

CERTIFICATE OF

CALIBRATION REPORT FOR COORDINATE MEASURING MACHINE

Certificate Number 619201951911507

Units: Metric mm unless otherwise stated

Customer Information:

Name: J and J Machine
Address: 1629 West Haskel Street
City: Appleton
State WI 54914
Contact: Mike Kirkbride

Machine Information:

Machine Serial No: 5191150
Machine Type: Global S Green
Machine Size: 575
Machine Location: Warehouse

Test Information:

Certificate Date: 6/19/2019
Engineer: Andrew Hopperstad
B/L Number: N/A
Work Instruction No: HWI-00283 V13
Test Method: American National Standard ASME B89.4.1b-2001

Probehead Type: UA
Probe Type: LSP-X1c
Probe Serial No: 1603
Measuring Software: PC-DMIS 2019 R1
Engineers Temp Gage Cert: GC-14986

It is hereby certified that the above-described machine has been tested onsite per the American National Standard ASME B89.4.1b-2001 test method and conforms to the the original manufacture specifications. All reported uncertainty values are expanded uncertainties with a coverage factor of K=2.

This calibration certificate may not be reproduced other than in full except with the permission of J and J Machine and the issuing laboratory.

The standards used by Hexagon Metrology, Inc. are traceable to The National Institute of Standards and Technology (NIST) and/or the National Physical Laboratory (NPL). Records of traceability are on file and available for review upon request.

Findings:

Initial Installation

Environmental Conditions:

Max Standard Ambient Temperature (°C): 22.0 Meets Factory Specification
Min Standard Ambient Temperature (°C): 18.0 Meets Factory Specification
Spatial Thermal Gradient (°C/meter): 1 Meets Factory Specification
Max Recorded Temperature (°C): 20.3
Min Recorded Temperature (°C): 18.5



2019-06-19
T09:32:19-05:00

Signed by: Andrew Hopperstad

Date: 6/19/2019



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Page 1 of 4
Ver. 03.06.02.16

CERTIFICATE OF CALIBRATION REPORT FOR COORDINATE MEASURING MACHINE

B89 Repeatability, Measurement Uncertainty

(as derived from B89 4.1-2001b, Section 5.3).

Certificate Number 619201951911507

Units: Metric mm unless otherwise stated

Calibration Results:

Uncertainty:

Axis	Factory Specification	Measured Range
X	1.7 (µm)	0.4 (µm) Meets Factory Specification
Y	1.7 (µm)	0.41 (µm) Meets Factory Specification
Z	1.7 (µm)	0.12 (µm) Meets Factory Specification

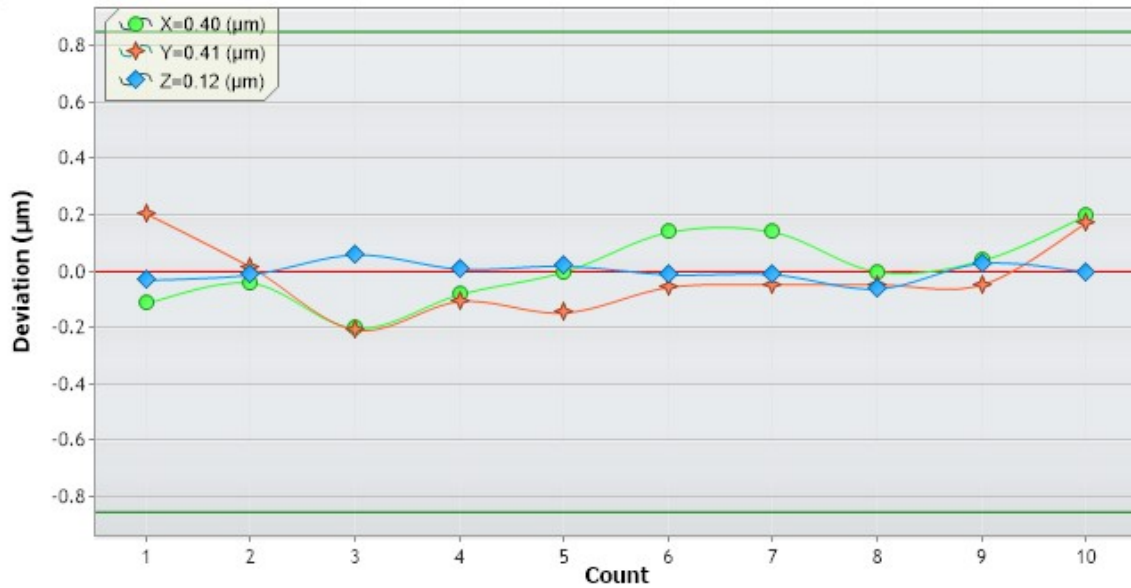
Sphere Gage

Sphere Gage Control No: 15112
 Sphere Serial No: 163447
 Sphere Due Date: 12/3/2020

Calibration Data:

Position	X Deviation (µm)	Y Deviation (µm)	Z Deviation (µm)	Diameter
1	-0.11	0.21	-0.03	25.0005
2	-0.04	0.02	-0.01	25.0007
3	-0.2	-0.21	0.06	25.0005
4	-0.08	-0.11	0.01	25.0006
5	0.0	-0.15	0.02	25.0005
6	0.14	-0.06	-0.01	25.0006
7	0.14	-0.05	-0.01	25.0005
8	0.0	-0.05	-0.06	25.0006
9	0.04	-0.05	0.03	25.0004
10	0.2	0.18	0.0	25.0005

B89 Repeat




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Page 2 of 4
 Ver. 03.06.02.16

CERTIFICATE OF
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B89 Volumetric Performance, Measurement Uncertainty

(as derived from B89 4.1-2001b, Section 5.5.2)

Certificate Number 619201951911507

Units: Metric mm unless otherwise stated

Calibration Results: Meets Factory Specification

Factory Specification: 7.0 (μm)

Results: 5.36 (μm)

No of Bar Positions: 17

Uncertainty: 0.502 (μm)

Ballbar Gage Control No: 12136

Ballbar Serial No: 12136A

Ballbar Gage Due Date: 11/10/2020

Nominal Bar Length: 401.3

Calibration Data:

Bar Position	Measured Length	Range (μm)	Dev'n to Mean (μm)
1	401.2713	0.16	+1.7
2	401.2685	0.16	-1.1
3	401.2686	0.21	-0.9
4	401.2686	0.27	-1.0
5	401.2705	0.01	+0.9
6	401.2669	0.03	-2.7
7	401.2678	0.05	-1.8
8	401.2676	0.03	-2.0
9	401.2722	0.09	+2.7
10	401.2696	0.18	+0.0
11	401.2710	0.03	+1.5
12	401.2690	0.27	-0.6
13	401.2699	0.01	+0.3
14	401.2694	0.12	-0.2
15	401.2697	0.1	+0.1
16	401.2690	0.21	-0.6
17	401.2694	0.35	-0.2



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Page 3 of 4
 Ver. 03.06.02.16

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B89 Volumetric Performance, Measurement Uncertainty

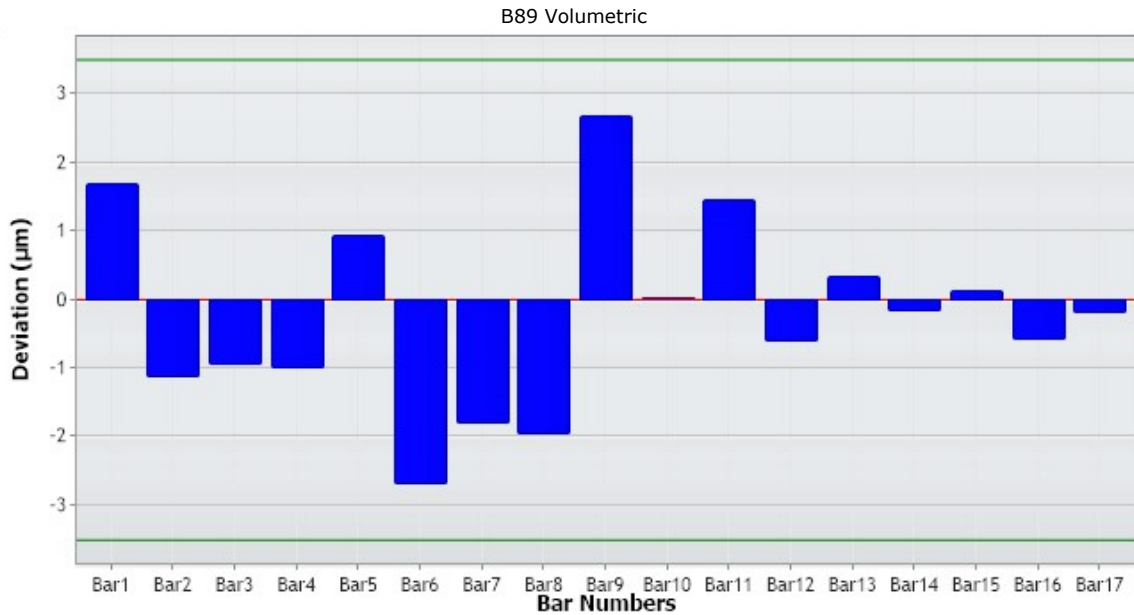
(as derived from B89 4.1-2001b, Section 5.5.2).

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Calibration Data (Continued):

Bar Position	Measured Length	Range	Dev'n to Mean
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Page 4 of 4
Ver. 03.06.02.16