



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

BOBIER METROLOGY SOLUTIONS
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Flint, MI 48532
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CALIBRATION

Valid To: June 30, 2018

Certificate Number: 1526.01

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 (±)	Comments
Optical Comparator ³ –			
Magnification	5× to 100×	76 μin + 440 μin/in 1.9 μm + 0.44 μm/mm	Reticle
Scale Deviation (Visual)	Up to 12 in Up to 304.8 mm	83 μin + 23 μin/in 2.1 μm + 0.023 μm/mm	Reticle
CMM ³ –			
Linear Displacement Accuracy	Up to 118 in Up to 3000 mm	15 μin + 1.1 μin/in 0.37 μm + 0.0011 μm/mm	Laser interferometer
	Up to 18 in Up to 457.2 mm	59 μin + 5.7 μin/in 1.5 μm + 0.0057 μm/mm	Step gage
	(18 to 40) in (457.2 to 1016) mm	51 μin + 7.1 μin/in 1.3 μm + 0.0071 μm/mm	Step gage

Parameter/Equipment	Range	CMC ² (±)	Comments
CMM ³ (cont.) –			
Volumetric Performance (Manual)	(10 to 36) in (254 to 915) mm	120 µin + 0.22 µin/in 3.0 µm + 0.00022 µm/mm	Ball bar
Volumetric Performance (DCC)	(10 to 36) in (254 to 915) mm	75 µin + 0.33 µin/in 1.9 µm + 0.00033 µm/mm	Ball bar
Squareness	Up to 24 in Up to 609.6 mm	10 µin + 12 µin/in 0.26 µm + 0.012 µm/mm	Granite square
Video/Vision Measuring Machines ³ –			
Scale Deviation	Up to 12 in Up to 304.8 mm	83 µin + 23 µin/in 2.1 µm + 0.023 µm/mm	Reticle
Z Scale Deviation	Up to 6 in Up to 152 mm	71 µin + 0.02 µin/in 1.8 µm + 0.0005 µm/mm	Gage blocks
Calipers	Up to 12 in Up to 304.8 mm	89 µin + 2.1 µin/in 2.3 µm + 0.0021 µm/mm	Master block Master gage
Outside Micrometers	Up to 4 in Up to 101.6 mm	54 µin + 10 µin/in 1.4 µm + 0.010 µm/mm	Master block Master gage
Depth Micrometers	Up to 1 in Up to 25.4 mm	56 µin + 3.6 µin/in 1.4 µm + 0.0036 µm/mm	Master block
Ring Gage – Inside Diameter	Up to 12 in Up to 304.8 mm	2.3 µin + 11 µin/in 0.06 µm + 0.011 µm/mm	CMM, master ring
Plug Gage – Outside Diameter	Up to 12 in Up to 304.8 mm	2.7 µin + 0.62 µin/in 69 µm + 16 µm/mm	Master plug, laser micrometer, CMM
Gage Balls/CMM Cal Spheres	Up to 2 in Up to 50.8 mm	5.7 µin + 17 µin/in 0.14 µm + 0.017 µm/mm	Master gage ball, roundness gage, CMM

II. Dimensional Testing/Calibration⁴

Parameter/Equipment	Range	CMC ² (±)	Comments
Linear Accuracy ⁴			
2D	Up to 24 Inches Up to 609.6 mm	3.5 μin + 11 μin/inch 0.09 μm + 0.011 μm/mm	CMM, optical
3D	0 to 24 Inches Up to 609.6 mm	17 μin + 32 μin/inch 0.43 μm + 0.032 μm/mm	
Position ⁴	(28 x 40 x 24) in (711.2 x 1016 x 609.6) mm	7.9 μin + 33 μin/inch 0.20 μm + 0.033 μm/mm	CMM, optical
Linear Accuracy ^{3,4}	(5 to 20) ft (1.5 to 6) m	390 μin + 25 μin/in 10 μm + 0.0025 μm/mm	Portable CMM

¹ This laboratory offers commercial and field calibration service and dimensional testing 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 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 This laboratory meets R205 – *Specific Requirements: Calibration Laboratory Accreditation Program* for the types of dimensional tests listed above. Accredited test reports issued containing appropriate statements of measurement results, measurement uncertainty, and traceability are considered equivalent to a “calibration” certificate.



Accredited Laboratory

A2LA has accredited

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Flint, 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 the requirements of ANSI/NCSLI 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 25th day of October 2016.



A handwritten signature in blue ink, appearing to read "J. C. Bunt".

Senior Director of Quality and Communications
For the Accreditation Council
Certificate Number 1526.01
Valid to June 30, 2018

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