

ICS 23.020.30

CCS J74



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

GB/T 19533-2024

Replacing GB/T 19533-2004

**Periodic inspection and evaluation of steel cylinders for
compressed natural gas in vehicles**

汽车用压缩天然气钢瓶定期检验与评定

Issued on: April 25, 2024

Implemented on: November 1, 2024

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

Foreword	
1 Scope	
2 Normative references	
3 Terms and definitions	
4 Inspection tools and devices, periodic inspection periods, and periodic inspection items	
4.1 Inspection tools and devices	
4.2 Periodic inspection periods	
4.3 Periodic inspection items	
5 Preparation for inspection	
5.1 Records	
5.2 Handling of medium inside the cylinder	
5.3 Cylinder valve removal and surface cleaning	
6 Appearance inspection and evaluation	
6.1 General requirements	
6.2 Inspection and evaluation of cracks, laminations, bulges, cuts, abrasions, gouges, wear, and dents	
6.3 Inspection and evaluation of fire damage	
6.4 Inspection and evaluation of corrosion	
6.5 Inspection and evaluation of cylindrical shell deformation	
7 Hammer inspection and evaluation	
8 Inspection and evaluation of cylinder opening threads	
9 Internal inspection and evaluation	
10 Non-destructive testing	
10.1 Magnetic particle testing	
10.2 Ultrasonic testing	
11 Determination of mass and capacity	
12 Hydrostatic test	
13 Internal drying	
14 Inspection and assembly of cylinder valves	
15 Leakage test	
16 Post-inspection procedures	
Annex A (Informative) Measurement methods for depth of dents, cuts, abrasions, gouges, and wear	

Annex B (Normative) Determination method for the capacity of cylinders

Bibliography

Foreword

This document was issued on 25 April 2024 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 November 2024.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies.

The document runs to 17 pages in translation. The identification, the dates, the table of contents and the clauses reproduced on this page are taken from the standard itself.

GB/T 19533-2024 Periodic inspection and evaluation of steel gas cylinders for the on-board storage of compressed natural gas as a fuel for automotive vehicles

It replaces GB/T 19533-2004, which is superseded.

1 Scope

GB/T 19533-2024 specifies the periodic inspection and evaluation of the steel cylinders that hold compressed natural gas on a vehicle. A CNG cylinder holds gas at 200 bar under the floor of a taxi or a bus, it is refilled several times a week, and it is exposed to road salt, impact and the stress of the vehicle's own movement; the periodic inspection is what stands between that and a burst. The standard sets the inspection interval and the conditions requiring an out-of-schedule inspection, the preparation of the cylinder including the safe release of gas and the removal of the valve, the external and internal visual examination and the criteria for corrosion, dents, cuts, gouges, fire damage and arc burns, the thread inspection, the hydrostatic or acoustic emission test and its acceptance criteria, the evaluation and the decision to return to service, to repair or to scrap and how a scrapped cylinder is rendered unusable, the marking of the inspected cylinder and the records. The 2024 edition replaces GB/T 19533-2004. For an inspection body, a CNG station or a fleet operator in China, this is the procedure.

This document specifies the basic methods and technical requirements for the periodic inspection and evaluation of steel gas cylinders for the on-board storage of compressed natural gas as a fuel for automotive vehicles (hereinafter referred to as "cylinders").

This document is applicable to seamless, reusable, refillable cylinders with a nominal working pressure of 20MPa or 25MPa, a nominal capacity ranging from 30L to 300L, and a working temperature between -40 degrees C and 65 degrees C, which are filled with compressed natural gas as vehicle fuel conforming to GB 18047, and fixed on vehicles and

used as fuel tanks.

2 Normative references

The following documents contain provisions which, through reference in this text, constitute provisions 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 8335 Special threads for gas cylinders

GB/T 8336 Special thread gauges for gas cylinders

GB/T 9251 Methods for hydrostatic test of gas cylinders

GB/T 10878 Special taps of taper threads for gas cylinders

GB/T 12137 Methods for leakage test of gas cylinders

GB/T 13005 Terminology of gas cylinders

GB/T 17258 Steel cylinders for the on-board storage of compressed natural gas as a fuel for automotive vehicles

NB/T 47013.4 Nondestructive testing of pressure equipments - Part 4: Magnetic particle testing

TSG 23 Regulation on safety technology for gas cylinder

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 13005 and the following apply.

3.1

abrasion

damage to cylinders caused by friction of materials due to scraping, grinding, or vibration

3.2

PRD end plug

plug installed at one end of a cylinder with a neck-in structure at both ends, equipped with a pressure relief device (PRD) and a blinding function

4 Inspection tools and devices, periodic inspection periods, and periodic inspection items

4.1 Inspection tools and devices

The inspection tools and devices shall include at least the following:

- a) Lighting device: Used to inspect the inner and outer surfaces of the cylinder and the surfaces of accessories. The voltage of the safety light source shall not exceed 24V;
- b) Endoscope: Used to inspect the inner surface of the cylinder, with high-definition color display and storage functions;
- c) Special tools such as torque wrench: Used for disassembling and installing cylinder, cylinder valve, or PRD end plug;
- d) Length measurement tools (including ruler, square ruler, tape measure, and vernier caliper): Used to measure the length and depth of damage, etc.;
- e) Ultrasonic thickness meter: Used to measure the wall thickness of the cylinder;
- f) Weighing apparatus: Used to measure the mass and capacity of the cylinder. The weighing apparatus shall be accurate, with a maximum weighing capacity of 1.5 to 3.0 times the common weighing capacity, and an accuracy class of medium; its verification or calibration period shall comply with the relevant regulations;
- g) External hydrostatic test device: Used for hydrostatic test of the cylinder;
- H) Leakage test device: Used for leakage test of the cylinder;
- i) Residual gas treatment device: Used for the treatment of media inside the cylinder;
- j) Cleaning device: Used to clean contaminants and corrosion products on the inner and outer surfaces of the cylinder;
- k) Thread gauge and tap: Used for inspecting and repairing the threads of the cylinder neck. The tap and gauge shall comply with the requirements of GB/T 10878 and GB/T 8336, respectively;
- 1) Copper hammer: With a mass of approximately 250g, used for acoustic inspection;
- m) Magnetic particle testing device: Used to detect cracks or crack-like defects in the cylinder.