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GB/T 19361-2021

Wire electrical discharge machines(unidirectional traveling type) - Testing of the accuracy

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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"

Drafting.

This document replaces GB/T 19361-2003 "Wire EDM (One-way Wire Type) Accuracy Inspection", and GB/T 19361-

Compared with.2003, the main technical changes are as follows.

--- Added a chapter "Terms and Definitions" (see Chapter 3);

---The machine tool type "Cross table type" is changed to "Cross sliding table type"; the machine tool parts "head frame" and "wire tube" are changed to "handle head" and "electrode wire roll"

Tube" (see 4.1, 4.2, 3.1 and 3.2 of the.2003 edition);

---Added "machine tool leveling", "illustration", "software compensation" and other use overview (see 5.3, 5.7, 5.8);

---Changed the geometric accuracy tolerance values of X-axis, Y-axis, Z-axis and other

linear motion axes (see 6.1, 5.1 in the.2003 edition);

--- Deleted the item "Checking the parallelism between the reference plane of the positioning pin or the workpiece clamping frame and the X-axis movement and Y-axis movement" (see

(G7 item in 5.2 of the.2003 version);

---In "Positioning accuracy and repetitive positioning accuracy of CNC axis", the tolerance value of the inspection item is changed, and the "two-way repetitive setting" is added.

Bit accuracy" and "average reverse difference" test items (see Chapter 7 P1~P5, Chapter 6 of the.2003 edition);

---In "processing inspection", change the name of the inspection item "cylindricity" to "diameter consistency" (see Chapter 8, Chapter 7 of the.2003 edition

chapter);

---In "Circle Inspection", the test item name "Circle Hysteresis" is changed to "Two-way Circle Deviation", and the inspection conditions are changed (see Chapter 9,

Chapter 8 of the.2003 edition).

The translation method used in this document is equivalent to ISO 14137.2015 "Inspection Condition Accuracy Inspection of Wire EDM Machine Tools".

The Chinese documents that have consistent correspondence with the normatively cited international documents in this document are as follows.

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

(eqvISO 230-1.1996)

---GB/T 17421.2-2016 General Rules for Inspection of Machine Tools Part 2.Confirmation of the positioning accuracy and repeatability of the CNC axis

Fixed (ISO 230-2.2006, IDT)

---GB/T 17421.4-2016 General Rules for Inspection of Machine Tools Part 4.Circle Inspection of CNC Machine Tools (ISO 230-4.2005, IDT)

---GB/T 19660-2005 Industrial automation system and integrated machine tool numerical control coordinate system and motion naming (ISO 841.

2001, IDT)

This document has also made the following editorial changes.

---The standard name was changed to "Wire EDM Machine Tool (One-way Wire Type)

Accuracy Inspection", which is in line with the relevant terminology of my country's existing machine tools

The usage is consistent with quasi and idiom.

Introduction

The purpose of this document is to standardize the inspection methods for conventional precision and general-purpose wire-cut EDM machines (one-way wire type).

In this document, the tolerances of G1, G2, G3, G4, P1, P2, P3, P4, P5 have changed compared with GB/T 19361-2003.

Wire EDM (one-way wire type)

Accuracy check

1 Scope

This document refers to ISO 230-1, ISO 230-2 and ISO 230-4 to specify general-purpose, conventional precision wire EDM machine tools

(One-way wire type) geometric accuracy inspection, CNC axis positioning accuracy and repeat positioning accuracy inspection, processing inspection and circle inspection. This document also

The tolerance value corresponding to the above-mentioned inspection is specified.

This document applies to cross-sliding table type machine tools and double-column type machine tools.

This document only relates to the verification of machine tool accuracy, and it is neither applicable to machine tool operation tests (such as vibration, abnormal noise, component crawling, etc.).

Inspection is also not applicable to the test of machine tool performance (such as speed, feed, etc.). The above-mentioned inspection is usually completed before the accuracy of the machine tool.

This document specifies the terminology of the main parts of machine tools and specifies the naming of coordinate axes with reference to ISO 841.

2 Normative references

The content of the following documents constitutes an indispensable clause of this document through normative references in the text. Among them, dated quotations

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 General Rules for Inspection of Machine Tools Part 1.Geometric Accuracy of Machine Tools under No Load or Finishing Conditions (Testcodefor

machinetools-Part 1.Geometricaccuracyofmachinesoperatingunderno-loadorquasi-staticcondi-

tions)

ISO 230-2 General Rules for Inspection of Machine Tools Part 2.Determination of Positioning Accuracy and Repeated Positioning Accuracy of CNC Axis (Testcodefor

machinetools-Part 2.Determinationofaccuracyandrepeatabilityofpositioningofnumericalycon-

troledaxes)

ISO 230-4 General Rules for Inspection of Machine Tools Part 4.Circle Inspection of CNC Machine Tools (Testcodeformachinetools-Part 4.

Circulartestsfornumericalycontroledmachinetools)

ISO 841 Industrial automation system and integrated machine tool numerical control coordinate system and motion naming (Industrialautomation

systemsandintegration-Numericalcontrolofmachines-Coordinatesystemandmotionnomencla ture)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Electro-dischargemachines

The machine tool uses the pulse discharge method between two conductive electrodes (tool electrode and workpiece electrode) to ablate materials in the insulating working fluid.

The discharge is independent in time and randomly distributed in space, and the discharge energy of the two poles is controllable.

3.2

Wire electrical-dischargemachines

The machine tool uses the electrode wire to ablate material through EDM to manufacture prismatic or more complex shaped workpieces.