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

QUALITY PLUS, INC.
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CALIBRATION

Valid To: May 31, 2025 Certificate Number: 1254.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations and dimensional testing[1, 8]:

I. Dimensional

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Gage Blocks –			
Steel & Ceramic	Up to 4 in	(3.7 + 0.6*L*) µin	Comparison to master gage blocks with Edmund's comparator (single point measurement)
Tungsten & Carbide	Up to 4 in	(4.3 + 0.8*L*) µin	
Long Gage Blocks –			
Steel & Ceramic	(5 to 20) in	(7.3 + 0.7*L*) µin	Comparison to master gage blocks with Edmund's comparator (single point measurement)
Calipers[3] –			
Dial/Vernier Digital	Up to 48 in	590 µin 300 µin	Comparison to gage blocks
Micrometers[3] –	Up to 48 in	(2.9 + 1.4*L*) µin + 0.6*R*	Comparison to gage blocks
Anvil Parallelism	Up to 48 in	(21 + 1) µin/in	Master pin gage

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Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Indicators[3] – Dial, Digital, Test			Comparison to:
0.000 02 in Resolution	Up to 2 in	(12 + 0.5*L*) µin	Gage blocks
0.000 05 in Resolution	Up to 2 in	(29 + 0.5*L*) µin	Gage blocks
0.0001 in Resolution	Up to 2 in	58 µin	
0.0005 in Resolution	Up to 2 in	290 µin	
0.001 in Resolution	Up to 4 in	580 µin	
0.0005 in Resolution	Up to 2 in	290 µin	Dial indicator checker
0.001 in Resolution	Up to 4 in	580 µin	
Height Gages[3]			
0.000 05 in Resolution	Up to 48 in	(83 + 0.6*L*) µin	Comparison to gage blocks
0.0001 in Resolution		(97 + 1*L*) µin	
0.0005 in Resolution		(300 + 0.4*L*) µin	
0.001 in Resolution		590 µin	
Plain Cylindrical Ring/Disc Gages	(0.04 to 12) in	(9.3 + 1.1*D*) µin	Comparison to master rings or gage blocks & P&W Labmaster™
Pin Gages – ZZ, Z	Up to 1 in	30 µin	Master pins & laser micrometer
Plug Gages – X, Y, Z	Up to 4 in	(22 + 2*L*) µin	P&W Supermicrometer™
Protractors	(0 to 360°)	2' 31"	OGP video measuring machine
Adjustable Threaded Ring Gages –			
Minor Diameter	Up to 2 in	40 µin	Sylvac bore gage
	(2.1 to 12) in	(92 + 5.4*L*) µin	OGP video measuring machine
Pitch Diameter	Up to 12 in	X (Tolerance Master Setting Plug)	Thread set master

Parameter/Equipment	Range	CMC[2, 4, 7] (±)	Comments
Screw Thread Gages, Unified & Metric –			
Pitch Diameter	Up to 8 in	(62 + 2*D*) µin	Thread wires & P&W Supermicrometer™
Major Diameter	Up to 8 in	(22 + 2*L*) µin	
Optical Comparators[3] –			
Magnification	Up to 100x	320 µin	Standard glass scales
X & Y Linear Travel & Indication	Up to 10 in	180 µin	
Micrometer Heads	Up to 2 in	22 µin + 0.6*R*	Comparison to gage blocks
Radius Gages	Up to 12 in	(93 + 5.6*L*) µin.	OGP video measuring machine
Bench Micrometers[3] –	Up to 24 in	(17 + 11*L*) µin	Comparison to gage blocks
	Up to 40 oz	2.0 oz	Force gauge
Anvil Parallelism	Up to 1 in	21 µin	Master pin gage
Measuring Machines[3] –	Up to 80 in	(13 + 3.3*L*) µin	Comparison to gage blocks
	Up to 40 oz	2.0 oz	Force gauge
Anvil Parallelism	Up to 1 in	21 µin	Master pin gage
Feeler Gages	Up to 1 in	26 µin	P&W Supermicrometer™

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Surface Plates[3] –			
Overall Flatness	(6 in x 218 in)	(24 + 0.5*D*) µin	Electronic leveling system Planekator
Local Area Flatness (Repeat Reading)		30 µin	Datum gage (repeat-o-meter indicator)
Length Standards	Up to 36 in	(68 + 1.4*L*) µin	Starrett Digichek height master
Chamfer Gage[3]	Up to 1 in	580 µin	Chamfer gage master
Internal Micrometer[3]	Up to 7 in	(39 + 0.4*D*) + 0.6*R* µin	Ring gage
Steel Rules	Up to 24 in	(120 + 1.7*L*) µin	OGP optical measuring machine
Glass Scales (Stage Micrometer)	Up to 24 in	(120 + 5.4*L*) µin	OGP optical measuring machine

II. Dimensional Testing/Calibration[1]

Parameter/Equipment	Range	CMC[2, 4, 7] (±)	Comments
Dimensional Measurements[5] –			
3D	Up to 45 in	(54 + 1.2*L*) µin	Zeiss CMM Prismo (contact)
Testing & Calibration	Up to 24 in	(110 + 5.4*L*) µin	Avant Zip 600 (non-contact by video)

III. Mechanical

Parameter/Equipment	Range	CMC[2, 4, 6, 7]	Comments
Balances & Scales[3, 9]	(20 to 500) mg (0.5 to 500) g 500 g to 5 kg (5 to 12) kg (10 to 50) kg	0.0039 mg + 0.6*R* 0.0034 g + 0.6*R* 0.0035 g + 0.6*R* 0.0041 g + 0.6*R* 0.0065 g + 0.6*R*	ASTM class 4 weights
Torque – Measure	Up to 1000 lbf·ft Up to 1000 lbf·in	2.2 % 1.7 %	Torque calibrator

[1] This laboratory offers commercial dimensional inspection, commercial calibration, and field 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 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] In the statement of CMC, *L* is the numerical value of the nominal length of the device measured in inches, *D* is the diameter of the device in inches or diagonal of the device in inches, and *R* is the resolution of the device under calibration.

[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] In the statement of CMC, percentages are percentage of reading, unless otherwise indicated.

[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.

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

[9] Balances & Scales are typically calibrated at the location in which they are used. If a balance or scale is calibrated in any location, other than the location intended for use, it is the user's responsibility to account for changes in gravitational forces, if any, and make air buoyancy corrections.

Accredited Laboratory

A2LA has accredited

QUALITY PLUS, INC.

Chicopee, MA

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 29th day of June 2023

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1254.01
Valid to May 31, 2025

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