



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

SUPERIOR GAGE SERVICE  
 13931 N 503 Road  
 Tahlequah, OK 74464  
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CALIBRATION

Valid To: August 31, 2012

Certificate Number: 2209.01

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

I. Dimensional

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Gage Blocks	Up to 1 in (1 to 4) in	5 µin (1.3 + 3.7L) µin	Mechanical comparison
Ring Gages – Inside Diameter	Up to 1 in (1 to 6) in	9 µin (2 + 8D) µin	Mechanical comparison to gage blocks
Plug Gages – Outside Diameter	Up to 1 in (1 to 2) in (2 to 4) in	10 µin (4 + 6D) µin 18 µin	Mechanical comparison to gage blocks
Threaded Plug Gages –  Pitch Diameter Major Diameter	Up to 2 in Up to 2 in	86 µin 33 µin	Mechanical comparison to gage blocks  Three-wire method

Parameter/Equipment	Range	CMC <sup>2,4</sup> (±)	Comments
Micrometer Standard	Up to 1 in Up to 6 in	15 μin (9 + 6L) μin	Mechanical comparison to gage blocks
Depth Micrometers <sup>3</sup>	(0 to 6) in	250 μin	Gage blocks
Height Gages <sup>3</sup> – Micro-Hite	(0 to 24) in (0 to 36) in	210 μin 74 μin	Gage blocks Gage blocks
Pin Plugs Class ZZ – Outside Diameter	(0 to 1) in	33 μin	Mechanical comparison to gage blocks
Surface Plates <sup>3</sup> – Flatness Repeatability	(4 x 8) ft	(24 + 0.4X) μin 33 μin	Electronic level system, repeat-o-meter
Dial Indicators <sup>3</sup> – Linearity	(0 to 1) in	66 μin	Digital indicator checker
Micrometers <sup>3</sup> – Error of Indication	(0 to 6) in	200 μin	Gage blocks, optical flats
Dial Calipers <sup>3</sup>	(0 to 6) in (6 to 12)in	200 μin 450 μin	Gage blocks, ring gages
Optical Comparator <sup>3</sup> – Linearity Magnification	Up to 12 in 10x, 20x, 50x	420 μin 0.034 % of magnification	Glass master and scale

II. Mechanical

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Indirect Verification of Rockwell Hardness <sup>3</sup> and Rockwell Superficial Hardness Testers <sup>3</sup>	<p>HRA:            (70 to 79) HRA            (80 to 89) HRA            (90 to 95) HRA</p> <p>HRBW:            (1 to 50) HRBW            (51 to 79) HRBW            (80 to 130) HRBW</p> <p>HRC:            (20 to 39) HRC            (40 to 59) HRC            (60 to 70) HRC</p> <p>HRE:            (65 to 74) HRE            (75 to 88) HRE            (89 to 130) HRE</p> <p>HR15N:            (40 to 79) HR15N            (80 to 89) HR15N            (90 to 95) HR15N</p> <p>HR15T:            (20 to 79) HR15T            (80 to 87) HR15T            (88 to 100) HR15T</p> <p>HR30N:            (40 to 59) HR30N            (60 to 76) HR30N            (77 to 85) HR30N</p> <p>HR45N:            (10 to 49) HR45N            (50 to 66) HR45N            (67 to 75) HR45N</p> <p>HR45T:            (1 to 39) HR45T            (40 to 49) HR45T            (50 to 75) HR45T</p>	<p>0.36 HRA            0.29 HRA            0.24 HRA</p> <p>1 HRBW            0.64 HRBW            0.45 HRBW</p> <p>0.34 HRC            0.35 HRC            0.38 HRC</p> <p>0.34 HRE            0.56 HRE            0.56 HRE</p> <p>0.37 HR15N            0.3 HR15N            0.26 HR15N</p> <p>0.36 HR15T            0.29 HR15T            0.24 HR15T</p> <p>0.29 HR30N            0.18 HR30N            0.19 HR30N</p> <p>0.47 HR45N            0.2 HR45N            0.39 HR45N</p> <p>0.61 HR45T            0.61 HR45T            0.39 HR45T</p>	ASTM E18

Parameter/Equipment	Range	CMC <sup>2</sup> (±)	Comments
Indirect Verification of Brinell Hardness Testers <sup>3</sup> –  3000 kgf	250 HBW 500 HBW	8 HBW 13 HBW	ASTM E10
Indirect Verification of Micro Vickers and Knoop Hardness Testers <sup>3</sup> –  100 gf 300 gf 100 gf 300 gf 500 gf 1000 gf	750 HK 700 HK 775 HV 960 HV 960 HV 720 HV	23 HK 30 HK 30 HV 49 HV 44 HV 34 HV	ASTM E384
Force Gages	Up to 200 lbf	0.31 lbf	Dead weight force tension only
Torque Wrenches	Up to 125 ft-lb (125 to 250) ft-lb (250 to 600) ft-lb  Up to 1500 in-lb (1500 to 3000) in-lb	0.94 ft-lb 1.8 ft-lb 4.0 ft-lb  10 in-lb 20 in-lb	AKO torque tester
Scales and Balances <sup>3</sup>	(100 to 300) g 400 g to 4 kg (4 to 6) kg	0.25 mg 0.2 g 0.6 g	Class 1 certified weights

<sup>1</sup> This laboratory offers commercial calibration service and field calibration service.

- <sup>2</sup> Calibration and Measurement Capability (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. Calibration and Measurement Capabilities 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> 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.
- <sup>4</sup> In the statement of CMC,  $L$  represents the numerical value of the nominal length of the device measured in inches;  $X$  represents the numerical value of the surface plate diagonal in inches;  $D$  represents the numerical value of the nominal diameter of the device measured in inches.



World Class Accreditation

The American Association for Laboratory Accreditation

# Accredited Laboratory

A2LA has accredited

## SUPERIOR GAGE SERVICE

*Tahlequah, OK*

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/NCSL Z540-1-1994 and any additional program requirements in the field of calibration. 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 16<sup>th</sup> day of August 2010.



  
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Peter Meyer

President & CEO  
For the Accreditation Council  
Certificate Number 2209.01  
Valid to August 31, 2012

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