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

GB/T 9239.21-2019

**Mechanical vibration -- Rotor balancing -- Part 21: Description
and evaluation of balancing machines**

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Foreword

GB/T 9239 "Mechanical Vibration Rotor Balance" plan is divided into the following parts.

--- Part 1. Introduction 1);

--- Part 2. Vocabulary 2);

--- Part 11. Balance method and tolerance for rigid rotors 3);

--- Part 12. Balance method and tolerance for flexible rotors 4);

--- Part 13. Medium and large rotor field balance criteria and safety protection 5);

--- Part 14. Method for assessing the balance error 6);

--- Part 21. Description and assessment of balancing machines 7);

--- Part 23. Balancing machine shields and other protective measures for measuring stations 8);

--- Part 31. Machine imbalance sensitivity and unbalance sensitivity 9);

--- Part 32. Balanced key criteria for shafts and fittings 10).

This part is part 21 of GB/T 9239.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part replaces GB/T 4201-2006 "Description and Inspection of Balancer".

1) Revised GB/T 29714-2013 "Guidelines for the Use and Application of Mechanical Vibration Balance Standards".

2) Revised GB/T 6444-2008 "Mechanical Vibration Balance Vocabulary".

3) Revised GB/T 9239.1-2006 "Mechanical vibration constant state (rigid) rotor balance

quality requirements Part 1. Specification and balance tolerance test".

4) Revised GB/T 6557-2009 "Mechanical Vibration Flexible Rotor Mechanical Balance Method and Guidelines".

5) Revise GB/T 28785-2012 "Guidelines and protection of on-site balance of large and medium-sized rotors for mechanical vibrations".

6) Revised GB/T 9239.2-2006 "Balance quality requirements for mechanically vibrating rigid rotors - Part 2. Balanced error".

7) Revised GB/T 4201-2006 "Description and Inspection of Balancer".

8) Revised GB/T 12977-2008 "Other protective measures for balancing machine guards and measuring stations".

9) Revised GB/T 19874-2005 "Mechanical vibration machine imbalance sensitivity and unbalance sensitivity".

10) Revised GB/T 16908-1997 "Key Guidelines for the Balance of Mechanical Vibration Shafts and Mating Parts".

Compared with GB/T 4201-2006, the main technical changes in this section are as follows.

--- Modified the standard name and standard number;

---Modified the partial parameters of the C-type external centroid check rotor of the horizontal balance machine (see Table 5, Table 5 of the.2006 edition);

--- Modified the parameters of the support shaft of the C-type external centroid check rotor of the horizontal balancer (see Table C.1, Table C.1 of the.2006 edition).

This section uses the translation method equivalent to ISO 21940-21.2012 "Mechanical Vibration Rotor Balance Part 21. Description of Balancer

And assessment.

The documents of our country that have a consistent correspondence with the international documents referenced in this part are as follows.

---GB/T 6444-2008 Mechanical vibration balance vocabulary (ISO 1925.2001, IDT).

This part was proposed by the China Machinery Industry Federation.

This part is under the jurisdiction of the National Testing Machine Standardization Technical Committee (SAC/TC122).

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1 Scope

This part of GB/T 9239 specifies the requirements for the performance of balancing machines for balancing rotating parts by the following tests.

- a) minimum reachable residual unbalance test, Umar test;
- b) Unbalance reduction rate test, URR test;
- c) single-sided balancing couple unbalanced interference test;
- d) Compensator test.

These tests are carried out during and after the acceptance checker to ensure that the balancer can be used for actual balancing.

operation. Simplified testing procedures are specified for periodic testing. This section does not specify tests for other capabilities and performance parameters of the balancing machine.

Three types of special calibration rotors are specified in these tests and are suitable for most vertical and horizontal balancing machines. Attached

The recommended method of remodeling the old-fashioned verification rotor as specified in the original national standard is described.

In addition, this section highlights the importance of manufacturers in developing a format for balancing machine features. Use this specified format to enable users to be different

Manufacturer's products are compared. In addition, in the appendix, a guide to information provided by the user to the manufacturer for data and requirements is given.

This section applies to a balancing machine that supports the rotor and rotates the rotor in a rigid state at equilibrium speed and can be in one or more flat

The surface can indicate the magnitude and phase angle at which the imbalance correction is required. Therefore, it is suitable for rigid rotors and rotors with elastic shafts.

Balance according to the low speed balance program. It covers soft support balancers and hard support balancers. This section also includes technical requirements for the above balancing machine.

Seeking, but not including those special features related to automatic correction.

This section does not specify a balancing criterion that is specified in ISO 1940-1 and ISO

11342 (only applicable to low speed balancing procedures).

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

ISO 1925 Mechanical vibration balance vocabulary
(Mechanicalvibration-Balancing-Vocabulary)

3 Terms and definitions

The terms and definitions defined in ISO 1925 apply to this document.

4.1 General requirements

The manufacturer shall provide data suitable for horizontal balancing machines or vertical balancing machines in accordance with 4.2 or 4.3.

Note. See Appendix A for a summary of the information provided by the user to the balancer manufacturer.

4.2.1 Rotor mass and unbalance limit

4.2.1.1 The maximum mass m of the rotor that can be balanced shall be specified within the range of the balancing speed (n_1 , n_2) of the balancing machine.