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Method for calibration and classification of torque measuring devices

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Contents

	Page
Foreword	iii
1 Scope	1
2 Terms, definitions, abbreviations and symbols	1
3 Preparation for calibration	3
3.1 Reference standard	3
<i>Table 1 — Uncertainty of calibration torques</i>	3
3.2 Condition and identification of a torque measuring device	4
3.3 Resolution of the indicator	4
3.4 Lower limit of calibration, T_{\min}	5
3.5 Number of calibration orientations (see Annex A)	5
4 Preliminary procedure	6
4.1 Alignment	6
4.2 Temperature considerations	6
4.3 Instrumentation set-up	6
4.4 Preloading procedure	6
5 Calibration procedure	6
5.1 Selection of calibration torques	6
5.2 Application of calibration torques	7
6 Calculation of results	7
6.1 Determination of deflection, d	7
6.2 Determination of relative repeatability, R_1	8
6.3 Determination of relative reproducibility, R_2	8
6.4 Determination of relative errors of interpolation, E_{it} and E_{itd}	9
6.5 Determination of relative residual deflection, R_0	10
6.6 Determination of relative reversibility, R_3	10
6.7 Determination of relative errors of indication, E_i and E_{id}	10
6.8 Determination of uncertainty of measurement and relative measurement uncertainty interval	11
7 Classification of torque measuring devices	11
7.1 General	11
7.2 Determination of a classification and its range	11
<i>Table 2 — Criteria for classification of torque measuring devices</i>	12
8 Calibration certificate	12
Annex A (informative) Orientation diagrams	14
<i>Figure A.1 — Example of preloading and calibration sequences for a torque measuring device with round shaft drives, six incremental and decremental torques, classes 0.05 to 5.0</i>	14
Annex B (normative) Method example of determining uncertainty of the calibration results of the torque measuring device	16
<i>Table B.1 — Summary of worked examples</i>	19
<i>Table B.2 — Worked example in torque units: 100 N·m torque measuring device clockwise torque, incremental series only</i>	19
<i>Table B.2 — Worked example in torque units: 100 N·m torque measuring device clockwise torque, incremental series only (continued)</i>	20
<i>Table B.2 — Worked example in torque units: 100 N·m torque measuring device clockwise torque, incremental series only (continued)</i>	20
<i>Table B.3 — Uncertainties calculated in accordance with B.3</i>	20
<i>Table B.3 — Uncertainties calculated in accordance with B.3 (continued)</i>	21

<i>Table B.4 — Worked example in mV/V: 2 kN·m torque measuring device clockwise torque, incremental series</i>	22
<i>Table B.4 — Worked example in mV/V: 2 kN·m torque measuring device clockwise torque, incremental series (continued)</i>	22
<i>Table B.4 — Worked example in mV/V: 2 kN·m torque measuring device clockwise torque, incremental series (continued)</i>	23
<i>Table B.5 — Uncertainties calculated in accordance with Annex B</i>	23
<i>Table B.5 — Uncertainties calculated in accordance with Annex B (continued)</i>	24
<i>Table B.6 — Uncertainty interval calculated in accordance with Annex B</i>	24
<i>Table B.6 — Uncertainty interval calculated in accordance with Annex B (continued)</i>	25
<i>Table B.7 — Worked example in mV/V: 2 kN·m torque measuring device clockwise torque, incremental and decremental series</i>	26
<i>Table B.7 — Worked example in mV/V: 2 kN·m torque measuring device clockwise torque, incremental series and decremental series (continued)</i>	27
<i>Table B.7 — Worked example in mV/V: 2 kN·m torque measuring device clockwise torque, incremental series and decremental series (continued)</i>	27
<i>Table B.8 — Uncertainties calculated in accordance with Annex B</i>	28
<i>Table B.8 — Uncertainties calculated in accordance with Annex B (continued)</i>	28
<i>Table B.9 — Uncertainty interval calculated in accordance with Annex B</i>	29
<i>Table B.9 — Uncertainty interval calculated in accordance with Annex B (continued)</i>	29
Bibliography	30

Summary of pages

This document comprises a front cover, and inside front cover, pages i to iv, pages 1 to 30, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 31 August 2017. It was prepared by Panel ISE/101/1/2, *Torque measuring and testing*, under the authority of Subcommittee ISE/101/1, *Uniaxial testing*, and Technical Committee ISE/101, *Test methods for metals*. A list of organizations represented on these committees can be obtained on request to their secretary.

Supersession

This British Standard supersedes BS 7882:2008, which is withdrawn.

Information about this document

This revision introduces the relative measurement uncertainty interval, the range in which the expected error is likely to lie, calculated as the sum of the absolute relative deviation and the expanded uncertainty.

Some of the values in [Table B.4](#) and [Table B.7](#) are given to 8 decimal places, to allow users to check the data manually against these and the other tables in [Annex B](#), and to eliminate rounding errors. It is not necessary to report at this level.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its methods are expressed as a set of instructions, a description, or in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard specifies requirements for the calibration and classification of torque measuring devices, including those used for the calibration of torque tools.

It describes the method of calibration, calculation of calibration results and the classification of the torque measuring device in a static mode. The information to be given on the certificate of calibration is also listed.

[Annex A](#) provides diagrams of the application of torque, and examples for the calibration of torque measuring devices. [Annex B](#) indicates how to determine uncertainty of the calibration results of the torque measuring device.

2 Terms, definitions, abbreviations and symbols

For the purposes of this British Standard, the following terms, definitions, abbreviations and symbols apply.

NOTE Where applicable, this British Standard has been prepared using JCGM 200.

2.1 calibration torque T

torque with traceability derived from national standards of mass, length and time, and of specified expanded uncertainty of measurement (U_T), which can be applied to the torque measuring device

2.2 deflection d

algebraic difference between the indicator reading prior to the application of a torque and the indicator reading for each applied torque in a given measurement series

NOTE The deflection can be derived from either digital data output or visual data output.

2.3 data acquisition system

electronic module that has the ability to acquire signals from a torque measuring device and transmit data based on those signals for analysis

NOTE Where analogue signals are acquired by the torque measuring device, and these are converted into a digital data stream using an analogue to digital converter, the stream of data can be digitally filtered, re-sampled and stored, or logged ready for analysis.

2.4 loading direction

direction of applied torque, either clockwise or anti-clockwise about the axis of rotation, when viewed from the end of the torque measuring device to which the calibration torque is applied

2.5 lower limit of calibration T_{\min}

lower value of torque at which a torque measuring device of a given class can be calibrated

2.6 reference standard

equipment used to generate or to measure the reference torque applied to the torque measuring device that is being calibrated

NOTE Torques can be generated by a power source monitored by the reference standard.