



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

RENISHAW INC.
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West Dundee, IL 60118
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CALIBRATION

Valid To: June 30, 2019

Certificate Number: 2707.01

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
Coordinate Measuring Machines ³ –			Performance verification per:
Length Measurement Error	Up to 1000 mm	$(0.23 + L/990) \mu\text{m}$	ISO 10360-2 using length bar
Probing Error	Up to 1000 mm	$(0.37 + L/990) \mu\text{m}$	ISO 10360-2 using step gauge
	Reference Standard Diameter: (10 to 50) mm	0.11 μm	ISO 10360-5 using master sphere
			Note: the length measurement error tests in ISO 10360-2 include both volumetric and linear scale accuracy tests
Angular Accuracy	0° to 360°	0.32 arcsec	Laser interferometer

II. Dimensional Testing¹

Parameter/Equipment	Range	CMC ² (±)	Comments
One Dimensional ⁵ – Fixed Length (Setting Gage Calibrator)	(50 to 300) mm	0.85 μm	Setting gage calibrator
One Dimensional ⁵ – Linear Displacement (Telescoping Ballbar)	(-1 to 1) mm	0.24 μm	Laser interferometer

III. Thermodynamics

Parameter/Equipment	Range	CMC ² (±)	Comments
Environmental Sensors – Air Temperature Material Temperature Air Pressure Relative Humidity	(15 to 25) °C (15 to 25) °C (913 to 1031) mbar (25 to 75) % RH	0.070 °C (70 mK) 0.070 °C (70 mK) 0.9 mbar 4.3 % RH	Reference sensors

IV. Time & Frequency

Parameter/Equipment	Range	CMC ² (±)	Comments
Optical Frequency of HeNe Lasers	(473 612 629 to 473 613 029) MHz	5.9 MHz	Reference laser

¹ This laboratory offers commercial dimensional testing, calibration service, and field calibration service where noted.

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 In the statement of Calibration and Measurement Capability, L is the numerical value of the nominal length of the device measured in meters.

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 certificate.



Accredited Laboratory

A2LA has accredited

RENISHAW INC.

West Dundee, IL

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 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 24th day of July 2017.

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

President and CEO
For the Accreditation Council
Certificate Number 2707.01
Valid to June 30, 2019

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