

ICS 29.160.30

CCS K22



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

GB/T 13957-2022

Replacing GB/T 13957-2008

**Technical requirements for the fundamental series of
three-phase large asynchronous motor**

大型三相异步电动机基本系列技术条件

Issued on: December 30, 2022

Implemented on: July 1, 2023

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

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Foreword

This document was drafted in accordance with the rules provided 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 13957-2008 Technical requirement for the fundamental series of three-phase large asynchronous motor; compared with GB/T 13957-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows: -- Add the normative references GB/T 20160, GB/T 22715, GB 30254-2013; delete the normative reference JB/T 10098 (see Chapter 2; Chapter 2 of the 2008 edition); -- Add the chapter "Terms and definitions" (see Chapter 3); -- Change the type spectrum of the Y series motor, and complete the performance parameters of the corresponding supplementary specifications (see Table 1 ~ Table 4 and Table 10 ~ Table 13; Table 1 ~ Table 4 and Table 10 ~ Table 13 of the 2008 edition); -- Delete the "short-time elevated voltage test" (see 4.10,

5.2 of the 2008 edition); -- Add Table 17 "Inspection rules" (see Chapter 7). Please note that some of the contents of this document may involve patents. The issuing organization of this document is not responsible for identifying patents. This Standard was proposed by China Electrical Equipment Industry Association. This document shall be under the jurisdiction of National Technical Committee 511 on Large Generator of Standardization Administration of China (SAC/TC 511). Drafting organizations of this document: Harbin Electric Power Equipment Co., Ltd., Harbin Large Electrical Machinery Research Institute Co., Ltd., Xiangtan Electric Manufacturing Co., Ltd., DEC (Deyang) Electric Motor Technology Co., Ltd., Shanghai Electric Machinery Co., Ltd., Jiamusi Electric Machine Co., Ltd., Heilongjiang Nuclear Main Pump Engineering Technology Research Center, Lanzhou Electric Corporation, SEC Electric Machinery Co., Ltd., Wolong Electric Nanyang Explosion

Protection Group Co., Ltd., China Nuclear Power Engineering Co., Ltd. Main drafters of this document: Wang Zeyu, Sheng Zhiwei, Wang Jingming, Sun Yutian, Zhao Dongzhi, Zhong Weilin, Peng Dahua, Chang Yanqin, Song Yu, Zhai Ming, Tan Huating, Yang Shengcheng, Tong Fuchun, Zhou Mi. The previous versions of this document and the documents which are replaced by this document are as follows: Technical requirements for the fundamental series of three- phase large asynchronous motor

1 Scope

GB/T 13957-2022 is the Chinese national standard on technical requirements for the fundamental series of three-phase large asynchronous motor, 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 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 July 2023. Classification: ICS 29.160.30, CCS K22. 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 type, basic parameters and dimensions, technical requirements, inspection rules, test methods, as well as requirements for the marking, packaging and warranty period, of three-phase large asynchronous motor. This document applies to large-scale Y series four-pole and above general-purpose cage-rotor three-phase asynchronous motors (hereinafter referred to as "Y series motors") and large-scale YR series four-pole and above general-purpose wound-rotor three-phase asynchronous motors (hereinafter referred to as "YR series motors"). The center heights are 710 mm, 800 mm, 900 mm, 1 000 mm and 1 120 mm, respectively. It applies to large-scale YKS, YRKS series three-phase asynchronous motors as a reference.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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 191, Packaging - Pictorial marking for handling of goods

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

GB/T 997, Classification of types of construction, mounting arrangements and terminal box position (IM Code) for rotating electrical machines

GB/T 1032, Test procedures for three-phase induction motors

GB/T 1096, Square and rectangular keys

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

GB/T 1974, Tangential keys and keyways

GB/T 1993, Cooling methods for rotating electrical machines

GB/T 4772.2, Dimensions and output series for rotating electrical machines - Part 2: Frame numbers 355 to 1000 and flange numbers 1180 to 2360

GB/T 4831, Specification for model of rotating electrical motor

GB/T 4942, Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification

GB/T 10068, Mechanical vibration of certain machines with shaft heights 56 mm and higher - Measurement, evaluation and limits of vibration severity

GB/T 10069.1, Measurement of airborne noise emitted by rotating electrical machines and the noise limits - Part 1: Method for the measurement of airborne noise emitted by rotating electrical machines

3 Terms and definitions

No terms and definitions need to be defined in this document.

4 Types, basic parameters and dimensions

4.1 The product model consists of two parts: product code and specification code, which shall meet the requirements of GB/T 4831.

4.2 The degrees of protection provided by enclosure shall meet the requirements of GB/T 4942.

4.3 The cooling methods for motors are IC01, IC11, IC21, IC31, which shall meet the requirements of GB/T 1993, or be agreed by both parties.

4.4 The construction and mounting arrangements for motors are IMB3, IM7211, IM7212, which shall meet the requirements of GB/T 997, or be agreed by both parties.

4.5 The rating of the motor is a continuous rating based on the S1 duty system.

5.18 The shaft extension of the motor is not allowed to bear the external axial force and radial force other than the weight of the coupling. When the motor and the driven machinery are connected by a flexible coupling, there shall be a limiting device on the coupling, and the allowable movement shall be as stipulated in the agreement.

5.19 The stator winding of the motor shall be equipped with at least 6 embedded resistance temperature measuring elements with graduation number Pt100, and each bearing bush shall be equipped with at least one resistance temperature measuring element with graduation number of Pt100, which shall be stipulated in the agreement if necessary.

5.20 Viewed from the extension end of the main shaft, the terminal box of the motor is usually located on the right side of the machine frame (or according to the agreement). When the power is 2 000 kW and above, the neutral point shall be led out.

5.21 When the alphabetical order of the marks on the outlet end is the same as the voltage phase sequence of the three-phase power supply, the motor shall rotate clockwise when viewed from the extension end of the main shaft.

5.22 The motor is not allowed to be reversed or braked during operation. The YR series motor is allowed to reverse after stopping, and the Y series motor is only allowed to rotate in one direction. Whether they are allowed to reverse after stopping depends on the agreement.

5.23 While meeting the requirements that the terminal voltage during the starting process is not lower than 85% of the rated value, and the resistance torque generated by the load is proportional to the square of the rotational speed, under the condition that the rated speed is less than 60% of the rated torque, the Y series motor is allowed to start twice continuously in the actual cold state (at the initial state of ambient temperature, the motor shall stop naturally between the second starts), or start once in a hot state after rated operation (the initial state does not exceed the rated operating temperature).

5.24 The motor shall have reliable measures to prevent shaft current.

5.25 The appearance and assembly quality requirements of the motor are as follows:

a) The assembly of the motor shall be complete and correct, with all kinds of marks complete;

6 Test methods

6.1 The routine test of the motor shall be carried out according to the provisions of GB/T 1032.

6.2 The mechanical inspection items shall be carried out according to the following requirements:

a) Rotation inspection: The motor shall be smooth and brisk when rotating, without stagnation;

b) Appearance inspection: Check whether the assembly of the motor is complete and correct, and the paint on the surface of the motor shall be dry, uniform, and free from stains, bumps, cracks, etc.;