THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

F. D. HURKA COMPANY

Charlotte, NC

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 6th day of November 2008.

President
For the Accreditation Council
Certificate Number 1527.01
Valid to December 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: December 31, 2010

Certificate Number: 1527.01

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
Optical Comparator[3], 5x, 10x, 20x, 31.25 in, 50x and 100x magnification			
X-Y Linearity	(0 to 12) in	180 µin	Glass master
Rotation	360°	5’	
Squareness	6 in	153 µin over 6 in	Precision square
Automatic Video Comparator[3], 126x –			
X-Y-Z coordinates	X, Y: (0 to 12) in, X, Y: (0 to 40) in, Z: (0 to 6) in	(120 + 2.2*L*) µin (110 + 5*L*) µin 140 µin	Glassmaster Step gage Gage block
Squareness	6 in	150 µin	Precision square
Articulating Arm CMM[3] –			
Linear Repeatability	24 in	0.0006 in	Step gage
Ball Bar	(0 to 24) in	0.0011 in	4 positional checks

Parameter/Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Manual Vision System[3], 126x –			
X-Y-Z coordinates	X, Y: (0 to 12) in X, Y: (1 to 40) in Z: (0 to 12) in	(150 + 1.5*L*) µin (130 + 4.7*L*) µin 140 µin	Glass master Checkmaster Gage block
Squareness	6 in	200 µin	Precision square
CMM[3] –			
X-Y-Z coordinates Repeatability	(0 to 40) in	(100 + 5*L*) µin 100 µin	Step gage
Squareness (XY, XZ, YZ)	(0 to 24) in	120 µin	Precision square
Ball bar	(0 to 24) in	400 µin	4 positional checks
Universal Length Measuring Machine[3] –			
Linearity Measuring Force	(0 to 300) mm	(0.03 + 2.5*L*/1000) µm	Gage blocks, force gage
Parallelism		1.4 µm	Sphere
Height Gage[3]	(0 to 40) in	(130 + 3.7*L*) µin	Step gage, gage blocks, indicator
Surface Plate[3] –			
Flatness	8 in × 12 in to 24 in × 48 in	45 µin	Planekator
Flatness	24 in × 48 in and larger	46 µin	Autocollimator
Repeat Reading	8 in × 12 in and larger	43 µin	Repeat-o-meter

Parameter/Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Threads[3] –			Universal length measuring machine, set plugs, sine plate
Thread Rings (Functional Diameter)	(0 to 4) in	300 µin	
Thread Plugs Set Plugs (Pitch Diameter)	(0 to 13) in	(60 + 5*L*) µin	
Thread Wires	All	9 µin	Universal length measuring machine
Cylindrical Measure[3] –			
OD Gages	(0 to 20) in	(6 + 2*L*) µin	Universal length measuring machine
ID Gages	(0.08 to 0.3) in (> 0.3 to 15) in	(30 + 7*L*) µin (24 + 6*L*) µin	
Custom Designed Gages	(0 to 20) in	(7 + 3.7*L*) µin	
Micrometer Length Standards[3]	(0 to 24) in	(6.3 + 2.6*L*) µin	Universal length measuring machine, microhite
Micrometers[3] –			
Length	(0 to 24) in	(64 + 1.5*L*) µin	Gage blocks
Parallelism		61 µin	Gage balls
Gage Blocks	< 1 in (1 to 4) in > 4 in	(3.3 + 0.8*L*) µin (2.5 + 2.3*L*) µin (5.9 + 2.3*L*) µin	Electronic comparator, gage blocks
Calipers[3]	(0 to 12) in (18 to 40) in	800 µin (800 + 1.2*L*) µin	Gage blocks Check master
Indicators[3]	(0 to 4) in	27 µin	Universal length measuring machine, gage block & stand, indicator calibrator

Parameter/Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Step Gage	(0 to 24) in	(95 + 4*L*) µin	Electronic comparator, master step gage
Glass Scales	(0 to 12) in	(8 + 2.9*L*) µin	Universal length measuring machine with microscope
Squares[3]	(0 to 12) in	50 µin	SquareMaster and master square
Bore Gages[3]	(0 to 6) in	200 µin	Gage blocks, ring gage
CMM Spheres Spheres-Balls[3]	(0 to 5) in	20 µin	Universal length measuring machine
Line Scales[3], Steel Rulers	(0 to 48) in	0.0018 in	Vision coordinate measuring machine

II. Dimensional Testing[5]

Parameter/Equipment	Range	Best Uncertainty[2, 3, 4] (±)	Comments
Coordinate Measuring Machine (CMM)	18 × 20 × 16 in 28 × 24 × 18 in 8 ft hemispherical	(100 + 5*L*) µin (100 + 5*L*) µin 600 µin	CNC CMM Manual CMM Articulating arm CMM
Vision Coordinate Measuring Machine With Touch Probe Vision System Manual Video	6 × 4 × 6 in 25 × 25 × 16 in 8 × 6 × 6 in 6 × 4 × 6 in	(120 + 2.2*L*) µin (125 + 2.2*L*) µin (120 + 2.2*L*) µin (150 + 1.5*L*) µin	Vision /Video system
Optical Comparator	12 × 8 × 6 in	180 µin	Optical comparator

Parameter/Equipment	Range	Best Uncertainty[2, 3, 4] (±)	Comments
Universal Length Measuring Machine	(0 to 20) in (0 to 2) in	(6.3 + 2.6*L*) µin	Helios Helicom UMG-50
Hand and Bench Tools	(0 to 12) in (0 to 6) in (0 to 24) in	800 µin 200 µin 200 µin	Micrometers and calipers Indicators, indicating devices Height gages, transfer stands
Go/No Go Gaging	(0 to 12) in	300 µin	Plug gage, ring gage, thread plug, thread ring, snap gages, stacked gage blocks

III. Mechanical

Parameter/Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Torque[3]	(10 to 100) in·oz (5 to 1000) in·lb (25 to 250) ft·lb (251 to 600) ft·lb	0.0066*R* 0.0032*R* 0.0032*R* 0.0066*R*	Torque calibrator
Indirect Verification of Rockwell Hardness Testers[3]	HRB-W: Low Med High HRC: Low Med High HRE-W: Low Med High	 1 HRB-W 1 HRB-W 1 HRB-W 1 HRC 1 HRC 1 HRC 1 HR30E-W 1 HR30E-W 1 HR30E-W	Indirect verification method per ASTM E18 with test blocks

Parameter/Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Indirect Verification of Superficial Hardness Testers[3]	HR30T-W: Low Med High HR30N: Low Med High	 1 HR30T-W 1 HR30T-W 1 HR30T-W 1 HR30N 1 HR30N 1 HR30N	Indirect verification method per ASTM E18 with test blocks

IV. Thermodynamic

Parameter/Equipment	Range	Best Uncertainty[2] (±)	Comments
Temperature/Humidity Testers – Single or Dual Point	 (67 to 75) °F (30 to 50) % RH	 2 °F 22 % RH	 Comparison to precision temperature/humidity

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

[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 statement of best uncertainty, L is the length of the unit under test in inches. R is the range of the unit under test.

[5] This laboratory meets the A2LA Calibration Program Requirements for the types of dimensional measurements listed. Accredited reports issued from measurements taken under the terms of the Calibration Program Requirements and containing appropriate statements of measurement results, measurement uncertainty, and traceability are considered equivalent to a "calibration" certificate.