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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 43.080.01

T 47

GB/T 36883-2018

Technical specification of LNG vehicle

液化天然气汽车技术条件

Issued on: October 10, 2018

Implemented on: May 01, 2019

Issued by: State Administration for Market Regulation;

**Standardization Administration of the People's Republic of
China.**

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Technical specification of LNG vehicle

1 Scope

This Standard specifies the terms and definitions, technical requirements, inspection rules, marks, transport and storage as well as exit-factory documents for liquified natural gas (hereinafter referred to as LNG) vehicle.

This Standard is applicable to M₂, M₃, N₂, N₃ vehicles that can use liquified natural gas as fuel.

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 3836.1, *Explosive atmospheres - Part 1: Equipment - General requirements*

GB 7258-2017, *Technical Specifications for Safety of Power-driven Vehicles Operating on Roads*

GB/T 9969, *General Principles for Preparation of Instructions for Use of Industrial Products*

GB 11567, *Motor vehicles and trailers-lateral and rear underrun protection requirements*

GB/T 17676-1999, *Natural gas vehicle and liquefied petroleum gas vehicle Identification marks*

GB/T 17895, *Natural gas vehicle and liquefied petroleum gas vehicle - Vocabulary*

GB/T 20734-2006, *Mounting requirements for liquefied natural gas vehicle special equipment*

GB/T 25986, *Filling device of natural gas vehicles*

QC/T 471, *Specifications for auto diesel engines*

provisions of QC/T 691. The technical conditions of compression ignition engines shall comply with the provisions of QC/T 471.

4.1.9 Automobile production plants shall add oil that meets the requirements of engine manufacturers. Temporary replacement of diesel engine oil with a quality level higher than CH-4 shall work.

4.1.10 All components shall be made of materials with high temperature resistance and corrosion resistance according to engine exhaust temperature and exhaust gas composition.

4.2 Special equipment for LNG vehicles

Safety protection shall comply with the provisions of GB 7258-2017. Special equipment for LNG vehicles shall comply with the requirements of QC/T 755 and shall also meet the following requirements.

- a) The pressure and temperature of the output gas of the special equipment for LNG vehicles shall meet the requirements of the engine
- b) In any of the following cases, the special equipment for LNG vehicles shall be able to automatically cut off the LNG output:
 - 1) Ignition switch off;
 - 2) The engine is not running;
 - 3) Gas pipeline breakage, shedding, etc.
- c) All electrical components in special equipment for LNG vehicles shall meet the requirements of GB 3836.1.
- d) Filling device shall meet the requirements of GB/T 25986.
- e) Liquid signal system shall meet the following requirements:
 - 1) The liquid volume display of the LNG vehicle shall be displayed on the instrument. The liquid volume display unit is liter (L) or percentage (scale).
 - 2) LNG vehicles shall be able to give an alarm signal when the volume of the gas cylinder is low. First alarm when the remaining liquid volume does not meet the 100km driving range. Re-alarm when the remaining liquid volume does not meet the 50km driving range.

4.3 Installation of special equipment for LNG vehicles

4.3.1 The installation of special equipment for LNG vehicles shall be carried out in accordance with the provisions of GB/T 20734-2006 and shall also meet the

- a) The installation of pipelines shall ensure that the joints of the pipelines are easy to construct, sealed, easy to inspect, and highly reliable.
 - b) Pipes and components shall avoid high temperature heat sources such as exhaust pipes and superchargers, as well as complete vehicle solenoid valves, mechanical power supply valves, etc.
 - c) The distance between the pipeline and the joint and the engine exhaust pipe shall be greater than or equal to 100mm. When the distance is between 100mm and 200mm, a reliable and fixed thermal insulation device shall be installed. The distance from the drive shaft shall be greater than or equal to 100mm.
 - d) For Class M vehicles, piping shall not be installed directly in the cabin. If the gas cylinder is installed at the top of the vehicle, the pipeline can only be installed in the compartment, there shall be no connection joints in the pipeline, and effective isolation and safety protection measures shall be set for the pipeline.
- 4.3.4** Safety components shall be installed in accordance with the following requirements:
- a) The protective installation of special equipment for LNG vehicles shall comply with the provisions of 12.6 and GB/T 20734-2006 in GB 7258-2017. The side guard of the gas cylinder shall comply with the provisions of GB 11567.
 - b) The alarm device shall be installed in a prominent position in the cab. The detector shall be installed at the top of the closed and semi-enclosed space where there is a large leakage of gas fuel and the risk of accumulation, or where there is a risk of large leakage if it is not closed, such as the cab, passenger compartment, trunk, engine compartment, gas cylinder set box, gas filling panel and pipe joints. The specific installation location can be determined by the vehicle manufacturer itself in accordance with the provisions of this article.

5 Inspection rules

5.1 Type test

LNG vehicles shall be type tested if they meet one of the following conditions:

- a) new product or old product produced in transferred plant;
- b) production resumed after discontinued production of more than one year;
- c) after the formal production, for example, when the structure, material,

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