



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

GB/T 13319-2020

**Geometrical product specifications (GPS) - Geometrical
tolerancing - Pattern and combined geometrical specification**

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Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Standard replaced GB/T 13319-2003 Geometrical Product Specifications (GPS)

- Geometrical Tolerancing - Positional Tolerancing. Compared with GB/T 13319-2003, this Standard made the major technical changes as follows.

--- Add the terms and definitions such as "pattern specification", "pattern feature", "tolerance zone pattern", "pattern characteristics", "theoretical exact feature pattern", "single indicator pattern specification" and "multiple indicator pattern specification" "multi-level single indicator pattern specification", "internal constraint" and "external constraint" (see Clause 3 of this Edition);

--- Add the definition of symbols and specification modifiers (see Clause 4 of this Edition);

--- Add the marking principle of pattern tolerance specification based on specification modifiers (see Clause 5 of this Edition);

--- Delete the basic marking method of position tolerance and the marking method of composite position (see Clause 5 of 2003 edition).

This Standard uses re-drafting method to modify and adopt ISO 5458.2018

Geometrical Product Specifications (GPS) - Geometrical Tolerancing - Pattern and Combined Geometrical Specification.

Compared with ISO 5458.2018, this Standard has the technical differences; the corresponding technical differences and their causes are as follows.

--- Regarding normative references, this Standard has made adjustments with technical differences to adapt to Chinese technical conditions. The adjustments are reflected in Clause 2 "Normative References". The specific adjustments are as follows.

- * Replace ISO 1101 with GB/T 1182 modified to adopt international standards;
- * Replace ISO 8015 with GB/T 4249-2018 modified to adopt international standards;
- * Replace ISO 17450-1 with GB/T 24637.1 modified to adopt international standards;
- * Replace ISO 17450-2 with GB/T 24637.2 modified to adopt international standards;

Geometrical Product Specifications (GPS) -

Geometrical Tolerancing - Pattern and Combined

Geometrical Specification

1 Scope

This Standard uses geometric specifications of the symbols POSITION, SYMMETRY, LINE PROFILE and SURFACE PROFILE, as well as STRAIGHTNESS (in the case where the toleranced features are nominally coaxial) and FLATNESS (in the case where the toleranced features are nominally coplanar) to establish the complementary rules of GB/T 1182; which may be used for the combined rules for the pattern specifications or defining single specifications listed in Annex C.

These rules are applicable when a set of tolerance zones are grouped together with location or orientation constraints, through the use of the CZ, CZR or SIM modifiers.

This Standard does not cover the use of the pattern specifications when the minimum and maximum material requirement is applied (see GB/T 16671).

This Standard does not cover the establishment of common datum (see GB/T 17851)

based on pattern features.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 1182 Geometrical Product Specifications (GPS) - Geometrical Tolerancing - Tolerances of Form, Orientation, Location and Run-Out (GB/T 1182-2018, ISO 1101:2017, MOD)

GB/T 4249-2018 Geometrical Product Specifications (GPS) - Fundamentals - Concepts, Principles and Rules (ISO 8015:2011, MOD)

GB/T 24637.1 Geometrical Product Specifications (GPS) - General Concepts - Part 1. Model for Geometrical Specification and Verification (GB/T 24637.1-2020, ISO 17450-1:2011, MOD)

GB/T 24637.2 Geometrical Product Specifications (GPS) - General Concepts - Part 2. Basic Tenets, Specifications, Operators, Uncertainties and Ambiguities (GB/T 24637.2-2020, ISO 17450-2:2012, MOD)

GB/T 38760 Geometrical Product Specifications (GPS) - Features Utilized in Specification and Verification (GB/T 38760-2020, ISO 22432:2011, MOD)

3 Terms and Definitions

For the purpose of this document, the terms and definitions given in GB/T 1182, GB/T 4249, GB/T 24637-1, GB/T 24637-2, GB/T 38760 and the following apply.

3.1 Pattern specification

Combined requirement indicated by a set of geometrical specifications, and controlled by a tolerance zone pattern.

NOTE 1. The geometrical features controlled by a pattern specification can be a set of compound features, united features or single features, which can be features of size (linear

or

angular).

NOTE 2. Table C.1 provides examples of pattern specifications.

NOTE 3. The set of pattern features controlled by a pattern specification does not define a united feature. A united feature can be a pattern feature, i.e. one of the members of the tolerated features controlled by a pattern specification.

3.2 Pattern feature

Geometrical feature which is a member of the set of features controlled by a pattern specification.

3.3 Tolerance zone pattern

Combination of more than one tolerance zone, having, without priority between them, constraints of orientation and location, or constraints of orientation.

NOTE 1. A tolerance zone pattern is composed of several tolerance zones which can have different nominal geometries.

NOTE 2. A tolerance zone pattern can be established without external constraint or with orientation constraint and/or location constraint from a datum system.

3.4 Pattern characteristic

Geometrical characteristic controlled by a pattern specification.

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