



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994

PRECISION SOLUTIONS, INC.
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Quakertown, PA 18951
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CALIBRATION

Valid To: August 31, 2019

Certificate Number: 3840.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations¹:

I. Dimensional

Parameter/Equipment	Range	CMC ^{2, 4} (±)	Comments
Surface Plates ³ –			
Flatness	(17 to 72) in diagonal (12 to 60) in diagonal (>60 to 120) in diagonal	(57 + 0.27DL) µin (20 + 0.7DL) µin (35 + 0.42DL) µin	Planekator Federal level system
Repeatability	0.002 in	29 µin	Repeat-O-Meter, dial indicator
Optical Comparators ³ –			
Linearity	(0.2 to 12) in	(160 + 0.63L) µin	Glass master
Magnification	10X, 20X, 31.25X, 50X, 62.5X, 100X, 125X, 250X	(770 + 0.13L) µin	Glass master and glass measuring scale
Angle	0° to 360°	0.01°	Glass master
Calipers ³	(0.1 to 40) in	(280 + 3.6L) µin	Gage blocks

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Micrometers ³	(0.1 to 40) in	(59 + 6.5L) μin	Gage blocks
Depth Micrometers ³	(0.1 to 12) in	(130 + 6.2L) μin	Gage blocks
Indicators ³	(0.00005 to 0.2) in (0.2 to 1) in (1 to 4) in	14 μin 32 μin 75 μin	Gage blocks
Height Gages ³	(0.1 to 48) in	(49 + 6.9L) μin	Gage blocks

II. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Scales and Balances ³	(1 to 500) mg	0.012 mg	Class 1 weights, ASTM E617, NIST Handbook 44
	(1 to 5) g	0.04 mg	
	10 g	0.058 mg	
	20 g	0.086 mg	
	(30 to 200) g	0.0003 % of test load	Class 2 weights, ASTM E617, NIST Handbook 44
	(200 to 1000) g	0.0003 % of test load	
	(1000 to 6000) g	0.0003 % of test load	Class 6 weights, ASTM E617, NIST handbook 44
	(6000 to 12 000) g	0.0003 % of test load	
	(10 000 to 30 000) g	0.0006 % of test load	Class F weights, NIST Handbook 105-1, NIST Handbook 44
	40 000 g to 110 kg	0.0006 % of test load	
	(120 to 8000) kg	0.012 % of test load	
	(0.001 to 2) lb	0.000 24 lb	
	(2 to 120 000) lb	0.012 % of test load	
Force – Measuring Equipment ³	(0.1 to 200) lbf (200 to 5000) lbf	0.024 % of test load	Class F weights, ASTM E617, ASTM E4

Parameter/Equipment	Range	CMC ² (±)	Comments
Force ³ – Tension	(10 to 250) lbf	0.057 lbf	Interface 9840 indicator, ASTM E74 & ASTM E4 w/ Toledo 250 lbf loadcell
	(50 to 1000) lbf	0.12 lbf	w/ Morehouse 1000 lbf loadcell
	(200 to 5000) lbf	1.4 lbf	w/ Morehouse 5000 lbf loadcell
	(2000 to 10 000) lbf (10 000 to 50 000) lbf	6.1 lbf 9.7 lbf	w/ Interface 50 000 lbf loadcell
Compression	(10 to 250) lbf	0.066 lbf	w/ Toledo 250 lbf loadcell
	(50 to 1000) lbf	0.12 lbf	w/ Morehouse 1000 lbf loadcell
	(200 to 5000) lbf	1.1 lbf	w/ Morehouse 5000 lbf loadcell
	(2000 to 10 000) lbf (10 000 to 50 000) lbf	5.1 lbf 8.2 lbf	w/ Interface 50 000 lbf loadcell

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. CMC's 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 meets A2LA R104 – *General Requirements: Accreditation of Field Testing and Field Calibration Laboratories* for these calibrations. 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. In the statement of CMC, DL is the numerical value of the diagonal length of the device measured in inches.





Accredited Laboratory

A2LA has accredited

PRECISION SOLUTIONS, INC.

Quakertown, PA

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets 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 8 January 2009*).



Presented this 27th day of July 2017.

A handwritten signature in black ink, written over a horizontal line.

President and CEO
For the Accreditation Council
Certificate Number 3840.01
Valid to August 31, 2019

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