

ICS 43.020



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

GB/T 44410.2-2024

**Road vehicles - Compressed natural gas (CNG) fuel systems -
Part 2: Test methods
(English Translation)**

Issued on: August 23, 2024

Implemented on: December 1, 2024

Issued by: State Administration for Market Regulation

Table of Contents

Foreword...	3
Introduction...	5
1 Scope...	6
2 Normative references...	6
3 Terms and definitions...	6
4 Test methods...	6
Appendix A (Informative) Structure number comparison table...	12

Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020

Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents.

This document is Part 2 of GB/T 44410 Road vehicles - Compressed natural gas (CNG) fuel systems. The following parts have been issued for GB/T 44410:

- Part 1: Safety requirements;
- Part 2: Test methods.

This document adopts ISO 15501-2:2016, Road vehicles - Compressed natural gas (CNG) fuel systems - Part 2: Test methods, by modification.

Compared with ISO 15501-2:2016, this document has a lot of adjustments in structure.

See Appendix A for a list of structure number changes between the two documents.

The technical differences between this document and ISO 15501-2:2016 and their reasons are as follows:

- Use the normatively referenced GB/T 44410.1-2024 to replace ISO 15501-1 (see Chapter 3, 4.3.2) to adapt to our country's technical conditions and increase operability;
- Delete the term "notified body" (see 3.1 of ISO 15501-2:2016) to adapt to our country's technical conditions;

- Change the strength test and acceptance conditions of gas cylinders (see 4.1.1.1, 4.1.1.3, 4.1.1.4) to adapt to our country's technical conditions;
- Delete the requirements for aftermarket rotatable parts (see 4.1.2 and 4.1.3 of ISO 15501-2:2016) to adapt to our country's technical conditions;
- Add dynamic test acceleration and equivalent calculation method for gas cylinders of different types of vehicles (see 4.1.2.3, 4.1.2.4) to adapt to our country's technical conditions;
- Add gas density state in static test (see 4.1.3.2), with different gas density values at different temperatures;
- Use the normatively referenced GB/T 17258 to replace ISO 11439 (see 4.1.5.3) to adapt to our country's technical conditions and increase operability.

This document also makes the following editorial modifications:

- Add the informatively referenced GB/T 3730.1 (see Chapter 1);

Road vehicles - Compressed natural gas (CNG) fuel systems

- Part 2: Test methods

1 Scope

This document describes the test methods for compressed natural gas on-board fuel systems that meet the safety requirements of GB/T 44410.1-2024.

This document applies to road vehicles using compressed natural gas on-board fuel systems as specified in GB/T 3730.1.

Note: For the tests of individual components, refer to ISO 15500 (all parts), GB/T 43408, GB/T 17258 and GB/T 24160.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 17258, Steel cylinders for the on-board storage of compressed natural gas as

a fuel for automotive vehicles (GB/T 17258-2022, ISO 11439:2013, NEQ)

GB/T 44410.1-2024, Road vehicles - Compressed natural gas (CNG) fuel systems

- Part 1: Safety requirements (ISO 15501-1:2016, MOD)

ISO 6487, Road vehicles - Measurement techniques in impact tests -

Instrumentation

ISO 15500-1, Road vehicles - Compressed natural gas (CNG) fuel system

components - Part 1: General requirements and definitions

3 Terms and definitions

For the purposes of this document, the following terms and definitions, as well as those given in GB/T 44410.1-2024 and ISO 15500-1, apply.

4.1 Cylinder mounting strength tests

ρ - density of CNG at 20 MPa and 15 °C, which is taken as 0.2 and is expressed in kilograms per liter (kg/L).

4.1.3.3 The test shall be carried out using the following procedure:

- a) Apply force in the direction specified in 4.1.2.2 to the gas cylinder group anchorages within 0.2 s, and pass through the center of gravity of the gas cylinder group to the set value;
- b) Maintain the force for at least 0.2 s;
- c) Remove the force.

4.1.4 Alternative method

If the vehicle collision test is carried out in accordance with the regulations, it is considered to comply with the provisions of GB/T 44410.1-2024. A calculation method can be used instead of practical testing if its equivalence can be demonstrated.

4.1.5.1 Acceptance by testing

After the gas cylinder or gas cylinder group is tested according to the methods specified in 4.1.2 and 4.1.3, the gas cylinder shall:

-- remain attached to the test piece;

-- structural damage to the bracket does not affect installation.

4.1.5.2 Acceptance by calculation

Appropriate calculations shall be performed based on various technical parameters. The calculation method shall be approved by the testing agency.

4.1.5.3 Acceptance by engineering experience (steel cylinders)

The conformity acceptance of steel cylinders (in accordance with the provisions of GB/T 17258) is determined by calculation results and confirmed by long-term experience. See Appendix B.

4.2.1 The test can be carried out at ambient temperature. Each vehicle shall be subjected

to the following tests:

a) Fill the vehicle fueling system upstream of the first-stage pressure regulator with gas at $1 \text{ MPa} \pm 0.1 \text{ MPa}$;

.....