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

GB/T 22719.2-2008

**Interturn insulation of random-wound winding for AC
low-voltage electrical machines - Part 2: Test limits**

交流低压电机散嵌绕组匝间绝缘 第2部分：试验限值

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Table of Contents

- 1 Scope
- 2 Normative References
- 3 Terms and Definitions
- 4 Test Parameters
 - 4.2 Impulse test voltage peak value
 - 4.6 The Number of Tests and Process Test
- 5 Comparison Parameters

Foreword

GB/T 22719 Interturn insulation of random-wound winding for AC low-voltage electrical machines consists of following two parts. - Part

1 Scope

GB/T 22719.2-2008 is the Chinese national standard on interturn insulation of random-wound winding for ac low-voltage electrical machines - part 2: test limits, 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 30 December 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 October 2009. Classification: ICS 29.160.01, 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 Part of GB/T 22719 specifies the interturn insulation test of random-wound winding for AC electrical machines - test parameters, test limits and the allowable value of the test waveforms difference quantity when doing the automatic test discrimination. This Part applies to random-wound winding interturn insulation test for the 3-phase or single- phase AC electrical machines of which the nominal voltage is no more than 1140V.

2 Normative References

The articles contained in the following documents have become part of this Part of

GB/T 22719 when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB 755-2008 Rotating electrical machines - Rating and performance (IEC 60034-1.2004, IDT)

GB/T 8170-1987 Rules for rounding off of numeric values

JB/T 9615.1-2000 Test methods of the interturn insulation on random wound winding for AC low-voltage machines

3 Terms and Definitions

For the purpose of this Part, the following terms and definitions apply.

3.1 Comparison parameter The parameters used for comparing the test waveforms difference quantity in the impulse waveform comparison method.

3.2 Waveform area difference The difference of the areas (see figure 1) covered by the two test waveform curves and their corresponding x-coordinate (t) in the tested windings (or coils) or the reference windings (or coils), at any specified comparison discrimination zone.

4 Test Parameters

4.1 Overview The test parameters refer to the impulse test voltage peak value, wave-front time, test time, test voltage input direction, number of tests, and test energy and so on. The key test parameters refer to the impulse test voltage peak value and wave-front time.

4.2 Impulse test voltage peak value

4.2.1 Impulse test voltage peak value of motor winding interturn insulation shall not be less than the value - that is calculated by formula (1), and then it is rounded off to hundreds place (hundred volts) according to provisions of GB/T8170-1987.

4.2.3 The operating factor K₂ is selected according to Table 1 - based on severities of environmental conditions of motor operating, frequency of motor startup or forward-backward turning, difficulty level of motor installation or repair, additional requirements for the motor such as reliability and safety. For other operating conditions or requirements which are not listed in Table 1 (if any), it may be selected by reference according to the specific circumstances of the products.

4.2.4 The tolerance of impulse test voltage peak value is $\pm 5.0\%$ or $\pm 3.0\%$, $\pm 3.0\%$ is recommended to be adopted preferably.

4.2.5 Impulse test voltage peak value can be measured on motor winding (terminal) by

choosing any of methods described below.

4.3 Wave-front Time Wave-front time of impulse test voltage is $0.2\mu\text{s}$ (tolerance is μs) and $1.2\mu\text{s}$ (tolerance is $\pm 30\%$), $0.2\mu\text{s}$ is recommended to adopt preferably.

4.4 Test Time GB/T 22719.2--2008 Impulse voltage test time of each converting wirings shall be based on that the correct judgment can be made on test waveforms. Generally, it takes 1s-3s, and the time can be shorter for the automatic test.

4.6 The Number of Tests and Process Test

4.6.1 As for the three-phase motor, according to test methods and selection principles specified in chapter 5 of JB/T9615.1-2000, any one method can be selected from phase (Δ), line (Y), and angle (Δ) connection methods; then it shall be carried out the impulse test according to provisions of 4.4 - each input direction of impulse test voltage.

5 Comparison Parameters

5.1 Overview Comparison parameters are the test waveforms amplitude value, oscillating period, waveform area difference and area of waveform difference.

5.2 Test Waveforms Amplitude Value and Oscillating Period Generally, the difference in amplitude value and oscillating period of two test waveforms are compared in manual test.

5.4 Allowable Value of the Test Waveforms Difference Quantity In automatic test discrimination, the allowable values for overall test waveforms difference quantity shall be pre-tested and calculated in accordance with provisions specified in Annex A.