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

GB/T 45381-2025

**Test conditions for moving beam gantry electrical discharge
forming machines - Accuracy testing**

动梁式龙门电火花成形机床 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. 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: Beijing Electric Processing Research Institute Co., Ltd., Beijing Dimeng CNC Technology Co., Ltd., Suzhou Electric Processing Machine Bed Research Institute Co., Ltd., Beijing Power Machinery Research Institute, Xiamen Standardization Research Institute, China University of Petroleum (East China), Shandong Haomai CNC Machine Bed Co., Ltd., Harbin Institute of Technology, Beijing Information Science and Technology University, Shenzhen Lingchuang Intelligent Co., Ltd., Nanjing Ningqing CNC Machine Tool Manufacturing Co., Ltd. company. The main

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Medium and large EDM machines are used in aviation, energy, and civil fields for key engine parts, housings, and difficult-to-process materials, as well as large-scale. It is an important equipment for precision machining of key parts. Its machine tool structure and precision requirements are different from those of traditional single-column and double-column EDM machines. The bed is different, requiring a new structure and higher precision. The EDM forming machine tool with a moving beam gantry structure breaks through the traditional double-column EDM. The limitations of the EDM forming machine in terms of Y-axis travel and overall machine accuracy have effectively improved the EDM processing accuracy of medium and large parts. This document makes the precision detection behavior of moving beam gantry EDM forming machine tools more standardized, which is conducive to improving the manufacturing quality of machine tools and promoting the industry standardization. Precision inspection of moving beam gantry EDM machine

1 Scope

China's national accuracy test conditions for moving beam gantry electrical discharge forming machines. EDM sinking is how the largest dies are made - the cavities for automotive body panel presses, forging dies, and moulds too hard or too intricate to cut - and at that size the machine takes a gantry form, with a fixed table carrying the workpiece and a crossbeam that moves over it. Fixing the table is deliberate: a die block of several tonnes does not move accurately, whereas a beam can be built stiff and driven precisely. Because the electrode never touches the work, the machine's own geometry is the only thing establishing the cavity's accuracy - there are no cutting forces to blame and no way to correct by feel. The standard specifies the geometric, positioning and working accuracy with their tolerances, and confines itself to accuracy: operational tests for vibration, noise and creep, and parameter checks, precede it and are outside its scope.

This document specifies the geometric accuracy, positioning accuracy and working accuracy of the moving beam gantry EDM forming machine tool, and also specifies the accuracy related to the above. The tolerance value corresponding to the inspection item. This document is applicable to the accuracy detection of gantry structure EDM forming machine tools with fixed worktable and movable crossbeam. 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 5291.2 Precision inspection of electrospark forming machines Part

3 Terms and definitions

The terms and definitions defined in GB/T 5291.2, GB/T 14896.1 and GB/T 14896.2 and the following apply to this document.

3.1 The tool electrode with a certain geometric shape that matches the required shape of the workpiece feature is used to remove material through electrospark machining. machine tool. [Source: GB/T 5291.2-2022, 3.2]

3.2 crossbeam An EDM machine with a gantry structure with a fixed worktable and a movable crossbeam.

4 Terminology and naming of coordinate axes

The movable beam gantry EDM forming machine tool (hereinafter referred to as the "machine tool") is shown in Figure

1. The coordinate axes of the machine tool shown in Figure 1 are The naming is carried out in accordance with the provisions of GB/T 19660.