

ICS 25.080.20

CCS J 54



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

GB/T 20957.5-2007

**Test conditions of precision machining centre -- Part 5: Tests
for accuracy and repeatability of positioning of work-holding
pallets**

精密加工中心检验条件 第5部分：工件夹持托板的定位精度和重复定位精度检验
(English Translation)

Issued on: June 25, 2007

Implemented on: November 1, 2007

Issued by: Standardization Administration of China

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Foreword

GB/T 20957 "Test conditions for precision 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 deformation.

This section GB/T Part of 520,957.

The partial modification of the use of ISO 10791-5:1998 "Test conditions for machining centers - Part 5. Clamp the workpiece pallet positioning accuracy and weight Re-positioning accuracy test "(in English).

And ISO 10791-5:1998 compared to the main technical content of the following modifications.

--- According to machine precision grade requirements, tolerance for all test items in ISO 10791-5:1998 is based on a compression (Compression common ratio of approximately

1.6).

For ease of use, this section made the following editorial changes.

- "This standard" be replaced by "this section";
- "." --- With a decimal point instead of a comma as the decimal point, "";
- Title Chapter 3, "a brief description" to "General requirements";
- Of ISO 10791-5:1998 and other international standards referenced with has been adopted as our national standard in place of the corresponding international standard;
- Remove the ISO 10791-5:1998 Foreword and Introduction;
- Remove the ISO 10791-5:1998 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. Beijing Institute of milling, Beijing Machine Tool Research Institute, National Chiao Tung University Kunming Machine Technology Co., Ltd., a limited machine in the Czech Republic the company.

1 Scope

This section provides repeat positioning accuracy on the machine a workpiece clamping plate (hereinafter referred to as the pallet) and the positioning accuracy of each pallet Requirements and test methods.

This section applies to a single pallet precision machining centers. This section does not apply to precision machining center pallets manufacturing system.

2 Normative references

The following documents contain provisions which, through reference GB/T 20957 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) ISO 8525-1:1990 for machine tool 800mm nominal

size of the workpiece to the pallet ISO 8525-2:1990 machine tool parts is greater than the nominal size of 800mm workpiece pallet

3 General requirements

3.1

section all linear dimensions, tolerances and corresponding tolerances in millimeters; angle dimensions in degrees, and the phase angle deviation the tolerance should be expressed as a ratio, but in some cases for clarity available microradians or arc seconds. Equivalent relational expression as follows.

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

3.2

When using this section, methods of measurement and inspection tools precision recommendation should refer to the geometric precision of GB/T 17421.1. Repeat positioning accuracy and positioning accuracy of testing conditions shall refer to GB/T 17421.2.

3.3

part of a number of commonly used letters, these letters represent the following meanings.

--- M and N represent a horizontal axis machine tools. Reaching the direction of the pallet function, for horizontal machining center, M and N refer to X and Z-axis (or Z-axis and X-axis) axis; for vertical machining center, M and N refers to the X-axis and Y-axis (or Y-axis and X Axis) axis.

--- P represents the vertical axis of the machine. On the horizontal machining center, P refers to the Y axis of the shaft; for vertical machining center, P refers to the Z axis Axis.

--- R represents the axis of rotation of the pallet. On the horizontal machining center, R refers to the B axis of the shaft; for vertical machining centers, R refers to the C-axis Axis.

--- J and approaches related to the sequence number.

--- K is used in the formula represents the various common axis letter M, N, P and R are.

3.4

inspection tools, according to the structural characteristics must not test all of the items in this section. For the purpose of acceptance testing requirements, the