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

GB/T 23480-2025

Replacing GB/T 23480.1-2009

**Small hole drilling electrical discharge machines - Testing of
the accuracy**

电火花小孔加工机床 精度检验

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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 for standardization documents" Drafting. This document replaces GB/T 23480.1-2009 "Electro-spark small hole high-speed machining machine tools Part

1. Terminology and accuracy inspection" and GB/T 23480.2-2009 "Electro-spark small hole high-speed machining machine tools Part

2. Parameters", GB/T 23480.1-2009, Compared with GB/T 23480.2-2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

a) The machine tool type has been modified (see

4.1 and Figure 1, Chapter 3 of GB/T 23480.1-2009);

- b) Added standard instructions for machine tool leveling, diagrams, and software compensation (see 5.3, 5.6, and 5.7);
- c) The tolerance values corresponding to the accuracy test items have been changed (see Chapter 6 to Chapter 8, Chapter 5 to Chapter 7 of GB/T 23480.1-2009). chapter);
- d) Added the inspection of the spindle (Z axis) motion straightness, the spindle head (W axis) motion straightness, and the guide installation hole axis. Geometric accuracy test items such as coaxiality inspection with the electrode rotating axis (see Chapter 6);
- e) Added positioning accuracy inspection functions such as positioning accuracy, repeated positioning accuracy and positioning reverse difference inspection for CNC W-axis and Z-axis motion. Test items (see Chapter 7);
- f) Added the normative appendix "Special inspection tools and inspection rods" (see Appendix A);
- g) The machine tool parameter table (see Chapter 4 of GB/T 23480.2-2009) has been deleted. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the China Machinery Industry Federation. This document is under the jurisdiction of the National Technical Committee for Standardization of Special Processing Machine Tools (SAC/TC161). This document was drafted by: Suzhou Electric Machine Tool Research Institute Co., Ltd., Suzhou Amazon Machine Tool Co., Ltd., Taizhou Jiangzhou CNC Machine Bed Manufacturing Co., Ltd., Zhejiang Aigson Intelligent Manufacturing Co., Ltd., Xiamen Standardization and Quality Brand Association, Suzhou Baoma CNC Equipment Co., Ltd., Beijing Electro-Processing Research Institute Co., Ltd., Suzhou Sanguang Technology Co., Ltd., Dongguan Taiyi Yingtuo Technology Co., Ltd. Co., Ltd., Suzhou Zhonggu Industrial Co., Ltd., China University of Petroleum (East China), Harbin Institute of Technology, Jiangsu Dongqing CNC Machine Tool Co., Ltd., Beijing Machine Tool Institute Precision Electromechanical Co., Ltd. and Gu'an Aerospace Xingbang Machinery Manufacturing Co., Ltd. The main drafters of this document are. Wang Ying, Weng Hongmei, Ding Chengcai, Zhang Bo, Yu Yongwei, Wang Shaowu, Mei Jianen, Jia Yunhai, Zhou Zhikai, Kuang Jinxiang, Yan Wei, Ji Renjie, Yang Xiaodong, Li Haozhou, Wang Peide, Wang Guiliang, Zhang Baosong, and Hong Lijun. The previous versions of this document and the documents it replaces are as follows:

---Published in.2009 as GB/T 23480.1-2009 and GB/T 23480.2-2009;

--- This is the first revision, and GB/T 23480.1-2009 and GB/T 23480.2-2009 are merged.
Accuracy inspection of EDM small hole machining machine tools

1 Scope

China's national accuracy test for small hole electrical discharge drilling machines. It

specifies the geometric accuracy and working accuracy tests for machines that drill small holes by electrical discharge, with the test conditions, the methods and the tolerances. Small hole EDM exists to make holes that cannot be drilled. A rotating tubular electrode is fed toward the workpiece with a dielectric flushed through it, and material is removed by electrical discharge rather than by cutting - so the process does not care how hard the material is, applies almost no force to the workpiece, and will drill a hole with an aspect ratio of several hundred to one. That is how cooling holes are put through turbine blades, how the starter holes for wire EDM are made in hardened dies, how injector nozzles and spinnerets are produced, and how a broken tap is removed from an expensive part. Because the tool wears rapidly and is fed continuously, the accuracy of the machine is not the accuracy of a milling machine. What matters is the straightness and squareness of the electrode feed axis over the full stroke, since any deviation is written directly into a deep hole; the concentricity and runout of the rotating electrode guide, which determines the hole diameter and roundness; the positioning accuracy of the table; and the repeatability with which the machine returns to a position, because a blade may have a hundred holes and each must be where the drawing says. The standard separates the geometric tests, made on the unloaded machine, from the working accuracy tests, made by drilling specified holes in a specified workpiece and measuring them - because a machine can pass the first and fail the second. Issued on 28 March 2025 and in force since 1 October 2025, it replaces GB/T 23480.1-2009.

This document specifies the type and parameters, geometric accuracy, positioning accuracy and working accuracy of EDM small hole machining machines, as well as the requirements related to the above-mentioned accuracy. The tolerance value corresponding to the degree detection. This document is applicable to the detection of the accuracy of EDM small hole machining machines. This document only covers the detection of machine tool accuracy and is not applicable to machine tool operation tests (vibration, abnormal noise, creeping of parts, etc.) and other Checks on parameters (such as speed, feed rate, etc.) are usually performed before precision testing.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 14896.1 Terminology of special processing machine tools Part

3 Terms and definitions

The terms and definitions defined in GB/T 14896.1 and GB/T 14896.2 apply to this

document.

4 Types and parameters

4.1 The structure of the EDM small hole machining machine (hereinafter referred to as the "machine tool") is shown in Figure

1. The coordinate system and main motion axes of the machine tool are named according to The provisions of GB/T 19660.

4.2 The main parameters of the machine tool should include.

---Work surface width,

---Working table length,

---Distance from guide to work surface,

---X axis travel,

---Y axis travel,

---Z axis travel,

---W axis travel.

4.3 When designing machine tools, the priority number system should be used for the main parameters listed in

4.2 according to the provisions of GB/T 19764, and the common ratio should be selected according to 1.25. Rounded value.