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

**GB/T 16318-2021**

Replacing GB/T 16318-1996

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**Basic test method for rotating traction electrical machines**

旋转牵引电机基本试验方法

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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 of Standardization Documents" drafted: This document replaces GB/T 16318-1996 "Basic Test Methods for Rotating Traction Motors": Compared with GB/T 16318-1996, except for the In addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) The description of the scope has been changed, and the content of motor classification has been added (see Chapter 1, Chapter 1 of the:1996 edition);
- b) Added Chapter 3 "Terms and Definitions" (see Chapter 3);
- c) Added the requirements for "test power supply", changed the requirements of "measurement instrument accuracy", and added "measurement of voltage and current" "Measurement of motor input power" requirements (see Chapter 4, Chapter 3 of the:1996 edition);
- d) Changed the description of the content of "Testing before the test" (see Chapter 5, Chapter 4 of the:1996 edition);
- e) Changed the requirement of "Determination of insulation resistance of winding to casing and windings", and added the requirement of "Determination of other insulation resistance" (see 6:1, 6:2, Chapter 5 of the:1996 edition);
- f) "Determination of winding cold temperature", "Measurement method of winding DC resistance" and "Determination of DC motor armature winding resistance" have been changed Requirements for "Determination of Armature Winding Resistance of AC Motors" (see 7:1, 7:2, 7:3, 7:4, Chapter 6 of the:1996 edition);
- g) The requirements of "General Requirements" and "Temperature Rise Test Method" have been added, and the "Determination of Cooling Air Temperature During Temperature Rise Test" and "Motor Winding "Correction of temperature rise" requirements (see 9:1, 9:2, 9:4, 9:6, Chapter 8 of the:1996 edition);
- h) Changed the requirement of "reversal test" and deleted the contents of Table 2~Table 5 (see Chapter 10, Chapter 9 of the:1996 edition);

- i) Changed the requirement of "AC traction motor powered by converter", added "General requirement" and "No-load test of asynchronous traction motor" "Asynchronous traction motor locked-rotor test", "synchronous traction motor open-circuit test" and "synchronous traction motor short-circuit test" requirements, delete In addition to the "crack camera" requirements (see 11:1, 11:3, 10:2, 10:7 of the:1996 edition);
- j) Changed the number of test points (see Chapter 12, Chapter 11 of the:1996 edition);
- k) Deleted the content about "split camera" in "transient test" (see 12:1 of the:1996 edition);
- l) The test circuit diagram is deleted (see Chapter 13 of the:1996 edition);
- m) Added "single-phase AC commutator motor", "main motor-generator set", "auxiliary motor, auxiliary motor-generator set and auxiliary rotary "Transition flow machine" requirements (see 15:1, 15:2, 15:3);

## 1 Scope

GB/T 16318-2021 is the Chinese national standard on basic test method for rotating traction electrical machines, 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 31 December 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 July 2022. Classification: ICS 29.280, CCS K63. 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 basic test methods for rotating traction motors (hereinafter referred to as "motors"): This document applies to rotating electrical machines for rolling stock and road vehicles, including traction motors, engine-driven main generators, main Motor-generator sets, auxiliary motors, auxiliary generators, auxiliary motor-generator sets and auxiliary rotary converters, for rotary traction machines with special requirements For lead motors, any test methods not specified in this document shall be specified by the user and the manufacturer through consultation:

Note 1: This document also applies to rotating electrical machines on trailers pulled by powered vehicles:

Note 2: This document can be applied to rotating electrical machines on special vehicles (such as industrial and mining locomotives), but does not include motor explosion-proof or other possible special tests:

Note 3: This document does not apply to motors and permanent magnet traction motors on

small ground vehicles (such as battery-powered trucks, trucks used in the factory area, etc.): It is also not suitable for micro motors on various vehicles, such as motors for windshield wipers:

## 2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, dated citations documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document:

GB/T 755 Rotating Electric Motor Rating and Performance

GB/T 1029 Test method for three-phase synchronous motor

GB/T 1032 Three-phase asynchronous motor test method

GB/T 2900:25 electrical terminology rotating electrical machine GB/T 2900:

36 Electrical Terminology Electric Traction GB/T 4942:

1 Protection class (IP code) classification of the overall structure of rotating electrical machines

GB/T 10068 Measurement, Evaluation and Limitation of Mechanical Vibration and Vibration of Motors with Shaft Center Height of 56mm and Above GB/T 10069:

1 Noise Determination Methods and Limits of Rotating Electric Machines Part 1: Determination Methods of Rotating Electric Machine Noise

GB/T 21563 Shock and Vibration Test of Rail Transit Rolling Stock Equipment

GB/T 22715 Rotating AC Motor Stator Forming Coil Impulse Voltage Level

GB/T 22716 DC motor armature winding inter-turn insulation test specification

GB/T 22717 Motor magnetic pole coil and inter-turn insulation test specification of magnetic field winding GB/T 22719:

1 Inter-turn insulation of scattered windings of AC low-voltage motors Part 1: Test methods GB/T 22719:

## 3 Terms and Definitions

GB/T 755, GB/T 2900:25, GB/T 2900:36, GB/T 25123:1-2018 and GB/T 25123:2-2018