

Micrometers

Part 1: Standard design external micrometers
Concepts, requirements and testing

DIN
863-1

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Supersedes
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Prüfen geometrischer Größen – Meßschrauben –
Teil 1: Bügelmeßschrauben, Normalausführung – Begriffe,
Anforderungen, Prüfung

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Foreword

This standard has been prepared by the *Normenausschuß Technische Grundlagen* (Fundamentals in Technology Standards Committee).

See Explanatory notes for relationship to International Standard ISO 3611, published by the International Organization for Standardization.

The DIN 863 series of standards comprises the following:

- Part 1: Standard design external micrometers – Concepts, requirements and testing
- Part 2: Fixed micrometers and depth micrometers – Concepts, requirements and testing
- Part 3: Special design external micrometers – Designs, requirements and testing
- Part 4: Internal micrometers – Concepts, requirements and testing

Amendments

This standard differs from the October 1983 edition in that the terminology has been harmonized with the relevant international literature [1] and the standard has been editorially revised.

Previous editions

DIN 863: 1925-04, 1928-04, 1956-02; DIN 863-1: 1977-11, 1983-10.

Dimensions in mm

1 Scope

This standard specifies design, dimensional and performance requirements for and the testing of external micrometers of a standard design, with measuring capacities up to 500 mm, having 0,01 mm scale intervals or digital increments and a maximum span of 25 mm.

Continued on pages 2 to 6.

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original should be consulted as the authoritative text.

2 Normative references

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the titles of the publications are listed below. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

| | |
|-----------------|---|
| DIN 102 | Reference temperatures for measuring instruments and workpieces |
| DIN 1319-1 | Basic concepts in metrology – General concepts |
| DIN 1319-2 | Basic concepts in metrology – Terminology relating to the use of measuring instruments |
| DIN 2257-1 | Terminology used in dimensional metrology – Units, activities, checking instruments – Metrological concepts |
| DIN EN ISO 3650 | Geometrical Product Specifications (GPS) – Length standards – Gauge blocks (ISO 3650 : 1998) |

[1] International vocabulary of basic and general terms in metrology (VIM), published by the International Organization for Standardization (ISO), 1993.*

3 Terminology

3.1 Concepts

For the purposes of this standard, the concepts defined in DIN 1319-1, DIN 1319-2, DIN 2257-1 and [1] apply, in addition to the following:

3.1.1 Maximum permissible error

Extreme value of an error permitted for micrometers as in this standard (cf. 5.21 in [1]); in this standard, termed 'limit of error' and designated as G (cf. figure 3).

3.1.2 Maximum permissible error of measuring head

Limit of error for the measuring head only, i.e. disregarding the effects of the anvil and frame, but including errors due to the spindle and its guide, and the indicating device (designated as G_{Me}).

3.2 Nomenclature

See figure 1 for nomenclature used in this standard.

4 Designation

Designation of a standard design (N) external micrometer in accordance with this standard with a measuring range of 25 to 50 mm (25–50):

Micrometer DIN 863 – N 25–50

5 Requirements

5.1 Limits of error and tolerances

The limits of error and tolerances given in table 1 shall not be exceeded. The values specified for G shall be met at any randomly selected micrometer setting.

NOTE: Any doubling of permissible errors is precluded because the G values apply for any setting, including those at an extreme value.

G_{Me} shall not exceed 3 μm across the entire 25 mm span of the measuring range.

The parallelism tolerances given in table 1 apply **where** the prescribed measuring force is applied through the ratchet drive.

5.2 Frame

The frame shall be shaped to permit the measurement of a cylinder with a diameter equal to the maximum value of the micrometer's measuring range. It shall be sufficiently stiff so that a force of 10 N applied between the measuring faces does not alter the distance between them by more than the permissible difference in readings specified in table 1.

It is recommended that insulating plates be fitted to the frame to prevent body heat from being transmitted to the frame.

*) Obtainable from *Beuth Verlag GmbH*, Burggrafenstr  e 6, D-10787 Berlin.