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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 2363-2025

Replacing GB/T 2363-1990

Accuracy of fine-pitch involute cylindrical gears

小模数渐开线圆柱齿轮精度

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents". Drafting.

This document replaces GB/T 2363-1990 "Precision of Small Module Involute Cylindrical Gears". Compared with GB/T 2363-1990, except for the structure...

Aside from adjustments and editorial changes, the main technical changes are as follows.

a) The scope of application has been changed (see Chapter 1, Chapter 1 of the 1990

edition);

b) The terminology has been changed (see Chapter 3, Chapter 3 of the 1990 edition);

c) Basic requirements for deviations and tolerances have been added (see Chapter 4);

d) The format for indicating gear precision has been changed (see 4.2.2.1, Chapter 8 of the 1990 edition);

e) The requirements concerning the composition of precision units have been changed, and the provisions concerning group tolerances have been deleted (see Chapter 5, Chapter 4 of the 1990 edition);

f) The sections "Gear blank requirements," "Tolerances and inspection," and "Backlash" have been removed (see Chapters 5-7 of the 1990 edition).

g) Added calculation and rounding rules for accuracy grade tolerance values (see Chapter 5).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Gear Standardization (SAC/TC52).

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This document was first published in 1980, revised for the first time in 1990, and this is the second revision.

Introduction

Since 1995, the core principle of the ISO cylindrical gear accuracy evaluation method has been to use a coordinate system and single-item deviation (including pitch deviation,...) The measured results of cumulative pitch deviation, profile deviation, helical deviation, and radial runout are compared with the tolerance zones given by the formulas in the standard to determine the tolerance zone.

The accuracy grade of gears is measured (see GB/T 10095.1-2022). Furthermore, GB/T 10095.1-2022 allows for different individual measurements for different tooth surfaces.

Different accuracy levels are used for the deviation.

For smaller gear products (pitch circle diameter not exceeding 600 mm), ISO also provides measurement results based on radial composite deviation.

The evaluation method for determining the accuracy grade of the tested gear by comparing the tolerance zone given by the formula in the standard (see GB/T 10095.2-2023).

It should be noted that. First, the accuracy classes (levels 1 to 11) in GB/T 10095.1-2022 differ from those in GB/T 10095.2-2023.

Accuracy classes (R30 to R50) are not inherently equivalent; the choice depends on the user's needs or the agreement between the supplier and the customer.

The accuracy of the gear under test shall be evaluated according to GB/T 10095.1-2022 or GB/T 10095.2-2023; secondly, the accuracy class of the gear under test.

This does not directly reflect its performance in actual use; that is, one should not simply equate the precision grade of a gear with its service performance. Good or bad.

The characteristics of precision measurement of small module involute cylindrical gears in China are. a large number of products to be measured, short and high-frequency production cycles, and coordinate measurement.

Measuring the physical dimensions of tiny gears presents significant challenges. However, considering that the fundamental method for accuracy evaluation is coordinate measurement, this document will still use coordinate measurement.

The single-item deviation is used as the accuracy evaluation item, supplemented by radial composite deviation and tangential composite deviation as the pass/fail evaluation items. That is, gear manufacturing enterprises are able to...

In high-speed production cycles, comprehensive deviations are used as internal accuracy evaluation and quality control requirements, while single deviations are used through sampling or other methods.

The difference is used to determine the final precision grade of the gears. In other words, companies use the precision grade of individual deviations for the social evaluation of their products, and use a comprehensive...

The measurement curve of the combined deviation is used for internal quality control of the product.

Small module involute cylindrical gear precision Important Note. Familiarity with GB/T 10095.1-2022, GB/T 10095.2-2023, GB /Z 18620.1, GB /Z 18620.2, and...

The contents of GB /Z 18620.3 are very important for the use of this document.

1 Scope

This document specifies the grading method and tolerance values for the surface accuracy of individual small-module involute cylindrical gears within the following parameter range.

- 0.1mm<=mn< 0.5mm;

- 5<=z<=200;

- 0.5mm<=d<=100mm;

- 0.2mm<=b<=10mm;

- beta<=45°. in. mn --- Normal module; z --- Number of teeth; d --- pitch circle diameter; b --- Tooth width (axial); beta --- Helix angle.

Note 1.The tolerance value of accuracy is also called the allowable value of deviation.

Note 2.The precision grade of the gear obtained according to this document is not directly related to the actual performance of the gear in use.

This document applies to the evaluation of the manufacturing level of small-module gears made of metal and powder metallurgy materials.