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Technical requirements for caravan

旅居挂车技术要求

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard is proposed by the Ministry of Industry and Informatization of the People's Republic of China and the Ministry of Communications and Transportation of the People's Republic of China.

This Standard shall be under the jurisdiction of the National Technical Committee for Automobile Standardization (SAC/TC 114).

Drafting organizations of this Standard: Highway Science Institute of the Ministry of Transportation, Qingdao Chuntian Vehicle Science and Technology Co., Ltd., Disheng (Changzhou) Vehicle Science and Technology Co., Ltd., Hanyang Special Automobile Research Institute, Zhongtian High-Tech Special Vehicle Co., Ltd. Beijing North Accommodation Vehicle Co., Ltd.

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Technical requirements for caravan

1 Scope

This Standard specifies the classification, the requirements of finished vehicles, the requirements of special equipment and facilities, reliability requirements, test methods and inspection rules for caravan.

This Standard is applicable to caravan towed by motor vehicles equipped with special towing devices. The camp trailers that serve as permanent accommodation can refer to this standard.

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 1589 Limits of dimensions, axle load and masses for motor vehicles, trailers and combination vehicles

GB/T 2820.5 Reciprocating internal combustion engine driven alternating current generating sets - Part 5: Generating sets

GB/T 3324 General technical requirements for wooden furniture

GB/T 3325 General technical requirements for metal furniture

GB/T 3730.1 Motor vehicles and trailers - Types - Terms and definitions

GB/T 4606 Road vehicles - 50 semi-trailer fifth wheel coupling pin - Basic and mounting /interchangeability dimensions

GB 4785 Prescription for installation of the external lighting and light-signaling devices for motor vehicles and their trailers

GB/T 5053.1-2006 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 24 N (normal) for vehicles with 24V nominal supply voltage

GB/T 5053.2-2006 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 12 N (normal) for vehicles with 12V nominal

supply voltage

GB/T 5842 Liquefied petroleum gas cylinders

GB 7258 Technical specifications for safety of power-driven vehicles operating on roads

GB 9685 National food safety standard -- Standard for uses of additives in food contact materials and their products

GB/T 11918.2 Plug, socket-outlets and couplers for industrial purposes - Part 2: Dimensional compatibility and interchangeability requirements for pin and contact-tube

GB 12676 Technical requirements and testing methods for commercial vehicle and trailer braking systems

GB/T 13594 Antilock braking performance and test procedure for motor vehicles and their trailers

GB/T 15088 Road vehicles - Fifth wheel kingpins - Strength test

GB/T 18883 Indoor air quality standard

GB 21670 Technical requirements and testing methods for passenger car braking systems

GB/T 22550 Leisure accommodation vehicles - Vocabulary

GB/T 22551 Leisure accommodation vehicles - Caravans - Habitation requirements

GB/T 23336 General technical requirements for semitrailer

GB/T 25085 Road vehicles - 60V and 600V single-core cables

GB/T 25088 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 24S (supplementary) for vehicles with 24V

GB/T 25979 Road vehicles - Heavy commercial vehicle combinations and articulated buses - Lateral stability test methods

GB/T 25980 Road vehicles - Coupling balls for caravans and light trailers - Dimensions

GB/T 25988 Road vehicles - Towing vehicle coupling device to tow caravans or light trailers - Mechanical strength test

QC/T 252 Special Purpose Vehicle type test procedures

QC/T 448-1999 Cook truck -- general technical requirements

5.2.4 When the trailers travel at the speed of 30km/h on flat and dry road, the maximum deviation of trailers' rear axle track centerline relative to the trailers' front axle track centerline shall not be greater than 110mm.

5.2.5 The trafficability of the caravan trailers shall meet the requirements of GB 1589.

5.3 Connection match requirements

5.3.1 The mechanical strength and dimensions of the towing connection device of the caravan centre-axle trailer shall conform to the relevant requirements of GB/T 25980 and GB/T 25988. The caravan semi-trailer shall use No. 50 traction pin in accordance with the specifications in GB/T 4606 and GB/T 15088.

5.3.2 The terrain clearance of the connection center point of the caravan centre-axle trailers towed by the type M1, N1 tractor shall be $380\text{mm} \pm 50\text{mm}$. The terrain clearance of the traction pin board of the caravan semi-trailers shall be $1080\text{mm} \sim 1110\text{mm}$.

5.3.3 The front and back rotation of the caravan trailers shall be in accordance with the relevant standards.

5.3.4 The traction rod of the caravan semi-trailer shall be equipped with a safety chain, the length of which shall be longer than the length of the control connection line and the strength of which shall ensure the vehicle cannot break when lost control.

5.3.5 The external lighting and light signaling devices of the trailers shall comply with the requirements of GB 4785.

5.3.6 The caravans shall use electric connectors that comply with GB/T 5053.2-2006. Among those, line 2 shall be connected with the position lamp, clearance lamp and licence lamp, line 6 shall be connected with the rear fog lamp and line 7 shall be connected with the reversing lamp. Wiring of the rest shall conform to the requirements of 5.4 in GB/T 5053.1-2006 or 5.4 in GB/T 5053.2-2006. The caravans shall be fitted with electrical connectors in compliance with GB/T 25088 for connection of other electrical equipment.

6 Requirements for special equipment and facilities

6.1 Carriages

6.1.1 The carriages shall have certain heat preservation capacity. When the difference of external and internal temperatures (mean value) is $20^{\circ}\text{C} \sim 25^{\circ}\text{C}$, the heat transfer coefficient of the carriage shall not be greater than that of $1.4\text{ W}/(\text{m}^2\cdot\text{K})$.

6.1.2 The rainproof sealing of the caravans shall comply with the requirements of QC/T

6.3 Water supply and drainage facilities

6.3.1 The vehicle shall be provided with water supply and drainage facilities that meet the requirements in GB/T 22551. There shall not be any leakage or dripping at the connections of the water supply and drainage system. The specification and location of the pipeline interface for the water supply and drainage system shall match the facilities of the camp and meet the following requirements:

- a) The water supply pipeline shall use DN20 or DN16 pipe and fittings, in which the external water injection interface shall be equipped with both tap water interface and gravity water injection interface. The materials of the water supply system shall conform to the sanitary standard of domestic drinking water.
- b) The sewage pipeline shall use pipes that match the sewerage interface of the water facilities and shall provide smell barriers. The diameter drainage pipe of the toilet shall be no less than 50mm, and the drain valve is recommended to be 76mm (3 in). The diameter of drainage pipeline for other sewage facilities shall be no less than 25mm and the drain valve is recommended to be 38mm (1.5 in).

6.3.2 Wash sink shall be provided in the vehicle. There shall be separated connection between the drain of the sink and the pipe below.

6.3.3 Caravans shall be provided with a fixed or portable clean water tank which shall be made of environment-friendly materials and meet the following requirements:

- a) The inlet and outlet connections of the fixed clean water tank shall be located at the external surface of the trailer and easy to connect. The materials for all pipes, fittings and seals shall comply with requirements in GB 9685;
- b) The water tank shall be provided with water level gauge which enables the user to see the water level in the tank;
- c) It shall be firmly and reliably installed.

6.3.4 The trailers with a clean water tank shall be provided with a waste water tank that is larger than the capacity of the clean water tank. (The special camp trailers are not recommended to use waste water tanks, but shall be provided with corresponding sewage pipes that can be connected to the camp sewage system). Clean water tank and waste water tank shall be easy to wash and clean.

6.3.5 When all water supply and drainage pipelines are arranged under the chassis, appropriate protective measures shall be taken and winter drain valves shall be installed.

6.6.4 When the relative humidity of the air is 45%~ 75% and the ambient temperature is 15°C ~ 35°C, the cold state of the circuits of the electrical system to the ground and to one another (before the electrical system is electrified and the temperature difference between the parts and the environment is not more than 3°C), the insulation resistance of each part shall not be less than 2mΩ.

6.6.5 Wires shall be properly protected and securely fixed in a position free from scratching, wearing and corrosion. They shall not loosen or fall off during the use of the vehicle.

6.6.6 Lighting lamps and electrical components installed in the toilet shall be moisture-proof. The power sockets shall be waterproof.

6.6.7 Power circuit system shall be provided with overload protection main switch.

6.6.8 Caravans shall be equipped with household accumulator as necessary, such as batteries. The accumulator compartment shall ventilate. Except for batteries and their charging circuit, all other circuits shall be provided with circuit breaker. Low power consumption appliance can share a circuit breaker.

6.7 Heating facilities

6.7.1 Heating facilities are suggested to adopt electric heater, gas or fuel heater. They shall comply with the relevant national standards.

6.7.2 There shall be insulation protection between the heat source and its adjacent objects.

6.7.3 The exhaust of gas/oil burning appliances shall be discharged out of the vehicle. The vent shall not point to the door side and shall be away from the window.

6.7.4 The piping systems and exhaust gas discharge systems of gas/oil burning appliances shall be well sealed. Under normal working pressure, there shall not be leakage.

6.8 Special equipment for liquefied petroleum gas system and its installation

6.8.1 The selection of LPG cylinder shall comply with regulations of GB/T 5842.

6.8.2 LPG cylinder shall be fixed to a traction rack outside the carriage or a cylinder container. When the cylinder is installed in the external traction rack, protection measures shall be taken. The cylinder shall be placed in a vertical position with the valve facing upward, firmly fixed and easy to replace.

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