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GB/T 1957-2006

Replacing GB/T 1957-1981

Tolerances and general features for plain limit gauges

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Table of Contents

Foreword	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	4
4 Symbols	5
5 Gauge Codes and Rules for Use	5
6 Tolerance	6
7 Requirements	9
8 Acceptance and Inspection	9
9 Marking and Packaging	10
Annex A	12
Annex B	13
Annex C	14

Foreword

This Standard replaces GB/T 1957-1981 *Tolerances and general features for plain limit gauges*.

Compared with GB/T 1957-1981, the main changes of this Standard are as follows:

- Change the format according to GB/T 1.1-2000;
- Change the standard's name;
- Add terms and definitions used in this Standard (section 3 of this edition);
- Add description of the symbols used in this Standard (section 4 of this edition);
- Change the hardness of gauge measuring planes (section 13 of the 1981 edition; section 7.4 of this edition);
- Change the finish of gauge measuring planes into roughness (section 14 of 1981 edition; section 7.5 of this edition);
- Add the acceptance and inspection requirements of gauges (section 8 of this edition);
- Modify the recommended gauge types and the size application scope (Annex 1 to 1981 edition; Annex B to this edition);
- Take workpiece determination to be the requirements of the annex (section 3, 4 and 5 of 1981 edition; Annex C of this edition).

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of National Technical Committee on Measuring Instruments of Standardization (SAC/TC 132).

Drafting organization of this Standard: Harbin Measuring & Cutting Tool Group Co., Ltd.

Main drafters of this Standard: Wu Ying, Gao Shanming, and Yao Xuli.

The previous version replaced by this Standard is as follows:

- GB/T 1957-1981.

Tolerances and general features for plain limit gauges

1 Scope

This Standard specifies the terms and definitions, tolerance, requirements, inspection, marks and package of plain limit gauges.

This Standard applies to plain limit gauges of which the basic dimensions of holes and shafts are up to 500mm, and tolerance grades are IT6 to IT16.

The plain limit gauges (hereinafter referred to as gauges) defined in this Standard apply to inspection of the basic dimensions of holes and shafts specified in GB/T 1800.1-1997 ~ GB/T 1800.4-1999 *Limits and Fits*.

2 Normative references

The articles contained in the following documents have become part of this document when they are quoted herein. For the dated documents so quoted, all subsequent modifications (including all corrigendum) or revisions made thereafter do not apply to this Standard. However, the parties who reach an agreement according to this Standard are encouraged to study whether the latest versions of these documents may be used. For the undated documents so quoted, the latest versions (including all modification sheets) apply to this document.

GB/T 1800.1-1997 Limits and fits – Bases - Part 1: Terminology (neq ISO 286-1:1988)

GB/T 1800.2-1998 Limits and fits – Bases - Part 2: Basic rules of tolerances, deviations and fits (eqv ISO 286-1:1988)

GB/T 1800.3-1998 Limits and fits – Bases - Part 3: Numerical values tables of standard tolerances and fundamental deviations (eqv ISO 286-1:1988)

GB/T 1800. 4-1999 Limits and fits - Tables of standard tolerance grades and limit deviations for holes and shafts (eqv ISO 286-2:1988)

3 Terms and definitions

The following terms AND definitions determined in GB/T 1800.1-1997 to GB/T 1800.4-1999 apply to this Standard.

8.1 Acceptance

8.1.1 The specified dimension values in this Standard are subject to standard measuring conditions, that is, temperature is 20°C and the measuring force is zero.

8.1.2 The inspection of ring gauges shall be subject to calibration. If there are disputes, C.3 in Annex C will prevail.

8.2 Inspection

8.2.1 All the parameters of a gauge shall be subject to direct inspection; the major inspection parameters and inspection instruments are tabulated in Table 5.

Table 5

Major inspection parameters	Inspection instruments
Surface roughness	Profilers, surface roughness comparison specimens
Roundness of Holomorph plug gauges and ring gauges	Roundness measuring instruments
Generatrix straightness	Profilers, Grade-0 knife straight edges
Flatness of caliper gauge measuring planes	Knife straight edges, optical flats
Parallelism of caliper gauge measuring planes	Optimeters, length measuring instruments
Hardness	Vickers hardness testers (or Rockwell hardness testers)

8.3 Decision on the qualification of a workpiece shall be consistent with that in Annex C.

9 Marking and Packaging

9.1 The end face of a plug gauge probe and the non-working surface of other gauges shall be marked with:

- a) The manufacturer name and registered trademark;
- b) Basic dimension and tolerance codes of the inspected workpiece;
- c) Codes of use of a gauge;
- d) Year of manufacture.

Note 1: Plug gauges with working dimensions less than 14mm are allowed to mark the requirements from a) to d) on the handle or nameplate.

Note 2: Single-head double-limit gauges should better not be marked with the code of use.

9.2 The packing box shall be marked with:

- a) The manufacturer name and registered trademark;
- b) The name of the product;
- c) Basic dimension and tolerance codes of the inspected workpiece.

9.3 Gauges shall be subject to anti-corrosive treatment before being properly packaged.

9.4 Gauges that are verified to be satisfactory to this Standard shall be furnished with a certificate, on which the number of this Standard and the date of manufacture shall be marked.

Annex A

(Informative)

Check Gauges

A.1 The dimensional tolerance of a check gauge is 1/2 of that of a working gauge for shafts; the dimensional tolerance of a check gauge contains shape errors.

A.2 The surface appearance of check gauges, the degree of connection of probes and handles, the making material, the measuring plane hardness and treatment shall be in conformity with 7.1~7.4, 7.6.

3 The surface roughness of the measuring plane of a check plug gauge shall not be more than what is specified in Table A.1.

Table A. 1

Check plug gauges	Basic dimensions of check gauges /mm		
	Less than or equal to 120	More than 120, less than or equal to 315	More than 315, less than or equal to 500
	Surface roughness of measuring planes of check gauges / μ m		
Check plug gauges of IT6~IT9 working ring gauges for shafts	0.05	0.10	0.20
Check plug gauges of IT10~IT12 working ring gauges for shafts	0.10	0.20	0.40
Check plug gauges of IT13~IT6 working ring gauges for shafts	0.20	0.40	

Annex B

(Informative)

Recommended Gauge Types and Size Application Range

B.1 The recommended gauge types and size application range are shown in Table B.1.

Table B.1

Purpose	Recommended order	Gauge's working dimensions /mm			
		~18	More than 18~100	More than 100~315	More than 315~500
Types of go gauge for workpiece holes	1	Holomorph plug gauge		Non-holomorph plug gauge	Ball-end bar gauge
	2	—	Non-holomorph plug gauge or sheet plug gauge	Sheet plug gauge	—
Types of no-go gauge for workpiece holes	1	Holomorph plug gauge	Holomorph plug gauge or sheet plug gauge		Ball-end bar gauge
	2	—	Non-holomorph plug gauge		—
Types of go gauge for workpiece shafts	1	Ring gauge		Caliper gauge	
	2	Caliper gauge		—	
Types of no-go gauge for workpiece shafts	1	Caliper gauge			
	2	Ring gauge			

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