

ICS 73.100.99; 29.160.30
CCS D 98

MT

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

MT/T 1040-2019

**Specification for shearer variable frequency adjustable speed
definite purpose converter-fed YBVF series travel motors
(English Translation)**

Issued on: November 28, 2019

Implemented on: June 1, 2020

Issued by: State Administration of Coal Mine Safety

Table of Contents

Foreword...	3
1 Scope...	5
2 Normative References...	5
3 Type and Basic Parameters...	6
4 Requirements...	8
5 Test Methods...	16
6 Inspection Rules...	19
7 Marking, Packaging and Storage...	21
Bibliography...	24

1 Scope

This Standard specifies the type and basic parameters, requirements, test methods, inspection rules, marking, packaging, storage and transportation of shear variable frequency adjustable speed definite purpose converter-fed YBVF series travel motor.

This Standard applies to the shear variable frequency adjustable speed definite purpose converter-fed YBVF series travel motor (hereinafter referred to as motors). All other motors derived from this series of motors can also be implemented by reference.

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this document.

GB/T 191 Packaging - Pictorial Marking for Handling of Goods

GB 755-2008 Rotating Electrical Machines - Rating and Performance

GB/T 997-2008 Rotating Electrical Machines-Classification of Types of Construction, Mounting Arrangements and Terminal Box Position (IM Code)

GB/T 1032-2012 Test Procedures for Three-Phase Induction Motors

GB/T 1993-1993 Cooling Methods for Rotating Electrical Machines

GB/T 2423.4-2008 Environmental Testing for Electric and Electronic Products - Part 2:

Test Method - Test Db: Damp Heat, Cyclic (12h+12h Cycle)

GB 3836.1-2010 Explosive Atmospheres-Part 1: Equipment - General Requirements

GB 3836.2-2010 Explosive Atmospheres - Part 2: Equipment Protection by Flameproof Enclosures "d"

GB 3836.3-2010 Explosive Atmospheres - Part 3: Equipment Protection by Increased Safety "e"

GB/T 4942.1-2006 Degrees of Protection Provided by the Integral Design of Rotating Electrical Machines (IP Code) - Classification

GB 10068-2008 Mechanical Vibration of Certain Machines with Shaft Heights 56 mm and Higher-Measurement Evaluation and Limits of Vibration Severity

GB/T 10069.1-2006 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

GB/T 22670-2008 Test Procedures for Converter-Fed Three Phase Cage Induction Motors

GB/T 22719.1-2008 Interturn Insulation of Random-Wound Winding for AC Low-Voltage Electrical Machines - Part 1: Test Methods

GB/T 22719.2-2008 Interturn Insulation of Random-Wound Winding for AC Low-Voltage Electrical Machines - Part 2: Test Limits

AQ/T 1043-2007 Mining Products Safety Label

3.1 Type

3.1.1

The motor shall be made of flameproof type according to the provisions of GB 3836.2-2010, and its explosion-proof mark shall be Exd I Mb.

3.1.2

The cooling method of the motor is casing water cooling, which shall comply with IC3W7 specified in GB/T 1993-1993.

3.1.3

The structure and installation type of the motor shall comply with the provisions of GB/T 997-2008, and be IMB5, IMB10, or other suitable installation types.

3.2 Basic parameters

3.2.1

The rating of the motor is based on the continuous duty system (S1), and the user and the manufacturer are also allowed to agree to determine the rating based on other duty systems;

and specify the corresponding parameters such as speed, load, and load duration, as well as the test methods.

3.2.2

The reference frequency of the motor is 50 Hz; and the rated voltages are 380 V, 660 V and 1140 V.

NOTE: Rated voltage and reference frequency refer to the motor operating voltage and frequency

According to the provisions of 12.4 in GB/T 1032-2012.

5.8 Determination of maximum torque

According to the provisions of 12.1 in GB/T 1032-2012.

5.9 Determination of minimum torque

According to the provisions of 12.2 in GB/T 1032-2012.

5.10 Determination of slip ratio

Under the condition of 50 Hz sinusoidal power supply, add load to the motor to make the motor run at the rated torque; measure the speed or slip according to the provisions of 4.3.5 in GB/T

1032-2012; and measure the slip ratio according to the provisions of 10.3 in GB/T 1032-2012.

5.11 Power frequency withstand voltage test

According to the provisions of 12.6 in GB/T 1032-2012.

5.12 Turn-to-turn insulation test

According to the provisions of GB/T 22719. 1-2008 and GB/T 22719. 2-2008.

5.13 Vibration measurement

When the vibration measurement is powered under the condition of the converter, and the effective value of the vibration speed of the motor at no load shall be measured at three

frequencies of 20 Hz, 50 Hz and 100 Hz; and the maximum value is the vibration speed of the motor. The vibration measurement method shall be in accordance with the provisions of GB

10068-2008.

5.14 Measurement of noise

When the noise measurement is powered by the converter, the noise of the motor at no-load shall be measured at three frequencies of 20 Hz, 50 Hz and 100 Hz, respectively. The method of noise measurement shall be in accordance with the provisions of GB/T 10069.1-2006.

5.15 Measurement of shaft voltage

According to the provisions of 14.7 in GB/T 22670-2008.

5.16 Temperature rise test

5.16.1

The motor temperature rise test method adopts the direct method specified in 11.2.1 of GB/T 22670-2008, but the power supply and loading power (torque) during the test are as specified in 5.16.2. When take temperature measurement and test of each part of the motor, the temperature measurement of the cooling medium shall be in accordance with the provisions of

Clause 6 in GB/T1032-2012 and Clause 11 in GB/T 22670-2008.

5.16.2

When the test is under the power supply of the inverter, the motor runs respectively at a frequency of 50 Hz at the rated torque, and at a frequency of 5 Hz at the rated torque to thermal stability; and measure the temperature rise of the motor. And at a frequency of 100 Hz, after running for 0.5 h at the output torque calculated at the rated power and the synchronous speed of 100 Hz frequency, measure the temperature rise of the motor.

5.16.3

The maximum surface temperature test shall be in accordance with the provisions of 26.5.1.3 in GB 3836.1-2010.

5.17 Load characteristic test

This test shall be carried out after the temperature rise test.

After starting the motor, adjust the frequency converter to 5 Hz, 10 Hz, 20 Hz, 30 Hz, 40