QC

NATIONAL AUTOMOTIVE INDUSTRY

STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 43.080
T 47

QC/T 989-2014

General Requirement of Traction Battery Enclosure for Electric Vehicles

电动汽车用动力蓄电池箱通用要求

Issued on: October 14, 2014 **Implemented on: April 1, 2015**

Issued by: Ministry of Industry and Information Technology of PRC

Ministry of Industry and Information Technology of PRC

Announcement

Year 2014 No.63

The Ministry of Industry and Information Technology approved 494 industry standards (standard numbers, names, major contents, starting date of implementation can refer to Annex 1) including *General Requirement of Traction Battery Enclosure for Electric Vehicles*, as well as 2 light industry standard amendments (see Annex 2). Thereof, there are 26 automotive industry standards, 38 chemical industry standards, 56 metallurgical industry standards, 124 nonferrous industry standards, 51 building material standards, 1 gold industry standard, 7 rare earth industry standards, 38 textile industry standards, 2 package industry standards, 1 pharmaceutical equipment industry standard, 33 electronic industry standards, and 117 communication industry standards.

The above automotive, package, pharmaceutical equipment industry standards are published China Planning Press; the chemical industry standards are published by Chemical Industry Press; the metallurgical industry standards are published by Metallurgical Industry Press; the nonferrous metal, gold, rare earth, and textile industry standards are published by China Standard Press; the building material industry standards are published by China Building Material Industry Press; the electronic industry standards are organized to publish by China Electronic Standardization Institute of Ministry of Industry and Information Technology; while the communication industry standards are published by People's Posts and Telecommunications Press.

Annex: standard numbers, names, starting date of implementation for 26 automotive industry standards.

Ministry of Industry and Information Technology of PRC

October 14, 2014

Annex:

Standard Numbers, Names, Starting Date of Implementation for 26 Automotive Industry Standards

SN	Standard Numbers	Standard Names	Replaced Standard Numbers	Starting Date of Implementation
1	QC/T 989-2014	General Requirement of Traction Battery Enclosure for Electric Vehicles		April 1, 2015
2	QC/T 986-2014	Atomizing Spray Pump for Vehicle Air-Conditioning System		April 1, 2015
3	QC/T 987-2014	Performance Requirements and Test Methods for Safety Belts Retractor of Motor Vehicles		April 1, 2015
4	QC/T 988-2014	Vehicle Door Outside Handle		April 1, 2015
5	QC/T 804-2014	Instrument Panel Assembly and Console Assembly for Passenger Cars	QC/T 804-2008	April 1, 2015
6	QC/T 628-2014	Steering Lock with Ignition Switch Vehicle	QC/T 628-1999	April 1, 2015
7	QC/T 430-2014	Road Vehicles Editorial Nominating Method for the Type Designation of Spark-Plugs	QC/T 430-2005	April 1, 2015
8	QC/T 741-2014	Ultra-Capacitor for Electric Vehicles	QC/T 741-2006	April 1, 2015
9	QC/T 973-2014	Buffering Chunk of Motorcycles and Mopeds Wheels		April 1, 2015
10	QC/T 974-2014	Specifications of Carriage for Three-Wheeled Motorcycles and Mopeds		April 1, 2015
11	QC/T 975-2014	Driving Axle for Right Three-Wheeled Motorcycles and Mopeds		April 1, 2015
12	QC/T 976-2014	Buffering Cover of Motorcycles and Mopeds Wheels		April 1, 2015
13	QC/T 977-2014	Specification for Automotive Electrical Accelerator Pedal Module		April 1, 2015
14	QC/T 978-2014	Relay for Automobile Starters Specification		April 1, 2015
15	QC/T 979-2014	Waterproof Vent Device for Protecting Automotive Electrical and Electronics Equipment		April 1, 2015
16	QC/T 980-2014	Coal Transport Vehicles		April 1, 2015
17	QC/T 23-2014	Milk Tanker	QC/T 23-1992	April 1, 2015
18	QC/T 981-2014	Wheels for Motor Vehicles – Surface Paint Coatings		April 1, 2015

Table of Contents

Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009 *Directives for Standardization – Part 1: Structure and Drafting of Standards*.

This Standard was proposed and under the jurisdiction of National Technical Committee for Standardization of Automotive (SAC/TC 114).

Drafting organizations of this Standard: Beijing Institute of Technology, China Automotive Technology & Research Center, Zhejiang Gushen Energy Technology Co., Ltd., Chongqing Changan New Energy Automobile Co., Ltd., China Automotive Engineering Research Institute Co., Ltd., Shanghai H&D EV Battery Co., Ltd., Shanghai Aowei Technology Development Co., Ltd., Beiqi Foton Motor Co., Ltd., Guangzhou Honda Automobile Co., Ltd., Brilliance Auto Group Co., Ltd., Shanghai CENA Energy Co., Ltd., FAW-Volkswagen Automotive Co., Ltd., Hefei Guoxuan High-Tech Power Energy Co., Ltd., and Harbin Coslight Power Co., Ltd.

Chief drafting staffs of this Standard: Sun Fengchun, Wang Zhenpo, Liu Peng, Yuan Changrong, Sun Jianping, Yao Lei, Zhang Yongsheng, Ma Lishang, Zhao Shuhong, Zhu Wei, Miao Xiaoli, Peng Hanrui, Huang Min, Xu Xingwu, He Xiangyun, Shan Chong, and Meng Xiangfeng.

General Requirement of Traction Battery Enclosure for Electric Vehicles

1 Scope

This Standard specifies the general requirements, safety requirements, mechanical strength, appearance and dimension, environmental resistance requirements, assembly requirements, test methods, identification and mark, transportation, storage and package of battery enclosure in the traction battery system for electric vehicles.

This Standard is applicable to the vehicle charging battery enclosure and swapping battery enclosure.

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) are applicable to this document.

GB 2894 Safety Signs and Guideline for the Use

GB 4208-2008 Degrees of Protection Provided by Enclosure (IP Code)

GB/T 2408-2008 Plastics – Determination of Burning Characteristics – Horizontal and Vertical Test

GB/T 13306-2011 Plate

GB/T 18384.1 Electric Vehicles – Safety Specification – Part 1: On-Board Energy Storage

GB/T 18384.3-2001 Electric Vehicles – Safety Specification – Part 3: Protection of Persons against Electric Hazards

GB/T 18455-2010 Package Recycling Marking

GB/T 19596 Terminology of Electric Vehicles

QC/T 238 Storage and Preservation of Automotive Parts

safety mark; which shall meet the requirements of GB/T 13306-2011, and Sub-clause 6.1 in QC/T 413-2002.

4.1.6 The battery enclosure shall reserve sufficient space and solid foundation for the installation of fuse, power line, collection line, and various sensor components.

4.1.7 All connectors, terminals, electrical contacts without basic insulation shall be enhanced protection; after the jointing with connectors, terminals, and electrical contacts, which shall meet the Class-3 protection requirements stipulated in Table 1 of GB 4208-2008.

4.2 Appearance and dimension

4.2.1 The outer surface of the battery enclosure shall be free from obvious scratches, deformation and the like defects; the surface coating shall be uniform.

4.2.2 The installation of nameplate and mark shall be upright, firm, and the characters shall be clear, an easy to observe.

4.2.3 The parts shall be firm and reliable; without rust, burrs, cracks and the like defects and damages.

4.2.4 In the direction facing the front panel and identification of the battery enclosure, the width is from left to right; height is from up to down; length is from front to rear; the dimension is the maximum dimension range, refer to Appendix A.

4.2.5 This specification is applicable to the battery enclosure with hexahedron structure, while not applicable to the battery enclosure with multi-body combination structure or abnormal-shape.

4.3 Mechanical strength

4.3.1 Vibration resistance strength

After the test specified in Sub-clause 5.3.1, the battery enclosure shall have no mechanical damage, deformation, loose phenomenon on the fastening positions; the locking device shall not be damaged.

4.3.2 Impact resistance strength

After the test specified in Sub-clause 5.3.2, the battery enclosure shall have no mechanical damage, deformation, loose phenomenon on the fastening positions; the locking device shall not be damaged.

4.3.3 Locking and fixing

The battery enclosure equipped with locking device for fixing, the locking device shall be reliable, and take the anti-misuse measures.

c) Atmospheric pressure: 86kPa~106kPa.

5.1.2 Instrumentation

The test instrument and equipment shall measure the uncertainty and stability meeting the requirements; the measurement of uncertainty shall be one magnitude better than the uncertainty of the measured index or the maximum allowable error is less than one third of the allowable error of the measured parameters.

5.2 Appearance and dimension inspection

5.2.1 Appearance inspection

Visually examine the outer surface of battery pack, and the installation of nameplate and mark; use the fastening tool to check whether the tightening situation of the parts; the inspection results shall meet the requirements of Sub-clause 4.2.

5.2.2 Dimension inspection

Use the measuring gauge to measure the dimension of the battery enclosure, which shall meet the requirements of Sub-clause 4.2.

5.3 Mechanical strength test

5.3.1 Vibration test

Refer to the vehicle installation position of the test device, fix the battery enclosure onto the vibration test machine bench, the locking device is in the locking state. The vibration test shall be performed in the three directions, firstly from Axis-Z, secondly from Axis-Y, and finally from Axis-X. The vibration frequency range is of 10Hz~55Hz; the maximum acceleration is of $30m/s^2$, perform 10 times scanning cycles along the three axes that are perpendicular with one another, the scanning speed rate is 1oct/min. After the test, the battery enclosure shall have no mechanical damage, deformation, loose phenomenon on the fastening positions; the locking device shall have no damage.

5.3.2 Impact test

Fix the battery enclosure onto the impact test machine bench, locking device is in the locking state; during the test, shock pulse shall adopt the semi-sinusoidal pulse waveform; the peak acceleration is of $150m/s^2$, the retention time is of 11ms. After the test, the battery enclosure shall have no mechanical damage, deformation, loose phenomenon on the fastening positions; the locking device shall have no damage.

5.4 Safety test

5.4.1 Dust proof test

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------