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

GB/T 14711-2025

Replacing GB/T 14711-2013

**General requirements for safety of small and medium size
rotating electrical machines**

中小型旋转电机通用安全要求

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document replaces GB/T 14711-2013 "General requirements for safety of small and medium size rotating electrical machines". Compared with GB/T 14711-2013, apart from structural and editorial changes, the main technical changes are as follows:

- a) deleted the provision that small power motors manufactured to GB/T 5171 could also be assessed against GB/T 12350 (see Clause 1 of the 2013 edition);
- b) added marking and instruction requirements for motor service factor and for converter-fed variable-speed motors (see Clause 4);
- c) added terminal box and wiring device requirements for universal AC/DC motors, for AC motors rated above 750 V (ac) or of frame size H315 and above, and for standby generators (see Clause 6);
- d) added the method for measuring earthing resistance on small power motors (see 9.11);
- e) revised the internal wiring clauses, adding a minimum cross-section for motor leads and stating that the rated voltage of a lead shall not be lower than the maximum working voltage at its location (see Clause 12; Clause 13 of the 2013 edition);
- f) revised the temperature limits for materials supporting live parts and for insulating bushing materials, and added thermal class 200 (N) (see Table 7; Table 6 of the 2013 edition);
- g) revised the high-frequency impulse endurance requirements, the test method and the specimen requirements under electrical insulation (see 14.4; 15.5 of the 2013 edition);
- h) revised the insulation system test requirements, adding qualification tests for type I and type II insulation systems and the marking of the impulse voltage insulation class (IVIC) (see Clause 15; Clause 16 of the 2013 edition);
- i) added thermal test requirements for motors fitted with brake coils or controllers, for special-purpose motors and for converter-fed variable-speed motors, and the rule that where the product standard specifies otherwise, that standard governs (see Clause 20);
- j) revised the range of DC voltages applied when measuring insulation resistance (see Table 18; Table 16 of the 2013 edition);
- k) revised the trip current of the over-current relay on the high-voltage transformer during the power-frequency withstand voltage test (see 23.2.12; 24.2.11 of the 2013 edition);
- l) revised the permitted relative displacement between the cord and the clamping position

after the static pull test on the supply cord clamping device (see 24.8; 25.8 of the 2013 edition);

m) added the requirement that an integrated drive-and-control motor system shall also comply with GB/T 4208 (see Clause 25);

n) added the steady-state damp heat test method, together with requirements for touch current measurement and related safety verification after the damp heat test (see Clause 26).

Attention is drawn to the possibility that some elements of this document may be the subject of patent rights. The issuing body shall not be held responsible for identifying patents.

This document was proposed by the China Electrical Equipment Industry Association, and is under the jurisdiction of the National Technical Committee on Rotating Machinery of Standardization Administration of China (SAC/TC 26).

The successive editions of this document and of the documents it replaces are: first issued in 1993 as GB 14711-1993; first revised in 2006; second revised in 2013 as GB/T 14711-2013; this is the third revision.

1 Scope

This document specifies general safety requirements for small and medium size rotating electrical machines (motors and generators, hereinafter referred to as "motors") that comply with GB/T 755.

This document applies to activities related to the design, manufacture, inspection, and operation of small and medium size rotating electrical machines. Other types of electrical machines can also be implemented as a reference.

2 Normative references

The provisions in the following documents become essential provisions of this document through reference. For dated references, only the version with the date indicated applies; for undated references, the latest version (including all amendments) applies.

GB/T 755 Rotating electrical machines - Rating and performance · GB/T 825 Eyebolts · GB/T 1971 Rotating electrical machines - Terminal markings and direction of rotation · GB/T 2423.3 Environmental testing - Part 2: Test methods - Test Cab: Damp heat, steady state · GB/T 2423.4 Environmental testing - Part 2: Test methods - Test Db: Damp heat, cyclic (12 h + 12 h) · GB/T 2900.1-2008 Electrotechnical terminology - Fundamental terms · GB/T 2900.18-2008 Electrotechnical terminology - Low-voltage apparatus · GB/T 2900.25 Electrotechnical terminology - Rotating machines · GB/T 4074.7-2024 Methods of test for winding wires - Part 7: Temperature index of enamelled winding wires · GB/T 4207

Determination of the proof and comparative tracking indices of solid insulating materials · GB/T 4208 Degrees of protection provided by enclosure (IP code) · GB/T 4942 Degrees of protection provided by the integral design of rotating electrical machines (IP code) · GB/T 5169.11 Fire hazard testing - Part 11: Glow-wire flammability test method for end-products (GWEPT) · GB/T 5169.12 Fire hazard testing - Part 12: Glow-wire flammability index (GWFI) test method for materials · GB/T 5169.16 Fire hazard testing - Part 16: Test flames - 50 W horizontal and vertical flame test methods · GB/T 5169.21 Fire hazard testing - Part 21: Abnormal heat - Ball pressure test method · GB/T 8170 Rules of rounding off for numerical values and expression and judgement of limiting values · GB/T 11026.4-2012 Electrical insulating materials - Thermal endurance - Part 4: Ageing ovens - Single-chamber ovens · GB/T 12113-2023 Methods of measurement of touch current and protective conductor current · GB/T 12665 Damp heat test requirements for electrical machines used under general environmental conditions · GB/T 13002 Rotating electrical machines - Thermal protection · GB/T 16422.2 Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps · GB/T 17948.1-2018 Functional evaluation of insulation systems - Random-wound windings - Thermal evaluation and classification · GB/T 17948.2 Functional evaluation of insulation systems - Random-wound windings - Changes and substitution of components · GB/T 17948.3 Functional evaluation of insulation systems - Form-wound windings - Thermal evaluation and classification · GB/T 17948.4 Functional evaluation of insulation systems (type II) - Form-wound windings - Electrical endurance · GB/T 20111.3 Electrical insulation systems - Thermal evaluation - Part 3: Encapsulated-coil models - Random-wound EIS · GB/T 20139.1-2016 Electrical insulation systems - Thermal evaluation of modifications to an established EIS - Part 1: Random-wound EIS · GB/T 20139.2-2017 Electrical insulation systems - Thermal evaluation of modifications to an established EIS - Part 2: Form-wound EIS · GB/T 21707 Insulation specification for converter-fed variable-speed motors · GB/T 22714 Test specification for interturn insulation of form-wound windings of low-voltage AC machines · GB/T 22716 Test specification for interturn insulation of DC machine armature windings · GB/T 22718 Method for evaluating the thermal endurance of insulation systems of high-voltage machines · GB/T 22719.1 Interturn insulation of random-wound windings of low-voltage AC machines - Part 1: Test methods · GB/T 22719.2 Interturn insulation of random-wound windings of low-voltage AC machines - Part 2: Test limits · GB/T 22720.1-2017 Qualification and quality control tests for partial-discharge-free (type I) insulation systems in converter-fed machines · GB/T 22720.2-2019 Qualification tests for partial-discharge-resistant (type II) insulation systems in converter-fed machines

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 755 and GB/T 2900.1-2008 apply, together with those set out in this clause. Insulating materials are grouped by comparative tracking index: group IIIa covers $175 \leq \text{CTI} < 400$, group IIIb