


Quality Control Capabilities

Coordinate Measuring Machine


- Brown and Sharpe Validator
- 24" x 18" x 12"
- Reflex software
- Calibrated by Midwest CMM Services
- NIST #681/280 800-IL
- ISO-9001 Registered
- ISO-17025 Accredited





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CERTIFIKAT 11020100

MIDWEST CMM SERVICES
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ILAB
Calibration
ISO 17025:2005 Accreditation No. 112128

Certificate of Calibration
Certificate # 23970

Customer: MB&I Machining ~ 419 North 6th Street, Morris, Oklahoma 74445
 Model Number: Brown & Sharpe MicroVal 345
 Serial Number: 078878
 Software Verifid: Reflex
 Service Order Number: 23970
 Purchase Order Number: 1029

Calibration Procedure Used: ASME B89.4.1-2008
 Equipment Location: On-Site
 Equipment Condition: Used
 As Found Condition: In Tolerance Out of Tolerance*
 As Left Condition: In Tolerance Out of Tolerance*
 Meets Mfg. Specifications: Yes No

Measurement Results					
Linear Accuracy	Manuf. Spec.	Before	After	Axis Length	
X-Axis	.0050mm	.0050mm	.0050mm	300mm	
Y-Axis	.0050mm	.0040mm	.0040mm	400mm	
Z-Axis	.0050mm	.0040mm	.0040mm	300mm	
Squareness	Manuf. Spec.	Before	After		
(Ballbar Length: 250mm)					
XY	.0050mm	N/A	.0015mm		
YZ	.0050mm	N/A	.0035mm		
ZX	.0050mm	N/A	.0020mm		
Volumetric Accuracy:	.0100mm		.0160mm		
Repeatability:	.0040mm		.0020mm		


Environmental Conditions: 74.6° F
 Estimated Measurement Uncertainty: +/- 1.1um

This certificate represents an expected uncertainty using a coverage factor k=2 which approximates a 95% confidence level.

Standards Used	Serial #	Traceability #	Cert. Date	Exp. Date
Wetber Bar	11915.2	683/285233-14	03-18-2014	03-18-2016
Ballbar Spheres	1015 & 102C	683/288426-13	07-20-2015	07-20-2016

This certifies that the instrument listed above has been calibrated, certified and verified in compliance with ISO/IEC 17025:2005, ASME B89.4.1-2008, ISO 9000 & ISO 9001:2008. The calibration results published in this certificate were obtained using equipment capable of producing results that are traceable to NIST/NMI and through NIST/NMI to the International System of Units (SI). This calibration certificate shall not be reproduced except in full, without the written approval of Midwest CMM Services.

Calibration Technician: Adrian Custer
 Certification Date: 10/07/2015
 Due Date: 10/07/2016

Approved By: 
 Michael R. Berger
 Quality Manager

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Quality Control Capabilities

- 1-2-3 Blocks
- 0"-8.5" Calipers
- 1"-12" Calipers
- 1"-6" Calipers
- Sundstand Centers Gage
- Brown & Sharp CMM
- 0"-4" Depth Gage
- Other Depth Gages
- Dial Gages
- 0"-12" Dial Gages
- 0"-12.5" Dial Calipers
- 0"-8.5" Dial Calipers
- 1"-6" Dial Calipers
- 1"-8" Dial Calipers
- Large Dial Calipers
- 0"-8" Dial Indicator
- 0-100mm Dial indicator w/ Base
- Other Dial Indicators
- Digital 0"-12" Calipers
- Digital Calipers
- Digital Protractors
- SPI-Visual Finish Gage Standard
- Gage Blocks
- Height Gage 0-12
- Height Gage 0-23 Digital Dial
- Dial Indicator Gage
- Small Dial Indicator Gage
- 30' Measuring Tape
- 0"-1" Groove O.D. Mics
- 0"-1" O.D. Mics
- 0"-1" Outside Mics
- 1"-2" O.D. Mics
- 1"-2" Outside Mics
- 10" Standard Mics
- 10"-11" O.D. Mics
- 10"-11" Rod Insert O.D. Mics
- 11" Standard Mic
- 11"-12" Rod Insert O.D. Mics
- 2"-3" Groove O.D. Mics
- 2"-3" O.D. Mics
- 2"-3" Outside Mics
- 3"-4" O.D. Mics
- 3"-4" Outside Mics
- 4"-5" O.D. Mics
- 4"-5" Outside Mics
- 5"-6" O.D. Mics
- 5"-6" Outside Mics
- 6"-7" O.D. Mics Rod
- 6.0"-12.0" O.D. Mic Anvil
- 7"-8" Rod Insert O.D. Mics
- 8" Standard Mic
- 8"-9" Rod Insert O.D. Mics
- 9" Standard Mic
- 9"-10" Rod Insert O.D. Mics
- ID Mic Set
- 11"-12" O.D. Mics
- 0"-1" O.D. Mics
- 10"-11" O.D. Mics
- 1"-2" O.D. Mics
- 2"-3" O.D. Mics
- 3"-4" O.D. Mics
- 4"-5" O.D. Mics
- 5"-6" O.D. Mics
- 6"-7" O.D. Mics
- 7"-8" O.D. Mics
- 8"-9" O.D. Mics
- 9"-10" O.D. Mics
- Profilometer
- Other Protractors
- 0"-6" Scales
- Other Scales/Rulers
- 2-1/4" Square
- 4-1/4" Square
- 6-1/4" Square
- 8-1/4" Square
- 1"-8" Standards
- 0'-25' Tape Measure
- 0.250-28UNF-2B Thread Gage
- 0.437-20UNF-2B LH Thread Gage
- 5/16-24UNF 2B Thread Gage
- 7/16-20UNF 2B Thread Gage
- Special Customer Specific Gages
- V-Block #1 4-1/8"
- V-Block 2-3/4"