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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/Z 10096-2022

Replacing GB/T 10096-1988

Accuracy of rack

齿条精度

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part

1.Structure and Drafting Rules of Standardization Documents" drafted. This document replaces GB/T 10096-1988 "Rack Accuracy". Compared with GB/T 10096-1988, except for structural adjustment and editorial changes Besides, the main technical changes are as follows:

a) The scope has been changed, and the accuracy evaluation of the rack pair is no longer specified (see Chapter 1, Chapter 1 of the 1988 edition);

b) Changed the words and symbols of some terms (see Chapters 3 and 4, Chapter 3 of the 1988 edition);

c) Changed the definition of "total deviation of tooth profile", and changed the evaluation plane from "normal section" to "end section" (see 3.5, Chapter 3 of the 1988 edition);

d) Chapter 5 was changed, the accuracy level was reduced to 11, and the tolerance grouping was cancelled (see Chapter 5, Chapter 4 of the 1988 edition);

e) Change the title of Chapter 6 to "References and Measurements", and give the requirements for design reference, processing reference, installation reference and inspection reference Relationships (see Chapter 6, Chapter 5 of the 1988 edition);

f) Chapter 7 is changed, only the radial runout (original cogging runout tolerance) Fr, the pitch limit deviation fpt, and the total accumulated pitch deviation are retained (original pitch cumulative tolerance) Fp, total tooth profile deviation (original tooth profile error) Falpha and total helix deviation (original tooth orientation error) Fbeta, etc. Standard requirements for accuracy indicators, move the remaining indicators and descriptions to informative appendix, and delete the 12th level of the above indicators Accuracy (see Chapter 7, Appendix A~Appendix C, Chapter 6~Chapter 9 of the 1988 edition);

g) Changed the drawing method of rack precision (see Chapter 8, Chapter 9 of the 1988 edition). This document is proposed and managed by the National Gear Standardization Technical Committee (SAC/TC52). Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents. This document is drafted by: Zhengzhou High-end Equipment and Information Industry Technology Research Institute Co., Ltd., Anhui Weisong Optoelectronics Technology Co., Ltd., Zhejiang Sote Transmission Technology Co., Ltd., Zhengzhou Machinery Research Institute Co., Ltd., Xi'an Fast Automobile Transmission Co., Ltd., Beijing University of Technology, Zhengzhou Tianshi Offshore Oil Equipment Co., Ltd., Lu'an Jianghuai Yongda Machinery Manufacturing Co., Ltd., Dongguan Xinghuo Gear Co., Ltd., Chongqing University Xue, Shenyang Dongrui Hammer Measurement and Control Equipment Co., Ltd., Anhui University of Science and Technology, Dalian University of Technology, Yichang Changji Technology Co., Ltd., Zhengzhou Desen Environmental Technology Co., Ltd. The main drafters of this document. Wang Zhigang, Guan Hongjie, Li Wutian, Lu Yeqing, Zhu Hualiang, Hou Shengwen, Shi Zhaoyao, Wang Zhengbing, Zhang Liyong, Wang Jianmin, Zhang Yongjuan, Ren Jihua, Liu Yi, Chen Yonghong, Xu Jiandong, Ling Siying, Zhang Yuanguo, Tong Aijun, Zhong Ruiling, Wei Fangkun, Xu Wenbo, Fan Ruili, Li Haixia, Fu Xuechuan, Xing Hechen, Dong Fan, Ji Xieru, Li Hongwei, Ji Yihong, Li Tieqiang, Li Tongjie. This document was first published in 1988 and this is the first revision. Rack accuracy

1 Scope

GB/Z 10096-2022 is the Chinese national standard on accuracy of rack, in the field of mechanical systems and components. The /Z suffix marks it as a guiding technical document: it does not prescribe requirements that can be certified against, but sets out the technique, the method or the state of the art that the standards bodies recommend following. It was issued on 12 October 2022 by the State Administration for Market

Regulation; Standardization Administration of China. As a guiding technical document it carries no separate date of entry into force: it applies from publication. Classification: ICS 21.200, CCS J17. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the grades, benchmarks, measurements, tolerance values and drawing annotations of the geometric accuracy of the rack and teeth (hereinafter referred to as "rack accuracy"). This document is applicable to the basic tooth profile conforming to GB/T 1356, the range of normal modulus mn is 1mm~40mm, and the working tooth width b is not large Single straight or helical racks up to 630mm. Warning. Users of this document should note that the accuracy value of the unassembled rack cannot be used to directly judge the use of the assembled rack pair performance.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

GB/T 2821 Gear Geometric Element Code

GB/T 3374.1 Gear Terms and Definitions Part

3 Terms and Definitions

The terms and definitions defined in GB/T 2821 and GB/T 3374.1 and the following terms and definitions apply to this document.

3.1 radial runout Cogging runout Fr Take any section of the rack with no more than 50 tooth pitches, and keep the measuring head and the tooth slot of the measured rack in sequence near the middle of the tooth depth Double-sided contact, measure the difference between the maximum value and the minimum value of the distance from the center of the head ball to the reference surface of the rack.

Note. The measurement principle of radial runout Fr is shown in Figure 1.