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

GB/T 20735-2025

Replacing GB/T 20735-2006

Pressure regulators of CNG vehicles

汽车用压缩天然气减压调节器

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1 Scope

GB/T 20735-2025 is the Chinese national standard covering the regulator that drops gas from 200 bar to engine pressure - its stages and the heating that offsets the chill of expansion, the relief and shut-off, the leak tightness and the endurance over the life of the vehicle. Issued on 31 October 2025, it has been in force since 1 May 2026, replacing GB/T 20735-2006.

This Document specifies the requirements for pressure regulator of CNG vehicles, describes the test methods, and provides information on marking and exit-factory documentation. This Document applies to pressure regulator of CNG vehicles with a nominal operating pressure not exceeding 35 MPa, an operating temperature of -40°C to 120°C, and a working medium conforming to GB 18047. NOTE. Unless otherwise stated, all pressures mentioned in this document refer to gauge pressure.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

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

GB/T 7762 Rubber, vulcanized or thermoplastic - Resistance to ozone cracking - Static strain testing

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 17895 Natural gas vehicle and liquefied petroleum gas vehicle - Vocabulary

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in GB/T 17895 and the following apply.

3.1 Nominal working pressure; P

1 The maximum allowable pressure at the inlet when the pressure regulator is working normally.

3.2 Lock-up pressure; PL The maximum stable outlet pressure of the pressure regulator when the flow rate is zero within the allowable inlet pressure range.

3.3 Maximum flow rate; Q The ambient temperature is $20^{\circ}\text{C}\pm 5^{\circ}\text{C}$, the input pressure of the pressure regulator is P1, and the upper limit of the flow rate that can be achieved when the deviation is within the specified range under a given outlet pressure.

3.4 Safety valve open pressure; P

2 The pressure when the pressure relief valve is initially opened.

3.5 Safety valve emission pressure; PRV The lower limit of pressure at which the pressure relief valve is fully open.

3.6 Safety valve emission flow; QRV The emission flow rate at which the pressure relief valve is fully open.

4.1 General

4.1.1 The materials of the pressure regulator in contact with natural gas shall be compatible with natural gas.

4.1.2 The pressure regulator should be heated by circulating engine coolant. The material of the heating pipes of the pressure regulator shall be compatible with the engine coolant.

4.1.3 The surface of the pressure regulator, connecting threads, and inlet and outlet sealing surfaces shall be free from dents, scratches, rust, cracks, burrs, and dirt.

4.1.4 The markings on the valve body surface of the pressure regulator shall be clearly visible.

4.2 Performance requirements

4.2.1 Hydrostatic strength After undergoing the hydrostatic strength test according to the test method specified in 5.2, the pressure regulator shall not exhibit cracking, permanent deformation, or other similar phenomena.

4.2.2 Pressure relief valve performance The pressure regulator shall be equipped with the pressure relief valve, which shall continue to function normally after pressure is released. After the pressure relief valve is tested according to the test method specified in 5.3, its performance shall meet the following requirements.

- a) No leakage occurs when the inlet pressure is 95% of P2;
- b) It can release air when the inlet pressure is 105% of P2;
- c) After 600 pressure relief tests, it still meets the requirements of
- d) The safety valve emission flow QRV is no less than the measured value of the maximum flow rate Q of the pressure regulator.

4.2.3 Leakage

4.2.3.1 When the pressure regulator is tested for leakage according to the test method specified in 5.4.1, if no bubbles appear within the specified time, the sample shall pass the test. If bubbles are detected, its leakage rate shall be $\leq 15 \times 10^{-6}$ m³/h (standard conditions).

4.2.3.2 When the pressure regulator is tested for lock-up pressure according to the test method in 5.4.5, the final value of PL within the specified time shall not exceed 20% of the initial value.

4.2.4 Maximum flow rate The flow rate Q of the pressure regulator, measured according to the test method specified in 5.5, shall be no less than the manufacturer's specified value.

4.2.5 Cycle life After undergoing a cycle life test according to the test method specified in 5.6, the pressure regulator shall meet the requirements of 4.2.1, 4.2.3, and 4.2.4.

4.2.6 Corrosion resistance After the pressure regulator undergoes a salt spray test according to the test method specified in 5.7.1, the metal plating shall not be damaged or peeled off and shall comply with the provisions of 4.2.3. For brass pressure-bearing components with a zinc content higher than 15%, after testing according to the test method specified in 5.7.2, inspection with a 25x magnifying glass shall show no cracks.

4.2.7 Ozone resistance After the non-metallic components of the pressure regulator in contact with natural gas undergo an ozone resistance test according to the test method specified in 5.8, no cracks shall appear.

4.2.8 Compatibility After the non-metallic components of the pressure regulator undergo a compatibility test according to the test method specified in 5.9, the volume change rate shall not exceed 20%, and the mass change rate shall not exceed 5%.

4.2.9 Vibration resistance After testing according to the test method specified in 5.10, the pressure regulator shall meet the requirements of 4.2.3.

4.2.10 Dry heat resistance After the non-metallic components of the pressure regulator in contact with natural gas are tested for dry heat resistance according to the test method specified in 5.11, the change in tensile strength shall not exceed 25%, and the elongation shall be -30% to 10%.

4.2.11 Electrical performance

4.2.11.1 Insulation resistance The insulation resistance of the pressure reducing regulator is tested according to the test method specified in 5.12.1, and the resistance value shall be ≥ 240 k Ω .

4.2.11.2 Minimum opening voltage When the minimum opening voltage of the pressure regulator solenoid valve is tested according to the test method specified in 5.12.2, the