

Translated English of Chinese Standard: QC/T1072-2017

[www.ChineseStandard.net](http://www.ChineseStandard.net) → Buy True-PDF → Auto-delivery.

[Sales@ChineseStandard.net](mailto:Sales@ChineseStandard.net)

**QC**

AUTOMOBILE INDUSTRY STANDARD  
OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 43.040.10

T 35

**QC/T 1072-2017**

---

**Automotive shift position sensor**

汽车用档位传感器

**Issued on: April 12, 2017**

**Implemented on: October 01, 2017**

---

**Issued by: Ministry of Industry and Information Technology of PRC**

## Table of Contents

|                                             |    |
|---------------------------------------------|----|
| Foreword .....                              | 7  |
| 1 Scope .....                               | 8  |
| 2 Normative references .....                | 8  |
| 3 Terms and definitions.....                | 9  |
| 4 Requirements .....                        | 9  |
| 5 Test methods .....                        | 14 |
| 6 Inspection rules .....                    | 17 |
| 7 Marking, packaging, storage, custody..... | 19 |

## Attachment:

### Number, name and date of implementation of 22 automotive industry standards

| No. | Standard number  | Standard name                                                                                   | Number of standard replaced | Date of implementation |
|-----|------------------|-------------------------------------------------------------------------------------------------|-----------------------------|------------------------|
| 301 | QC/T 727-2017    | Instrument for automobile and motorcycle                                                        | QC/T 727-2007               | 2017-10-01             |
| 302 | QC/T 803-2017    | Oxygen sensor for automobile                                                                    | QC/T 803.1-2008             | 2017-10-01             |
| 303 | QC/T 1072-2017   | Gear position sensor for automobiles                                                            |                             | 2017-10-01             |
| 304 | QC/T 1073.1-2017 | Accelerometers for automobiles - Part 1: Linear accelerometers                                  |                             | 2017-10-01             |
| 305 | QC/T 1074-2017   | Technical specifications for automotive parts remanufacturing products                          |                             | 2017-10-01             |
| 306 | QC/T 1075-2017   | Technical conditions for metal honeycomb carrier of exhaust catalytic converter                 |                             | 2017-10-01             |
| 307 | QC/T 777-2017    | Technical conditions for electromagnetic fan clutch of automobile                               | QC/T 777-2007               | 2017-10-01             |
| 308 | QC/T 1076-2017   | Performance requirements and test methods for continuously variable transmission (CVT)          |                             | 2017-10-01             |
| 309 | QC/T 1077-2017   | Terminology and definitions for classification of automatic control transmission for automobile |                             | 2017-10-01             |
| 310 | QC/T 1078-2017   | Advertising vehicle                                                                             |                             | 2017-10-01             |
| 311 | QC/T 1079-2017   | Suction & delivery vehicle                                                                      |                             | 2017-10-01             |
| 312 | QC/T 1080-2017   | Mobile loudspeaker for popularization of science                                                |                             | 2017-10-01             |
| 313 | QC/T 1081-2017   | Electric power steering device for automobile                                                   |                             | 2017-10-01             |
| 314 | QC/T 1082-2017   | Motor for electric power steering device of automobile                                          |                             | 2017-10-01             |
| 315 | QC/T 1083-2017   | Controller for electric power steering device of automobile                                     |                             | 2017-10-01             |
| 316 | QC/T 1084-2017   | Sensor for electric power steering device of automobile                                         |                             | 2017-10-01             |
| 317 | QC/T 1085-2017   | X-ray testing for light-alloy wheel of motorcycle                                               |                             | 2017-10-01             |
| 318 | QC/T 1086-2017   | Technical conditions for range extenders for electric vehicles                                  |                             | 2017-10-01             |

## Automotive shift position sensor

### 1 Scope

This standard specifies the requirements, test methods, inspection rules for rotary shift position sensors for automobiles.

This standard is applicable to rotary shift position sensors (hereinafter referred to as "sensors") for speed ratio adjustment of automatic transmissions of category M and N automobiles. Other types of shift position sensors may refer to this standard.

### 2 Normative references

The following documents are indispensable for the application of this standard. For dated references, only dated versions apply to this standard. For undated references, the latest edition (including all amendments) applies to this standard.

GB/T 21437.2 Road vehicles - Electrical disturbances from conduction and coupling - Part 2: Electrical transient conduction along supply lines only

GB/T 28046.2-2011 Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 2: Electrical loads

GB/T 28046.3-2011 Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 3: Mechanical loads

GB/T 28046.4-2011 Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 4: Climatic loads

GB/T 30038-2013 Road vehicles - Degrees of protection (IP code) - Protection of electrical equipment against foreign objects, water and access

QC/T 413-2002 Basic technical requirements for automotive electric equipment

GB/T 33014.1 ~ 33014.5 Road vehicles - Component test methods for electrical/electronic disturbances from narrowband radiated electromagnetic energy

The sensor shall be capable of withstanding a voltage of 50 Hz and an actual sine wave of 500 V for a period of 1 min. The product after test shall comply with the provisions of 4.2.

Note: For passive device sensors, it is recommended to measure the insulation resistance.

## **4.6 Temperature resistance**

### **4.6.1 Low-temperature storage performance**

When the sensor is subject to the low-temperature storage test at -40 °C and restored at the test environment for 2 h, the performance shall be in accordance with the provisions of 4.2.

### **4.6.2 High-temperature storage performance**

When the sensor is subject to the high-temperature storage test at 85 °C and restored at the test environment for 2 h, the performance shall be in accordance with the provisions of 4.2.

### **4.6.3 Resistance to rapid temperature changes**

When the sensor is subject to the rapid temperature changes (low-temperature at -40 °C and high-temperature at 125 °C) and restored at the test environment for 2 h, the performance shall be in accordance with the provisions of 4.2.

### **4.6.4 Low-temperature working performance**

When the sensor is subject to the low-temperature resistance test at -40 °C, the performance of the sensor shall be in accordance with the provisions of 4.2.

### **4.6.5 High-temperature working performance**

When the sensor is subject to the high-temperature resistance test at 125 °C, the performance of the sensor shall be in accordance with the provisions of 4.2.

### **4.6.6 Temperature drift performance**

The temperature drift of the sensor within the working temperature range shall not exceed:

- The output of voltage signal is 40 mV;
- The output of PWM signal is 1.2%.

## **4.7 Resistance to cyclic damp heat**

After the sensor has been subjected to a cyclic damp heat test, the performance

### **5.3.2 Response time**

Mount the sensor on a dedicated test device, turn it from 0 degrees to a maximum angle at a speed of not more than 10 rad/s. Measure the time required from reaching the maximum angle until the sensor's output signal meets the requirements of 4.2.1. Turn it from the maximum angle point to 0 degrees at a speed of not more than 10 rad/s, measure the time required from reaching to 0 degrees until the sensor's output signal meets the requirements of 4.2.1.

### **5.4 Test of resistance to working voltage**

Apply the minimum and maximum operating voltages for the sensor according to Table 1. Check the basic performance according to 5.3.

### **5.5 Test of resistance to abnormal voltage**

#### **5.5.1 Test of reverse connection of power polarity**

It is carried out according to the provisions of 4.7.2.3 of GB/T 28046.2-2011. The test voltage of a 5 V sensor is 5 V.

#### **5.5.2 Test of power overvoltage**

It is carried out according to the provisions of 4.3.1.1.2 or 4.3.2.2 of GB/T 28046.2-2011. The test voltage of a 5 V sensor is 7 V.

### **5.6 Test of insulation withstanding voltage**

It is carried out according to the provisions of 4.11.2 of GB/T 28046.2-2011.

### **5.7 Test of temperature resistance**

#### **5.7.1 Low-temperature storage test.**

It is carried out according to the provisions of 5.1.1.1.2 of GB/T 28046.4-2011.

#### **5.7.2 High-temperature storage test.**

It is carried out according to the provisions of 5.1.2.1.2 of GB/T 28046.4-2011.

#### **5.7.3 Test of resistance to rapid temperature change**

Follow the provisions of 5.4.2 of GB/T 28046.4-2011 to carry out 100 rapid temperature change tests. The holding time at low-temperature and high-temperature in each cycle is 60 min.

#### **5.7.4 Test of low-temperature working performance**

Each sensor can only exit-factory after passing inspection and being attached with the product quality certificate and marking.

## **6.2 Exit-factory inspection**

The exit-factory inspection items include sensor shape, marking, basic performance.

## **6.3 Type inspection**

### **6.3.1 Several situations in which type inspection shall be carried out**

The type inspection of the sensor is carried out in the following cases:

- a) In case of trial production and type finalization of new sensor;
- b) After formal production, in case of major changes in structure, materials and processes that affect sensor performance;
- c) For batch or mass-produced sensors, not less than once every two years;
- d) When the production of sensor is restored after suspension for more than one year;
- e) When the exit-factory inspection result is significantly different from the previous type inspection result;
- f) When the national quality supervision agency requests the type inspection.

### **6.3.2 Sampling and grouping**

Samples for type inspection shall be taken from a batch of samples that have passed the exit-factory inspection; the number shall not be less than 18. It is first re-inspected according to the exit-factory inspection items. When the re-inspection is qualified, divide the samples evenly into 6 groups. Carry out test based on the following groups and item sequences:

- a) Group 1: Temperature drift test, temperature test, temperature/humidity combined cycle test;
- b) Group 2: Test of working voltage range, test of insulation withstanding voltage test, test of abnormal voltage, test of electromagnetic immunity, free fall test;
- c) Group 3: Protection test, test of oil resistance;
- d) Group 4: Test of mechanical shock;
- e) Group 5: Vibration test;

**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](mailto:Sales@ChineseStandard.net)

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

**----- The End -----**