



# CERTIFICATE OF ACCREDITATION

**ANSI-ASQ National Accreditation Board/AClass**  
500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

**Hexagon Universal Calibration Services**  
**51170 Grand River Avenue**  
**Wixom, MI 48393**

has been assessed by AClass  
and meets the requirements of international standard

**ISO/IEC 17025:2005 & ANSI/NCSL Z540-1-1994**

while demonstrating technical competence in the field(s) of

**CALIBRATION**

Refer to the accompanying Scope(s) of Accreditation for information regarding the types  
of calibrations to which this accreditation applies.

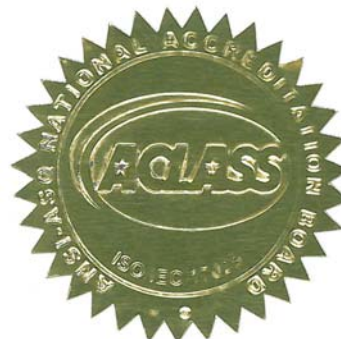
AC-1167

Certificate Number

AClass Approval

Certificate Valid: 05/11/2009-05/12/2011

Version No. 001



This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. 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 January 2009*).



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

**Hexagon Universal Calibration Services**

51170 Grand River Ave., Wixom, MI 48393  
Mike Blake Phone: 248-449-9508

**CALIBRATION**

Valid to: May 12, 2011

Certificate Number: AC-1167

**I. Dimensional**

<b>PARAMETER / EQUIPMENT</b>	<b>RANGE</b>	<b>CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]</b>	<b>REFERENCE STANDARD OR EQUIPMENT</b>	<b>METHOD(S)</b>
Linear Displacement Accuracy (CMM)	(0 to 130) ft	45 µin + 4 µin/in	Laser	B89.4.1b
Linear Accuracy (Boring Mills, Lathes, Machining Centers, Layout Machines)	(0 to 130) ft	75 µin + 3 µin/in	Laser	ASME B5.54
Linear Displacement Accuracy (CMM)	(0 to 24) in	80 µin + 4 µin/in	Step gage and Probe	ISO 10360-2 B89.4.1b
Linear Accuracy (Boring Mills, Lathes, Machining Centers, Layout Machines)	(0 to 24) in	290 µin + 1 µin/in	Step gage and an Indicator	ASME B5.54
Straightness and Squareness:  (CMMs, Boring Mills, Lathes, Machining Centers, Layout Machines)	(0 to 10) ft  (3 to 50) ft	(18 + 1 % of the measured strt error in µin + 0.5F <sup>2</sup> ) µin  (100 + 2.5 % of the measured strt error in µin + 0.05F <sup>2</sup> ) µin	Laser	JIS B 7440 ASME B5.54
Straightness and Squareness  CMMs, Boring Mills, Lathes, Machining Centers, Layout Machines	(0 to 48) in	58 µin + 4 µin/in	Master Square and an Indicator	JIS B 7440 ASME B5.54



PARAMETER / EQUIPMENT	RANGE	CALIBRATION AND MEASUREMENT CAPABILITY [EXPRESSED AS UNCERTAINTY(±)]	REFERENCE STANDARD OR EQUIPMENT	METHOD(S)
Angle	10 degrees	(0.2 + 0.2 % of the max measured error in arc seconds + 0.05M <sup>2</sup> ) Arc Seconds	Laser	JIS B 7440 ASME B5.54
	200 Arc Seconds (‘‘)	(0.21 + 0.5 % of the max. measured error in arc seconds) ‘‘	Electronic Level	
Flatness <sup>3</sup>	To 20 x 30 ft	Expressed uncertainty is calculated on site and is expressed in μin (100 + 13L) μin L= ball bar length in inches	Electronic Levels	GGG-P-463C
Volumetric Performance (CMM)	To 42 in	(100 + 13L) μin L= ball bar length in inches	Ball Bar; ANSI/ASME B89.4.1	B89.4.1b
Repeatability	(0 to 2) in	43 μin	Master Sphere	B89.4.1b
Circular Interpolation: Boring Mills, Machining Centers	(50 to 600) mm	(3.7 + 0.02L + 0.4 %V) μm L = Length of ball bar in mm V = Measured radial variation in microns	Renishaw dynamic ball bar	Renishaw Ball Bar Guide ASME B5.54
Rotational Positioning: Boring Mills, Machining Centers, Rotary Tables	360 °	(1.7 + 0.2 % of the measured error in arc seconds) ‘‘	Renishaw RX10 and Laser	Renishaw RX10 User Guide
Electronic Level Calibration	+/- 1 000 ‘‘	1.3 ‘‘	5 in Sine Plate and 5 piece gage block set	Mahr Federal CP-131

**Notes:**

1. This Laboratory offers on-site service for all parameters. (\*Except Electronic Level Calibration).
2. F = Distance the optics traveled during the test in feet. M = Distance optics travel during test in meters.
3. Calibration and Measurement Capability 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 ideal equipment. Best uncertainties represent expanded uncertainties expressed at approximately a 95% confidence level, usually using a coverage factor of k=2.
4. If the either of the associated closures for the plate flatness measurement exceed the calculated uncertainty than this larger value is expressed as the measurement uncertainty.
5. This scope is part of and must be included with the Certificate of Accreditation No. AC-1167



Vice President

