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

GB/T 22671-2024

Replacing GB/T 22671-2008

Test methods for external-rotor motors

外转子电动机试验方法

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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 for standardization documents" Drafting. This document replaces GB/T 22671-2008 "Test methods for external rotor motors". Compared with GB/T

22671-2008, except for the structure In addition to adjustments and editorial changes, the main technical changes are as follows: Deleted the vertical installation method and Figure 2 (see Chapter 3 of the.2008 edition); - Deleted "Test requirements" (see Chapter 4 of the.2008 edition), "Measurement" (see Chapter 5 of the.2008 edition) and "Test criteria" "Basic Requirements for Tests" (see Chapter 5) and "Test Preparation" (see Chapter 6 of the.2008 edition) were added. 6); The temperature rise test method has been changed (see Chapter 8, Chapter 8 of the.2008 edition); - The test methods for stall torque and stall current have been changed (see Chapter 10, Chapter 10 of the.2008 edition); - The electric strength test method has been changed (see Chapter 13, Chapter 13 of the.2008 edition); - The turn-to-turn impulse withstand voltage test method has been changed (see Chapter 14, Chapter 14 of the.2008 edition); - The test method for noise determination has been changed (see Chapter 18, Chapter 18 of the.2008 edition); - Added test methods for protection level testing (see Chapter 20); - Added the test method for cogging torque (see Chapter 21); - Added test method for measurement of back electromotive force (see Chapter 22); - Added the test method for torque fluctuation (see Chapter 23); - Added the test method for maximum torque determination (see Chapter 24); - Added the test method for minimum torque determination (see Chapter 25). - Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document was proposed by the China Electrical Equipment Industry Association. This document is under the jurisdiction of the National Technical Committee for Standardization of Rotating Electrical Machines (SAC/TC 26). This document was drafted by: China Electric Power Research Institute Co., Ltd., Guangdong Fanshida Agricultural and Animal Husbandry Fan Co., Ltd., Wolong Electric Drive Co., Ltd. Dongfeng Motor Group Co., Ltd., Midea Group Co., Ltd., Guangdong Welling Motor Manufacturing Co., Ltd., Taizhou Jinyu Electromechanical Co., Ltd. Co., Ltd., Zhuhai Kaibang Motor Manufacturing Co., Ltd., Zhejiang Electric Drive Innovation Center Co., Ltd., Changzhou Xiangming Intelligent Power Co., Ltd., Dongguan Benmo Technology Co., Ltd., Guangdong Xinbao Electric Appliance Co., Ltd., Qingdao Haier Washing Machine Co., Ltd., Haining Aifuluo Electric Co., Ltd. Co., Ltd., Weike Testing Technology Co., Ltd., Hitachi Elevator Motor (Guangzhou) Co., Ltd., Foshan Hongwei Technology Co., Ltd., Weike Certification and Inspection Co., Ltd. Co., Ltd., Hangzhou Saiwei Motor Co., Ltd., Jiaxing Weikai Testing Technology Co., Ltd., General Machinery Key Core Basic Parts Innovation Center (Anhui) Co., Ltd., Huzhou Nanxun Xinlong Motor Co., Ltd., Zhuoerbo (Ningbo) Precision Electromechanical Co., Ltd., Zhejiang Fuerde Drive Dong Technology Co., Ltd., Shenzhen Helishi Intelligent Equipment Co., Ltd., Changzhou Techlan Motor Co., Ltd., Zhoushan Chenguang Electric Co., Ltd., Hangzhou Zhenzheng Weidun Motion Control Technology Co., Ltd. and Huangshan Zhenzhou Electronic Technology Co., Ltd. The main drafters of this document are. Cheng Lei, Gu Zhongli, Ye Qianjie, Luo Junbo, Xie Feng, Wu Yunshan, Wu Di, Ding Wei, Chen Dongsuo, Qiu Yiming, Bi Haitao, Zhang Chuanjia, Liao Xuanhong, Chen Guanghua, Ma Qinggang, Zhu Xianmao, Wu Hongbing, Gao Xiaojun, Chen Jingtao, Xie Jingjuan, Wang Chengyong, Fu Bin, Zhang Xiaobin, Shi Guojun, Sheng

Ronghui, Liao Jianyong, Huang Honghua, Jin Jianjun, Ye Peng, and He Jian. The previous versions of this document and the documents it replaces are as follows: First published in 2008 as GB/T 22671-2008; This is the first revision. - Test methods for external rotor motors

1 Scope

China's national test methods for external-rotor motors. It specifies the basic requirements for testing external-rotor motors and describes the methods for the no-load test, the temperature rise test, the efficiency and power factor test, the steady-state test, the locked-rotor test and the other test items, applying to AC asynchronous and synchronous external-rotor motors. An external-rotor motor turns the usual arrangement inside out: the stator is at the centre and the rotor is the outer shell, rotating around it. That is done because the load is very often the shell itself. A fan impeller, a drum, a roller or a wheel can be built directly onto the rotating outer casing, which removes the shaft, the bearings, the coupling and the housing that an ordinary motor would need to drive it - so an axial fan, a blower, a conveyor roller, an in-wheel drive and a washing machine drum are all built this way. The construction also gives a large rotor inertia, useful in a fan, and a large surface at the outside of the machine. But it makes the standard test methods awkward or invalid, which is why this document exists. There is no shaft extension to couple a dynamometer to, so torque and output power cannot be measured the usual way. The rotor is the outer surface, so it cannot be instrumented while running and its temperature has to be inferred. The stator is inside, surrounded by the rotor, so its cooling is entirely different and a temperature rise test conducted as for a conventional motor gives a misleading result. And the machine is often supplied without a mounting or a load because the customer builds both. The standard sets out how each measurement is made under those conditions. Issued on 29 September 2024 and in force since 1 April 2025, it replaces GB/T 22671-2008.

This document specifies the basic requirements for testing external rotor motors, describing no-load tests, temperature rise tests, efficiency and power factor tests. Test methods for steady-state test, locked-rotor test and other test items. This document applies to AC asynchronous/synchronous external rotor motors (hereinafter referred to as motors).

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 755 Ratings and performance of rotating electrical machines

GB/T 4942-2021 Degrees of protection of rotating electrical machines as a whole (IP code) Classification

GB/T 5171.1 Small power motors Part

3 Terms and definitions

The terms and definitions defined in GB/T 5171.21-2016 and the following apply to this document.

3.1 external-rotor motor An electric motor with a stator inside and a rotor outside.

4 Installation methods and requirements

4.1 Installation Method Use a special fixture to connect the motor housing to the dynamometer shaft, as shown in Figure 1. For electric motors whose rotating shaft can be extended, it is advisable to process the extended shaft and directly connect it to the dynamometer for testing.