

CERTIFICATE OF CALIBRATION

Issued By: Mitutoyo (UK) Ltd. Calibration Laboratory

Date of issue : 09-May-2024

Certificate No: 328380



0332

Mitutoyo

Calibration Laboratory:

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Approved Signatory:

G. Adams

CUSTOMER
Total Laboratory Services Ltd
Blandford Forum

MANUFACTURER
Mitutoyo Corporation
DESCRIPTION
3.0000 mm Steel Gauge Block

GRADE
GRADE 1
IDENTIFICATION
227407

CALIBRATION CONDITIONS
Ambient temperature 20 +/- 0.5 Degrees Celsius
BASIS OF CALIBRATION
Accuracy Requirements of BS EN ISO 3650:1999
Specification for Gauge Blocks - centre point and variation

DATE OF CALIBRATION
09-May-2024
TRACEABLE EQUIPMENT
Ident Nr. WCL510
M11
Certificate Nr. 150669
325814

METHOD OF CALIBRATION
The gauge listed on the certificate has been calibrated for the axial length and variation using a Gauge Block Comparator and a Grade K Master Gauge Block of a similar material. Measurements were taken at the centre and at the four corner positions, the results of which are within the specification unless identified otherwise by either an "*" and/or a "v". (See Decision and Decision rule basis on last page).

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a coverage probability of approximately 95 %. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

Authorised By

A handwritten signature in black ink, appearing to read 'G. Adams'.

CERTIFICATE OF CALIBRATION



UKAS Accredited Calibration Laboratory No. 0332
Mitutoyo (UK) Ltd, 6 Banner Park, Wickmans Drive
Coventry, West Midlands, CV4 9XA, United Kingdom

Certificate No: 328380

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Variation and deviation from nominal

Serial Number	Nominal Size (mm)	Centre	Min	Max	Variation
227407	3.0000	0.00 μ m	-0.01 μ m	0.01 μ m	0.02 μ m

Coefficient of thermal expansion: (10.8 +/- 0.5) x 0.000001 /K

Estimated uncertainty of measurement : +/- 0.08 μ m

Comments :

Decision:

Actual measured results are within the specification and accepted based on the below decision rule.

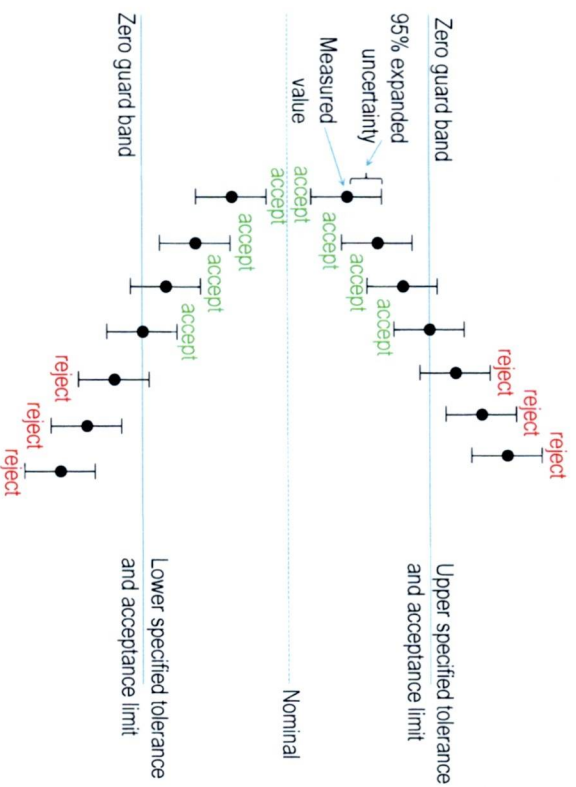
Decision rule basis:

Unless the actual results stated on the calibration certificate are highlighted with an “**” and/or a “^” they will be classed as within the specification and accepted based on the binary decision rule (simple accept or simple reject) from JCGM 106:2012 Clause 8.2 where the expanded uncertainty for k=2 is less than or equal to the specification allowing zero guard bands. Any actual measured results highlighted with an “**” and/or a “^” will be classed as outside the specification and rejected based on the above decision rule (see attached document DOC-006-42.1). If the uncertainty of measurement is greater than the specification, no compliance statement will be provided.

**** End of report ****

JCGM 106: 2012 Clause 8.2 - Decision rule based on simple acceptance / shared risk

Unless the actual results stated on the calibration certificate are highlighted with an “*” or “N” they will be classed as within requirements / tolerance and **accepted** based on the binary decision rule (simple accept or simple reject) where the expanded uncertainty for $k = 2$ is less than or equal to the requirement / tolerance allowing zero guard bands. Actual measured results highlighted with an “*” or “N” are outside requirements / tolerance and **rejected** based on the above decision rule.



Based on JCGM 106: 2012

NOTE: If the uncertainty of measurement is greater than the required requirements / tolerance, no compliance statement will be provided. This will be clearly highlighted on the calibration certificate.

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CUSTOMER

Total Laboratory Services Ltd
Blandford Forum

MANUFACTURER

Mitutoyo Corporation

DESCRIPTION

5.0000 mm Steel Gauge Block

GRADE

GRADE 1

IDENTIFICATION

225715

CALIBRATION CONDITIONS

Ambient temperature 20 +/- 0.5 Degrees Celsius
Accuracy Requirements of BS EN ISO 3650:1999

BASIS OF CALIBRATION

Specification for Gauge Blocks - centre point and variation

DATE OF CALIBRATION

09-May-2024

TRACEABLE EQUIPMENT

Ident Nr.
WCL510
M11

Certificate Nr.
150669
325814

METHOD OF CALIBRATION

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The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a coverage probability of approximately 95 %. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

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Variation and deviation from nominal

Serial Number	Nominal Size (mm)	Centre	Min	Max	Variation
225715	5.0000	-0.02 µm	-0.08 µm	0.01 µm	0.09 µm

Coefficient of thermal expansion: (10.8 +/- 0.5) x 0.000001 /K

Estimated uncertainty of measurement : +/- 0.08 µm

Comments :

Decision:

Actual measured results are within the specification and accepted based on the below decision rule.

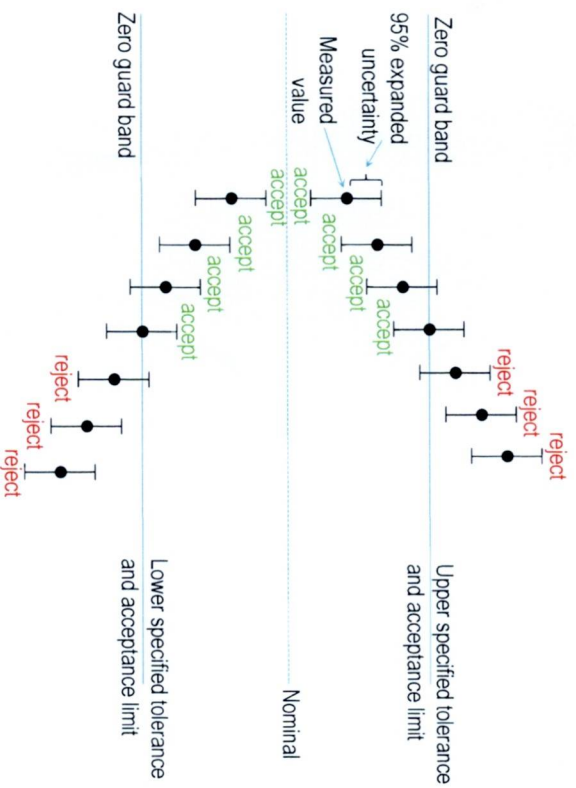
Decision rule basis:

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**** End of report ****

JCGM 106: 2012 Clause 8.2 - Decision rule based on simple acceptance / shared risk

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Based on JCGM 106: 2012

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CERTIFICATE OF CALIBRATION

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G. Adams

CUSTOMER
Total Laboratory Services Ltd
Blandford Forum

MANUFACTURER
Mitutoyo Corporation

DESCRIPTION
10.0000 mm Steel Gauge Block

GRADE
GRADE 1

IDENTIFICATION
231752

CALIBRATION CONDITIONS
Ambient temperature 20 +/- 0.5 Degrees Celsius

BASIS OF CALIBRATION
Accuracy Requirements of BS EN ISO 3650:1999
Specification for Gauge Blocks - centre point and variation

DATE OF CALIBRATION
09-May-2024

TRACEABLE EQUIPMENT
Ident Nr. WCL510
M11
Certificate Nr. 150669
325814

METHOD OF CALIBRATION
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Variation and deviation from nominal

Serial Number	Nominal Size (mm)	Centre	Min	Max	Variation
231752	10.0000	0.03 µm	-0.01 µm	0.03 µm	0.04 µm

Coefficient of thermal expansion: (10.8 +/- 0.5) x 0.000001 /K

Estimated uncertainty of measurement : +/- 0.08 µm

Comments :

Decision:

Actual measured results are within the specification and accepted based on the below decision rule.

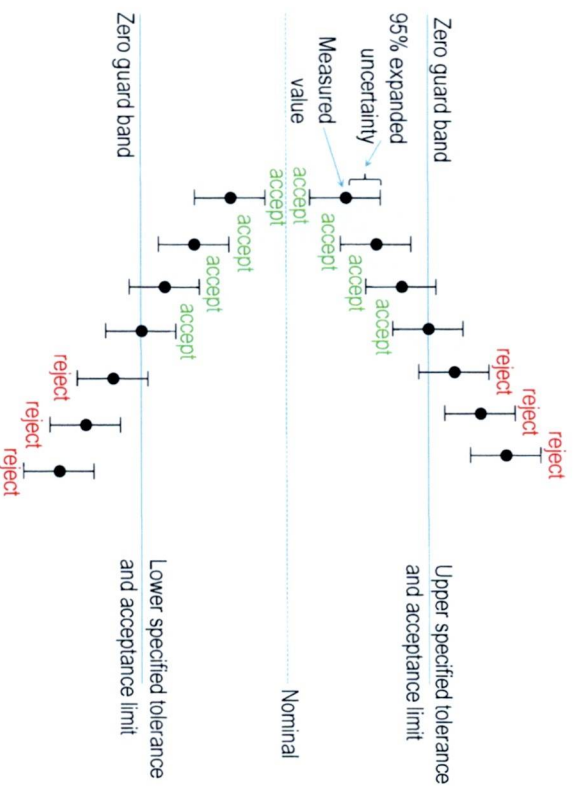
Decision rule basis:

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