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

GB/T 21948.2-2008

**Test conditions for CNC milling machines with table of variable
height - Testing of accuracy - Part 2: Machines with vertical
spindle**

数控升降台铣床检验条件 精度检验 第2部分：立式铣床

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Foreword

GB/T 21948 "Test conditions for CNC milling machine accuracy test" is divided into two parts.

--- Part 1. Horizontal milling machine;

--- Part 2. Vertical Milling Machine. This section GB/T 21948 Part 2. This part is proposed by China Machinery Industry Federation. This part of the National Metal Cutting Machine Standardization Technical Committee (SAC/TC22) centralized. This section is drafted. Beijing First Machine Tool Plant, Zigong Changzheng Machine Tool Co., Ltd. The main drafters of this section. Hu Ruilin, Wang Xiaohui, and Wei Wei. Test conditions for CNC milling machine accuracy test Part 2. Vertical Milling Machine

1 Scope

GB/T 21948.2-2008 is the Chinese national standard on test conditions for cnc milling machines with table of variable height - testing of accuracy - part 2: machines with vertical spindle, in the field of manufacturing engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 3 June 2008 by the General Administration of Quality Supervision,

Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 January 2009. Classification: ICS 25.080.20, CCS J54. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This section GB/T 21948 specifies the CNC vertical milling machine geometric accuracy testing, inspection and positioning accuracy and working accuracy inspection Requirements and methods of test. This section applies to the work surface width of 200mm ~ 500mm general purpose CNC vertical milling machine.

2 Normative references

The following documents contain provisions which, through reference

GB/T 21948 in this section constitute provisions of this section. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 17421.1-1998 Test code for machine tools - Part 1. under no-load or finishing conditions Geometric accuracy of machines (Eqv ISO 230-1.1996)

GB/T 17421.2-2000 Test code for machine tools - Part 2. CNC axis positioning accuracy and repeatability of determination (Eqv ISO 230-2.1997)

GB/T 19660-2005 Industrial automation systems and integration - Numerical control of machines and motion coordinate system named (ISO 841. 2001, IDT)

3 General requirements

3.1 Units of measurement This section all linear dimensions are in millimeters (mm) represents; angle deviation is mainly used as a ratio; in some cases for clarity For units with microradians (μrad) and angular seconds (") in terms of its relationship formula below.
 $0.01/1000 = 10 \times 10^{-6} = 10\mu\text{rad} \sim 2 "$

3.2 Installation level When using this section shall GB/T 17421.1-1998, especially air transport machine testing before installation, spindles and other moving parts Turn heat up, measurement and inspection tools recommended accuracy. According to GB/T 17421.1-1998 adjust the machine to install the

3.1 level. The table in the middle position of travel. Workbench Place the central level meter. Levels in both vertical and horizontal readings are not more than 0.04/1000.

3.3 Test order Inspection order under this Part may not represent the actual test sequence. In order to make an inspection tool assembly and disassembly and inspection of convenience, can be arbitrary Order of inspection.

3.4 Test Project When the test machine, according to the structural characteristics must not test all of the items in this section. When testing requirements for acceptance purposes, can Select the manufacturer to obtain the consent of interested test items by the user, but these test items must be clearly stated at the time of ordering the machine.

3.5 inspection tool Test tools provided in this section is only an example, you can use the same amount of instructions or have other tools to test at least the same accuracy. Indicators should have a 0.001mm or higher resolution.