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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 17926-2022

Replacing GB 17926-2009

Compressed natural gas cylinder valves for vehicles

车用压缩天然气瓶阀

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1 Scope

China's national standard for the valve fitted to a compressed natural gas cylinder on a vehicle. It specifies the basic types, the technical requirements, the inspection and test methods, the inspection rules, and the marking, packaging, storage and transport of CNG cylinder valves for vehicles, and it applies to valves working between -40 C and +85 C at a nominal working pressure not exceeding 25 MPa. The cylinder valve is the single most safety-critical component on a gas vehicle, because it is the only thing between 20 MPa of stored gas and the outside. Everything that could go wrong is concentrated in it, and so the valve is not simply a shut-off: it carries the pressure relief device that must vent the cylinder in a fire before the cylinder itself bursts, and the excess flow device that must close if a line downstream is severed in a collision. Both have to work once, after years of doing nothing, in the worst conditions the vehicle will ever see. The standard therefore sets design, material and process requirements together with the performance requirements, and then devotes its longest chapter to testing them: the mechanical properties and chemical composition of the metal parts, the material performance of the non-metallic seals - the components that age, and whose ageing sets the valve's real service life - the valve body appearance, the inlet and outlet threads, the valve performance itself, the performance of the pressure relief device and the performance of the excess flow device. The inspection rules cover incoming material and part inspection, factory inspection and type testing, and the marking and storage requirements close the document. Issued on 9 March 2022 and in force since 1 October 2022, it replaces GB 17926-2009.

This Standard specifies the basic types, technical requirements, inspection and test methods, inspection rules and signs, packaging, storage and transportation of compressed natural gas cylinder valves for vehicles. This Standard is applicable to the compressed natural gas cylinder valve for vehicles (hereinafter referred to as the valve) whose working environment temperature is - 40°C~+85°C and whose nominal working pressure is not more than 25MPa.

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 197, General purpose metric screw threads - Tolerances

GB/T 228.1, Metallic materials - Tensile testing - Part

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 8337, GB/T 13005, GB/T 16918, GB/T 33215 as well as the followings apply.

3.1 excess flow device a device that can act and limit the gas flow when the gas flow or the pressure difference between the inlet and outlet exceeds the set value

4 Basic types

4.1 The opening-closing type of the valve is manual control.

4.2 The valve shall have a safety relief device (pressure relief device; PRD). Its type is a bursting disc-fusible alloy plug series composite device.

4.3 According to the requirements of use, a flow restricting device can be set on the valve.

4.4 Model indication method. The valve model shall consist of the following parts. The code of the compressed natural gas cylinder valve for vehicles is represented by "CTF".

5.1 Design requirements

5.1.1 The connection thread specification of the air inlet of the valve shall be PZ

27.8 taper thread or M25x2 ordinary thread.

5.1.5 The excess flow device shall be designed with a bypass channel.

5.1.6 The valve shall specify the design service life. Valves are designed for at least one cylinder inspection cycle.

5.2.2 Non-metallic seal material

5.2.2.1 Oxygen aging resistance The non-metallic seals shall be kept for 96h continuously in oxygen with a temperature of $70^{\circ}\text{C}\pm 5^{\circ}\text{C}$, a test pressure of 2MPa and a purity of $\geq 99.5\%$, and there shall be no visible cracks and damages.

5.3 Process requirements

5.3.1 The valve body shall be forged. There shall be no defects such as cracks, wrinkles, inclusions, porosity, shrinkage holes, and underfills on the surface that would impair valve performance. When the shot blasting process is used on the surface of the valve body, the

size and depth of the pits on the surface shall be uniform.

5.4.1 Valve performance

5.4.1.1 Open and close At the nominal working pressure, the valve shall be able to fully open and close according to the temperature and test torque specified in Table 1.

5.4.1.2 Excess torque resistance The threads connecting the inlet and outlet of the valve to external parts shall bear the following excess torque.

5.4.2.1 Extrusion resistance After holding the pressure for 30 minutes at

1.2 times the nominal working pressure, increase the pressure to

2.25 times the nominal working pressure at a rate of 0.5MPa/s, and the fusible alloy of PRD shall not be extruded.

5.4.3.2 Pressure pulse Apply the nominal working pressure to the air inlet and air outlet of the excess flow device respectively and perform 100 pulses each, which shall meet the requirements of 5.4.3.3.

5.4.3.3 Flow limiting When the pressure difference between the two ends of the inlet and outlet of the excess flow device exceeds

0.65 MPa, the excess flow device shall be able to act and restrict the flow. When the pressure difference reaches 10MPa, the bypass flow of the excess flow device shall not be greater than 0.05m³/min (under the standard state).

6.1 Test conditions

6.1.1 Test environment Unless otherwise specified, the tests specified in this document are carried out at an ambient temperature of 15°C~30°C.

6.1.4 Test flowmeters and pressure gauges The accuracy of the test flowmeter is 0.5. The accuracy of the pressure gauge shall not be lower than level 1.6. The range of the pressure gauge shall be

1.5 to 2 times the test pressure.

6.2 Mechanical properties test and chemical composition analysis of metal parts materials

6.3 Material performance test of non-metallic seals

6.3.1 Oxygen aging resistance test Place 3 non-metallic seal test pieces in the aging test device. Remove air from the device. Fill with oxygen with a purity of $\geq 99.5\%$. Make the pressure reach 2MPa. Warm up to 70°C $\pm$ 5°C. Keep 96h and take out. Visually inspect its changes, which shall meet the requirements of 5.2.2.1.