



SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005
& ANSI/NCSL Z540-1-1994 & ANSI/NCSL Z540.3-2006

ROBB PRECISION TOOL SERVICES, INC.
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CALIBRATION

Valid To: July 31, 2019

Certificate Number: 2557.01

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} (\pm) | Comments |
|---|-------------------|------------------------------|-------------------------------|
| Gage Blocks | (0.050 to 4.0) in | (5 + 7.5L) μ in | P & W Labmaster™ gage blocks |
| Pin and Plug Gages | (Up to 12.0) in | (10 + 8L) μ in | P & W Labmaster™ gage blocks |
| Plain Ring Gages | (Up to 5.0) in | (22 + 6L) μ in | P & W Labmaster™, gage blocks |
| Inside, Outside, and Bore Micrometers | Up to 6 in | (0.6R + 10L) μ in | Gage blocks and optical flat |
| Indicators ³ – Dial, Digital, Test | (Up to 4.0) in | (0.6R + 10L) μ in | Gage checker, gage blocks |

| Parameter/Equipment | Range | CMC ^{2,4} (±) | Comments |
|--|--|---|---------------------------------------|
| Optical Comparators – Linear Scale Magnification Squareness | (Up to 8.0) in 4x to 100x Perpendicularity | 89 μin (436 + 1.2L) μin 0.6 minutes | Magnification checker, glass scale |
| Dial, Vernier, and Digital Calipers | Up to 12 in | (0.6R + 10L) μin | Gage blocks |

II. Mechanical

| Parameter/Equipment | Range | CMC ^{2,4} (±) | Comments |
|----------------------------------|---|--|---|
| Torque Wrenches ³ | (0.5 to 400) in•ozf (2.5 to 50) in•lbf (50 to 400) in•lbf (400 to 1000) in•lbf (25 to 250) ft•lbf (251 to 600) ft•lbf (601 to 1000) ft•lbf (1001 to 2000) ft•lbf | 0.25 % IV 0.25 % IV 0.34 % IV 0.27 % IV 0.33 % IV 0.24 % IV 0.32 % IV 0.38 % IV | CDI torque loader and load cells AKO torque loader and load cell |
| Torque Screwdrivers ³ | (0.5 to 400) in•ozf (2.5 to 40) in•lbf | 0.5 % IV 1.2 % IV | CDI torque loader and load cells |
| Torque Testers, Transducers | (0.5 to 400) in•ozf (2.5 to 1000) in•lbf (25 to 250) ft•lbf (251 to 2000) ft•lbf | 0.062 % IV 0.12 % IV 0.07 % IV 0.23 % IV | Movement arms, certified weights |
| Dynamometers | Up to 20 000 lbf | 0.06 % of indicated values | Load cell and digital indicator system |

| Parameter/Equipment | Range | CMC ² (±) | Comments |
|---|--|---|--|
| Indirect Verification of Rockwell Hardness Testers ³ | <p>HRA:</p> <p>Low Medium High</p> <p>HRBW:</p> <p>Low Medium High</p> <p>HRC:</p> <p>Low Medium High</p> <p>HREW:</p> <p>Low Medium High</p> <p>HR15N:</p> <p>Low Medium High</p> <p>HR15TW:</p> <p>Low High</p> <p>HR30N:</p> <p>Low Medium High</p> <p>HR30TW:</p> <p>Low Medium High</p> | <p>0.48 HRA 0.24 HRA 0.27 HRA</p> <p>0.47 HRBW 0.44 HRBW 0.46 HRBW</p> <p>0.52 HRC 0.37 HRC 0.37 HRC</p> <p>0.70 HREW 0.71 HREW 0.63 HREW</p> <p>0.50 HR15N 0.32 HR15N 0.83 HR15N</p> <p>0.46 HR15TW 0.58 HR15TW</p> <p>0.50 HR30N 0.80 HR30N 0.37 HR30N</p> <p>0.81 HR30TW 0.61 HR30TW 0.42 HR30TW</p> | Indirect verification per ASTM E18-16 |
| Pressure Gauges ³ Hydraulic | (0 to 10 000) psig | 3 psig | Fluke 700G Series Pressure Gage Standard |

¹ This laboratory offers commercial calibration and field calibration services.



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 CMC, IV stands for indicated value, L is the numerical value of the nominal length of the device measured in inches, and R is the resolution of the unit under test.



Accredited Laboratory

A2LA has accredited

ROBB PRECISION TOOL SERVICES, INC.

Lynnwood, WA

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 the requirements of ANSI/NCSLI Z540.3-2006 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 6th day of September 2017.

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

President and CEO
For the Accreditation Council
Certificate Number 2557.01
Valid to July 31, 2019
Revised April 24, 2019

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