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GB/T 18488.2-2015

Replace GB/T 18488.2-2006

**Drive motor system for electric vehicles - Part 2:
Test methods**

电动汽车用驱动电机系统 第 2 部分：试验方法

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Foreword

- Part 1: Technical conditions;
- Part 2: Test methods.

This part is Part 2 of G /T 18488.

This part is drafted in accordance with the rules given by GB /T 1.1-2009.

This part is a replacement of GB/T 18488.2-2006 *Electric Vehicle Motors and Controllers - Part 2: Test Methods*. Compared with GB/T 18488.2-2006, there are major technical changes as follows in addition to editorial changes:

- Addition of reference standards and part of the standards in the latest version;
- Addition of terms and definitions, test environmental conditions, test power supply voltage stabilization requirements and signal shielding requirements;
- Modification of instrument accuracy, addition of measuring instrument, abolition of the requirements for measuring range of measuring instruments, and addition of requirements for measurement accuracy;
- Modification of wiring requirements, where the wiring specifications in test should be consistent with the actual wiring of the vehicle;
- Modification of the provisions of the mechanical strength of drive motor controller housing, where the mass imposed is determined in accordance with the equivalent pressure;
- Modification of the test method for sealing performance of the cooling circuit of liquid cooling system, where the accuracy of test medium and test instruments is definite;
- Modification of the test method for the cold DC resistance of drive motor stator winding, abolition of the bridge method and the voltmeter-ammeter method, definition of microhmmeter measurement method, and addition of discriminative method for environmental temperature consistency;
- Modification of insulation resistance test method and addition of the measurement method for the insulation resistance of temperature sensor and of drive motor controller by the drive motor stator winding;
- Modification of the withstand voltage test, abolition of short-term boosting withstand voltage test, the armature winding insulation DC leakage current test and DC withstand

voltage test, addition of the inter-case impact withstand voltage between the drive motor field winding and the brushed DC drive motor armature winding, and definition of the power frequency withstand voltage test method for housing, temperature sensor and drive motor controller by drive motor winding;

- Modification of the temperature rise test method, provision of measurement point, recording time and temperature-rise calculation formula, and addition of the determination of the cooling medium temperature and extrapolation calculation method of the winding resistance;

- Modification of efficiency measurement, and provision of the power of drive motor system's assistive devices involved in the calculation;

- Modification of the test method for maximum operating speed, and abolition of the measurement in cold state and definition of data recording time;

- Modification of the environmental adaptability test method, change of the test methods for low temperature test, high temperature test and humid heat test and test content; modification of salt spray test time;

- Modification of the EMC test method, where the test is performed according to the test method provided by the manufacturer or user;

- Modification of the amendment of test results, adjusted to be informative annex;

- Addition of selection methods for the test points and measurement parameters during the speed - torque characteristics and efficiency test, and detailing of test methods;

- Addition of new test items, such as outline, shape and installation dimensions, quality, operating voltage range, continuous torque, continuous power and peak torque, peak power, efficient workspace, maximum efficiency, control accuracy, response time, the drive motor controller current, drive motor controller support capacitor discharge time, resistance to vibration, reliability;

- Abolition of the test methods for controller overload, noise, vibration, touch current test, current test, voltage fluctuation and peak power measurement.

This part is proposed by China Ministry of Industry and Information Technology.

This part is under the jurisdiction of the National Technical Committee of Automotive Standardization (SAC/TC 114).

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Previous versions that this part replaces are as follows:

--GB/T 18488.2-2001, GB/T 18488.2-2006.

Drive motor system for electric vehicles-

Part 2: Test methods

1 Scope

This part of GB/T 18488 stipulates the instrumentation, test preparations and the test methods used in the test of drive motor system for electric vehicles.

This part applies to drive motor system for electric vehicles, drive motor and drive motor controller. The motor vehicle only with power generation and its controller may be performed with reference to this part.

2 Normative references

Following documents are indispensable for application of this document. For the dated documents so quoted, only dated versions apply to this document. For the undated documents so quoted, the latest versions (including all modification sheets) apply to this document.

GB 755 - 2008 Rotating electrical machines - Rating and performance

GB/T 2423.1 - 2008 Environmental testing - Part 2: Test methods - Tests A: Cold

GB/T 2423.2 - 2008 Environmental testing - Part 2: Test methods - Tests B: Dry heat

GB/T 2423.10 - 2008 Environmental testing for electric and electronic products - Part 2: Tests methods - Test Fc: Vibration (sinusoidal)

GB/T 2423.17 - 2008 Environmental testing for electric and electronic products - Part 2: Test method - Test Ka: Salt mist

GB/T 2900.25 Electrotechnical terminology - Rotating electrical machines

GB/T 2900.33 Electrotechnical terminology - Power electronics

GB/T 3859.1 - 2013 Semiconductor converters - General requirements and line commutated converters - Part 1-1: Specification of basic requirements

GB/T 4208 - 2008 Degrees of protection provided by enclosure (IP code)

GB/T 4942.1 - 2006 Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification

GB/T 13422 - 2013 Semiconductor converters - Electrical test methods

GB/T 18488.1 - 2015 Drive motor system for electric vehicles Part 1: Specification

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