



THE AMERICAN ASSOCIATION FOR
LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

DIMENSIONAL MEASUREMENT, INC.

Wixom, MI

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 any additional program requirements in the field of calibration. 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 18 June 2005*).

Presented this 23rd day of December 2008.

A handwritten signature in cursive script, reading "Peter Abney".

President
For the Accreditation Council
Certificate Number 2503.01
Valid to December 31, 2010



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

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

DIMENSIONAL MEASUREMENT, INC.
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 Wixom, MI 48393
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CALIBRATION

Valid To: December 31, 2010

Certificate Number: 2503.01

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

I. Dimensional

Parameter/Equipment	Range	Best Uncertainty ^{2,4} (\pm)		Comments
		Laboratory	Field	
Bore Gages (2-point ID Micrometer) ³	Up to 500 mm (To 1 μ m resolution)	Larger of 0.6R or (0.61 + 0.006L) μ m	Larger of 0.6R or (0.61 + 0.011L) μ m	Gage block comparison
Calipers ³	Up to 800 mm (To 10 μ m resolution)	Larger of 0.6R or (6.0 + 0.006L) μ m	Larger of 0.6R or (6.0 + 0.011L) μ m	Gage block comparison
	Up to 2000 mm (To 10 μ m resolution)	Larger of 0.6R or (7.1 + 0.015L) μ m	See Footnote 5	CMM
Depth Micrometers ³	Up to 500 mm	Larger of 0.6R or (6.0 + 0.006L) μ m	Larger of 0.6R or (6.0 + 0.011L) μ m	Gage block comparison
Dial & Digital Indicators ³	Up to 500 mm (To 1 μ m resolution)	Larger of 0.6R or (0.60 + 0.006L) μ m	Larger of 0.6R or (0.61 + 0.008L) μ m	Gage block comparison
Feeler Gages/Taper Gages ³	Up to 25 mm	0.6 μ m	0.6 μ m	Micrometer

Parameter/Equipment	Range	Best Uncertainty ^{2,4} (\pm)		Comments
		Laboratory	Field	
Gage Balls – Diameter	Up to 100 mm	$(1.0 + 0.006L) \mu\text{m}$	See Footnote 5	Bench Micrometer
Height Gages ³ (To 0.02 mm resolution)	Up to 800 mm	Larger of $0.6R$ or $(12 + 0.006L) \mu\text{m}$	Larger of $0.6R$ or $(12 + 0.011L) \mu\text{m}$	Gage block comparison
	Up to 800 mm	Larger of $0.6R$ or $(12 + 0.008L) \mu\text{m}$	See Footnote 5	CMM
	Up to 2000 mm	Larger of $0.6R$ or $(13 + 0.013L) \mu\text{m}$	See Footnote 5	CMM
Height Masters ³	Up to 500 mm	Larger of $0.6R$ or $(1.2 + 0.006L) \mu\text{m}$	Larger of $0.6R$ or $(1.2 + 0.011L) \mu\text{m}$	Gage block comparison
Micrometers ³	0 to 50 mm	Larger of $0.6R$ or $(2.1 + 0.006L) \mu\text{m}$	Larger of $0.6R$ or $(2.1 + 0.006L) \mu\text{m}$	Gage block comparison
	75 to 175 mm	Larger of $0.6R$ or $(5.1 + 0.006L) \mu\text{m}$	Larger of $0.6R$ or $(5.1 + 0.006L) \mu\text{m}$	Gage block comparison
	200 to 500 mm	Larger of $0.6R$ or $(10 + 0.006L) \mu\text{m}$	Larger of $0.6R$ or $(10 + 0.006L) \mu\text{m}$	Gage block comparison
	Up to 1000 mm	Larger of $0.6R$ or $(2.1 + 0.01L) \mu\text{m}$	See Footnote 5	CMM
Micrometer Standards ³	Up to 500 mm	$(0.84 + 0.006L) \mu\text{m}$	$(0.67 + 0.011L) \mu\text{m}$	Gage block comparison
	Up to 1000 mm	$(1.2 + 0.001L) \mu\text{m}$	See Footnote 5	CMM
	Up to 2000 mm	$(3.6 + 0.012L) \mu\text{m}$	See Footnote 5	CMM
Parallels – Flatness and Parallelism ³	Up to 2400 × 1200 mm	$(2.0 + 0.010L) \mu\text{m}$	$(1.4 + 0.009L) \mu\text{m}$	Surface plate
Pin and Plug Gages ³	Up to 100 mm	$(0.32 + 0.006L) \mu\text{m}$	$(0.32 + 0.01L) \mu\text{m}$	Micrometer

Parameter/Equipment	Range	Best Uncertainty ^{2,4} (±)		Comments
		Laboratory	Field	
Profilometers – Indirect Verification of Vertical Magnification, Fixed Points ³	≈ 1 μm Ra ≈ 3 μm Ra	0.090 Ra + R* 0.090 Ra + R*	0.090 Ra + R* 0.090 Ra + R*	Roughness standards R* is the repeatability of the instrument
Protractors to 5' graduations (arcsec + arcsec/A)	Up to 360°	172 + 147/A	See Footnote 5	CMM
Radius Gages	Up to 300 mm	(6.0 + 0.047L) μm	See Footnote 5	Video inspection machine
Step/Riser Blocks ³	Up to 500 mm	(0.33 + 0.006L) μm	(0.33 + 0.01L) μm	Gage block comparison
	Up to 800 mm	(1.8 + 0.008L) μm	See Footnote 5	CMM
	Up to 2000 mm	(3.2 + 0.012L) μm	See Footnote 5	CMM
Rules – Length	Up to 400 mm	(6.0 + 0.047L) μm	See Footnote 5	Video inspection machine
	Up to 2000 mm	(3.2 + 0.012L) μm	See Footnote 5	CMM
Square ³	Up to 800 mm	(2.2 + 0.009L) μm	See Footnote 5	CMM
	Up to 2000 mm	(3.2 + 0.011L) μm	See Footnote 5	
Straight Edge – Straightness ³	Up to 2600 mm	(1.4 + 0.006L) μm	(1.4 + 0.009L) μm	Surface plate
Vee Blocks ³ –				
	Centrality	Up to 500 mm	(1.4 + 0.006L) μm	(1.4 + 0.011L) μm
Parallelism	Up to 1000 × 1000 mm	(1.4 + 0.005L) μm	(1.4 + 0.009L) μm	Surface plate

II. Dimensional Testing

Parameter/Equipment	Range	Best Uncertainty ^{2,3,4} (\pm)		Comments
		Laboratory	Field	
Length – 1D ³	Up to 500 mm	$(0.84 + 0.006L) \mu\text{m}$	$(0.84 + 0.01L) \mu\text{m}$	Gage block comparison
3D Point-to-Point Distance and Location	Up to $(1000 \times 800 \times 700)$ mm	$(2.2 + 0.009L) \mu\text{m}$	See Footnote 5	CMM
	Up to $(2000 \times 1200 \times 1000)$ mm	$(4.8 + 0.011L) \mu\text{m}$	See Footnote 5	CMM
	Up to 3600 mm diameter sphere	$(62 + 0.09L) \mu\text{m}$	$(62 + 0.09L) \mu\text{m}$	Faro arm
	Up to $(300 \times 300 \times 200)$ mm	$(6.0 + 0.047L) \mu\text{m}$	See Footnote 5	Video inspection machine
3D Full Feature-to-Full Feature Distance and Location, Including Holes, Shafts and Spheres, not Requiring PH10 Movement	Up to $(1000 \times 800 \times 700)$ mm	$(1.2 + 0.009L) \mu\text{m}$	See Footnote 5	CMM
	Up to $(2000 \times 1200 \times 1000)$ mm	$(3.2 + 0.011L) \mu\text{m}$	See Footnote 5	CMM
	Up to 3600 mm diameter sphere	$(62 + 0.09L) \mu\text{m}$	$(62 + 0.09L) \mu\text{m}$	Faro arm
	Up to $(300 \times 300 \times 200)$ mm	$(6.0 + 0.047L) \mu\text{m}$	See Footnote 5	Video inspection machine
Angle ³ (arcsec + arcsec/A)	0° to 360°	$2.8 + 0.81/A$	$45 + 22.9/A$	CMM
Surface Finish	$\approx 1 \mu\text{m Ra}$ $\approx 3 \mu\text{m Ra}$	$0.090 Ra + R^*$ $0.090 Ra + R^*$	See Footnote 5	Profilometer R^* is the repeatability of the instrument

¹ This laboratory offers commercial and field calibration services.

² “Best Uncertainty” 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 of nearly ideal measuring equipment. Best uncertainties represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The best uncertainty of a specific calibration performed by the laboratory may be greater than the best uncertainty due to the behavior of the customer’s device, to the environment 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 uncertainties achievable on a customer's site can normally be expected to be larger than the Best Measurement Capabilities (BMC) that the accredited laboratory has been assigned as Best Uncertainty 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 calibration uncertainty being larger than the BMC.

⁴ In the statement of best uncertainty, L is the numerical value of the nominal length of the device measured in millimeters; A is the numerical value of the length of the shortest leg that defines the angle in meters; R is the numerical value of the resolution of the device; Ra is the numerical value of the nominal roughness of the surface measured in micrometers roughness.

⁵ Field calibration service not available for this parameter range.