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Replacing GB/T 21268-2007

General technical conditions for garden patrol minibus

非公路用旅游观光车通用技术条件

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Standardization Administration of the People's Republic of China.

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Foreword

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

This standard replaces GB/T 21268-2007 “General technical conditions for garden patrol minibus”. As compared with GB/T 21268-2007, the main changes of this standard are as follows:

- MODIFY the definition of 3.1 “Garden patrol minibus” in “Terms and definitions”.

- In “Terms and definitions”, ADD “3.5 Limited driving distance”.

- MODIFY the model representation method.

- ADD the requirements for label content in 5.1.2.

- MODIFY the requirements for mass of members in 5.1.6, 5.3.1d) and 6.1.7.

- MODIFY the requirements for reliability test time and mean time between failures in 5.1.7, 6.19, and 7.4.4.

- MODIFY the calculation method of the passing angles in 5.2.1 and 6.3.2.

- ADD the requirements for seat width in 5.2.1 and 6.3.2.

- MODIFY the judgment requirements of the prototype machine quality in 5.2.2.

- MODIFY the requirements for the maximum speed limit of patrol minibus in 5.2.3.

- ADD the requirements for seat strength in 5.3.1.

- ADD the requirements for patrol minibus license plate in 5.3.8.

- ADD the requirements for frame rust treatment in 5.3.9.

- MODIFY the version numbers and reference clauses of the reference standard GB 7258 in 5.3.4, 5.3.5, 5.5.3, 5.6.2, and 5.14.3.

- ADD the requirements for fiber reinforced glass in 5.3.11 and 6.18.

- MODIFY the reference standard for brake requirements in 5.5.1.

- DELETE the requirements for the compartment quality of sightseeing combination train in 5.5.2, 5.5.7, and 5.7.4 of the original standards.

General technical conditions for garden patrol minibus

1 Scope

This standard specifies the scope of application, terms and definitions, models, basic parameters, requirements, test methods, inspection rules, markings, accompanied files and accessories, transport, storage, and quality assurance period of garden patrol minibus (hereinafter referred to as sightseeing vehicles).

This standard applies to garden patrol minibus and sightseeing combination trains (hereinafter referred to as sightseeing vehicles) that are driven by internal combustion engines, electric motors or alternately driven by the two. Other vehicles of the same type (such as hunting vehicles, etc.) can refer to it for implementation.

2 Normative references

The following documents are essential to the application of this document. 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) are applicable to this standard.

GB/T 1446 Fiber-reinforced plastics composites - The generals

GB/T 1771 Paints and varnishes - Determination of resistance to neutral salt spray (fog)

GB/T 2573 Test method for aging properties of glass fiber reinforced plastics

GB 3847-2005 Limits and measurement methods for exhaust smoke from C.I.E. (Compression Ignition Engine) and vehicle equipped with C.I.E.

GB/T 4094 Electric vehicles - Symbols for controls, indicators and tell-tales

GB 4208-2008 Degrees of protection provided by enclosure (IP code)

GB/T 4942.1-2006 Degrees of protection provided by the integral design of rotating electrical machined (IP code) - Classification

GB 7258-2012 Safety specifications for power-driven vehicles operating on roads

GB 8410 Flammability of automotive interior materials

5 Technical requirements

5.1 Basic requirements

5.1.1 Sightseeing vehicles shall be manufactured in accordance with drawings and technical documents approved by the stipulated procedures.

5.1.2 Sightseeing vehicles are marked on the signboard with durable materials and clear lettering in the obvious position:

a) Internal combustion sightseeing vehicle:

1) Manufacturer name;

2) Product name and model number;

3) Manufacturing date or product number;

4) Overall vehicle mass;

5) Maximum capacity: rated number of passengers (including driver);

6) Maximum operating speed at full load;

7) Manufacturing license number;

8) Special equipment code.

b) In addition to the above, the electric sightseeing vehicle shall also include:

1) The rated voltage and capacity of the battery in the electrical system;

2) Motor power.

5.1.3 The technical condition of the sightseeing vehicle body shall ensure that the driver has normal working conditions and passenger safety, and can provide a good sightseeing vision.

5.1.4 The exposed surface of a sightseeing vehicle shall be beautiful and smooth. Paint shall be uniform and there shall be no defects such as cracks, build-up, peeling, and foaming. The film adhesion shall not be lower than the quality requirements of level 2 of GB/T 9286-1998. All glass steel reinforced sightseeing vehicles have no requirements for paint film adhesion. For spraying plasticity or adhesive plasticity, it shall also pass the salt spray test in accordance with GB/T 1771.

5.1.5 The design of the markings for sightseeing vehicle control parts, indicators

when the floor of the vehicle is higher than 450 mm above the ground, the step entrance may be set by steps. The height of the first step from the ground shall not exceed 450 mm, and the height between other steps shall not exceed 350 mm.

5.3.4 When the sightseeing vehicle is equipped with front windscreen, the front windscreen wipers shall meet the requirements of clause 12.3 in GB 7258-2012.

5.3.5 Sightseeing vehicles shall be provided with a rearview mirror on the left and right sides. Rearview mirrors shall meet the requirements of 12.2.1, 12.2.2, 12.2.5 and 12.2.6 of GB 7258-2012.

5.3.6 Sightseeing vehicles may be equipped with windproof and rainproof devices that can be easily disassembled.

5.3.7 Inside and outside of the vehicle body, any parts and components that the occupant may touch shall not have any sharp projections (such as sharp corners, sharp edges, burrs, etc.) that may cause injury to the human body.

5.3.8 Sightseeing vehicles shall have the location for the installation of the front and rear license plates.

5.3.9 The surface of the sightseeing vehicle frame shall be subject to anti-rust treatment before installation.

5.3.10 Wheels shall not extend beyond the body of the vehicle, to avoid injury to occupants due to objects thrown off by the wheel's centrifugal force (dirt, stones, etc.).

5.3.11 The surface of fiber reinforced plastic used in sightseeing vehicles shall be smooth, uniform in color, and shall have no defects such as wrinkles, cracks, particles, flowing glue, peeling of resin, exposed fibers and surface stickiness. The selected fiber reinforced plastic products shall be confirmed to have resistance to salt mist, damp heat, weathering, and compression after impact. Among them, its salt mist resistance and damp heat resistance shall meet GB/T 2573, weathering resistance shall meet GB/T 16422.2, the compression performance after impact shall meet GB/T 21239. The enterprise may conduct test verification on the selected fiber reinforced plastic products, and may also receive test reports provided by the supplier that meet the above test requirements.

5.4 Instruments, tell-tales and lighting devices

5.4.1 The internal combustion sightseeing vehicle shall be equipped with an odometer, speedometer, engine water temperature or water temperature warning light, oil pressure gauge (or oil pressure warning light), battery charging

5.7.3 The maximum traction force of the sightseeing vehicle shall not be less than the design value, and the maximum climbing slope as calculated in accordance with this traction force shall not be less than the design value of the designed climbing slope.

5.7.4 The motor for electric sightseeing vehicle walking adopts 60 min(S_2) working system, the insulation grade of the motor is not lower than grade F; when series-excited motor is adopted, it shall provide necessary protective device (excluding wheel brake) to avoid motor from continuous ultra-high speed operation; DC traction motor shall meet the requirements of JB/T 5335. The protection level of the motor shall meet the IP54 level in GB/T 4942.1-2006.

5.7.5 The motor controller shall have overcurrent protection, overheating protection, overvoltage protection, and undervoltage protection. Its degree of protection shall comply with the IPX5 rating in GB 4208-2008.

5.8 Operating system

5.8.1 The functions and using requirements of each operating mechanism shall be described in detail in the instruction manual, clear and durable signs shall be used on the vehicle body to indicate the function of each operating mechanism.

5.8.2 The engine shall be able to be started by the driver in the seat.

5.8.3 Each operating mechanism shall be reasonably arranged and easy to operate.

5.8.4 The control circuit shall be equipped with a key switch device.

5.9 Steering system

5.9.1 The steering wheel of the sightseeing vehicle shall not be set to the right. A steering limit device shall be provided. The steering wheel shall not swing on the road which is flat, hard, dry and clean. The maximum free rotation of the steering wheel from the middle position to the left or right corner shall not exceed 15°.

5.9.2 The steering mechanism shall be light and flexible.

5.9.3 When driving on flat, hard, dry and clean concrete or asphalt roads, if it transits from straight line along a spiral line at the speed of 10 km/h within 5 s to the circle having a diameter of 24 m, the tangential hand operating force exerted on the outer edge of the steering wheel shall be not more than 150 N.

5.9.4 When the sightseeing vehicle travels at a speed of 15 km/h (if the

Electric sightseeing vehicle	70	75

5.14 Fire protection requirements

5.14.1 Fire retardant materials shall be used for the interior materials used in the sightseeing vehicle, and the flame retardancy shall comply with the provisions of GB 8410.

5.14.2 Sightseeing vehicles shall have a fire extinguisher installed so that the fire extinguisher can be properly positioned and accessible to the driver.

5.14.3 Safety requirements for fuel systems for internal combustion sightseeing vehicles shall be implemented in accordance with 12.5 in GB 7258-2012.

5.15 Overall machine performance item

Items under 5.1 ~ 5.14 are overall performance items.

6 Test methods

6.1 Preparation before the test

6.1.1 Before the test, it shall make the sightseeing vehicle have normal technical conditions, to ensure the accuracy of the test results. At the same time, in order to ensure safety and smooth test execution, every effort shall be made to eliminate hidden dangers and avoid accidents.

6.1.2 The prototype assemblies, components, accessories and attachments are completely equipped in accordance with the requirements, and shall meet the technical requirements for the whole vehicle exit-factory.

6.1.3 Before the prototype test, maintenance shall be carried out in accordance with the product's instruction manual. Oil, water, electricity, liquid, etc. shall meet the corresponding test and inspection requirements.

6.1.4 The climatic conditions of the test environment shall meet the following requirements:

a) Temperature -5 °C ~ 40 °C;

b) The wind speed does not exceed 5 m/s, unless otherwise specially required by the test item;

c) When the battery prototype is tested, the maximum relative humidity of the

6.3.2 For the structural dimensions of the sightseeing vehicle, it shall measure the following items:

Full length L, full width W, full height H, minimum ground clearance H_1 (no load state and full load state), frame middle point ground clearance H_2, approach angle α, pass angle β [$\beta = 2\arctan(2H_2/L_1)$] , departure angle γ, wheelbase L_1, front tread W_1, rear tread W_2, wheel static radius (no load state and full load state) (front wheels R_f, R_f'; rear wheels R_r, R_r'), distance from same direction seat cushion to the backrest L_2, distance between the same direction occupant seats L_3, distance between the facing occupant seat L_4, distance between the occupant seat surface and roof H_4, seat width W_3, as shown in Figure 1.

6.4 Measurement of sightseeing vehicle mass parameters

6.4.1 The technical state of the sightseeing vehicle is as follows:

Sightseeing vehicles have no load state and full load state.

6.4.2 The overall mass of the sightseeing vehicle is measured as follows:

a) The sightseeing vehicle is in a no-load state, it shall be driven from the one direction to the weighing platform and stop at the center of the weighing platform. During the measurement, the sightseeing vehicle stops and the engine or motor is turned off. Then the sightseeing vehicle is turned 180°, to measure the average value again.

b) The method for determining the mass of compartment is the same as above.

6.4.3 The mass of front- and rear-axles of sightseeing vehicles is measured as follows:

Sightseeing vehicles are in no-load condition and fully-loaded condition respectively. They are first driven from one direction to the weighing platform, to weight the front-axle and rear-axle in turn. During measurement, only the wheels of the axles under test are allowed to stop on the weighing platform. The prototype remains horizontal. Let is stop stably and the engine goes out (or the motor is turned off). Then the sightseeing vehicle is turned 180°, to measure the average value again.

Axle mass distribution correction is as shown in formula (1) ~ formula (5):

6.19.2 The intensive test procedure consists of several identical cycles. The procedure for the first cycle in the test is as follows:

The sightseeing vehicle is in full load at the starting position. After starting, it uses the forward gear to travel counterclockwise along the runway. It turns left at 90° to enter the slope climbing section, in which first the vehicle is changed to low speed gear, when reaching to the middle part of the uphill section, perform parking brake, after parking for 3 s ~ 5 s, start it up to continue climbing to the horizontal section, then run downhill at a safe speed, turn left at 90° into the barrier runway; at the speed of not less than 4 km/h, after the left wheels of the sightseeing vehicle pass through the left side barrier blocks, the right wheels pass through the right side barrier block, it shall neither stop driving nor cross the boundary when it passes through the barrier block. The sightseeing vehicle continues running forward, turns left at 90° to enter the straight line runway section, and continues running forward, turns left at 90° to reach the starting point.

6.19.3 The test process shall meet the following requirements:

a) Operating speed: The prototype shall be subject to a reliability-strengthened test operation at the maximum safe speed. The sightseeing vehicle shall run at a 90° turn and shall make a turn with the minimum turning radius.

b) Daily workload: The daily continuous operation volume shall be not less than 8 h; the sightseeing vehicle with the operating speed greater than 27 km/h shall circulate at least 75 cycles per hour; the sightseeing vehicle with the operating speed of 18 km/h ~ 27 km/h shall circulate at least 50 cycles per hour; the sightseeing vehicles with a speed of less than 18 km/h shall circulate at least 25 cycles per hour.

c) Prototype maintenance: The prototype can be routinely maintained as specified in the instruction manual.

d) After the test is carried out for 100 hours, change to the reversed direction.

6.19.4 Calculation of reliability index MTBF is as shown in the formula (10):

$$\mathrm{MTBF} = \frac{T_z}{r} \qquad \cdots\cdots (10)$$

Where:

T_z - Pure operating time, in hours (h);

r - Number of fault equivalents (see Appendix A).

Effectiveness A is as shown in formula (11):

7.2 Type inspection

7.2.1 Type inspection shall be carried out in any of the following situations:

a) When a new product or an old product is subject to trial production finalization after transferring to another plant;

b) When the product production is restored after suspension for a year;

c) When the higher quality inspection agency proposes a type inspection;

d) After the formal production, if there are major changes in structure, materials and processes affecting the product performance and quality;

e) When there is a significant difference between the exit-factory inspection result and the last type test.

7.2.2 Inspection items and inspection methods:

For type inspection, if it belongs to the four situations a), b), c) and d) of 7.2.1, it shall be subject to the overall vehicle structure, technical parameters and performance inspection in accordance with the contents of clause 6, and be subject to the reliability-enhanced test in accordance with 6.19; if it belongs to situation e) in 7.2.1, only inspect the affected items.

7.3 Number of vehicle samples under test

The number of vehicle sample under test is 1. The vehicle sample for the prototype of the new product is a trial produced vehicle sample.

7.4 Result assessment

7.4.1 The results of the whole vehicle performance test shall meet the requirements of this document.

7.4.2 There is no major fault (as defined in Appendix A) in the reliability-enhanced test (including special item tests).

7.4.3 If any item fails the inspection, it is allowed to re-inspect it after adjustment. If it still fails, it is determined that the product is unqualified.

7.4.4 Sightseeing vehicle type test shall be subject to 200 h reliability test, and the test results shall meet the requirements.

8 Markings, accompanied documents, transport,

References

[1] GB/T 4785 Installation requirements for exterior lighting and tell-tales of automobiles and trailers

[2] GB/T 7403.1 Lead-acid traction batteries - Part 1: Technical conditions

[3] GB 9656 Safety glazing materials for road vehicles

[4] GB/T 13053 Bus inner dimensions

[5] GB/T 18384.2 Electric vehicles - Safety specification - Part 2: Functional means and protection against failures

[6] GB/T 18385 Electric vehicles - Power performance - Test method

[7] GB/T 18386 Electric vehicles - Energy consumption and range - Test procedures

[8] GB 18565 Multiple performance requirement and detecting methods for commercial vehicles

[9] GB 18986 The safety requirements for light bus construction

[10] JT/T 426 Combination of vehicle performance requirements and test method

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