

ICS 17.040.20

CCS J04



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 24633.2-2024

**Geometrical product specifications (GPS) - Cylindricity - Part 2:
Specification operators**

产品几何技术规范（GPS）圆柱度 第2部分：规范操作集

Issued on: September 29, 2024

Implemented on: September 29, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1. Structure and drafting rules for standardization documents" Drafting. This document is Part 2 of GB/T 24633 "Geometrical Specifications for Products (GPS) Cylindricity". GB/T 24633 has been published. The following parts.

1. Vocabulary and parameters;

2. Specification of operation sets. This document replaces GB/T 24633.2-2009 "Geometrical Product Specification (GPS) Cylindricity Part

2. Specification Operation" Compared with GB/T 24633.2-2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

a) Change "stylus tip" to "probe tip" (see Chapter 4, Chapter 4 of the.2009 edition);

b) The expression of "detection mode" has been changed (see 4.2.1, 4.2.1 of the.2009 edition);

c) The expression of "measurement force" has been changed (see 4.2.3,

4.2.3 of the.2009 edition). This document is equivalent to ISO 12180-2:2011 "Geometrical Product Specifications (GPS) Cylindricity Part

2. Set of specification operations". Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Technical Committee for Standardization of Product Geometry Technical Specifications (SAC/TC240). This document was drafted by: Harbin Institute of Technology,

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Cylindricity is one of the important shape tolerances in product geometry specifications and is also the key to evaluating the geometric shape accuracy of rotating body products. Cylindricity is one of the most basic geometric errors. It is very important to ensure the geometric accuracy of rotating parts and improve the quality of products. Manufacturing accuracy, working performance and reliability play an important fundamental role in optimizing the manufacturing process. Scientific and advanced cylindrical specifications can not only reduce the error in the manufacturing process can improve the working performance of the rotating body products, and can also significantly reduce the failure rate of the rotating body products and extend their service life. With the development of digital measurement technology and product geometry specifications, the relevant definitions in the original standard are different from those in the current standard. The national GPS standards are not commensurate, and the technical requirements lag behind the current production needs, and cannot effectively regulate and guide the current market production situation. The finalized standards can better regulate and guide product geometric elements, provide technical support for enterprises in the design, manufacturing, inspection and other processes, and promote the development of my country's high-end equipment manufacturing industry. GB/T 24633 aims to specify the cylindricity specification of a single component and consists of two parts.

1. Vocabulary and parameters. The purpose is to define the terms and concepts of cylindricity of single components.

2. Set of specification operations. The purpose is to specify a complete set of specification operations for the cylindricity of a single component. This document does not specify a default filter cut-off frequency, stylus tip radius (the stylus tip itself has a certain shape and size, which plays a mechanical filtering role in the measurement, so the probe tip is sometimes also called the probe contact) and related methods (see The cylindricity specification must specify the operating value to ensure its uniqueness. , the specification is ambiguous and the supplier may use any value in this operation to provide proof of conformity. Filtering is necessary for data extraction operations. When extracting data, additional filtering may or may not be used. It can be a mean line filter (Gaussian filter,

spline filter, wavelet filter, etc.) or a nonlinear filter (such as morphological filter). The filter type will affect The definition of cylindricity as well as the set of normative operations therefore need to be clearly stated. NOTE

1 Scope

GB/T 24633.2-2024 gives the specification operators for cylindricity in the Chinese GPS system, completing the pair whose first part defined the vocabulary and parameters. This part defines the complete chain of operations a cylindricity specification implies: the partition of the feature from the workpiece, the extraction of points with the sampling strategy and its density and distribution along and around the cylinder, the filtration in both the circumferential and the axial direction, the association of the reference cylinder and the evaluation of the parameter, together with the default operator that applies when the drawing is silent and the modifiers that let each step be stated explicitly. Cylindricity is more sensitive than most characteristics to these choices, because the same surface sampled as a few circular traces or as a dense helical scan, and filtered at different cut-offs, gives materially different values. It took effect on 29 September 2024.

This document specifies a complete set of specification operations for the cylindricity of a single component. This document applies to the complete cylindrical profile of a single component.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document. ISO 12180-