



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

ZWICKROELL, LP  
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CALIBRATION

Valid To: January 31, 2023

Certificate Number: 1891.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations<sup>1, 5</sup>:

I. Dimensional

Parameter/Equipment	Range	CMC <sup>2, 4</sup> (±)	Comments
Diameter & Length <sup>3</sup> (Mechanical & Material Test Machines)	Up to 10 mm	0.023 mm	ASTM E83, ASTM D1238, ISO 1133-1&2, ISO 9513 (CMU), ASTM D6458, ASTM D1525, ISO 306, ISO 75 Micrometer, caliper
	Up to 60 mm	0.15 %	Gage blocks
Displacement <sup>3</sup> – Travel (Mechanical & Material Test Machines/Crosshead)	(0.02 to 60) mm	0.15 %	ASTM E83, ASTM 2309, ASTM 2658, ISO 9513, ISO 1133, ASTM D1238 Linear glass scale, magnetic scale (class C)
	(50 to 990) mm	0.15 %	
Gage Length <sup>3</sup>	(10 to 200) mm	0.03 mm	ISO 9513, ASTM E83 Digital calipers

II. Mechanical

Parameter/Equipment	Range	CMC <sup>2, 4, 6</sup> (±)	Comments
Force <sup>3</sup> – Measure	>400 kN to 2 MN 40 N to 400 kN (3 to 250) N (0.01 to 200) N	0.25 % 0.17 % 0.17 % 0.10 %	ASTM E4, ASTM D1238, ISO 1133, ASTM D648, ASTM D1525, ISO 306, ISO 7500-1, ISO 75  Load cells, deadweights
Durometer Calibration Type A, B, C, D –  Indenter Extension and Shape –  Diameter  Radius Type A, Type B, Type C, Type D  Angle  Extension  Indenter Display  Spring Calibration Force –  Type A  Type D	1.27 mm  0.79 mm 0.1 mm  30°  2.5 mm  Up to 100 Duro Units  (0 to 100) Duro Units  (0 to 100) Duro Units	0.04 mm  0.03 mm 0.012 mm  0.02°  0.04 mm  0.1 Division of the Reading  0.70 Duro Units  1.2 Duro Units	ASTM D2240; ISO 868 (part 6)  Optical inspection under 62.5 % magnification  Gage ring  The durometer spring is verified with lever arm with weights
Pendulum Impact Testing Machines <sup>3</sup> – Charpy, Izod, Tensile Impact Testing  Energy	Up to 10 J (10 to 100) J (100 to 300) J (300 to 450) J (450 to 750) J	0.0068 J 0.026 J 0.054 J 0.075 J 0.13 J	ISO 13802, ISO EN 10045-2, DIN 51222, ISO 8256, ASTM E23

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Pendulum Impact Testing Machines <sup>3</sup> – Charpy, Izod, Tensile Impact Testing (cont)			ISO 13802, ISO EN 10045-2, DIN 51222, ISO 8256, ASTM E23
Force	(0 to 50) N	0.011 N	Digital protractor
Impact Angle	(0 to 180)°	0.06°	
Impact True Level – Impact	----	0.000 045 in/in	
Dimensional	Up to 1 m	0.003 mm	
Test Machines <sup>3</sup> –			
Alignment	Up to 2500 microstrain	25 microstrain	ASTM E-1012
Crosshead Speed	Up to 1000 mm/min	0.15 %	ASTM E-2658, linear magnetic scale or magnetic scale position sensor

### III. Thermodynamics

Parameter/Equipment	Range	CMC <sup>2,6</sup> (±)	Comments
Temperature – Measure	Up to 350 °C	0.2 °C	ASTM D1238, ISO 1133-1&2, ASTM D648, ASTM D1525, ISO 306, ISO 75 Instrulab/Almemo RTD,

#### IV. Time & Frequency

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Stopwatches & Timers	Up to 240 s	0.016 s	ASTM 2658, ASTM D1238, ISO 1133-1&2

<sup>1</sup> Commercial calibration service and field calibration service is available from this laboratory.

<sup>2</sup> 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.

<sup>3</sup> This laboratory performs field calibration activities for these parameters. 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.

<sup>4</sup> In the statement of CMC, percentages are percentage of reading, unless otherwise indicated.

<sup>5</sup> This scope meets A2LA's *P112 Flexible Scope Policy*.

<sup>6</sup> 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.



# Accredited Laboratory

A2LA has accredited

**ZWICKROELL, LP**

*Kennesaw, GA*

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 11<sup>th</sup> day of February 2021.

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

Vice President, Accreditation Services  
For the Accreditation Council  
Certificate Number 1891.01  
Valid to January 31, 2023

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