ICS 25.080.99
CCS J 59

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 5291.2-2022

Replacing GB/T 5291.2-2003

Die sinking electro-discharge machines - Testing of the accuracy - Part 2: Double-column machines (slide-head type)

Issued on: December 30, 2022 **Implemented on: December 30, 2022**

Issued by: State Administration for Market Regulation, China National Standardization Administration

Table of Contents

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 for Standardization Documents" drafting.

This document is the second part of GB/T 5291 "Accuracy Inspection of EDM Machine Tools". GB/T 5291 has issued the following parts.

--- Part 1.Single-column machine tools (cross table type and fixed table type);

--- Part 2.Double-column machine tools (moving spindle head type).

This document replaces GB/T 5291.2-2003 "Precision Inspection of Electric Discharge Forming Machine Part 2.Double Column Machine Tool (Moving Spindle Head)

Compared with GB/T 5291.2-2003, except for structural adjustment and editorial changes, the main technical changes are as follows.

--- Added requirements such as "machine tool leveling" and "software compensation" (see 5.3, 5.7);

---Changed the geometric accuracy tolerance value of X-axis, Y-axis, Z-axis and other linear motion axes (see 6.1, 5.1 of the.2003 edition);

--- Added the item "Check of straightness of spindle (Z axis) motion" (see G3 in 6.1);

--- In "Geometric Accuracy Inspection", change the inspection item name "Deflection" to "Angular Deviation" (see G7 in 6.1,.2003 edition

G6 in 5.1);

--- Deleted the item "Inspection of the straightness of the workbench datum T-slot or datum plane in the X direction" (see 5.2 of the.2003 edition

middle G9);

--- Deleted the item "Check of parallelism between table reference T-slot or reference plane and X-axis movement" (see 5.2 of the.2003 edition

middle G10);

---Changed the tolerance value of the parallelism check between the electrode mounting plate and the X-axis/Y-axis movement (see G10 of 6.3, the.2003 edition

G11 in 5.3);

--- Deleted the item "Inspection of the lateral clearance between the spindle and the table" (see G14 in 5.3 of the.2003 edition);

--- Deleted the "manually operated shaft" test (see 6.1 of the.2003 edition);

--- Changed the positioning accuracy of the X-axis, Y-axis, and Z-axis, the repeatability of the positioning accuracy and the tolerance of the positioning reverse difference (see Chapter 7,.2003

version 6.2).

This document is equivalent to ISO 11090-2.2014 "EDM Machine Tool Inspection Conditions Accuracy Inspection Part 2.Double Column Machine Tool

(Moving spindle head type)".

The following minimal editorial changes have been made to this document.

--- In order to coordinate with the existing standard, the name of the standard is changed to "EDM Machine Tool Accuracy Inspection Part 2.Double Column Machine Tool (Movement)

Moving spindle head type)";

--- Include ISO 1101, which is normatively referenced in Chapter 8, in Chapter 2.

Please note that some contents of this document may refer to patents. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

In order to distinguish between single-column and double-column EDM machine tools, GB/T 5291 consists of two parts.

--- Part 1.Single-column machine tools (cross table type and fixed table type). The purpose of this document is to enable regular precision and general

Standardization of inspection methods for electric discharge forming machine tools (cross table type and fixed table type).

--- Part 2.Double-column machine tools (moving spindle head type). The purpose of this document is to specify general purpose and conventional precision electrical discharge

Inspection methods for forming machine tools (moving spindle head type).

The tolerances of G1, G2, G3, G5, P1, P2, P3 and P4 in this document have been modified according to GB/T 5291.2-2003.

The machine tool axis name in GB/T 5291.2-2003 has been modified according to the provisions of GB/T 19660-2005.

Due to the limited applicability in the current market, the cross table type machine tool (3.2 of GB/T 5291.2-2003) was deleted. due to

At present, the applicability of T-slots of typical machine tools on the market is limited, so the following inspection of GB/T 5291.2-2003 is deleted. G9 "workbench reference

Straightness inspection of T-slot or datum plane in X direction" and G10 "parallel between table datum T-slot or datum plane and X-axis movement

degree check".

Precision inspection of electric discharge forming machine tool part 2.

Double column machine tool (moving spindle head type)

1 Scope

With reference to ISO 230-1 and ISO 230-2, this document specifies the geometric accuracy inspection of general-purpose, conventional-precision electric discharge forming machine tools.

Inspection, CNC axis positioning accuracy and repeat positioning accuracy inspection and machining accuracy inspection. This document also specifies the standards corresponding to the above inspections.

difference.

This document applies to twin-column machine tools of the moving-spindle head type.

This document only involves the verification of machine tool accuracy, and is not applicable to machine tool operation tests (vibration, abnormal noise, crawling of parts, etc.) or its

Inspection of parameters (such as speed, feed rate, etc.), these inspections should usually be carried out before checking the accuracy.

This document also specifies the terminology used for the main components of the machine tool. Refer to GB/T 19660-2005 for the naming method of the coordinate axes.

NOTE. In addition to terms expressed in ISO official languages (English, French), Appendix A gives Dutch, German, Italian, Swedish, Persian and Japanese

equivalent term. These language standards are published by the Netherlands (NEN), Germany (DIN), Italy (UNI), Sweden (SIS), Iran (ISIRI) and Japan

(JISC) national member bodies are responsible. However, only terms given in official languages are considered ISO terms.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document.

ISO 230-1.2012 General rules for inspection of machine tools Part 1.Geometric accuracy of machine tools under no-load or quasi-static conditions (Test

staticconditions)

Note. GB/T 17421.1-1998 General inspection rules for machine tools Part 1.Geometric accuracy of machine tools under no-load or finishing conditions (eqvISO 230-1.

1996)