



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ALPHA TECHNOLOGIES SERVICES, LLC
6279 Hudson Crossing Suite 200
Hudson, OH 44236
Lori Knous Phone: 330 745 1641 x 7297

CALIBRATION

Valid To: May 31, 2023

Certificate Number: 2017.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory at the location listed above as well as the satellite laboratory location listed below to perform the following calibrations^{1,8}:

I. Dimensional

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Indicators ³ – Analog Digital	Up to 40 mm Up to 40 mm	(0.0051 + 0.6R) mm (0.0035 + 0.6R) mm	ASTM D3767 with gage blocks
Bore Diameter ³	Up to 12.7 mm	0.0039 mm	ASTM D5099, D1238, D3835 with borescope and master ring
Extensometers ³	Up to 400 mm (400 to 1000) mm	0.45 mm 0.45 mm	ASTM E83 with: Calibrated bar Precision ruler
Orifice ³ – Bore Diameter Length	(0.254 to 3.175) mm Up to 50.8 mm	0.0016 mm 0.0029 mm	ASTM D1238, D3835, D5099 with pin gage and micrometer

Parameter/Equipment	Range	CMC ² (±)	Comments
Piston Tip ³ – Outside Diameter Linear Length	Up to 12.7 mm Up to 19 mm	0.0016 mm 0.0016 mm	ASTM D1238, D3835 with micrometers
Thickness Gauge	Up to 3 mm	0.0016 mm	Certified gage blocks

II. Dimensional Testing/Calibration¹

Parameter/Equipment	Range	CMC ² (±)	Comments
Length Standards (1D) ^{3,5}	Up to 457 mm	0.03 mm	Height gage, surface plate
Diameter ^{3,6}	(0.1 to 25) mm	0.0059 mm	ASTM D3767 with caliper
Angle ³	(0 to 60)°	0.0025°	Rotary encoder measuring device

III. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Torque – Static	(0 to 50) in·lbf (50 to 130) in·lbf	0.088 in·lbf 0.088 in·lbf	Dead weights and torque arm
Dynamic ³	(0 to 50) in·lbf (50 to 130) in·lbf	0.16 in·lbf 0.17 in·lbf	Torque standard
Torque Wrenches	Up to 200 in·lbf	0.51 in·lbf	Torque wrench tester

Parameter/Equipment	Range	CMC ^{2,4} (\pm)	Comments
Mass	(0.1 to 10) g (> 10 to 220) g (> 220 to 500) g (> 500 to 1000) g (> 1 to 20) kg	0.0020 g 0.025 g 0.12 g 0.12 g 0.18 g	ASTM D1238, single substitution
Density Specific Gravity	(1.04 to 2.0) g/cm ³ (1.04 to 2.0)	0.002 g/cm ³ 0.002	Precision balance in air and in water
Density/Specific Gravity Testers ³	(1.04 to 2.0) (1.04 to 2.0)	0.002 + 0.6R 0.002 + 0.6R	ASTM D792
Force and Materials Testing Machines ³ –			
Force – Tension and Compression Transducers	(0 to 22) lbf (0 to 50) lbf (51 to 500) lbf (500 to 5000) lbf	0.11 % + 0.6R of reading 0.11 % + 0.6R of reading 0.11 % + 0.6R of reading 0.11 % + 0.6R of reading	ASTM E4 using deadweights ASTM E4 using load cells
Extensometer	(0 to 400) mm (400 to 1000) mm	0.45 mm 0.45 mm	ASTM E83, calibrated bar Precision ruler
Gage Length	(0 to 100) mm	0.024 mm	ASTM E83 using caliper
Crosshead Dwell Time	(0 to 10) min	0.23 s	Digital stopwatch
Crosshead Distance	(0 to 400) mm	0.07 mm	Digital position kit
Crosshead Rate	(0.03 to 600) mm/min	0.051 % of reading	Digital speed/position kit

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Scales and Balances ³	(0.1 to 10) g (> 10 to 220) g (> 220 to 500) g (> 500 to 1000) g (> 1 to 20) kg	(0.14 + 0.6R) g (0.15 + 0.6R) g (0.52 + 0.6R) g (1.0 + 0.6R) g (5.0 + 0.6R) g	Standard masses

IV. Thermodynamics

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Temperature – Temperature Measure ³	Ambient to 250 °C	0.088 °C	ASTM D1646, D2084, D5289, D6204, D6601 with temperature probe and meter
Temperature Meters	Ambient to 200 °C	0.061 °C	ITS 90, oil bath with SPRT and digital readout
Barrel Temperature ³	(15 to 425) °C	0.081 °C	ASTM D1238, D3835, with Hart digital PRT

V. Time & Frequency

Parameter/Equipment	Range	CMC ^{2,7} (±)	Comments
Dwell Time	(0 to 24) hours	0.23 s	ASTM D1646, D2084, D5289, D6204, D6601 with digital stopwatch

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CALIBRATION

I. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Torque – Dynamic ³	(0 to 50) in·lbf (50 to 130) in·lbf	0.16 in·lbf 0.17 in·lbf	Torque standard
Torque Wrenches	Up to 200 in·lbf	1.5 in·lbf	Torque wrench tester

¹ This laboratory offers commercial calibration and dimensional testing services and field calibration and dimensional testing services 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. 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, R is the numerical value of the resolution of the device.

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.

⁶ This test is not equivalent to a calibration.

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*.





Accredited Laboratory

A2LA has accredited

ALPHA TECHNOLOGIES SERVICES, LLC

Hudson, OH

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 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 24th day of June 2021.

A blue ink signature of the Vice President of Accreditation Services.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2017.01
Valid to May 31, 2023

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