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

GB/T 1800.2-2020

Replacing GB/T 1800.2-2009

**Geometrical product specifications (GPS) - ISO code system for
tolerances on linear sizes - Part 2: Tables of standard tolerance
classes and limit deviations for holes and shafts**

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Table of Contents

Foreword

Introduction

1 Scope

2 Normative references

3 Standard tolerance

4 hole limit deviation

5 axis limit deviation

Foreword

GB/T 1800 "Geometric Technical Specifications for Products (GPS) Linear Dimension Tolerance ISO Code System" is divided into two parts.

---Part 1.The basis of tolerance, deviation and fit;

---Part 2.Standard tolerance zone code and limit deviation table of holes and shafts.

This part is Part 2 of GB/T 1800.

This section was drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 1800.2-2009 "Geometrical Technical Specifications for Products (GPS) Limits and Coordination Part 2.Standard Tolerances, etc.

Table of limit deviations of grades, holes and shafts. Compared with GB/T 1800.2-2009, the main technical changes are as follows.

--- "Two parallel planes" is changed to "two opposite parallel planes" (see Chapter 1, Chapter 1 of the.2009 edition);

---Modified the schematic diagram used to illustrate the upper and lower limit deviations of holes and shafts in the scope (see Chapter 1, Chapter 1 of the.2009 edition);

--- Change "standard tolerance grade" to "standard tolerance" (see Chapter 3, Chapter 3 of the.2009 edition);

--- Deleted "For the recommended hole tolerance zone, see GB/T 1801-2009" (see Chapter 4 of the.2009 edition);

---Under the title of each limit deviation table, for holes, increase the upper limit deviation=ES, the lower limit deviation=EI; for the shaft, add

The upper limit deviation= es , the lower limit deviation= ei .

This part uses the redrafting method to modify and adopt ISO 286-2:2010 "Geometrical Product Specification (GPS) Linear Dimension Tolerance ISO

Code System Part 2. Standard Tolerance Zone Code and Limit Deviation Table of Hole and Shaft".

Compared with ISO 286-2:2010, this part has technical differences. The corresponding technical differences and their reasons are as follows.

---Regarding normative reference documents, this section has made adjustments with technical differences to adapt to my country's technical conditions and adjustments.

The situation is collectively reflected in Chapter 2 "Normative Reference Documents", and the specific adjustments are as follows.

* Replace ISO 286-1:2010 with GB/T 1800.1-2020, which is modified to adopt international standards.

This section also made the following editorial changes.

---Incorporated the content of ISO 286-2:2010/Cor.1:2013.

This part is proposed and managed by the National Standardization Technical Committee for Product Geometric Technical Specifications (SAC/TC240).

Drafting organizations of this section. Zhongyuan Institute of Technology, China Machinery Productivity Promotion Center, Pan Asia Automotive Technology Center Co., Ltd., Harbin Institute of Technology

School, Dalian University of Technology, Shandong University of Technology, Luoyang Bearing Research Institute Co., Ltd.

Introduction

The need for limit and fit of the processed parts is mainly determined by the interchangeability between the mass-produced parts and the inaccuracy of the processing method itself.

It is caused by demand, which is consistent with the fact that most of the workpiece elements do not need to be "correct" in size. to satisfy

The matching function is found to be sufficient for manufacturing a given workpiece whose size lies between two allowable limits (such as a tolerance). This is guaranteeing

The acceptable amount of dimensional change in manufacturing under the requirements of product function coordination.

Similarly, when a specific matching condition is required between the matching elements of

two different parts, a capacity (either positive or negative) needs to be assigned

Give a nominal size to get the required clearance or interference. GB/T 1800 gives an internationally acceptable code system for linear tolerances.

Provides a tolerance and deviation system applicable to two size types. "cylinder" and "two opposite parallel surfaces". The purpose of this code system is to achieve

Functional coordination.

The terms "hole", "shaft" and "diameter" are used to designate cylindrical (for example, tolerances on hole or shaft diameter) dimension elements. To simplify,

They are also used for two opposite parallel surfaces (such as tolerance markings on key thickness or groove width).

For the elements that form a fit, the precondition for the application of the ISO code for linear dimensional tolerances is that the nominal dimensions of the hole and the shaft are the same.

The previous version of GB/T 1800.2 has the tolerance criterion as the default fitting criterion for the size of the dimension element. However,

GB/T 38762 turns this default fitting criterion into a two-point size criterion. This means that the shape is no longer controlled by dimensional specifications.

In many cases, the diameter tolerance that meets this part is not sufficient to effectively control the desired fit function. Need to meet

The tolerance criteria of GB/T 38762.1. In addition, the application of geometric tolerances and surface structure requirements can improve the control of desired functions.

The common graphic display of the relationship between each tolerance zone code and its deviation is given in Appendix A.

This part is a product geometric technical specification (GPS) standard, known as the general GPS standard (see GB/T 20308).

See Appendix B for more detailed information about the relationship between this part and the GPS matrix model.

Product Geometric Technical Specification (GPS)

ISO code system for linear dimensional tolerances

Part 2. Standard tolerance zone code and hole,

Shaft limit deviation table

1 Scope

This part of GB/T 1800 specifies the limit deviation value of the common tolerance zone code for holes and shafts, and the value is according to GB/T 1800.1

The standard tolerance and basic deviation value table are calculated. It includes the upper limit deviation ES of the hole, the upper limit deviation es of the shaft, and the lower limit deviation of the hole.

The limit deviation EI and the lower limit deviation ei of the shaft (see Figure 1 and Figure 2).

Note. In the limit deviation value table, except for the tolerance zone codes JS and js that are symmetrical to the zero line, the upper limit deviation ES or es value is the lower limit deviation

Above the value of EI or ei.

This part establishes the ISO code system for linear dimensional tolerances, which applies to the following types of dimensional elements.

- a) Cylindrical surface;
- b) Two opposite parallel surfaces.

To simplify and consider the importance of cylindrical workpieces with circular cross-sections, only these elements are clearly specified. However, for better understanding,

The tolerances and deviations given in this section also apply to workpieces with non-circular cross-sections.

In particular, the term "hole" or "shaft" is usually used to indicate cylindrical surface elements (such as tolerances for hole or shaft diameter). For simplicity, these

The term is also used for two opposite parallel face types (such as tolerance markings for key thickness or groove width).

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated references, the latest version (including all amendments) applies to this document.

GB/T 1800.1-2020 Product Geometric Technical Specification (GPS) Linear Dimension Tolerance ISO Code System Part 1.Tolerance,

Basis of deviation and fit (ISO 286-1.2010, MOD)