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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 12350-2022

Replacing GB 12350-2009

Safety requirements of small power motors

小功率电动机的安全要求

Issued on: April 15, 2022 **Implemented on: November 1, 2022**

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1 Scope

GB/T 12350-2022 is the Chinese national standard on safety requirements of small power motors, in the field of electrical engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 15 April 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 November 2022. Classification: ICS 29.160.30, CCS K20. 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 general safety requirements of small power motors. This document applies to small power motors (hereinafter referred to as the motors) specified in GB/T 5171.1; it also applies as a reference to the implementation of other similar motors.

2 Normative references

The following documents are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 755, Rotating electrical machines - Rating and performance

GB/T 1971, Rotating electrical machines - Terminal markings and direction of rotation

GB/T 2423.3, Environmental testing - Part

3 Terms and definitions

Terms and definitions determined by GB/T 2900.25, GB/T 2900.27, GB 4706.1 and GB/T 5171.1, as well as the following, are applicable to this document.

3.1 Creepage distance The shortest path distance along the surface of insulating material between two conductive parts, or between a conductive part and an accessible surface.

3.2 Clearance The shortest spatial distance between two conductive parts, or between a conductive part and an accessible surface.

3.3 Enclosure Easy-to-reach motor surfaces, including the surfaces of motor junction box and other parts. Excluding hard-to-reach parts.

3.4 Component Special accessories for motors. Examples. centrifugal switch, capacitor, thermal protector, etc.

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3.5 Insulator A component used to insulate and support conductors.

3.6 Diameter of motor Diameter measured on the circumscribed circle of the motor stator casing, excluding the dimensions of the motor's radiation ribs, junction boxes and welds.

3.7 Pollution degree Expected degree of contamination of the microenvironment, represented by numbers.

Note. Pollution degree 1.non-pollution, or only dry, non-conductive pollution, which is of no effect. Pollution degree 2.only non-conductive pollution in general; but occasional short-lived conductive pollution by must-be-expected condensation. Pollution degree 3.conductive pollution; or conductive pollution changed from dry non-conductive pollution due to expected condensation. Pollution degree 4.persistent conductive pollution, for example, caused by conductive dust or rain or snow.

3.8 Basic insulation Insulation applied to live parts to provide basic protection against electric shock.

3.9 Supplementary insulation Separate insulation additionally applied to basic insulation in order to provide protection against electric shock in the event of failure of the basic insulation.

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4 Marking and description

4.1 Each motor shall have a firm nameplate indicating the rated data and other necessary matters of the motor in its obvious position. The nameplate of the motor shall contain the following.

a) name of the motor;

b) motor model or specification;

c) rated voltage or rated voltage range (unit. V);

d) rated frequency (unit. Hz);

e) symbols of the nature of power supply, except those marked with the rated frequency;

f) rated current (Unit. A);

g) rated output power or rated output power range (unit. W or kW); the motor with rated torque is only marked with rated output torque or rated output torque range. -- For motors that are completely fitted with other equipment and devices and cannot be separated separately, such as vacuum cleaner motors and drainage pump motors, it is allowed to mark the input power; it shall be indicated on the nameplate that the power is input power; -- The rated output power range or rated output torque range is only applicable to motors with stepless speed regulation; -- For motors with step speed regulation function, rated output power or rated output torque shall be marked in grades;

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h) rated speed or rated speed range (unit. r/min);

Note. The rated speed range is only applicable to motors with stepless speed regulation.

i) efficiency (for motors with energy efficiency labelling requirements);

j) working system (if not S1 working system);

k) capacitance and rated voltage of the capacitor (where applicable);

l) wiring diagram (if there is a wiring diagram label in other positions such as the casing or the manual, it is not necessary to indicate it);

5 Base and enclosure

5.1 General The motor shall have sufficient mechanical strength and rigidity to avoid safety accidents such as fire and electric shock caused by the reduction of clearance or creepage distance, loose parts or displacement caused by mechanical deformation.

5.2 Minimum allowable thickness of motor enclosure

5.2.1 For the unreinforced plane parts, it is specified as follows: -- cast metal thickness >=

3.2 mm; -- malleable cast iron thickness >=

2.4 mm; -- die-casting metal thickness >=

2.0 mm. If its surface is curved, ribbed or otherwise reinforced, or its surface shape has sufficient mechanical strength, the minimum allowable thickness may be reduced to. -- cast metal thickness >=

2.4 mm; -- malleable cast iron thickness >=

1.6 mm; -- die-casting metal thickness >=

5.2.2 For motors with sheet steel casings, the minimum allowable thickness of the steel casings is specified as. -- uncoated shell thickness >=

0.70 mm; -- cladding shell thickness >=

0.75 mm.

5.2.3 For motors with non-ferrous metal casings, the minimum allowable thickness of the casing is specified as

1.0 mm. However, for relatively small areas, curved surfaces and surfaces reinforced by other methods, and when a certain material has been proved by tests to have sufficient mechanical strength, the thickness is allowed to be less than the specified limits in

5.2.2 and this article.

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