THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

QUALITY CONTROL SALES AND SERVICES, INC.

Indianapolis, IN

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 18 June 2005*).

Presented this 25th day of August 2008.

President
For the Accreditation Council
Certificate Number 1498.01
Valid to July 31, 2010

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

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

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CALIBRATION

Valid To: July 31, 2010 Certificate Number: 1498.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations[1]:

I. Dimensional

Parameter / Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Gage Blocks –			
Steel	Up to 4 in	(3.3 + 1*L*) μin	Gage block comparator
	(>4 to 20) in	(22 + 1.4*L*) μin	Horizontal metroscope
Chromium Carbide, Tungsten Carbide, and Ceramic	Up to 4 in	(3.3 + 0.7*L*) μin	Gage block comparator
Thread Plugs –			
Pitch Diameter	80 TPI to 2 TPI	61 μin	Three wire method
Major Diameter	Up to 6 in	(20 + 1.4*L*) μin	Horizontal metroscope
Pipe Thread Plugs –			
Pitch Diameter	([$^1/_{16}$ to 27] to [$2^1/_2$ to 8]) TPI	99 μin	Three wire method
Steps	Up to 6 in	(57 + 4.2*L*) μin	Gage blocks
Thread Wires	80 TPI to 2 TPI	14 μin	Horizontal metroscope

Parameter / Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Plain Rings – Inside Diameter	(0.04 to 1.2) in (>1.2 to 9) in	36 μin (31 + 4.7*D*) μin	Horizontal metroscope
Length & Diameter Standards	Up to 20 in	(20 + 1.4*L*) μin	Horizontal metroscope, mechanical comparison
Indicators –			
Standard and Dial Bore Gages[3]	Up to 1 in	(41 + 0.2*R*) μin	Indicator calibrator, horizontal metroscope
Special	Up to 4 in	(14 + 0.1*R*) μin	
Calipers[3]	Up to 72 in	(490 + 20*L*) μin	Gage blocks
Micrometers –			
Depth[3] Inside[3] Outside[3]	Up to 12 in (1.5 to 40) in Up to 12 in	220 μin (240 + 10*L*) μin (80 + 17*L*) μin	Gage blocks
Vee	Up to 1.5 in	(80 + 17*L*) μin	Pins and balls
Fixed Height from a Surface Plate	Up to 50 in	(57 +4.2*L*) μin	Gage blocks
Height Masters	Up to 40 in	(45 + 2.3*L*) μin	Gage blocks
Height Gages[3]	Up to 40 in	430 μin	Gage blocks
Granite Surface Plate[3] –			
Flatness	Up to 96 in x 120 in	(13 + 0.4*Di*) μin + Closure Error	HeNe laser
Repeat Reading	Up to 0.0005 in	19 μin	Repeat-o-meter
Optical Flats, Measuring Anvils	Up to 6 in	2 μin	Monochromatic light and optical flat comparison

Parameter / Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Cylindrical Squares, Steel and Granite Squares – Fixed Point	18 in	(58 + 1.4*L*) μin	Master square comparison
Length and Diameter	Up to 4 in	33 μin	THV calibrator
Sine Bars – Dowel Diameter Dowel Parallelism Surface Flatness Dowel Distance Between Centers	Up to 21 in	 23 μin 93 μin 92 μin (64 + 3.8*L*) μin (64 + 3.8*L*) μin	Gage blocks with horizontal metroscope

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

[2] "Best Uncertainty" 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 of nearly ideal measuring equipment. Best uncertainties represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The best uncertainty of a specific calibration performed by the laboratory may be greater than the best uncertainty 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 uncertainties achievable on a customer's site can normally be expected to be larger than the Best Measurement Capabilities (BMC) that the accredited laboratory has been assigned as Best Uncertainty 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 uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the calibration uncertainty being larger than the BMC.

[4] In the best uncertainty, *L* is the nominal length of the device in inches; *D* is the diameter of the device in inches; *Di* is the diagonal length of the device in inches; *R* is resolution of the device in inches.