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

GB/T 16462.3-2017

**Test conditions for numerically controlled turning machines
and turning centres -- Part 3: Geometric tests for machines with
inverted vertical work-holding spindles**

数控车床和车削中心检验条件 第3部分：倒置立式机床几何精度检验

(English Translation)

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Foreword

GB/T 16462 "CNC lathe and turning center inspection conditions" is divided into eight parts.

--- Part 1. Horizontal machine geometry accuracy test;

--- Part 2. Vertical machine geometry accuracy test;

- Part 3. Inverted vertical machine geometry accuracy test;
- Part 4. Linear and rotary axis positioning accuracy and repeat positioning accuracy test;
- Part 5. Feed, speed and interpolation accuracy test;
- Part 6. Precision test precision test pieces;
- Part 7. Evaluation of the contour characteristics in the coordinate plane;
- Part 8. Assessment of thermal deformation.

This section GB/T 16462 Part 3.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section uses the redrafted law revision using ISO 13041-3:2009 "CNC lathe and turning center inspection conditions Part 3. Down Vertical machine tool geometric accuracy test. " this part of ISO 13041-3:2009 technical differences and the reasons are as follows.

- Chapter 4 title "brief description" to "general requirements", after the change in line with national conditions and with the current standards of similar CNC machine tools uniform;
- In the accuracy of the test table to delete the "measured deviation" column, because "measured deviation" is usually in the machine "certificate of conformity or accuracy Single "appears, there is no need to appear in the standard, after the change in line with national conditions and with the current standards of similar CNC machine tools unified;
- Chapter 6 of the International Standard will be replaced by this section Appendix A (informative), because the sixth chapter of the International Standard test items immature, no test indicators, so this section will be Chapter 6 as a reference test items in this part of the Appendix A, after the change in line with national conditions and with the current standards of similar CNC machine tools uniform;
- International Standard Appendix A to Appendix B of this section, because the International Standard Chapter 6 to Appendix A of this section, so the International Standard appendix A to appendix B of this section.

This part is proposed by China Machinery Industry Federation.

This part of the National Standardization Technical Committee metal cutting machine (SAC/TC22) centralized.

This part of the drafting unit. Beijing Beiyi Machine Tool Co., Ltd., Anyang Xinsheng Machine Tool Co., Ltd., Shenyang Machine Tool (Group) Co., Ltd.

Responsible company.

1 Scope

GB/T 16462 of this part of GB/T 17421.1 and ISO 230-7 provides for general-purpose inverted CNC vertical lathe and pour Geometrical inspection requirements and methods for vertical turning centers and their corresponding tolerances.

This section explains different concepts, different configurations and common features of inverted CNC vertical lathes and inverted vertical turning centers, and gives Control axis terms and definitions (see Figure 1, Figure 2, Figure 3 and Figure 4).

This section applies to the accuracy of machine tools.

This section does not apply to the operation of the machine inspection (such as machine vibration, abnormal noise, crawling and other moving parts test) and machine tools (Such as speed, feed rate), because these tests are usually carried out before the accuracy test.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 17421.1-1998 General rules of machine tools testing - Part 1. Geometrical accuracy of machine tools under no load or finishing conditions (eqv ISO 230-1:1996) ISO 230-7:2006 General rules of machine tools testing - Part 7 of the geometric axis of rotation of the test (Testcodeformachine tools-Part 7: Geometricaccuracyofaxesofrotation)

3 Terms and definitions

The following terms and definitions apply to this document.

Turning machine the main motion is the machine tool that rotates the workpiece relative to the fixed tool.

Manual control the machine's mode of operation for each movement is independent and operator controlled.

Numerical control; NC Computer numerical control computerizednumericalcontrol; CNC with numerical data control device, in the running process, the constant introduction of numerical data, so that a production process to achieve automatic control.

[GB/T 8129-2015]

Manual control lathe manuallycontroledturningmachine the machining steps of the machine are controlled or started by an operator without the use of a CNC lathe.