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**Special purpose vehicles for transporting large indivisible
loads**

大件运输专用车辆

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Special purpose vehicles for transporting large indivisible loads

1 Scope

This document specifies the terms and definitions of special purpose vehicles for transporting large indivisible loads, as well as the model representation method, requirements, test methods, inspection rules, large-scale transport signs, signs and identifications, vehicle identification numbers, certificates, accompanying documents and storage of special purpose vehicles for transporting large indivisible loads.

This document applies to special purpose vehicles for transporting large indivisible loads on the road.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. 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 standard.

GB 1589 Limits of dimensions, axle load and masses for road vehicles

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

GB/T 4607 Road vehicles - 90 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 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - 7-pole connector type 24 N (normal) for vehicles with 24 V nominal supply voltage

GB/T 5054.3 Road vehicles -- Multicore connecting cables -- Part 3: Construction, dimensions and marking of unscreened sheathed low-voltage cables

GB 7258 Safety specifications for power-driven vehicles operating on roads

GB/T 9969 General principles for preparation of instructions for use of industrial

products

GB/T 12539 Motor vehicles steep hill climbing test method

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

GB/T 13881 Road vehicles - Pneumatic braking connections between towing vehicles and trailers

GB 16735 Road vehicle - Vehicle identification number (VIN)

GB/T 20070 Road vehicles - Mechanical coupling between tractors and semi-trailers - Interchangeability

GB/T 21085 Qualified certificate of vehicle

GB 23254 Retro-reflective markings for trucks and trailers

GB 25990 Rear-marking plates for vehicles and their trailers

GB/T 31879 Road vehicles - General technical requirements for fifth wheel

GB/T 31883 Road vehicles - Drawbar couplings, drawbar eyes, fifth wheel kingpins, hook couplings and toroidal eyes - Wear limits for in-use mechanical couplings

GB/T 32860 Road vehicles - Interchangeability of drawbar couplings

JB/T 5943 Engineering machinery general technical specifications for weldments

QC/T 484 Automotive paint coating

QC/T 913 General technical specifications for platform trailer with hydraulic suspension

3 Terms and definitions

The terms and definitions, as defined in GB/T 31879, QC/T 913, as well as the following terms and definitions, apply to this document.

3.1

Large indivisible load transport

A kind of road transport, where at least one of the parameters of the total length, total width, total height, total mass, axle load of the vehicle and load exceeds the requirements in GB 1589, when carrying a single indivisible load.

5.1.4 External lighting and light signal devices, tail sign boards and reflective signs shall comply with the relevant provisions of GB 4785, GB 25990, GB 23254, respectively.

5.2 Structure

5.2.1 The number of axles of tractors for transporting large indivisible loads shall not be less than 3; the half or more of the axles shall be the drive axles.

5.2.2 For the special purpose low deck semi-trailers for transporting large indivisible loads, which have rigid suspension and leaf spring suspension, the number of axes shall not be greater than 5. When the number of axes is greater than 3, the other axes shall have follow-up steering or self-steering function.

5.2.3 The trailer for transporting large indivisible loads can adopt the vertical telescopic or horizontal expansion structure. Steel structural parts, such as load-bearing platforms and accessories, shall have sufficient strength and rigidity; they shall not be damaged, cracked, or permanently deformed, under normal use conditions.

5.2.4 Shackles, eyelets or limit blocks, etc. shall be provided on the carrying platform of the trailer for transporting large indivisible loads. Its structure, strength, quantity, location shall ensure that the carried equipment can be easily and reliably fixed; meanwhile it shall be equipped with lifting lug for hoisting.

5.3 Connections

5.3.1 The mechanical connections shall have sufficient strength and rigidity. They shall match the total mass and bearing mass of the towed trailer. The mutual connection shall be firm and reliable.

5.3.2 The specifications and models of the towing connector, the tow bar hanger, the tow seat, the tow pin shall match the mass of the towing vehicle and its towed trailer. The tractor for transporting of large indivisible loads shall adopt the No.50 or No.90 towing seat, in accordance with the provisions of GB/T 31879. The semi-trailer shall use No.50 traction pins, in accordance with GB/T 4606, or the No.90 traction pins, in accordance with GB/T 4607.

5.3.3 The interchangeability of the mechanical connection between the tractor and the semi-trailer shall comply with the provisions of GB/T 20070. The interchangeability of the drawbar connector shall comply with the provisions of GB/T 32860.

5.3.4 There shall be no visible cracks in mechanical connectors, such as traction connectors, drawbar hanger, traction seat's traction pins, connecting hooks, annular holes; their wear limit shall meet the requirements of GB/T 31883.

5.3.5 The hydraulic gooseneck shall have the function of pitching and swinging, to adapt to the lifting adjustment of the working stroke of the hydraulic suspension. It shall

be able to provide a suitable load to the traction seat, to ensure the normal use of the tractor. The maximum hinged angle of the hydraulic gooseneck, as relative to the tractor, shall not be less than 70°.

5.3.6 The steering end beam shall meet the following requirements:

- a) The steering end beam shall have the limit mark of the maximum allowable total towed mass;
- b) The maximum hinged angle of the steering end beam drawbar shall not be less than 45°; there shall be a reliable limit device at its extreme position;
- c) The drawbar of the steering end beam shall be provided with brackets or supporting wheels; the installation shall be firm and reliable; it shall be able to be retracted when driving.

5.3.7 The mechanical connections shall be equipped with a safety device, to prevent the motor vehicle from being disconnected, due to vibration and impact, during driving.

5.3.8 The electrical connectors between tractors, trailers, modular unit vehicles shall comply with the provisions of GB/T 5053.1. The multi-core cables shall comply with the provisions of GB/T 5054.3.

5.3.9 The pneumatic brake pipe connector, between the tractor and the trailer, shall comply with the provisions of GB/T 13881.

5.4 Axle load

5.4.1 For the single axle of the tractor for transporting large indivisible loads, the maximum allowable axle load shall not be greater than 10000 kg, when using a single tire; the maximum allowable axle load shall not be greater than 13000 kg, when using twin tires. When the total mass of the transportation vehicle combination is more than 100000 kg, the drive axle of the tractor for transporting large indivisible loads adopts twin tires, AND the nominal section width of the tire is not less than 375 mm, the maximum allowable axle load of a single axle is not more than 16500 kg; meanwhile, the total load capacity of the tires of the axle shall be greater than the axle load of the axle (calculated by the actual level).

5.4.2 The maximum allowable axle load of a trailer for transporting large indivisible loads, without a spool structure, shall not be greater than 13000 kg. For the trailer for transporting large indivisible loads, which adopt the spool structure, the allowable average axle load of each axis (1 line, 2 axles, 8 tires) shall not be greater than 18000 kg, AND the maximum allowable axle load shall not be greater than 20000 kg.

5.5 Dynamic performance

5.5.1 When the total mass of the vehicle combination for transporting of large

axles, the braking performance shall comply with the provisions of GB 12676. For the tractor for transporting large indivisible loads, which have more than 4 axles, the no-load braking distance at the initial braking speed of 30 km/h shall be not more than 9.5 m. Any part of the tractor for transporting large indivisible loads (except the part not included in the width of the vehicle) shall not exceed the test channel of the vehicle width (m) + 0.5 m.

5.6.8 In the no-load state, the parking brake device of the trailer for transporting large indivisible loads shall be able to ensure that, it can be kept stationary in the forward and backward directions, along a ramp which has a gradient of 8% AND an adhesion factor between tire and pavement of not less than 0.7, for a duration of not less than 2 min.

5.7 Other requirements

5.7.1 Hydraulic suspension trailers shall comply with the provisions of QC/T 913.

5.7.2 The pipelines of hydraulic, electrical, pneumatic systems shall be neatly arranged, reasonably connected, firmly connected. Each component and assembly shall be disassembled and assembled independently and easy to maintain.

5.7.3 The paint coating of the trailer shall comply with the relevant provisions of QC/T 484. The welding seam shall comply with the relevant provisions of JB/T 5943. All exposed ferrous metal parts shall be subjected to anti-corrosion treatment.

6 Test methods

6.1 Strength test

6.1.1 Under the condition that the structural parts, such as the bearing platform, bear 1.1 times the rated load, the special vehicle for transporting large indivisible loads runs for 30 km at a speed of 10 km/h. Record whether the structural parts work normally, whether there is abnormal noise, whether there is damage, cracks or permanent deformation, whether there is oil leakage in the hydraulic system.

6.1.2 The bearing platform and other structural parts bear 1.2 times the rated load, for 24 h of heavy load static test. Record whether the structure works normally, whether there is abnormal noise, whether there is damage, cracks, or permanent deformation, whether there is oil leakage in the hydraulic system.

6.2 Climbing test

The climbing test method shall be carried out, in accordance with the provisions of GB/T 12539.

6.3 Brake test

According to the specified items, each special purpose vehicles for transporting large indivisible loads shall be subject to exit-factory inspection. It can only leave factory, after passing the inspection and being accompanied with the certificate.

8 Others

8.1 Transporting mark for large indivisible loads

Special purposes vehicle for transporting large indivisible loads shall have reflective signs, which have the words "transporting large indivisible loads"; the background color is yellow; it shall use the standard Chinese characters; the character color shall be black.

8.2 Sign plate and identification

8.2.1 The product sign plate of special purposes vehicles for transporting large indivisible loads shall comply with the provisions of GB 7258. It shall also be equipped with the sign plates or identifications of parameters, such as the vehicle identification number (VIN), type (retractable or extendable), outline size (variable), axle load.

8.2.2 The installation location of the sign plate or identification shall be indicated in the product instruction manual.

8.3 Vehicle identification number and certificate

The tractors for transporting large indivisible loads, the trailers for transporting large indivisible loads, the modular unit vehicles shall have a unique vehicle identification code and a motor vehicle exit-factory certificate. The content and composition of the vehicle identification number shall comply with the provisions of GB 16735; the engraving position shall comply with the provisions of GB 7258; motor vehicle's exit-factory certificate shall comply with the provisions of GB/T 21085.

8.4 Accompanying documents

8.4.1 It shall include product instruction manual and related documents of supporting equipment.

8.4.2 The product instruction manual shall be written, in accordance with the provisions of GB/T 9969; the content shall conform to the provisions of GB 7258. It shall also include parameters, such as the number of axles, wheelbase, number of tires, installation location requirements for sign plates and identifications, as well as the use methods, maintenance requirements, precautions.

9 Storage

When the special purpose vehicle for transporting large indivisible loads is parked for

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