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Replacing GB 13365-2005

Motor vehicle spark arrester

机动车排气火花熄灭器

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document replaces GB 13365-2005 "Spark arrester". Compared with GB 13365-2005, in addition to structural adjustments and editorial changes, the main technical changes in this document are as follows:

a) Appearance requirements have been changed (see 5.1 of this Edition; 4.7 of Edition 2005);

b) Strength requirements have been added (see 5.2 of this Edition);

c) Arresting performance requirements have been changed (see 5.3 of this Edition; 4.1 of Edition 2005);

d) Power performance requirements when fitted with an arrester have been changed (see 5.4 of this Edition; 4.2 of Edition 2005);

e) High-temperature resistance requirements have been added (see 5.9 of this Edition);

f) Product labeling requirements have been added (see 5.10 of this Edition);

g) Electronic labeling requirements have been added (see 5.11 of this Edition).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing authority shall not be held responsible for identifying any or all such patent rights.

This document was proposed by National Fire and Rescue Administration.

Versions of standard substituted by this document are:

- It was first promulgated in 1992 as GB 13365-1992. It was first revised in 2005;

- This is the second revision.

Motor vehicle spark arrester

1 Scope

This document defines the terms and definitions of motor vehicle spark arrester (hereinafter referred to as "arrester"). It specifies the classification and model compilation, technical requirements, inspection rules, packaging, transportation, storage, and use. It also describes the corresponding test methods.

This document applies to the design, production, and testing of motor vehicle spark arrester. Spark arresters used in other equipment shall refer to this document for implementation.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 3181-2008, *Color Standard for Paint Film*

GB/T 5530.1, *Industrial wire screens and woven wire cloth -- Guide to the choice of aperture size and wire diameter combinations -- Part 1: Generalities*

GB/T 6543, *Single and double corrugated boxes for transport packages*

GB 9254.2-2021, *Information technology equipment, multimedia equipment and receivers - Electromagnetic compatibility - Part 2: Immunity requirements*

GB/T 7701.3, *Granular activated carbon from coal -- Granular activated carbon from coal for catalyst carrier*

GB 18030, *Information technology - Chinese coded character set*

GB/T 29261.3-2012, *Information technology -- Automatic identification and data capture (AIDC) techniques -- Vocabulary -- Part 3: Radio-frequency identification*

GA 36, *License plates of motor vehicles of the P. R. China*

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 29261.3-

4.2 Model compilation

The method for compiling the model of the arrester is as follows:

Example 1:

For an arrester that has a diameter of 150 mm, an interface size of 100 mm, that is generally equipped, non-integral, non-liquid cooling, with a passive tag, its company code is DYG, and its product model is: HXQ150/100-CFFN-DYG.

Example 2:

For an arrester has a diameter of 120 mm, an interface size of 60 mm, that is temporarily equipped, non-integral, liquid cooling, with an active tag type, its company code is QLF, and its product model is: HXQ120/60-LFYY-QLF.

5 Technical requirements

5.1 Appearance quality

5.1.1 The arrester surface should be flat and smooth. The weld should be uniform. Connectors should be securely connected. There should be no defects such as cracks, burn-throughs, or incomplete welds.

5.1.2 All exposed parts of the arrester should be passivated. There should be no risk of cuts.

5.1.3 The outer surface color of the arrester should be R 03 bright red, GY 03 military green or black as specified in GB/T 3181-2008.

5.1.4 The roundness of the arrester valve body should not exceed 5 mm.

5.1.5 The switch of the arrester should open and close flexibly. There should be no

sticking or other phenomena. The switch should be equipped with a limit device.

5.1.6 The valve core should be made of stainless steel with a thickness of not less than 0.6 mm.

5.2 Strength requirements

A pressure of 1000 N is applied to the arrester in the axial direction. The deformation of the length should not exceed 5% (excluding the switch). A force of 1000 N is applied perpendicular to the axial direction. The deformation of the diameter should not exceed 10%.

5.3 Arresting performance

Carry out the arresting performance test according to 6.3. The activated carbon particles collected at the arrester outlet should not exceed 15% of the original value.

5.4 Engine performance after installation of arrester

5.4.1 After the engine is fitted and used with an arrester, the power decreasing ratio (40% of rated power) of the engine should not exceed 2%.

5.4.2 After the arrester is installed and used, the exhaust noise at the tail pipe outlet should not exceed the exhaust noise when it is not installed.

5.4.3 After the arrester is installed and used, the exhaust temperature at the tail pipe outlet should not exceed the exhaust temperature when it is not installed.

5.5 Vibration resistance

The arrester shall be subjected to vibration test in accordance with 6.5. During and after the vibration, the test specimen shall not show any structural damage, open welding, loosening, or other phenomena that may affect its use.

5.6 Drop resistance

Non-integral arresters shall be subjected to the drop test in accordance with 6.6. After the test, the sample shall show no structural damage or permanent deformation that could endanger its safe use. After the test, the valve core shall open and close normally. The interface shall be able to be connected and used normally without correction.

5.7 Installation requirements

5.7.1 The connection between the generally equipped arrester and the exhaust system should be able to withstand a tensile force of 1000 N without falling off. When connected to the end of the exhaust tail pipe, the connection should be sealed and prevented from loosening.

5.7.2 Temporarily equipped arresters should be equipped with a connection device that

5.11.3 After passing the tests in 6.5, 6.6 and 6.9, the electronic tag should be able to be read and written. The read information should be consistent with the written information.

5.11.4 Passive tag information should include the manufacturer, product model, manufacturing date, production batch number, production serial number, etc. The coding rules should comply with the requirements of Annex A.

5.11.5 The information on active tags shall include the manufacturer, product model, manufacturing date, production batch number, production serial number, etc. The coding rules shall comply with the requirements of Annex A.

5.11.6 The electronic tag should be able to be read and written normally in an environment surrounded by metal.

5.11.7 The reading distance when reading electronic tag information should be greater than 0.2 m.

5.11.8 The content written into the electronic tag and the information interaction with the reader/writer shall comply with the requirements of the GB 18030 *Chinese coded character set*.

5.11.9 The encoding rules for the vehicle license plate data in the active tag host number shall comply with the requirements of Annex B. The technical requirements for radio transmission equipment are shown in Annex C.

6 Test methods

6.1 Appearance quality inspection

6.1.1 Visually inspect the exterior quality, welding, and connection conditions of the arrester. Determine whether the test results meet the requirements of 5.1.1.

6.1.2 Visually inspect the passivation treatment of the exposed parts of the arrester. Determine whether the test results meet the requirements of 5.1.2.

6.1.3 Use a color chart to compare the exterior color of the arrester and determine whether the test results meet the requirements of 5.1.3.

6.1.4 Use a roundness tester to measure the roundness of the cylinder and determine whether the test results meet the requirements of 5.1.4.

6.1.5 Manually operate the switch of the arrester to open and close it. Determine whether the test results meet the requirements of 5.1.5.

6.1.6 Check the valve core material report. Use a vernier caliper to measure the thickness of the valve core material. Determine whether the test results meet the

10 - Collection box for test activated carbon;
11 - Video monitoring device;
12 - Residual material collection device;
13 - Automatic weighing system for test activated carbon;
14 - Storage box.

Figure 1 -- Schematic diagram of arrester's spark arresting performance test device

6.4 Engine performance test after installation of arrester

6.4.1 Use a fan to simulate the engine's exhaust volume. Simulate the maximum and minimum applicable displacements. Use a power tester to test the fan's operating power before and after the arrester is installed. Calculate the power decreasing ratio according to formula (1). Determine whether the test results meet the requirements of 5.4.1.

6.4.2 Turn on the arrester. Place a sound level meter 1 m from the arrester outlet and at the same height as the arrester axis. Adjust the sound level meter to A-weighting. Measure the noise level. Turn off the arrester. Measure the noise level at the same location. Determine whether the test results meet the requirements of 5.4.2.

6.4.3 Turn on the arrester. Place a thermometer at a height of 0.2 m from the arrester outlet and at the same height as the arrester axis. Measure the temperature. Turn off the arrester. Measure the temperature at the same location. Determine whether the test results meet the requirements of 5.4.3.

6.5 Vibration resistance test

Install two arresters in their operating configuration on a vibration test bench and subject them to vertical vibration. Liquid cooling arresters should be filled with cooling medium as specified. The vibration frequency should be 50 Hz, and the amplitude should be 1.0 mm. For 10-h vibrations, the vibration test may be conducted in segments. However, the continuous vibration duration of each segment should be no less than 5 h, and the time interval between segments should be no more than 24 h. Determine whether the test results meet the requirements of 5.5.

6.6 Drop resistance test

Two non-integral arresters, with their centerlines horizontal, are dropped 3 times from a height of 2 m onto a hard, flat concrete floor. Liquid cooling arresters should be filled with cooling medium as specified. Operate the arresters after the drop. Determine whether the test results meet the requirements of 5.6.

6.7 Installation requirements test

6.7.1 Use a tensile force gauge to load the joint. After reaching 1000 N, observe the joint for any abnormalities such as loosening, damage, or any other abnormalities.

times (or perform a read test on each tag 100,000 times, with an accuracy rate of not less than 99.995%). Determine whether the results meet the requirements of 5.11.2.

6.11.3 After the tests in 6.5, 6.6, and 6.9, read the electronic tag information using a reader/writer. Determine whether the result meets the requirements of 5.11.3. After writing new information to the electronic tag using a reader/writer, read the electronic tag information again and determine whether the result meets the requirements of 5.11.3.

6.11.4 Use a reader/writer to read the electronic tag and determine whether the result meets the requirements of 5.11.4.

6.11.5 Use a reader/writer to read the electronic tag and determine whether the result meets the requirements of 5.11.5.

6.11.6 Place metal plates measuring 0.2 m x 0.2 m at a distance of 0.2 m in front, behind, left, and right of the non-integral arrester. Use a reader/writer to write new information to the electronic tag at a distance of 0.2 m from the top. Read the information from the electronic tag. Determine whether the result meets the requirements of 5.11.6.

6.11.7 Use an antenna with an accuracy of at least 9 dB to read the electronic tag information. Perform 3 consecutive reads. Measure the distance at which the tag can be read. Calculate the average value. Determine whether the test results meet the requirements of 5.11.7.

6.11.8 In accordance with the requirements of GB 18030, check the content written into the electronic tag and the encoding method for information exchange with the reader. Determine whether the test results meet the requirements of 5.11.8.

6.11.9 Check whether the vehicle license plate data encoding rules in the active tag host number are written in accordance with the requirements of Annex B. Check whether the radio frequency identification and signal data packet structure used by the radio transmitting equipment are as shown in Annex C. Determine whether the test results meet the requirements of 5.11.9.

7 Inspection rules

7.1 Exit-factory inspection

7.1.1 Each batch of products shall be inspected piece by piece before leaving the factory. The inspection items shall be in accordance with 5.1, 5.7 and 5.10.

7.1.2 Each batch of products shall be sampled and inspected upon delivery. The sampling ratio shall not be less than 20%. Inspection items shall be in accordance with 5.3 and 5.11.

7.1.3 Products may only leave the factory when the test results of 7.1.1 and 7.1.2 are

judged to be qualified.

7.2 Type inspection

7.2.1 Type inspection should be carried out in any of the following situations:

a) When a new product or an old product is transferred to a new factory for trial production and evaluation;

b) When changes occur in the product's design, structure, materials, parts, components, production process, or production conditions that may affect product quality;

c) When changes occur in the technical requirements specified in the product standard;

d) When production resumes after a suspension of one year or more;

e) When the product quality supervision department requests type inspection;

f) In other circumstances where product quality can only be proven through type inspection.

7.2.2 The type inspection contents shall include all items specified in this document. The inspection results shall meet the requirements of this document.

8 Packaging, transportation, storage and use

8.1 Packaging

8.1.1 Arresters can be packed in appropriate quantities for transportation. The box shall contain the product manual and product certificate.

8.1.2 The cartons used for outer packaging should comply with the requirements of GB/T 6543 to ensure that the product is not damaged during transportation, loading and unloading, and storage.

8.2 Transportation

During transportation and loading-unloading, materials should be stacked neatly and tied securely.

8.3 Storage and use

During storage, be careful to prevent moisture and high temperatures. The typical storage temperature is -10°C~30°C, with a relative humidity below 80%. Dissolved media and flammable materials should be avoided. The storage period should not

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