



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

CAPSTONE CALIBRATION
7016 Baker Blvd
Richland Hills, TX 76118
Jon T. Cappa Phone: 817 284 2707

CALIBRATION

Valid To: January 31, 2022

Certificate Number: 1593.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following surface plate calibrations^{1,5}:

I. Dimensional

Parameter/Equipment	Range	CMC ^{2,4} (±)	Comments
Granite Surface Plates ³ – Flatness Repeat Reading	5 in to 30 ft 5 in to 30 ft	(10 + 0.74DL) μin 23 μin	Autocollimator Repeat-o-meter (only valid in connection with flatness calibration)
Angle Plates – Squareness	Up to 24 in	(20 + 1.9L) μin	Comparison to master square
Parallelism – V-Blocks	Up to 36 in Up to 12 in	(10 + 1.5L) μin 41 μin	Electronic indicator, surface plates and plug gage
Gage Blocks	Up to 4 in (4 to 20) in	(4.9 + 1.4L) μin (7 + 1.2L) μin	Master gage blocks, electronic amp and gage block comparator
Optical Flats – Flatness Parallelism	Up to 3 in Up to 3 in	4.5 μin 4.5 μin	Master optical flat and monochromatic light

Parameter/Equipment	Range	CMC ^{2,4} (\pm)	Comments
Straightness ³	Up to 72 in	$(20 + 0.75L) \mu\text{in}$	Autocollimator
Autocollimators	Up to 10 arc-min	0.66 arc-sec	Gage blocks and sine bar
Calipers ³	Up to 36 in (37 to 80) in	$(180 + 0.6R) \mu\text{in}$ $(390 + 0.6R) \mu\text{in}$	Gage blocks
Micrometers ³	Up to 24 in	$(200 + 0.6R) \mu\text{in}$	Gage blocks
Digital and Dial Indicators ³ – Up to 6 in	0.000 020 in resolution 0.000 050 in resolution 0.000 100 in resolution 0.000 500 in resolution 0.001 000 in resolution	$(26 + 0.6R) \mu\text{in}$ $(45 + 0.6R) \mu\text{in}$ $(84 + 0.6R) \mu\text{in}$ $(410 + 0.6R) \mu\text{in}$ $(820 + 0.6R) \mu\text{in}$	Gage blocks
Height Gages – High Resolution ³	Up to 48 in	$(310 + 0.6R) \mu\text{in}$ $(130 + 0.6R) \mu\text{in}$	Gage blocks
Length Standards	Up to 36 in	$(20 + 3.7L) \mu\text{in}$	Gage blocks, electronic indicator and amplifier
Wires/Pins / Plug Gages and Outside Cylindrical Diameter	Up to 3 in	31 μin	Supermicrometer, gage blocks
Plain Rings and Inside Cylindrical Diameter	Up to 10 in	24 μin	Ring gage comparator, gage blocks
Thread Plugs, 60° - Pitch Diameter Major Diameter	Up to 10 in	220 μin 31 μin	3 wire method Supermicrometer, gage blocks
Optical Comparators – Linearity Magnification Angle	Up to 12 in 10x to 100x 30°, 45°, 60°, 90°	460 μin 47 μin 57 arc-sec	Glass magnification scale, gage ball fixture angle blocks

II. Mechanical

Parameter/Equipment	Range	CMC ² (±)	Comments
Hardness Testers ³	HRBW:		Test blocks, Indirect verification per ASTM E18
	(40 to 59) HRBW	1.8 HRBW	
	(60 to 79) HRBW	1.8 HRBW	
	(80 to 100) HRBW	1.8 HRBW	
	HRC:		
	(20 to 30) HRC	1.7 HRC	
	(35 to 55) HRC	1.7 HRC	
	(59 to 65) HRC	1.7 HRC	
	HR15N:		
	(70 to 77) HR15N	1.7 HR15N	
	(78 to 88) HR15N	1.8 HR15N	
	(90 to 92) HR15N	1.7 HR15N	
	HR30N:		
	(42 to 50) HR30N	1.8 HR30N	
	(55 to 73) HR30N	1.8 HR30N	
	(77 to 82) HR30N	1.8 HR30N	
	HR45N:		
	(20 to 31) HR45N	1.9 HR45N	
	(37 to 61) HR45N	1.7 HR45N	
	(66 to 72) HR45N	1.8 HR45N	
	HR15TW:		
	(74 to 80) HR15TW	1.8 HR15TW	
	(81 to 86) HR15TW	1.7 HR15TW	
	(87 to 93) HR15TW	1.7 HR15TW	
	HR30TW:		
	(43 to 56) HR30TW	1.8 HR30TW	
	(57 to 69) HR30TW	1.8 HR30TW	
	(70 to 83) HR30TW	1.7 HR30TW	
HR45TW:			
(13 to 32) HR45TW	1.8 HR45TW		
(33 to 52) HR45TW	1.8 HR45TW		
(53 to 73) HR45TW	1.9 HR45TW		

¹ This laboratory offers commercial and on-site calibration service.

- ² Calibration and Measurement Capability Uncertainties (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 best measurement uncertainty, DL is the numerical value of the nominal length in inches of the diagonal, L is the numerical value of the nominal length, and R is the numerical value of the resolution of the device in microinches.
- ⁵ This scope meets A2LA's *P112 Flexible Scope Policy*.



Accredited Laboratory

A2LA has accredited

CAPSTONE CALIBRATION

Richland Hills, TX

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 the requirements of ANSI/NCCL 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 24th day of January 2020.

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

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 1593.01
Valid to January 31, 2022

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