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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 19239-2022

Replacing GB 19239-2013

Installation specification for gas system of gas vehicles

燃气汽车燃气系统安装规范

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1 Scope

GB 19239-2022 is the Chinese national standard on installation specification for gas system of gas vehicles, in the field of road vehicles engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 31 August 2022 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 January 2023. Classification: ICS 43.020, CCS T40. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the installation requirements, test methods, inspection rules and implementation transition period of the gas system of gas vehicles. This document is applicable to gas vehicles that can use compressed natural gas (hereinafter referred to as CNG) / liquefied natural gas (hereinafter referred to as LNG) / liquefied petroleum gas (hereinafter referred to as LPG) as fuel.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in this text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB 8410 Flammability of Automotive Interior Materials

GB/T 13005 Terminology of Gas Cylinders

GB/T 17676 Natural Gas Vehicle and Liquefied Petroleum Gas Vehicle - Identification Marks

GB/T 17895 Natural Gas Vehicle and Liquefied Petroleum Gas Vehicle - Vocabulary

GB/T 34510 Liquefied Natural Gas Cylinders for Vehicles

GB/T 36123-2018 Technical Requirements for Gas Leakage Alarm Device of Gas Vehicle

QC/T 245-2017 Technology Requirements of Fuel-gas System for CNG Vehicles

QC/T 247-2017 Technology Requirements of Fuel-gas System for LPG Vehicles

QC/T 755-2020 Technical Requirements of Fuel-gas System for LNG Vehicles

ISO 6487:2015 Road Vehicles - Measurement Techniques in Impact Tests - Instrumentation

3 Terms and Definitions

What is defined in GB/T 17895, GB/T 13005 and GB/T 34510, and the following terms and definitions are applicable to this document.

3.1 Refueling Device Refueling device refers to a component connected with the gas (liquid) refueling gun or gas (liquid) returning gun when refueling gas (liquid).

4.1 General Requirements

4.1.1 The gas system for CNG vehicles shall satisfy the requirements of Chapter 4 in QC/T 245-2017. The gas system for LPG vehicles shall satisfy the requirements of Chapter 4 in QC/T 247-2017. The gas system for LNG vehicles shall satisfy the requirements of Chapter 5 in QC/T 755-2020.

4.1.2 The installation of the gas system of gas vehicles shall comply with the requirements of the design documents of finished vehicles, and shall be assembled in accordance with the product drawings and technical documents approved by the prescribed procedures.

4.1.3 The installation of the gas system of gas vehicles shall satisfy the requirements of the

strength and rigidity of the vehicle bearing parts and other relevant safety components. Installation methods that may result in a reduction in the strength and rigidity of the vehicle bearing parts shall not be adopted. The gas system shall not be used as a bearing part.

4.1.4 The gas vehicles shall be marked with signs in accordance with the stipulations of GB/T 17676 in a prominent position.

4.1.5 After installation, the gas system of gas vehicles shall satisfy the following requirements:

---the gas cylinder shall not be deformed or worn;

---all components shall have anti-loosening measures, and there shall be no loosening or falling off;

---After the system is tested in accordance with the method specified in 5.1, there shall be no leakage. When the LNG gas system is tested, the cold test shall be carried out first;

---The various components of the gas system shall not be installed within a range of 100 mm from heat sources, such as: exhaust pipe and exhaust after-treatment tank, etc. When the distance between relevant components and heat sources is between 100 mm and 200 mm, fixed and reliable heat insulation devices shall be set up.

4.2 Gas Cylinder

4.2.1 The gas cylinder shall be installed away from heat sources, and shall be effectively separated from the driver's cab or passenger compartment. When the gas cylinder cannot be effectively separated from the driver's cab or passenger compartment, sealing boxes (sealing parts around the gas cylinder accessories), corrugated pipes and ventilation ports shall be used to discharge the gas that may leak out of the vehicle. The exhaust direction of the ventilation port shall be within the range of 45 cone with the ground. The distance from the ventilation specified in 5.3.2, the relative displacement between the gas cylinder or gas cylinder set and the fixed point of its fixing seat shall not be greater than 13 mm. Among them, the single gas cylinder and the single gas cylinder fixing seat in the gas cylinder set shall be tested in accordance with the method specified in 5.3.2.2; the installation of the fixing seat for the vertical arrangement of the gas cylinder set shall be tested in accordance with the method specified in 5.3.2.3. If the gas cylinder set is horizontally arranged and multiple gas cylinders are fixed by one fastening belt, the installation of the fixing seat shall be tested in accordance with the method specified in 5.3.2.4; if the gas cylinder fastening belt only fixes one gas cylinder, it shall be tested in accordance with the method specified in 5.3.2.2.

4.3 Refueling Device

4.3.1 The refueling device shall be installed with a dust cover and additional protective

measures. The protective measures include additional protective fences, partitions, protective covers or the protective mechanism of the vehicle itself.

4.3.2 The refueling device shall be arranged at a position that is easy to operate and shall not exceed the outline of the vehicle.

4.3.3 After the gas (liquid) refueling port is installed, there shall be no leakage after being inspected in accordance with the test method specified in 5.4.

4.4 Piping

4.4.1 Rigid piping shall be neatly and reasonably arranged, and shall not interfere with adjacent components. The fixed spacing shall not be greater than 600 mm. If the piping is in contact with adjacent components, or passes through holes, protective measures shall be taken to ensure that the piping is not worn. When two components are connected by rigid connection piping, it shall be designed as an "O", "S" or "U" shape, which can eliminate the effects of thermal expansion and contraction, and vibration; the radius of curvature of the piping center shall not be less than 5 times the outer diameter of the piping.

4.4.2 Components that can generate relative displacement shall be connected by flexible piping, and the others shall be connected by rigid piping. Flexible piping shall be fixed by resilient clips before and after each bend. The fixed spacing of flexible piping shall be not greater than 300 mm; when fixing, vibration reduction and anti-wear measures shall be considered. The direction of the piping shall be smooth, and there shall be no interference or discount.

4.4.3 The pipe joints shall not pass through or be installed in the driver's cab and passenger compartment, and shall not be installed in places with high heat sources, easy wear or impact; the distance from the transmission shaft shall not be less than 100 mm.

4.4.4 The pipe joints shall be installed within the visible range or at a position that is easy for the operator to operate. When disassembling the piping, release the pressure first, then disassemble it. After reassembly, conduct an air-tight test in accordance with different working pressures; the test method shall comply with the stipulations of 5.1.

4.4.5 When the distance between the liquid supply piping between the LNG cylinder and the carburetor, and the wiring harness, water circuit, gas circuit, oil circuit and other components that are not resistant to low temperature is less than 15 mm, temperature insulation measures shall be taken.

4.4.6 The venting port of the LNG cylinder vent piping shall be located at the top or rear of the vehicle, and a structure shall be set up to prevent rainwater and dust from entering and accumulating. When the vent piping is installed at the rear of the vehicle, measures shall be taken to prevent natural gas from entering or accumulating in the compartment or under the vehicle. In addition, it shall also be separated from devices and components that are prone