

CALIBRATION CERTIFICATE

CREAFORM

General Information

Product HandySCAN BLACK™|Elite
Manufactured by Creaform Inc.
HandySCAN 3D S/N 9270643
Calibration plate S/N 9350969

Customer 3D-EAS GmbH
Kollmering 30
Eging am See, Germany, 94535

Condition As left

Certificate number 02-23016-0140
Calibration date 2023-01-17
Ambient temperature Min 19.0 °C; Max 20.0 °C

Calibration center Creaform - France Certification Lab
24, rue Jean-Pierre Timbaud
Fontaine, 38600, France

AMETEK
ULTRA PRECISION TECHNOLOGIES



Acceptance Test Procedure

The performance testing procedures¹ used for this calibration are based on the VDI/VDE 2634 Part 3 standard.

5 ballbars of 3 different lengths are used to perform this procedure (see *Equipments* for details). The 10 spheres of the 5 ballbars are measured in different locations and orientations² throughout the system working volume of 0.58 m x 0.58 m x 0.74 m. The top hemisphere of the measured data is used for sphere fitting. Deviations of the test parameters between measured and nominal values are reported (see *Calibration Results* for details). The acceptance limits are defined as a constant value for the probing size error test and as a variable value for the sphere spacing error test dependent on the length of the artefact (0.0200 mm + 0.0400 mm/m).

Note 1 : Refer to procedure ATP927-01 for more details.

Note 2 : For more details concerning positions and orientations, refer to the drawings in the following pages of this certificate.

Calibration Results

Test	Specification	Limits +/-	Result	Status
Probing Size Error (Max. dev.)	Accuracy	0.0250	0.0204	Passed
Sphere Spacing Error (Max. dev.)	Volumetric Accuracy (0.650 m)	0.0459	0.0085	Passed
	Volumetric Accuracy (0.520 m)	0.0408	0.0134	Passed
	Volumetric Accuracy (0.395 m)	0.0357	0.0121	Passed

Equipments

Apparatus	Type	Serial number	Certificate number	Calibration date
Ballbar #1	Ballbar 650 mm	BB650_001	46642	2022-01-11
Ballbar #2	Ballbar 520 mm	BB520_001	46640	2022-01-10
Ballbar #3	Ballbar 520 mm	BB520_002	46641	2022-01-10
Ballbar #4	Ballbar 395 mm	BB395_001	46643	2022-01-11
Ballbar #5	Ballbar 395 mm	BB395_002	46644	2022-01-11
Comet System	Thermometer	47844/0921	E21-47844/0921	2022-01-10

These calibration results are traceable to the International System of Units (SI) through Euramet laboratories for Europe (LNE, NPL, PTB, etc.), the NIST or NRC for North America, ISO/IEC 17025 accredited calibration laboratories or National Metrology Institutes that are signatories to the International CIPM MRA (Mutual Recognition Arrangement). The scope of accreditation for ISO/IEC 17025 :2017 is granted by A2LA, a signatory of ILAC MRA (Mutual Recognition Arrangement).

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The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor $k = 2$, providing a level of confidence of approximately 95%.

Unless otherwise stated, mm is the unit.
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Digitally
approved by :

Yann Bevilacqua
Calibration Engineer