



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

GB/T 5289.2-2021

**Test conditions for testing the accuracy of boring and milling
machines with horizontal spindle - Part 2: Machines with
movable column and fixed table**

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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 of Standardization Documents" drafted.

This document is the second part of GB/T 5289 "Quality Inspection Conditions for Horizontal Milling and Boring Machines". GB/T 5289 has released the following parts.

--- Part 1. Machine tools with fixed columns and mobile tables;

--- Part 2. Machine tools with moving columns and fixed tables.

This document replaces GB/T 5289.3-2006 "Horizontal Milling and Boring Machine Inspection Conditions Accuracy Inspection Part 3. With Separate Workholding

Floor-standing machine tools with fixed table", compared with GB/T 5289.3-2006, except for structural adjustment and editorial changes, the main technical changes

as follows.

--- Chapter 1 adds inspection items to which the standard is applicable and inapplicable;

--- Added Chapter 3 Terms and Definitions;

--- Chapter 4 updated the schematic diagram of the machine tool, the typical configuration of the machine tool added an optional mobile rotary table, the column canceled the parallel spindle axis

Line movement, the Z axis and W axis feed axes were renamed, and the names of the R' axis and B' axis were added.

Added the naming of the main components in the machine diagram;

--- Added Chapter 5 special parts;

--- 6.5 Added descriptions of various types of "dial indicator", "ruler", "square" and "3D

probe";

--- Added 6.6 software compensation;

---Chapter 7 deletes the straightness and angle deviation of the column movement (W axis) in GB/T 5289.3-2006 according to the machine tool structure.

and the inspection of the perpendicularity and parallelism of other axes, delete the inspection of the straightness of the boring axis movement (Z axis);

In GB/T 5289.3-2006, the geometrical accuracy inspection of fixed rotary disc and radial slider motion (U-axis) is placed in the normative appendix

In the inspection of the C horizontal plate; the straightness and angular deviation of the ram movement (Z axis) and the verticality and

Parallelism detection, increased the parallelism detection of boring axis movement (W axis) and ram movement (Z axis); the straightness of each axis and

The main geometrical accuracy tolerance of the fixed table adopts the segmental tolerance, instead of the stroke exceeding 1m in GB/T 5289.3-2006

Then, the tolerance increases proportionally with the increase of the stroke; the tolerance values are improved compared with GB/T 5289.3-2006;

--- Added 7.6 movable rotary table and 7.7 indexing or rotary table;

--- Chapter 8 deletes the positioning accuracy and repeated positioning of the column movement (W axis) in GB/T 5289.3-2006 according to the machine tool structure

Accuracy detection; the positioning accuracy and weight of the fixed rotary disk and radial slider motion (U axis) in GB/T 5289.3-2006

The detection of the complex positioning accuracy is placed in the detection of the normative appendix C of the horizontal rotary table; the determination of the rotation axis (B' axis) of the CNC worktable is added.

Detection of bit accuracy and repeat positioning accuracy;

---Chapter 8 P1 and P2 increase the tolerance value of stroke greater than.2000, P3 and P4 increase the stroke greater than 1000 and less than

Tolerance value of.2000;

---The tolerance values of Chapter 8 have been improved compared with GB/T 5289.3-2006;

--- Added Appendix B and Appendix C.

This document uses the redrafting method to modify and adopt ISO 3070-2.2016 "Machinery Horizontal Milling and Boring Machine Accuracy Test Conditions Part 2.

The column moves along the X axis of the machine tool (floor type)".

Compared with ISO 3070-2.2016, this document has been adjusted in structure, and appendix A has been added, and appendix B corresponds to ISO 3070-2.2016.

Appendix A, Appendix C corresponds to Appendix B of ISO 3070-2.2016.

There are technical differences between this document and ISO 3070-2.2016, and the clauses involved in these differences have been

The vertical single line (I) of the position is marked, and a list of the corresponding technical differences and their reasons is given in Appendix A.

For ease of use, the following editorial changes have been made to this document.

- Modified the standard name;
- Chapter 6 title "Brief Description" is changed to "General Requirements";
- Deleted the "measured deviation column" in the precision table;
- Deleted the informative appendix C of ISO 3070-2.2016 for the naming of machine tool components in other languages.

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

GB/T 5289 "Quality Inspection Conditions for Horizontal Milling and Boring Machines" consists of two parts.

--- Part 1. Fixed column and mobile table machine tools. The purpose is to establish a horizontal type with fixed column and movable table

Inspection items and technical indicators that need to be observed during the accuracy inspection and acceptance of milling and boring machines.

--- Part 2. Machine tools with moving columns and fixed tables. The purpose is to establish a horizontal type with a moving column and a fixed table

Inspection items and technical indicators that need to be observed during the accuracy inspection and acceptance of milling and boring machines.

Horizontal milling and boring machines with moving columns and fixed worktables are generally called floor milling and boring machines in China. They are extremely useful in large-scale equipment manufacturing industries.

One of the most extensive work machines, the machine tool adopts the structure that the table is fixed on the ground, the column moves on the bed, and is equipped with a CNC

rotary table and special

Special accessories (such as. vertical milling head, universal milling head, etc.), one clamping can complete the processing of five faces and multiple processes, especially suitable for processing porous systems,

Box-type parts that require high-precision hole spacing. Floor milling and boring machine has excellent performance, wide processing range and high production efficiency.

It is an indispensable processing equipment in key national development fields such as ships, iron and steel, and nuclear power. Floor milling and boring machines have a wide range of applications and a large market demand.

To standardize the market and improve the overall technical level of such machine tools, this document is formulated to ensure product quality.

This document specifies the inspection requirements and inspection methods for the geometric accuracy, numerical control positioning accuracy, repeat positioning accuracy, and working accuracy of floor milling and boring machines.

and the corresponding tolerances, to provide a unified technical basis for the design, production debugging, acceptance and procurement of such machine tools, and to standardize and control the quality of products.

Performance and technical indicators play an important guiding role and are of great significance to ensuring product quality, promoting trade and technical exchanges.

The formulation and implementation of this document will promote the rapid development of floor milling and boring machines and the continuous improvement of product levels, and will contribute to the advancement of industry technology.

Step by step, improve the market share of this type of machine tool products at home and abroad to provide strong technical support.

Accuracy inspection conditions for horizontal milling and boring machines

Part 2. With moving uprights and fixed

table of machine tools

1 Scope

This document specifies the geometric accuracy, numerical control positioning accuracy and repeatability of horizontal milling and boring machines with a column moving along the X axis and a fixed table

Accuracy, inspection methods for working accuracy and corresponding tolerances.

This document applies to general purpose, ordinary precision, horizontal milling and boring