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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 34880.3-2025

Replacing GB/T 34880.3-2018

Test conditions for 5-axis simultaneous machining centers - Part 3: Specifications

五轴联动加工中心检验条件 第3部分：技术条件

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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 is part 3 of GB/T 34880 "Test conditions for five-axis machining centers". GB/T 34880 has been published as follows part.

- Part 1: Accuracy inspection of horizontal machine tools;

- Part 2: Vertical machine tool accuracy inspection;

- Part 3: Technical conditions.

This document replaces GB/T 34880.3-2018 "Test conditions for five-axis machining centers Part 3: Technical conditions".

Compared with GB/T 34880.3-2018, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

a) Added requirements for environmental conditions during inspection (see Chapter 4);

b) Added safety requirements for machine tool pneumatic systems (see 6.4);

c) The method for measuring machine tool noise has been changed, and the sound pressure level index for precision machine tools has been added (see 6.5, 4.4 of the 2018 edition);

d) The machining and assembly quality requirements for machine tools have been changed, and the index requirements for precision machine tools and the installation requirements for linear motors have been added (see 7.5, 7.6, 7.10, 7.11, 7.16, 7.21, 7.23, 2018 version 5.5, 5.6, 5.10, 5.11, 5.16, 5.20, 5.22);

e) Changed the requirements for dynamic balancing quality and deleted the requirements for pulley balancing (see 7.20, 5.19 of the 2018 edition);

f) The requirements for temperature rise test have been changed. The operating time is divided according to the maximum speed. The bearing temperature is adjusted from 60°C to 55°C (see 8.1.1, 6.1.1 of the 2018 edition);

g) The hydraulic system oil temperature has been changed from 55°C to 50°C (see 8.1.2, 6.1.2 of the 2018 edition);

h) Changed the actual deviation of various spindle speeds of machine tools under idling conditions (see 8.2.1, 6.1.3 of the 2018 edition);

i) The actual deviation of feed speed has been changed (see 8.2.2, 6.1.4 of the 2018 edition);

j) Changed the requirements for the no-load power of the main transmission system (see 8.3, 6.1.6 of the 2018 edition);

k) Added information interaction test requirements for machine tools with interconnection and interoperability functions or DNC functions (see 8.4.2);

l) The time and content of the continuous idling test have been changed. The continuous idling time has been adjusted from no less than 48 hours to no less than 72 hours (see Chapter 9, Chapter 7 of the 2018 edition);

m) Changed the requirements for the operation test of the maximum workpiece weight carried by the workbench, added the assessment of acceleration and angular acceleration, and changed The number of tests (see 10.1, 8.1 of the 2018 edition);

n) The test for the maximum torque of the main transmission system has been changed, the requirement applicable only to the mechanical spindle has been deleted, and the requirement for batch production machine tools has been added.

Test requirements (see 10.2, 8.2 of the 2018 edition);

o) The maximum cutting resistance test of the main transmission system was changed, the requirement applicable only to the mechanical spindle was deleted, and the requirement for batch production machines was added.

Test requirements for beds (see 10.3, 8.3 of the 2018 edition);

p) The maximum power test of the electric spindle has been changed from reaching 1/2 of the rated power to reaching 2/3 of the rated power (see 10.4, 2018 8.5 of the 2012 edition);

q) The tolerance requirements for the minimum setting unit test have been changed (see 11.2.3, 11.3.3, and 9.2.3 and 9.3.3 of the 2018 edition);

r) Changed the scope of application of the origin return test to only apply to machine tools that do not use absolute encoders (see Chapter 12, 2018 Chapter 10 of the 2011 edition);

s) The surface roughness requirements for machine tool accuracy inspection and working accuracy inspection have been changed (see Chapter 13, Chapter 11 of the 2018 edition).

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 Metal Cutting Machine Tools (SAC/TC22).

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Introduction

The five-axis machining center has the advantages of processing complex surfaces, improving processing accuracy and efficiency, and its precision performance directly affects the product Quality and processing capabilities. With the advancement of technology and the improvement of processing technology, the performance of five-axis linkage machining centers is also constantly improving. In order to meet our This document has been revised to reflect the demand for technological advancement of five-axis machining centers driven by the high-end development of China's machine tools and the transformation and upgrading of its manufacturing industry.

GB/T 34880 consists of three parts.

- Part 1: Horizontal machine tool precision inspection. The purpose is to establish the inspection requirements for the factory inspection of five-axis horizontal machining centers. Projects and requirements.

- Part 2: Vertical machine tool precision inspection. The purpose is to establish the inspection requirements for the five-axis linkage vertical machining center during factory inspection. Projects and requirements.

- Part 3: Technical conditions. The purpose is to establish the test to ensure the performance and quality of the five-axis linkage machining center during the manufacturing process Projects and corresponding requirements.

This document is the third part of GB/T 34880, which mainly specifies the general requirements, accessories and tools, safety Technical requirements and inspection methods such as hygiene, processing and assembly quality, dry run test, load test, minimum setting unit test, origin return test, etc.

This method can provide a basis and guidance for the design, manufacture, inspection and acceptance of five-axis linkage machining centers with general and precision levels.

Five-axis machining center inspection conditions Part 3: Technical conditions