.8L) μ in	Mahr 828

¹ This laboratory offers commercial calibration service, dimensional testing 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 In the statement of CMC, D is the diameter in inches and L is the length in inches.

⁴ "Supermicrometer" is a registered trademark with a last listed owner of Pratt & Whitney Measurement Systems, Inc., Connecticut U.S.A.

⁵ This laboratory meets *R205 – Specific Requirements: Calibration Laboratory Accreditation Program* for the types of dimensional tests listed above and is considered equivalent to that of a calibration.

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

LEADER CORPORATION

Shelby Township, 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 ANSI/NCCL 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 31st day of August 2021.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3692.01
Valid to June 30, 2023

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