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

GB/T 18400.4-2010

**Test conditions for machining centre -- Part 4: Accuracy and
repeatability of positioning of linear and rotary axes**

加工中心检验条件 第4部分：线性和回转轴线的定位精度和重复定位精度检验

(English Translation)

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Foreword

GB/T 18400 "Test conditions for machining centers" is divided into ten parts.

--- Part 1. horizontal spindle and with head Geometric tests for machines (horizontal Z-axis);

Universal spindle head Geometric tests for machines (vertical Z-axis) or vertical with vertical primary rotary axis;. --- Part 2

--- Part 3. with horizontal rotary axis of the main spindle head overall universal Geometric tests for machines (vertical Z-axis);

--- Part 4. positioning accuracy and linear and rotary axes repeatability test;

--- Part 5. Clamp the workpiece pallet positioning accuracy and repeatability of positioning accuracy test;

--- Part 6. feed rate, speed and accuracy test interpolation;

--- Part 7. finishing accuracy test specimen;

--- Part 8. Evaluation of the contouring performance in the three coordinate plane;

--- Part 9. Evaluation of conversion tool changer and pallet operation time;

--- Part 10. Evaluation of thermal effects.

This section GB/T Part of 418,400.

This part identical with ISO 10791-4:1998 "Test conditions for machining centers - Part 4. Positioning precision linear and rotary axes and repeatability test "(in English).

Taking into account China's national conditions, in the use of ISO 10791-4:1998 when this part has made several editorial changes.

--- "This standard" be replaced by "this section";

--- Title Chapter 3, "a brief description" to "General requirements";

--- Remove the ISO 10791-4:1998 Foreword and Introduction, increasing the national standards foreword;

--- Remove the ISO 10791-4:1998 Annex A (informative).

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. Sichuan Changzheng Machine Tool Group Co., Ltd., Beijing First Machine Tool Plant, Beijing Machine Tool Research Institute.

1 Scope

GB/T 18400 provisions of this part of the machining center positioning accuracy of linear and rotary axes and repeatability test tolerances.

This section applies to linear axis stroke to 2000mm and machining centers with the axis of rotation.

This section is no longer involved GB/T 17421.2-2000 already specified environmental conditions, warming the machine and test methods.

2 Normative references

The following documents contain provisions which, through reference GB/T 18400 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 18400.1-2010 Test conditions for machining centers - Part 1. horizontal spindle and with head Geometric tests for machines (Horizontal Z-axis) (ISO 10791-1:1998, IDT) GB/T 18400.2-2010 Test conditions for machining centers - Part 2. vertical spindle or universal heads with vertical primary rotary axis machine tool of

Geometric tests (vertical Z axis) (ISO 10791-2:2001, IDT)

3.1 Units of measurement

In this section, all linear dimensions and corresponding tolerances are in millimeters (mm) represents; dimensions and angles corresponding tolerance expense (°), micro Radians (μrad) and angular seconds (") shows the relationship between press its conversion formula.

$$0.010/1000 = 10 \times 10^{-6} = 10\mu\text{rad} \sim 2 "$$

3.2 Reference standard

You must refer to the use of the provisions of this part of GB/T 17421.2-2000, especially the test conditions, test procedures and assessment of results.

3.3 Test order

The order of test items in this section does not indicate the actual test sequence, in order to facilitate the assembly and disassembly and inspection tool inspection, press any time Order for 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 Made by the user to select the manufacturer agree that some of the test items of interest, but these test items should be clearly stated at the time of ordering the machine.

3.5 Non-axis test position

During the inspection axis, the axis on the non-detection of moving parts as possible should be placed in the middle of its stroke, or placed on the measuring element Deflection minimal impact position. Slide the spindle, ram, etc., when they are auxiliary axes, should be maintained in the retracted position.