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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 17.040.30

J 42

GB/T 22097-2008

Gear measuring center

齿轮测量中心

Issued on: June 25, 2008

Implemented on: January 01, 2009

Issued by: General Administration of Quality Supervision, Inspection and Quarantine;

Standardization Administration of the People's Republic of China.

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Gear measuring center

1 Scope

This Standard specifies the terms and definitions, type and basic parameters, requirements, safety performance, inspection methods, marking and packaging for gear measuring center.

This Standard is applicable to measuring the gear measuring center of which the gear module is above 0.5, and the top circle diameter is not more than 600mm (hereinafter referred to as "the measuring center").

2 Normative references

The provisions in the following documents become this Standard, through reference in this Standard. For dated documents, the subsequent amendments (excluding corrigendum) or revisions shall not apply to this Standard. However, all parties who enter into agreement according to this Standard are encouraged to study if the latest versions of these documents are applicable. For undated documents, the latest version applies to this Standard.

GB/T 191-2008, *Packaging and storage marks* (ISO 780:1997, MOD)

GB/T 4879-1999, *Rustproof Packaging*

GB/T 5048-1999, *Moistureproof packaging*

GB/T 6388-1986, *Transport package shipping mark*

GB/T 6467-2001, *The involute master of gear*

GB/T 6468-2001, *The helix master of gear*

GB 9969.1-1998, *General principles for preparation of instructions for use of industrial products*

GB/T 10095.1-2001, *Cylindrical gears - System of accuracy - Part 1: Definitions and allowable values of deviations relevant to corresponding flanks of gear teeth* (ISO 1328-1:1997, IDT)

GB/T 10095.2-2001, *Cylindrical gears - System of accuracy - Part 2: Definitions and allowable values of deviations relevant to radial composite deviations and runout information* (ISO 1328-2:1997, IDT)

GB/T 14436-1993, *General Principles of Industrial Product Guarantee*

6 Safety performance

6.1 Insulation resistance

The insulation resistance of the measuring center shall not be less than $2\text{M}\Omega$.

6.2 Ground resistance

The grounding resistance between the measuring center grounding device and the grounding terminal shall not be greater than 0.2Ω .

7 Inspection conditions

7.1 The indoor temperature during inspection is $20^{\circ}\text{C}\pm 1^{\circ}\text{C}$. The temperature change is $0.5^{\circ}\text{C}/\text{h}$. The time for the tested instrument to equilibrate the temperature in the test room is not less than 12h. The equilibrium temperature of the inspection tool in the room shall not be less than 6h.

7.2 The inspection room is kept clean. The vibration and power supply voltage meet the requirements.

8 Inspection methods

8.1 Appearance

Use visual inspection.

8.2 Interaction

Use visual inspection and hand touching detection.

8.3 Oblique circular runout of lower center

Fix the magnetic meter base with the torsion spring comparator on the base. Make the probe of the torsion spring comparator vertically contact the cone of the lower center. Turn the main shaft 720° . Take the maximum change of the indicated value of the comparator.

8.4 Parallelism of measuring head moving up and down to connecting line between upper and lower centers

Install precision mandrel between upper and lower centers. Fix the magnetic meter base with torsion spring on the vertical slide plate. Make the probe perpendicular to the outer circle of the mandrel. Move the vertical slide for inspection. Take the maximum change of the indicated value of the comparator.

8.5 Coaxiality of upper center to spindle rotation center

Install a precision mandrel with a length of 200mm between the upper and lower centers. Fix the magnetic meter base with the torsion spring comparator on the lower disc. Make the probe of the comparator vertically contact the outer circle of the upper end of the mandrel. Turn the main shaft 720°. Take the maximum change of the indicated value of the comparator.

8.6 Indication error when measuring involute tooth profile deviation

Install an involute model between the upper and lower centers. According to the computer involute tooth profile measurement program, the probe is in contact with the tooth surface. Measure the tooth surface of the template. Take the difference between the measured value and the actual value of the sample.

8.7 Indication error when measuring spiral deviation

Install a spiral line model between the upper and lower centers. According to the computer spiral program, the probe is in contact with the tooth surface. Measure the tooth surface. Take the difference between the measured value and the actual value of the model.

8.8 Indication error when measuring cumulative total deviation of tooth pitch

The probe is in contact with the middle of the standard gear tooth surface. Measure from the marked tooth according to the computer pitch measurement program. Take the maximum difference between the cumulative total deviation of the tooth pitch measured for one revolution and the actual value of the standard gear.

8.9 Variation of indication value when measuring involute tooth profile deviation

Use the same method as 8.6. In one clamping, continuously measure the tooth surface of the involute template five times. Take the maximum difference between the indicated values of each curve.

8.10 Variability of indication value when measuring spiral deviation

Use the same method as 8.7. Measure the spiral pattern five times continuously in one clamping. Take the maximum difference between the indicated values of each curve.

8.11 Variability of indication value when measuring cumulative total deviation of tooth pitch

Use the same method as 8.9. In one clamping, five rotations are continuously

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