THE AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

PRECISION MEASURING CORP.

Fraser, MI

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 14th day of April 2008.

President
For the Accreditation Council
Certificate Number 1768.01
Valid to March 31, 2010
Revised January 28, 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

PRECISION MEASURING CORP.
33250 Groesbeck Hwy.
Fraser, MI 48026
Robert Meyer Phone: 586 293 4420

CALIBRATION

Valid To: March 31, 2010 Certificate Number: 1768.01

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
Linear Displacement Accuracy[3] –			ANSI/ASME B89.4.1, sect 5.4
CMMs	Up to 130 ft	(54 + 3.6*L*) µin	Laser
Boring Mills, Lathes, Machining Centers, Layout Machines	Up to 130 ft	(74 + 3.6*L*) µin	Laser
Straightness and Squareness[3] –			
CMMs, Boring Mills, Lathes, Machining Centers, Layout Machines	Up to 10 ft	(21 + 0.01*S* + 0.5F^2) µin	Laser with short range optics
	(3 to 50) ft	(100 + 0.025*S* + 0.05F^2) µin	Laser with long range optics
	Up to 18 in	180 µin	Master square and indicator

Parameter/Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Angle[3] – CMMs, Boring Mills, Lathes, Machining Centers, Layout Machines, etc.	10 degrees 200 arc sec	(0.24 + 0.002*B* + 0.05*M*) arc sec (0.66 + 0.005*B*) arc sec	Laser Electronic level
Surface Plate Flatness[3]	To 20 ft × 30 ft	(59 + 4.8*D*) µin	Electronic levels Note: Uncertainty is to be no less than the acceptable closure error for the procedure.
Volumetric Performance[3] – CMMs	(10 to 42) in	(11 + 16*L*) µin	Ball bar; ANSI/ASME B89.4.1, sect. 5.5.2
Repeatability[3]	2 in	38 µin	Master sphere; ANSI/ASME B89.4.1, sect. 5.3

II. Dimensional Testing

Parameter/Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
3D Coordinates	110 in × 45 in × 54 in 28 in × 19 in × 18 in 36 in × 60 in × 28 in	(1800 + 49*L*) µin (1000 + 6.3*L*) µin (750 + 9*L*) µin	Mitutoyo CHN 1612 CMM Mitutoyo BHN 706 CMM Zeiss Eclipse CMM
3D Coordinates	115 ft hemisphere	(1400 + 5.3*L*) µin	SMX or Faro laser tracker

Parameter/Equipment	Range	Best Uncertainty[2, 4] (±)	Comments
Length Measurements	Up to 2 in Up to 8 in	(110 + 10*L*) μin 1200 μin	Micrometer Caliper
Diameter Measurements	(0.061 to 1.0) in	600 μin	Pin gages

[1] This laboratory offers commercial calibration service and on-site 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, to the environment (if the calibration is performed in the field) and to influences from the circumstances of the specific calibration.

[3] On-site calibration services are available for this parameter. The uncertainties achievable on a customer's site can 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, for linear measurements; L is the nominal length of the device in inches, except where noted. For straightness and squareness measurements; S is the straightness error in micro-inches and F is the distance the optics travel during test in feet. With angle measurements, B is the measured error in arc-seconds and M is the distance optics travel during test in meters. With flatness measurements, D is the diagonal length of the surface plate.

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