

Micrometers

Part 3: Special design external micrometers
Designs, requirements and testing**DIN**
863-3

CS 17 040.30

Supersedes
October 1983 edition.Prüfen geometrischer Größen – Meßschrauben –
Teil 3: Bügelmeßschrauben, Sonderausführungen
Konstruktionsmerkmale, Anforderungen, Prüfungen*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).

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 DIN 863-1 and DIN 863-2, and the standard has been editorially revised.

Previous edition

DIN 863-3: 1983-10

Dimensions in mm

1 Scope

This standard specifies requirements for special design external micrometers supplementing the specifications of DIN 863-1.

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 863-1 Micrometers – Standard design external micrometers – Concepts, requirements and testing
- DIN 878 Dial gauges
- DIN 870-1 Dial gauges with mechanical indication
- DIN 879-3 Dial gauges with electrical cutoff controls

Continued on pages 2 to 8.

Translation by DIN-Sprachendienst.

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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 2269	Measuring pins
DIN 3960	Concepts and parameters for the determination of involute spur gears (by individual gears) and spur gear pairs (cylindrical gear pairs)
DIN EN ISO 3050	Geometrical Product Specifications (GPS): Length standards – Gauge blocks (ISO 3650 : 1998)
ISO 11 : 1962	Straight-sided splines for cylindrical shafts with internal centering – Dimensions, tolerances and verification
ISO 1502 : 1996	ISO general-purpose metric screw threads – Gauges and gauging
ISO 2768-1 : 1989	General tolerances – Part 1: Tolerances for linear and angular dimensions without individual tolerance indications

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

3 Designation

Designation of a micrometer in accordance with this standard used to measure root tangent angles of gear teeth (D7), with a measuring range of 0 to 25 mm (D 25):

Micrometer DIN 863 – D7 – 0-25

4 Concepts, design features, dimensions, requirements and testing

4.1 Concepts

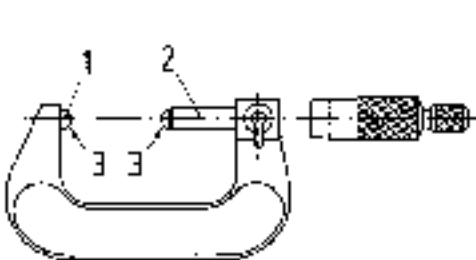
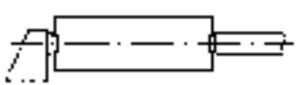
For the purposes of this standard, the concepts defined in DIN 1319-1, DIN 1319-2, DIN 2257-1 and [1] apply.

4.2 Design features, dimensions, requirements, testing

The designs shown in table 1 are for illustrative purposes only; however, the dimensions shall be as specified. Any deviating dimensions shall be subject to agreement.

General tolerances shall be class m tolerances as in ISO 2768-1.

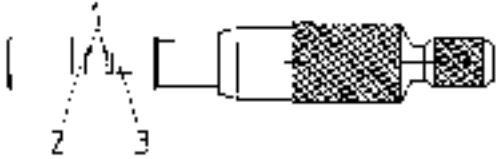
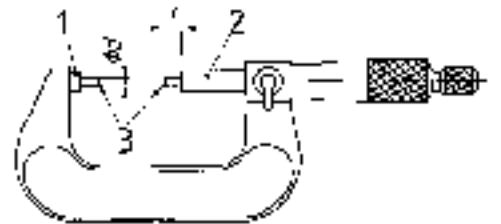
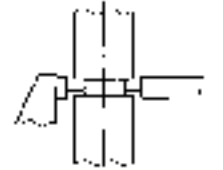
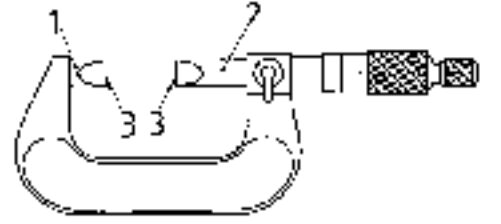

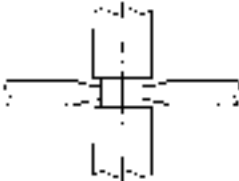
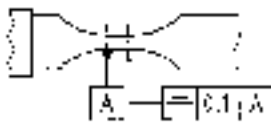
Table 1: Design features, dimensions, requirements and testing of special design external micrometers

Design features	Examples of application and remarks	Requirements and testing
4.2.1 Micrometer with spherical measuring faces (type D1)		
 <p>1 Anvil 2 Spindle 3 Measuring faces</p>	 <p>For measuring ball bearing inner rings. This type of micrometer is normally set using gauge blocks as in DIN EN ISO 3662. When the measuring forces specified in DIN 863-3 are applied using this type of micrometer, the surface pressure is greater. Either one or both of the measuring faces may be spherical.</p>	<p>The manufacturer shall specify the radius of the spherical faces.</p>

(continued)

*) Obtainable from Beuth Verlag GmbH, Burggrafenstraße 6, D-10787 Berlin.

Table 1 (continued)

Design features	Examples of application and remarks	Requirements and testing												
<p>4.2.2 Small-framed micrometers (type D2)</p>														
 <p>1 Measuring faces 2 Anvil 3 Spindle</p> <p>Small frame with surface between measuring faces to support wire or balls to be measured.</p>	<p>For measuring wire or ball diameters.</p>	<p>The preferred measuring range is 0 mm to 10 mm.</p>												
<p>4.2.3 Micrometer with small measuring faces (type D3)</p>														
 <p>1 Anvil 2 Spindle 3 Measuring faces</p>	 <p>For measuring grooves and splines. When the measuring forces specified in DIN 863-1 are applied using this type of micrometer, the surface pressure is greater.</p> <table border="1" data-bbox="755 1144 1071 1228"> <tr> <td>Preferred dimensions</td> <td>d</td> <td>2</td> <td>3</td> </tr> <tr> <td></td> <td>f</td> <td>5</td> <td>8</td> </tr> </table>	Preferred dimensions	d	2	3		f	5	8	<p>When checking the measuring faces, an edge zone 0,1 d in width shall be disregarded.</p>				
Preferred dimensions	d	2	3											
	f	5	8											
<p>4.2.4 Blade-type micrometer (type D4)</p>														
 <p>1 Anvil 2 Spindle 3 Measuring faces</p>  <p>Measuring face on the spindle side does not rotate.</p>	 <p>For measuring narrow grooves (e.g. of retaining rings). When the measuring forces specified in DIN 863-1 are applied using this type of micrometer, the surface pressure is greater.</p> <table border="1" data-bbox="755 1690 1071 1816"> <tr> <td>Preferred dimensions</td> <td>d</td> <td>0,4</td> <td>2</td> </tr> <tr> <td></td> <td>f</td> <td>1,6</td> <td>4</td> </tr> <tr> <td></td> <td>r</td> <td>10</td> <td>10</td> </tr> </table>	Preferred dimensions	d	0,4	2		f	1,6	4		r	10	10	<p>When checking the flatness of measuring faces, an edge zone 0,1 d in width shall be disregarded.</p> 
Preferred dimensions	d	0,4	2											
	f	1,6	4											
	r	10	10											

(continued)