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

LAKE SHORE INDUSTRIAL SERVICES, INC.
2230 Caughey Road
Erie, PA 16506
Suzanne R. Zuba Phone: 814 838 3539

CALIBRATION

Valid To: August 31, 2020 Certificate Number: 1505.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to the laboratory at the location listed above as well as the satellite laboratory location listed below to perform the following calibrations[1, 6]:

I. Dimensional

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Length[3] – Micrometer Standards, Length Rods	Up to 24 in Up to 48 in (24 to 84) in	(17 + 5.3*L*) µin (110 + 7.3*L*) µin (230 + 6.7*L*) µin	Standard measuring machine, gage blocks, surface plate and height gage
Cylindrical Gages –			
Outside Diameter – Plugs Inside Diameter – Rings	Up to 24 in (0.375 to 8) in	(32 + 5*L*) µin (20 + 2.5*L*) µin	Standard measuring machine, master ring
Threads Diameter –			
Thread Plug – PD Thread Plug – MD	Up to 24 in Up to 14 in	(83 + 2.5*L*) µin (27 + 4.5*L*) µin	Standard measuring machine, thread wires and gage blocks
Thread Rings Adjustable, Tactile Fit Set to Plug	Up to 8 in	-----	Standard set thread plugs

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Micrometers[3]	Up to 48 in	(58 + 5*L*) µin	Gage blocks
Calipers[3]	Up to 60 in	(640 + 1.6*L*) µin	Gage blocks and set rings
Height Gages[3]	Up to 36 in	(58 + 4.5*L*) µin	Gage blocks
Indicators[3]	Up to 1 in Up to 6 in	60 µin 580 µin	Gage blocks, indicator calibrator and bench micrometer
Thickness Gages	(0.001 to 0.1) in	30 µin	Bench micrometer and gage blocks
Squares – Parallelism	Up to 36 in	270 µin	Granite square and test indicator
Protractors	(0 to 360)°	0.065°	Angle blocks
Optical Comparators[3] –			
X, Y Axis Scales	Up to 6 in (6 to 12) in	190 µin (140 + 11*L*) µin	Up to 6” glass scale, above 6” gage blocks
Angle	Up to 90°	0.2°	Angle blocks
Magnification	10X, 20X, 50X	160 µin	Spheres and glass stage
Linear Measuring Machine / Universal Measuring Machine[3] –			
Length	Up to 80 in	(12 + 6*L*) µin	Gage blocks
Force	Up to 2 kgf	37 gf (1.3 ozf)	Force gage

II. Mechanical

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Torque Wrenches[3]	(10 to 100) in·lbf (30 to 300) in·lbf (25 to 250) ft·lbf (100 to 1000) ft·lbf	1.3 % 0.5 % 0.76 % 0.89 %	Torque transducer
Indirect Verification of Rockwell Hardness Testers[3]	HRBW: Low Medium High HRC: Low Medium High	 3.4 HRBW 1.3 HRBW 1.3 HRBW 1.5 HRC 1.5 HRC 0.94 HRC	Indirect verification method per ASTM E18

SATELLITE LABORATORY

LAKE SHORE INDUSTRIAL SERVICES, INC.
405 Centura Court
Spartanburg, SC 29303
Suzanne R. Zuba Phone: 814 838 3539

CALIBRATION

I. Dimensional

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Cylindrical Gages –			
Outside Diameter – Plugs	Up to 4 in	(33 + 3.8*L*) µin	Standard measuring machine and gage blocks
Threads Diameter –			
Thread Plug – PD	Up to 4 in	(91 + 5*L*) µin	Standard measuring machine, thread wires and gage blocks
Thread Plug – MD	Up to 4 in	(33 + 3.8*L*) µin	
Thread Rings: Adjustable, Tactile Fit Set to Plug	Up to 4 in	-----	Standard set thread plugs
Micrometers[3]	Up to 6 in	(86 + 3*L*) µin	Gage blocks
Calipers[3]	Up to 12 in	590 µin	Gage blocks and set rings
Height Gages[3]	Up to 24 in	(83 + 5*L*) µin	Gage blocks
Indicators[3]	Up to 0.008 in Up to 2 Up to 4	72 µin 420 µin 660 µin	Gage blocks, indicator calibrator and bench micrometer

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
NPT Ring Gages Standoff	Up to 2.5 in dia (0 to 1) in	630 µin	Height gage indicator, surface plate
NPT Thread Gage Notch Depth	Up to 2.5 in dia (0 to 1) in	190 µin	Height gage indicator, surface plate
NPT Thread Plug Gage Standoff	Up to 2.5 in dia (0 to 1) in	630 µin	Master NPT thread ring gage, gage block, height gage indicator and surface plate

II. Mechanical

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Torque Wrenches[3]	(5 to 50) in·lbf (25 to 250) in·lbf (100 to 1000) in·lbf (25 to 250) ft·lbf	1.9 % 1.4 % 1.3 % 1.3 %	Torque transducer and indicator
Pressure Gages	Up to 100 psi Up to 10 000 psi	0.6 psi 8.9 psi	Master pressure gage

[1] This laboratory offers commercial and field calibration 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 uncertainty 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 uncertainty.

[4] In the statement of CMC uncertainty, *L* is the numerical value of the nominal length of the device measured in inches and % applies the associated uncertainty at the full scale of the range.

[5] This accreditation covers calibrations performed at all laboratory locations listed in this scope of accreditation.

[6] This scope meets A2LA's *P112 Flexible Scope Policy.*

Accredited Laboratory

A2LA has accredited

LAKE SHORE INDUSTRIAL SERVICES, INC.

Erie, PA

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 April 2017*).

Presented this 4th day of June 2018.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1505.01
Valid to August 31, 2020
Revised July 20, 2020

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