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

# **中华人民共和国汽车行业标准**

QC/T 413-2002

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**Basic technical requirements for automotive electric  
equipment**

**汽车电气设备基本技术条件**

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China

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## Foreword

Before the transfer of standard reference, QC/T 413-1999 *Basic Technical Requirements for Automotive Electric Equipment* referred to the Standard ZB T35001-1987. Therefore, the revision of this time is actually the major revision of this Standard after 15 years.

The standard is modified with reference to relevant standards of Japan, Germany and France.

This Standard supersedes QC/T 413-1999 *Basic Technical Requirements for Automotive Electric Equipment*.

The main differences of this standard with QC/T 413-1999 are given as follows:

- The provisions for hot and humid products are canceled and Clauses 3.25 and 3.26 in Version 1999 are removed accordingly;
- The mould growth test is canceled (4.16 in Version 1999);
- The spark grading for the motor converter is canceled (3.17 and 4.10 in Version 1999);
- The replacement test is canceled (3.22 and 4.14 in Version 1999);
- The temperature range of product is adjusted and modified, where the upper and lower limits of working temperature and storage temperature are specified (3.3 in Version 1999; 3.1.3 in this Standard);
- The provisions for nominal voltage is modified, with 6V electric system canceled and the working voltage range added (3.9 in Version 1999; 3.1.4 in this Standard);
- The technical requirements for low-tension electric wire harness and mechanical fasteners are added into the provisions of basic product performance parameters (3.10 in Version 1999; 3.2 in this Standard);
- The recommended levels for short-term ration working time limit are modified, with 0.2 min canceled and 5 s and 15 s added (3.8.2 in Version 1999; 3.1.7.3 in this Standard);
- The temperature rising limits for relevant positions are partially modified (3.18 and 4.11 in Version 1999; 3.3 and 4.3 in this Standard);
- The provisions for noise test methods are added (see 4.4);
- The provisions for overspeed performance are supplemented (3.16 in Version 1999; 3.5 and 4.5 in this standard);
- Provisions for product protection performance are partially modified (3.7 and 4.8 in Version 1999; 3.6 and 4.6 in this Standard);
- The provisions for abnormal voltage resistance performance are added (see 3.7 and 4.7);
- The edition and expression in the provisions for dielectric voltage withstanding performance are partially changed (3.15 and 4.9 in Version 1999; 3.8 and 4.8 in this Standard);
- The provisions for anti-interference performance are largely modified and changed to the provisions for electromagnetic compatibility (3.13 in Version 1999; 3.9 and 4.9 in this Standard);

- The provisions for the temperature and duration of low-temperature test are modified (4.2 in Version 1999; 3.10.1 and 4.10.1 in this Standard);
- The provisions for the temperature and duration of high-temperature test are modified (4.4 in Version 1999; 3.10.2 and 4.10.2 in this Standard);
- The provisions for temperature change test are partially modified, where Method Na is recommended (4.3 in Version 1999; 3.10.3 and 4.10.3 in this Standard);
- The alternate hot and humid test is canceled (3.4 and 4.5 in Version 1999);
- The product performance test for cyclic temperature/humidity change (see 3.11) and the composite temperature/humidity cyclic test are added (see 4.11);
- The vibration test is largely modified, with the fixed-frequency vibration test canceled and the swept vibration severity added (3.6 and 4.7 in Version 1999; 3.12 and 4.12 in this Standard);
- The severity of salt spray test is added (3.5 and 4.6 in Version 1999; 3.13 and 4.13 in this Standard);
- The provisions for industrial solvent resistance performance are added (see 3.14 and 4.14);
- The contents and edition for surface protection performance are partially modified (3.19, 3.20, 3.21, 4.12 and 4.13 in Version 1999; 3.15 and 4.15 in this Standard);
- The product storage period is change from one year to two years (3.23 in Version 1999; 6.3 in this Standard);
- The contents and edition for general test conditions are modified (4.1 in Version 1999; 4.1 in this Standard);
- The provisions for performance parameter inspection are added (4.2 in this Standard);
- The provisions for AQL of products are enhanced (5.4 b in Version 1999; 5.4 in this Standard);
- The number of samples required for type test is change from 9 in 3 groups to 12 in 4 groups, and the test grouping and item sequence are modified (5.6 in Version 1999; 5.5.2 in this Standard);
- The contents that should be included for marking (product marking and package marking) are supplemented and modified according to GB/T 1.1 and relevant national provisions (6.1 and 6.5 in Version 1999; 6.1 in this Standard);
- It is clearly specified that the storage and keeping of products shall meet the relevant provisions in QC/T 238 *Storage and Keeping of Spare Parts of Automobile* (6.7 in Version 1999; 6.3 in this Standard);

Notes to relevant contents in this Standard:

The continuous ration refers to the load and conditions specified for long-term operation of the product; the short-term ration refers to the load, time and conditions specified for short-term operation of the product.

This Standard is proposed by the former National Bureau of Machine Building Industry.

This Standard is under the jurisdiction of National Automobile Standardization Technical

Committee.

The units responsible for drafting this standard: China Automotive Changsha Electric Appliance Co., Ltd., Changsha Automotive Electric Appliance Research Institute, Shanghai Industrial Traffic Electric Equipment Co., Ltd., Changchun Bulbs and Wires Co., Ltd., Hebi Tianhai Group, Suzhou Automotive Electric Equipment Manufacturing Co., Ltd.

The main draftsmen of this standard: Cao Yewan, Jiao Shugui, Min Yuejin, Li Weiyang, Fang Jialiu, Tang Manru, Wang Laisheng, Dai Zifei.

The historical editions superseded by this standard include:

- JB 2261-1979, ZB T35001-1987, QC/T 413-1999;
- JB 517-1977.

# Basic technical requirements for automotive electric equipment

## 1. Scope

This Standard specifies the technical requirements, test methods, inspection rules, marking, packaging, storage and keeping for automotive electric equipment.

This Standard applies for automotive electric equipment (including motors, electric and electronic products, hereinafter referred to as the Products).

## 2. Normative References

The following standards contain provisions which, through reference in this standard, constitute provisions of this standard. For the dated references, all the subsequent amendment lists (excluding the content of corrigendum) or revisions do not apply to this standard; however, the involved parties concluding agreements based on this standard are encouraged to investigate the possibility of applying the latest editions of the standards indicated below. For the undated references, the latest edition applies to this standard.

GB 191 Packaging - Pictorial markings for handling of goods (eqv ISO 780)

GB/T 2423.1 Basic environmental testing procedures for electric and electronic products - Tests A: Cold (eqv IEC 68-2-1)

GB/T 2423.2 Basic environmental testing procedures for electric and electronic products - Tests B: Dry heat (eqv IEC 68-2-2)

GB/T 2423.10 Environmental testing for electric and electronic products - Part 2: Test methods - Test Fc and guidance: Vibration (sinusoidal) (eqv IEC 68-2-6)

GB/T 2423.17 Basic environmental testing procedures for electric and electronic products - Test Ka: Salt mist (eqv IEC 68-2-11)

GB/T 2423.22 Basic environmental testing procedures for electric and electronic products -Test N: Change of temperature (eqv IEC 68-2-14)

GB/T 2423.34 Basic environmental testing procedures for electric and electronic products - Test Z/AD: Composite temperature/humidity cyclic test (eqv IEC 68-2-38)

GB/T 2828 Sampling procedures and tables for lot-by-lot inspection by attributes (Apply to inspection of successive lots or batches)

GB/T 4942.1 Classification of degrees of protection provided by enclosures of rotating electrical machines (eqv IEC 34-5)

GB/T 4942.2 Degrees of protection provided by enclosures for low-voltage apparatus (eqv IEC 947-1)

GB/T 10069.1 Measurement of airborne noise emitted by rotating electrical machinery and the

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