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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 1218-2018

Replacing GB/T 1218-2004

Depth micrometer

深度千分尺

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1 Scope

GB/T 1218-2018 is the Chinese national standard on depth micrometer, in the field of metrology and measurement. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 14 May 2018 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 December 2018. Classification: ICS 17.040.30, CCS J42. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard specifies the terms and definitions, types and basic parameters, requirements, inspection conditions, inspection methods, marking, and packaging for depth micrometers (excluding electronic digital depth micrometers). This Standard applies to scale-reading and digital-reading depth micrometers (excluding electronic digital depth micrometers) with scale intervals of

0.01 mm,

0.005 mm, and

0.001 mm, micrometer head spans of 25 mm and 50 mm, and an upper limit of the measuring range up to 300 mm.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 1216-2018 External micrometer

GB/T 1800.2-2009 Geometrical product specifications (GPS) - Limits and fits - Part

3 Terms and definitions

For the purpose of this document, the terms and definitions defined in GB/T 17163- 2008, GB/T 17164-2008, and GB/T 24634-2009, as well as the following apply.

3.1 depth micrometer A depth measuring instrument that utilizes the principle of a screw pair to provide a reading of the distance separating the measuring face of the base from the measuring face of the measuring rod. NOTE. Adapted from GB/T 17164-2008, definition 2.3.12.

3.2 zero error Deviation of the initial "zero" position of each measuring rod when interchanging different nominal-value measuring rods within the complete set supplied with the depth micrometer. NOTE. Adapted from GB/T 17163-2008, definition 4.23.

4 Types and basic parameters

4.1 Types The types of depth micrometers are shown in Figure 1 and Figure 2; the illustrations are provided for explanatory purposes only and do not depict detailed structural features. Figure 1 -- Type I depth micrometer (scale reading) Figure 2 -- Type II depth micrometer (digital reading)

4.2 Basic parameters

4.2.1 The span of depth micrometers shall be 25 mm or 50 mm. The upper limit of the measuring range shall extend up to 300 mm.

4.2.2 The length difference between interchangeable measuring rods of a depth micrometer shall correspond to the span of the depth micrometer.

4.2.3 The length of the measuring face of the base of depth micrometers shall be greater than (or equal to) 50 mm and less than (or equal to) 101.6 mm.

4.2.4 The recommended diameters for the measuring rods of a depth micrometer are. phi

4.5 mm, phi6 mm, and phi

4.2.5 Depth micrometers may be optionally equipped with high-accuracy measuring rods or standard measuring rods; depth micrometers equipped with standard measuring rods shall also be supplied with a setting standard for the initial value of the measuring range for each rod.

4.2.6 The scale interval of depth micrometers shall be

0.01 mm,

0.005 mm, or

0.001 mm.

4.2.7 The quantization step of digital counter reading units shall be

0.001 mm.

5.1 Appearance

5.1.1 Depth micrometers shall be free from defects such as rust, dents, scratches, or cracks that would affect its operational performance. The measuring face of the accompanying measuring rods shall also be free from defects such as rust, dents, or cracks.

5.1.2 The surface plating or coating of depth micrometers shall be uniform and free from peeling.

5.1.3 The scale markings shall be free from visually perceptible breaks, non-uniform line thickness, or other defects that would hinder accurate reading.

5.2 Interaction

5.2.1 The movement of the micrometer screw of depth micrometers shall be smooth and free-moving, without any sticking or jamming.

5.2.2 The replacement of measuring rods shall be easy, convenient, and reliable; the fit between the measuring rod and the micrometer screw shall be precise, with no perceptible looseness or wobble.

5.2.3 The fit of the micrometer screw pair shall be precise, and its axial run-out shall not exceed

0.01 mm.

5.3 Material

5.3.1 Bases and the setting standards shall be manufactured using tool steel, stainless

steel, or other materials with similar properties.

5.3.2 The micrometer screw and interchangeable measuring rods shall be manufactured from alloy tool steel, stainless steel, or other materials with similar properties; the measuring face of measuring rods should preferably be tipped with carbide or other wear-resistant materials.

5.4 Scale markings and scale numerals

5.4.1 Scale markings shall comply with the provisions of Clause

5.9 in GB/T 1216- 2018.

5.4.2 Unless otherwise specified, the scale numerals on the fixed sleeve shall be inscribed at intervals of every five scale markings; furthermore, these scale numerals shall correspond to the displacement of the measuring face of the depth micrometer (or the difference between the actual measured value and the lower limit of the measuring range).

5.5 Various devices

5.5.1 Depth micrometers shall be equipped with a ratchet stop, a locking device, a zero-adjustment device, an adjustment device for compensating the wear of micrometer screw pair, and shall be supplied with the necessary adjustment tools.

5.5.2 The locking device shall be capable of effectively locking the micrometer screw at any position; the change in the distance between the two measuring faces before and after locking shall not exceed

0.002 mm.

5.5.3 The zero-adjustment device and the adjustment device for compensating the wear of micrometer screw pair shall be designed for convenient operation by the user.

5.5.4 When the micrometer screw of a depth micrometer with a digital counter reading unit is moved, the counter shall advance sequentially without any display errors or irregularities; excluding the trailing digit, the centers of the remaining digits shall align along a straight line parallel to the axis of the micrometer screw when no digit carry- over is occurring.

5.5.5 When a depth micrometer features both an analog scale reading and a digital counter reading, and after being set to zero, at any position within the span, the difference between the counter reading and the analog scale reading shall not exceed

0.003 mm.

5.6 Measuring force When the micrometer screw is driven via the ratchet stop, the resulting measuring force generated by the measuring face of the measuring rod, under conditions of plane-to- sphere contact, is between 3 N and 6 N.