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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 43.060.40

T 13

GB/T 18364-2017

Replacing GB/T 18364.1-2001, GB/T 18364.2-2005

Filling receptacle of LPG vehicle

汽车用液化石油气加气口

Issued on: October 14, 2017

Implemented on: May 1, 2018

Issued by: General Administration of Quality Supervision, Inspection and Quarantine of the PRC;

Standardization Administration of the PRC.

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Foreword

This Standard is drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 18364.1-2001 "Filling receptacle of LPG vehicle (spiral)" and GB/T 18364.2-2005 "Filling receptacle of LPG vehicle - Part 2: Insert".

This Standard integrates the content of GB/T 18364.1-2001 and GB/T 18364.2-2005. Besides the editorial modification, the main changes are as follows:

- REFER to ECE R67 Code; the nominal working pressure of the filling receptacle of LPG vehicle is changed from 2.2 MPa to 3.0 MPa; the working environment temperature is changed from -40 °C~60 °C to -40 °C~65 °C;
- ADD reference to GB/T 528 "Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties" and GB/T 10567.2 "Wrought copper and copper alloys - Detection of residual stress - Ammonia test";
- ADD the requirement for the front volume of one-way valve of filling receptacle of LPG vehicle with total mass≤3500 kg and total mass>3500 kg;
- DELETE the provision on the diameter of filling receptacle in GB/T 18364.1-2001 and GB/T 18364.2-2005; ADD the requirement for the flow of filling receptacle of LPG vehicle with total mass≤3500 kg and total mass>3500 kg;
- ADD the requirement for the opening pressure of one-way valve;
- ADOPT the performance requirements for the filling receptacle of LPG vehicle and the corresponding test methods in ECE R67 Code.

This Standard was proposed by and shall be under the jurisdiction of Ministry of Industry and Information Technology of the PRC.

Drafting organizations of this Standard: Shanghai Xingdi Environmental Protection Equipment Co., Ltd., Chengdu Gaoyuan Automobile Manufacturing Co., Ltd., Shudu Bus Corporation, Shanghai Sunwin Bus Corporation, China Automotive Technology and Research Center Co., Ltd.

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Filling receptacle of LPG vehicle

1 Scope

This Standard specifies the definitions, types, technical requirements, test methods, inspection rules, marks, packing, exit-factory document, transport, and storage of filling receptacle of LPG vehicle.

This Standard is applicable to the filling receptacle of LPG vehicle, which uses the LPG vehicle as required in GB 19159 as the fuel, of which the nominal working pressure is 3.0 MPa (The pressure value described in this Standard is gauge pressure) and the working environment temperature is -40 °C~65 °C.

2 Normative references

The following documents are essential to the application of this document. For the dated references, only the versions with the dates indicated are applicable to this document. For the undated references, the latest version (including all the amendments) are applicable to this document.

GB/T 528 Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties

GB/T 9969 General Principles for Preparation of Instructions for Use of Industrial Products

GB/T 10125 Corrosion tests in artificial atmospheres - Salt spray tests

GB/T 10567.2 Wrought copper and copper alloys - Detection of residual stress - Ammonia test

GB/T 17895 Natural gas vehicle and liquefied petroleum gas vehicle - Vocabulary

GB 19159 Automotive liquefied petroleum gases

GB 19239 Mounting requirements of special equipment for gas vehicle

GB/T 3764 Thickness Series and Quality Requirements for Metallic and Chemical Coatings

3 Terms and definitions

5.1.4 The installation of filling receptacle on a vehicle shall comply with the provisions of GB 19239.

5.1.5 The metal parts of filling receptacle shall not use castings or die castings.

5.1.6 In the filling receptacle, the appearance requirements of all parts treated with metal and chemical coatings shall comply with the relevant provisions of GB/T 3764.

5.1.7 The front volume of one-way valve: For the filling receptacle of LPG vehicle with total mass $\leq$ 3500 kg, it shall $\leq$ 0.1 cm³; for the filling receptacle of LPG vehicle with total mass $>$ 3500 kg, it shall $\leq$ 0.5 cm³.

5.1.8 With water as the test medium, under 0.3 MPa pressure difference, the flow through the filling receptacle of LPG vehicle with total mass $\leq$ 3500 kg shall $\geq$ 20 L/min; under 0.3 MPa pressure difference, the flow through the filling receptacle of LPG vehicle with total mass $>$ 3500 kg shall $\geq$ 30 L/min.

5.1.9 When the pressure difference between the inlet and outlet of filling receptacle $\leq$ 0.2 MPa, the one-way valve shall be opened.

5.2 Performance requirements

5.2.1 Hydrostatic pressure strength

After the test of hydrostatic pressure strength is carried out according to the method specified in 6.3, the pressure bearing parts of filling receptacle shall be free of visible cracks or permanent deformation.

5.2.2 Air tightness

According to the method specified in 6.4, CARRY out air tightness test, the leakage rate $\leq$ 15 cm³/h.

5.2.3 One-way valve leak-proof

According to the method specified in 6.5, CARRY out the test, at any air pressure in 3 MPa~0.05 MPa, the leakage rate $\leq$ 15 cm³/h.

5.2.4 Temperature resistance

After the temperature resistance test is carried out according to the method specified in 6.6, the air tightness shall comply with the requirement of 5.2.2.

5.2.5 Durability

After completing the temperature cycling test, according to the method specified

6.8.2 SEAL the outlet of filling receptacle and PLACE it horizontally; according to the neutral salt spray test method specified in GB/T 10125, CARRY out the salt spray test for 96 h. After the test, according to 6.3, 6.4, and 6.6, CARRY out the test of hydrostatic pressure strength, air tightness test, and temperature resistance test.

6.9 Compatibility test

After the non-metal parts in contact with LPG are immersed in n-pentane or n-hexane at $23\text{ }^{\circ}\text{C}\pm 2\text{ }^{\circ}\text{C}$ for 72 h, and are stored at room temperature for 48 h; it shall measure the volume expansion rate and mass reduction rate.

6.10 Test of dry heat resistance

After the non-metal parts in contact with LPG are placed at $65\text{ }^{\circ}\text{C}$ for 168 h, according to the method specified in GB/T 528, CHECK the change in tensile strength and elongation.

6.11 Test of oxygen aging resistance

Under $40\text{ }^{\circ}\text{C}$ temperature and 20% stress, PLACE the non-metal parts in contact with LPG in the air with ozone content 50×10^{-8} for 72 h; USE a magnifying glass of 2 times to check the surface.

6.12 Creep test

After the non-metal parts in contact with LPG are maintained in water at $120\text{ }^{\circ}\text{C}$ and 6.75 MPa for 96 h, according to the provisions of 6.4 and 6.6, CARRY out air tightness test and temperature resistance test.

6.13 Temperature cycling test

Under 3 MPa pressure, the non-metal parts in contact with LPG are subjected to the temperature cycling test from $-40\text{ }^{\circ}\text{C}\sim 65\text{ }^{\circ}\text{C}$ for 96 h. After the test, according to the provisions of 6.4 and 6.6, CARRY out air tightness test and temperature resistance test.

6.14 Vibration resistance test

6.14.1 SECURE the test piece on a vibration test bench; SELECT one of the test methods described in 6.14.2 or 6.14.3 to carry out vibration resistance test. After the test, CHECK the connection of each part of test piece; according to 6.4, CARRY out air tightness test.

6.14.2 The test is carried out on a sinusoidal vibration bench. The constant acceleration is 1.5 g. The frequency range is 5 Hz~200 Hz. The test shall last for 5 h in each of the three orthogonal coordinate axes. The frequency band of

product use instructions shall be enclosed.

8.3 Transport and storage

8.3.1 During shipment, the products shall be handled with care, to prevent heavy pressure and collision, and to prevent the erosion of rain and chemicals.

8.3.2 The products shall be stored in ventilated, dry, and clean room.

9 Exit-factory document

9.1 Contents to be specified in product qualification certificate

It shall specify the following contents:

- a) Manufacturer's name and trademark;
- b) Product model and No.;
- c) Signature and seal of inspection department and inspection date.

9.2 Packing list

When there are accessories (such as joints, special tools, etc.) outside the filling receptacle in the packing box, it shall enclose a packing list.

9.3 Product use instructions

The instructions shall be developed in accordance with GB/T 9969. And the following contents shall be explained in particular:

- a) Structure type and function introduction of filling receptacle;
- b) Fault identification and elimination methods during use.

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