

Translated English of Chinese Standard: QC/T 29106-2014

www.ChineseStandard.net
Sales@ChineseStandard.net

ICS 43.040.10

E 36

QC

Automobile Industry Standard
of the People's Republic of China

QC/T 29106-2014

Replacing QC/T 29106-2014

Technical Specification of
Automobile Wire Harness

汽车电线束技术条件

QC/T 29106-2014 How to BUY & immediately GET a full-copy of this standard?

1. www.ChineseStandard.net;
2. Search --> Add to Cart --> Checkout (3-steps);
3. No action is required - Full-copy of this standard will be automatically & immediately delivered to your EMAIL address in 0~25 minutes.
4. Support: Sales@ChineseStandard.net. Wayne, Sales manager

Issued on: May 06, 2014

Implemented on: October 1, 2014

**Issued by: Ministry of Industry and Information Technology of the
People's Republic of China**

Ministry of Industry and Information Technology

of the People's Republic of China

Announcement

No. 32 of 2014

The Ministry of Industry and Information Technology has approved 1208 industry standards including “The Self-adhesive Label Printing Machine”, etc. (see Annex 1 for standard numbers, names, main content and initial implementation dates), including 471 mechanical industry standards, 32 automobile industry standards, 70 ship industry standards, 111 aviation industry standards, 137 chemical industry standards, 69 metallurgy industry standards, 30 building materials industry standards, 14 petrochemical industry standards, 6 non-ferrous metal industry standards, 89 light industry standards, 49 textile industry standards, 79 ordnance industry and civilian products industry standards, 15 nuclear industry standards, 2 electronics industry standards and 34 communications industry standards. 39 metallurgical industry standard samples including “Manganese Silicon Alloy (FeMn68Si16)” have approved (see Annex 2 for the standard sample list and composition content).

The above mechanical industry standards were published by China Machine Press; the automobile industry standards, the chemical industry standards and the non-ferrous metal industry standards were published by China Planning Press; the ship industry standards were organized and published by China Institute of Marine Technology & Economy; the aviation industry standards were organized and published by China Institute of Aviation; the chemical industry standards were published by Chemical Industry Press; the metallurgical industry standards were published by Metallurgical Industry Press; the building materials industry standards were published by Building Materials Press; the petrochemical industry standards were published by China Petrochemical Press; the light industry standards were published by China Light Industry Press; the textile industry standards were published by China Standards Press; the standards of the ordnance and civilian products industry were organized and published by Chinese Ordnance Industry Standardization Institute; the nuclear industry standards were organized and published by the Nuclear Industry Standardization Institute; the electronics industry standards were published by the Electronics Industry Standardization Institute of the Ministry of Industry and Information Technology; the communications industry standards were published by the People's Posts and Telecom Press and the communications engineering construction industry

Annex:

Numbers, standard names and initial implementation dates of 32 automotive industry standards

S/N	Standard No.	Standard name	Standard No. replaced	Initial implementation date
1	QC/T 231-2014	Specification of Kick-Starter for Motorcycles and Mopeds	QC/T 231-1997	10/01/2014
2	QC/T 233-2014	Performance and Measurement Method for Static Intensity of Motorcycles and Mopeds	QC/T 233-1997	10/01/2014
3	QC/T 66-2014	Wet Clutch for Moped and Motorcycle	QC/T 66-1993	10/01/2014
4	QC/T 962-2014	Technical Specifications of Paint Layer of Motorcycles and Mopeds		10/01/2014
5	QC/T 680-2014	General Technical Specifications for Voltage Regulators for Motorcycles And Mopeds	QC/T 680-2002	10/01/2014
6	QC/T 963-2014	Drum Brake of Motorcycles and Mopeds Wheels		10/01/2014
7	QC/T 234-2014	Technical Specifications of Steering Bearing for Motorcycles and Mopeds	QC/T 234-1997	10/01/2014
8	QC/T 964-2014	The Strength of the Plastic Seats and Their Anchorages for City Buses		10/01/2014
9	QC/T 644-2014	Specifications for Automobile Metal Fuel Tank	QC/T 644-2000, QC/T 488-2000	10/01/2014
10	QC/T 965-2014	Driver of Electric Rear-View Mirrors for Motor Vehicle		10/01/2014
11	QC/T 966-2014	Coating Technical Conditions for Automobile Plastic Parts		10/01/2014
12	QC/T 459-2014	Truck with Loading Crane	QC/T 459-2004	10/01/2014
13	QC/T 29106-2014	Technical Specification of Automobile Wire Harness	QC/T 29106-2004	10/01/2014

14	QC/T 198-2014	General Technical Specification for Automobile Switch	QC/T 198-1995	10/01/2014
15	QC/T 220-2014	Technical Specifications for Automobile Fusible Links	QC/T 220-1996	10/01/2014
16	QC/T 967-2014	Port Fuel Injector for Gasoline Engine		10/01/2014
17	QC/T 968-2014	Determination Methods of Platinum, Palladium and Rhodium Contents in Metallic Catalytic Converters		10/01/2014
18	QC/T 969-2014	Interior Trunk Release for Compartment of a Passenger Car		10/01/2014
19	QC/T 636-2014	Electric Window Regulator Specification for Vehicles	QC/T 636-2000	10/01/2014
20	QC/T 970-2014	Passenger Car Air Filter Technical Specification		10/01/2014
21	QC/T 971-2014	Specifications of Air filter Element for Motorcycles and Scooters		10/01/2014
22	QC/T 972-2014	Technical Requirements and Test Method for Motor Vehicle-Electronically Controlled Hydraulic Power Steering Gear		10/01/2014
23	QC/T 299.1-2014	Automobile hydraulic steering power pump - Part 1: Technical Requirements	QC/T 299-2000	10/01/2014
24	QC/T 299.2-2014	Automobile Hydraulic Steering Power Pump - Part 2: Test Method	QC/T 299-2000	10/01/2014
25	QC/T 563-2014	Performance and Test Methods for Automobile Steering Wheel	QC/T 563-1999	10/01/2014
26	QC/T 29097-2014	The Technical Specifications of Automobile Steering Gear	QC/T 29097-1992	10/01/2014
27	QC/T 29096-2014	The Bench Test Methods of Automobile Steering Gear	QC/T 29096-1992	10/01/2014
28	QC/T 303-2014	Technical Requirements and Test Methods for Motor Vehicles Oil Reservoir	QC/T 303-1999	10/01/2014
29	QC/T 301-2014	Technical Requirements and Test Methods for Motor Vehicles Power Cylinder	QC/T 301-1999, QC/T 302-1999	10/01/2014
30	QC/T 70-2014	Measurement Method of Acoustic Noise for Engines of Motorcycles and Mopeds	QC/T 70-1993	10/01/2014

Table of Contents

Foreword.....	8
1 Scope	10
2 Normative References.....	10
3 Terms and Definitions	12
4 Requirements	13
5 Test Method	25
6 Inspection Rules	33
7 Marking, Packaging, Storage and Custody	35
Annex A (Normative) Requirements for the Cross-section of Crimping Area and Crimping Juncture of Terminals and Wire Conductors	37
Annex B (Normative) Heat-shrinkable Double-wall Tubes for Automobile Wire Harnesses	39
Annex C (Normative) Pressure-sensitive Adhesive Tapes for Automobile Wire Harnesses	42
Annex D (Normative) Bellows for Automobile Wire Harnesses	44

Foreword

This Standard is drafted in accordance with the rules given in GB/T 1.1-2009 "Standardization Work Guidelines - Part 1: Structure and Preparation of Standards".

This Standard is the revision of QC/T 29106-2004. Compared with QC/T 29106-2004, main changes are as follows:

- Normative References (Clause 2) is added with GB 8410, GB 11122, GB 19147, GB/T 2423.1-2008, GB/T 2423.2-2008, GB/T 2423.17-2008, GB/T 2423.22 - 2002, GB/T 28046.3-2011, SJ/T 11363 and NB/SH/T 0521.
- Terms and Definitions (Clause 3) is added with the definitions of "housing", "protection sleeve" and "clip".
- ADD the limit deviation requirements for the dimensions "between clips" (Table 1 in 4.3).
- ADD the commonly used tape binding method and rules of three kinds of wire (4.2.7).
- ADD water resistance requirements for the installation of rubber parts (4.6).
- ADD the requirements for the minimum tension and the voltage drop of the conductor crimp zone of wires with specifications of 0.22 mm², 0.35 mm², 3.0 mm², 3.0 mm², 5.0 mm², etc. (Table 2 and Table 3).
- CANCEL the definition of puncture connection (3.8 of the original edition) and the corresponding clauses (4.4.6 of the original edition).
- SPECIFY sub-items for the crimp junctions and add the corresponding requirements (4.4).
- SPECIFY the voltage drop test measuring points and the voltage drop calculation method and add the determination method of temperature balance during the test procedure (5.4.6 and 5.5.3).
- MODIFY the chemical resistance test method and test parameters (5.16 of the original edition and 5.14 of this edition).
- MODIFY partly the normative Annex A, Requirements for Cross-section of Crimp and Crimp Junctions for Terminals and Wire Conductors.

Automobile Wire Harness - Technical Requirements

1 Scope

This Standard specifies the requirements, test methods, inspection rules, marking, packaging, storage and custody of automobile wire harnesses (hereinafter referred to as wire harnesses).

This Standard applies to various automobile wire harnesses with the nominal voltage less than 60 V (including single-wire assemblies).

2 Normative References

The following documents are essential to the application of this Standard. For the dated references, only the dated editions apply to this Standard. For the undated references, the latest edition (including all amendments) applies to this Standard.

GB/T 2423.1-2008 Environmental Testing - Part 2: Test method - Test A: Cold

GB/T 2423.2-2008 Environmental Testing - Part 2: Test method - Test B: Dry heat

GB/T 2423.17-2008 Environmental Testing for Electric and Electronic Products - Part 2: Test Method - Test Ka: Salt mist

GB/T 2423.22-2002 Environmental Testing for Electric and Electronic Products - Part 2: Test Method - Test N: Change of Temperature

GB/T 2828.1-2012 Sampling Procedures for Inspection by Attributes – Part 1: Sampling Schemes Indexed by Acceptance Quality Limit (AQL) for Lot-by-Lot Inspection

GB/T 4086 Glass Cleaning Agent

GB 8410-2006 Flammability of Automobile Interior Materials

GB 11121 Gasoline Engine Oils

GB 11122 Diesel Engine Oils

GB/T 13527.2 Soft PVC Tube (for electric wire insulation)

GB 17930 Gasoline for Motor Vehicles

GB 19147 Automobile Diesel Fuels (V)

GB/T 25085 Road Vehicles - 60 V and 600 V Single - Core Cables

GB/T 28046.3-2011 Road Vehicles - Environmental Conditions and Testing for Electrical and Electronic Equipment - Part 3: Mechanical Loads

QC/T 238 Storage and Custody of Auto Parts

QC/T 349 Plastic Fastening Belt

QC/T 417.1-2001 Road Vehicles - Connections for on-Board Electrical Wiring Harnesses - Part 1: Definitions, Test Methods and General Performance Requirements (the Automobile Part)

QC/T 417.3 Road Vehicles - Connections for on-Board Electrical Wiring Harnesses - Part 3: Taps for Single-Pole Connections - Dimensions and Specific Requirements

QC/T 417.4 Road Vehicles - Connections for on-Board Electrical Wiring Harnesses - Part 4: Tabs for Multi-Pole Connections - Dimensions and Specific Requirements

QC/T 417.5 Road Vehicles - Connections for on - Board Electrical Wiring Harnesses - Part 5: Column Taps for Single - and Multi-Pole Connections - Dimensions and Specific Requirements

QC/T 29010 Wire Joint Type, Size and Technical Requirements for Automobile Low Voltage

QC/T 29013 Wire Joint Type, Size and Technical Requirements for Automobile Storage Battery

HG/T 2196 Standard Classification System for Rubber Products in Automotive Application

JB/T 6313.1 Braided Copper Wires for Electrical Purposes - Part 1: General

JB/T 6313.2 Braided Copper Wires for Electrical Purposes - Part 2: Diagonal Braided Wires

JB/T 6313.3 Braided Copper Wires for Electrical Purposes - Part 3: Plain Braided Wires

NB/SH/T 0521 Ethylene Glycol and Propylene Glycol Base Engine Coolants

- a) Test facility: tensile testing machine: its range shall be determined as needed and indication error not greater than $\pm 1\%$; the sample fixture shall move at uniform speed, the fixture moving speed of 20 mm/min ~ 200 mm/min as a constant value.
- b) Test sample: Take samples from actual products; the length of samples is the minimum length to fix on the tensile testing machine.
- c) Test procedure: Fix the samples on the fixture of the tensile testing machine, apply tensile force in the direction of wire axis and then take down the maximum tensile indication value during the testing process of terminals.

5.4.6 Voltage drop test:

- a) Test facility:
 - 1) Constant current power supply: the current output range 0 ~ 300 A (or determined as needed); the maximum allowable deviation of output current $\leq \pm 1\%$.
 - 2) Digital millivoltmeter: the accuracy level not lower than level 0.5.
 - 3) Temperature measuring instrument and thermocouple: the accuracy level not lower than level 0.5.
- b) Test sample: Take samples from actual products; the length of wire remaining on the samples shall be more than 160 mm. Conduct brazing treatment for the measuring points as shown in Figure 16 to make sure the wire conductor will not get loose.
- c) Test procedure: Connect the circuit as shown in Figure 16, determine the test current according to Table 3, conduct measurement after heat balance, determine heat balance from 5 temperature readings at least from the temperature measuring points and read once every other 2 min. The maximum temperature difference among 5 consecutive readings shall be less than $\pm 2\text{ }^{\circ}\text{C}$. When a terminal connects with two or more wires, each wire shall be inspected separately. The voltage drop of conductor crimping area shall be calculated according to Formula (1):

$$U_{AB} = U_{AC} - U_{CD} \dots\dots\dots (1)$$

In the formula:

U_{AB} -- Voltage drop of conductor crimping zone, mV;

5.7 Circuit Testing

Use a special electrical circuit testing device or conduction apparatus for inspection.

5.8 Low temperature resistance test

Conduct the test according to Test Ad of GB/T 2423.1-2008; the test lasts for 4 h.

5.9 High temperature resistance test

Conduct the test according to Test Bd of GB/T 2423.2-2008; the test lasts for 8 h.

5.10 Temperature change resistance performance test

Conduct the test according to Test Nb of GB/T 2423.22-2008; the test lasts for 2 h.

5.11 Cyclic change resistance test of temperature and humidity

Implement according to QC/T 417.1-2001 4.10.

5.12 Vibration resistance test

Implement according to 4.11 in QC/T 417.1-2001; determine the vibration test parameters according to 4.1 in GB/T 28046.3-2011.

5.13 Salt Spray Resistance Test

Conduct the test according to the requirements of GB/T 2423.17; the test lasts for 48 h.

5.14 Chemical Resistance Test

5.14.1 Test facility:

- a) Constant temperature oil tank: temperature range, room temperature °C ~ 60°C:
temperature deviation ± 2 °C [[Translator note: there is no range °C ~ 60°C](#)].
- b) Vehicle fluids: Select and prepare according to Table 6.
 - Automobile gasoline shall meet the requirements of GB 17930;
 - Automobile diesel shall meet the requirements of GB 19147;
 - Gasoline engine oil shall meet the requirements of GB 11121;
 - Diesel engine oil shall meet the requirements of GB 11122;

7.1.2 When it is not required by drawings and technical documents, the product marking shall include the items as follows:

- a) Name of product;
- b) Model or applicable vehicles;
- c) Manufacturer or trademark;
- d) Date of manufacture or code;
- e) Barcode required by User.

7.2 Packaging

Packing documents:

- a) Packing list;
- b) Factory certificate of product;
- c) Instructions of operation and maintenance required by user.

7.3 Storage and Custody

The storage and storage of the product shall meet the relevant requirements of QC/T 238. The shelf life of the product is normally 2 years. The product shall continue to meet the mentioned requirements of this standard after 2 years' shelf life.

Table D.2 Bellows Performance Requirements

S/N	Item	Requirement
1	3000 h heat aging (Test temperature is the upper limit of the operating temperature in Table D.1; test duration: 3000 h)	No embrittlement or pulverization
2	Thermal aging (Test temperature and test duration: A: 125°C/ 240 h; B: 150°C/ 240 h; C: 150°C/ 500 h; D: 175°C/ 240 h; E: 190°C/ 180 h; F: 220°C/ 240 h; G: 260°C/500 h)	No embrittlement or pulverization
3	Low temperature impact (Use the bellows filled with PVC wire up to 75% as the test sample, test temperature - 40°C and test duration 4 h. In the environment of - 40°C, use a weight of 300 g to fall freely to impact the sample from the height of 100 mm)	No cracks or fractures
4	Flexibility (applicable to open bellows) (Under normal temperature, wind the hollow bellows around a pole two times to make the opening located outside of the bend. If the inner diameter of the bellows is less than 10 mm, the diameter of the pole is 4 times of the outer diameter of the bellows. If the inner diameter of the bellows is more than 10 mm, the diameter of the pole is 2 times of the outer diameter of the bellows.)	The wave crests on both sides of the opening shall not overlap or stagger. The bellows shall not narrow down; the opening of slot shall not be more than 1 mm.
5	Flame-retardant performance (burning rate)	≤ 100 mm/min (GB 8410-2006)

_____ **END** _____

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

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

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