

ICS 29.160.30

CCS K 24



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

**GB/T 44294-2024**

---

**General specification for electric spindle motors**

电主轴电动机通用技术规范

**Issued on: August 23, 2024**

**Implemented on: March 1, 2025**

---

**Issued by: State Administration for Market Regulation;  
Standardization Administration of the PRC**

## Table of Contents

|                                                    |    |
|----------------------------------------------------|----|
| 1 Scope ...                                        | 1  |
| 2 Normative references ...                         | 1  |
| 3 Terms and Definitions ...                        | 1  |
| 4 Models, classifications and basic parameters ... | 2  |
| 5 Technical requirements and test methods ...      | 3  |
| 6 Inspection Rules ...                             | 14 |
| 17 Appendix A (Informative) Mounting Surface ...   | 18 |

## 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 is required. 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 Micromotor Standardization Technical Committee (SAC/TC 2). This document was drafted by: Hangzhou Sanxiang Technology Co., Ltd., Ningbo Feishi Technology Co., Ltd., Jiangsu Xingchen High-speed Motor Co., Ltd. Zhejiang University, Ningbo Anxin CNC Technology Co., Ltd., Xiamen Shituo Servo Technology Co., Ltd., Guangdong Dangjia Intelligent Appliance Co., Ltd. Co., Ltd., Zhejiang Feida Lien Precision Manufacturing Co., Ltd., Changzhou Hanqi Motor Co., Ltd., Beijing Jingdiao Technology Group Co., Ltd., Xi'an Micromotor Research Institute Co., Ltd., Zhejiang RiChuang Electromechanical Technology Co., Ltd., Guangdong Zhenyu Technology Co., Ltd., Zhejiang Rujing Technology Co., Ltd. Company, Yiwu Laojin Mould Co., Ltd., Shandong Jiada Testing Co., Ltd., Dongguan Chuangfeng Technology Development Co., Ltd., Hengye Intelligent Drive Dong (Hangzhou) Co., Ltd., Sichuan Emke Servo Technology Co., Ltd., Shenzhen Zhongqu Motor Co., Ltd., Zhejiang Songtian Automotive Motor Systems Co., Ltd. The main drafters of this document are. Hao He, Shen Jianxin, Qiu Yiming, Liu Zhao, Huang Xiangqian, Wu Huajiang, Liu Yuanlin, Jiang Huixing, Dong Yunyue, Qian Cheng, Fu Jiangnan, Li Hui, Hu Yufei, Zhang Xiaobin, Guo Qiaobin, Tao Haitao, Zhang Biying, Xiao Benchong, Jin Qinghe, Wang Fengyan, Gu Weiye, Weng Hailin, Tu Jianmin, Zhong Pingxian, Zheng Dinghe. General technical specifications for electric spindle motors

## 1 Scope

China's national general specification for electric spindle motors. An electric spindle - a motorised spindle - integrates the motor rotor directly onto the spindle shaft, eliminating the belts, gears and couplings that would otherwise drive it. That construction is what makes high speed machining possible: a spindle running at twenty or forty thousand revolutions a minute cannot be belt driven, and every transmission element between motor and tool adds inertia, vibration and a speed limit. The engineering problem is heat and stiffness together. The motor's losses appear inside the spindle, millimetres from the bearings and the tool, so thermal growth moves the tool point unless it is managed; and the bearings must be preloaded enough for stiffness while running fast enough that the preload becomes a heat source itself. The specification's parameters - power against speed, runout, thermal drift - are what a machine tool builder selects on.

This document specifies the models, classifications, basic parameters and technical requirements of electric spindle motors, describes the corresponding test methods, and specifies Inspection rules and delivery preparation. This document is applicable to the manufacture of three-phase asynchronous motors and three-phase permanent magnet synchronous motors for electric spindles.

## 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 755-2019 Ratings and performance of rotating electrical machines

GB/T 2423.1-2008 Environmental testing for electric and electronic products Part

## 3 Terms and definitions

The terms and definitions defined in GB/T 2900.25, GB/T 2900.26 and the following apply to this document.

3.1 Electric spindle The motor is built into the spindle unit to form a precision rotating device that integrates the motor and spindle.