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Tri-wheel Vehicles - General Specifications

三轮汽车 通用技术条件

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Tri-wheel Vehicles - General Specifications

1 Scope

This document specifies the model compilation requirements, technical requirements, test methods, inspection rules, delivery, transportation and storage of tri-wheel vehicles.

This document is applicable to tri-wheel vehicles.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 2828.1 Sampling Procedures for Inspection by Attribute - Part 1: Sampling Schemes Indexed by Acceptance Quality Limit (AQL) for Lot-by-lot Inspection

GB/T 18386 Test Methods for Energy Consumption and Range of Electric Vehicles

GB/T 19119 Tri-wheel Vehicles and Low-speed Goods Vehicles - Prescription for Installation of Lighting and Light Signaling Devices

GB/T 19123 Tri-wheel Vehicles and Low-speed Goods Vehicles - Photometric Characteristics of Turn Signal Lamps

GB/T 19124 Tri-wheel Vehicles and Low-speed Goods Vehicles - Head Lamps

GB/T 19125 Tri-wheel Vehicles and Low-speed Goods Vehicles - Photometric Characteristics of Front and Rear Position Lamps, Stop Lamps

GB/T 19129 Tri-wheel Vehicles and Low-speed Goods Vehicles - Electric Horn - Performance Requirement and Methods

GB/T 19134 Tri-wheel Vehicles and Low-speed Goods Vehicles - Rear View Mirrors - Requirements of Performance and Installation

GB/T 19135 Tri-wheel Vehicles and Low-speed Goods Vehicles - Photometric Characteristics of Reversing Lamps

GB/T 20234.1 Connection Set for Conductive Charging of Electric Vehicles - Part 1: General Requirements

4 Model Compilation Requirements

The composition and rules of model compilation of tri-wheel vehicle products shall satisfy the stipulations of JB/T 10197.

5 Technical Requirements

5.1 General Requirements

5.1.1 Tri-wheel vehicles shall be manufactured in accordance with the product drawings and technical documents approved by the prescribed procedures.

5.1.2 The parts and accessories of the tri-wheel vehicles shall be qualified in the inspection before they are assembled.

5.1.3 The parts and accessories of the tri-wheel vehicles connected by fasteners shall be reliably connected as required, and there shall be no looseness. The tightening torque of fasteners in important parts shall comply with the stipulations of the product drawings or operating instructions.

5.1.4 The appearance of the tri-wheel vehicles shall be neat and tidy, and reasonably arranged; the various parts shall be free of defects. The vehicle body shall be regular; the height difference between the left and right symmetrical parts of the outer edge of the vehicle body shall be not greater than 40 mm.

5.1.5 The appearance quality, such as: the painting, castings and forgings, welding parts and metal coating of the tri-wheel vehicles shall comply with the stipulations of JB/T 11223.

5.1.6 The minimum ground clearance of the tri-wheel vehicles shall be greater than or equal to 160 mm.

5.1.7 The tri-wheel vehicles shall not manifest oil leakage, water leakage or air leakage, nor shall mud water seep into the vehicle body.

5.1.8 The fully enclosed cab shall not manifest water leakage.

5.1.9 The specific power of the tri-wheel vehicles shall be not less than 4.0 kW/t.

5.1.10 During the operation and running of the tri-wheel vehicles, there shall be no abnormal noise in the engine, transmission and other components. After the operating force is removed, all control handles and pedals with automatic reset function shall be able to be automatically reset.

5.1.11 For a three-wheeled vehicle with a steering handle or with a center-mounted steering wheel, 1 driver is authorized to ride; the seat cushion width shall be greater

than or equal to 400 mm; and the seat depth shall be greater than or equal to 400 mm. For left-steering tri-wheeled vehicle, it is approved for 1 passenger, in addition to the driver. The seat cushion width shall be greater than or equal to 350 mm; the seat depth shall be greater than or equal to 300 mm; and the seat shall not increase the contour-size of the tri-wheeled vehicle. If the above conditions are not met, only 1 driver is allowed to ride.

5.1.12 The steering device of the tri-wheel vehicles shall be flexible, easy to operate and free of block. During the wheel steering process, there shall be no interference with other components. The tri-wheel vehicles shall not deviate when driving on a flat, hard, dry and clean road; the steering device shall not manifest swaying, poor steering feel or other abnormal phenomena. The steering gear of the tri-wheel vehicles shall comply with the stipulations of GB/T 23930.

5.1.13 The clutch of the tri-wheel vehicles shall be smoothly engaged and completed disengaged. The free stroke of the clutch pedal is 20 mm ~ 40 mm. The pedal position and operating force shall comply with the stipulations of GB/T 23918.

5.1.14 The free stroke of the brake pedal of the tri-wheel vehicles is 20 mm ~ 40 mm. The pedal position and operating force shall comply with the stipulations of GB/T 23918.

5.1.15 The position and operating force of the parking brake device shall comply with the stipulations of GB/T 23918.

5.1.16 The position and operating force of the steering control mechanism of the tri-wheel vehicles shall comply with the stipulations of GB/T 23918.

5.1.17 The position and operating force of the engine throttle control device, transmission control device and self-unloading control device shall comply with the stipulations of GB/T 23918.

5.1.18 The operating position dimensions of the driver of the tri-wheel vehicles shall comply with the stipulations of GB/T 21422.

5.1.19 The type and pattern of tires on the same axle shall be the same, and compatible with the maximum design vehicle speed. The load of fully loaded tire shall not exceed the rated load of the tire.

5.1.20 The lateral swing and radial runout of the tri-wheel vehicle wheel assembly shall be not greater than 5 mm.

5.1.21 The tri-wheel vehicles shall be equipped with generators with good technical performance and a power of not less than 150 W. The performance of the generators shall comply with the stipulations of GB/T 23923.

5.1.22 The storage batteries installed in the tri-wheel vehicles shall be firmly installed, and able to maintain the normal operating voltage.

device. Under the condition of overcurrent specified by the electric vehicle manufacturer or shirt-circuit of the circuit connected to the power battery, the connection circuit with the terminal of the battery pack shall be disconnected; the power battery overcurrent disconnection device shall be able to work under any fault condition.

5.2.4.5 The drive system, power on and off shall satisfy the following requirements:

a) The transition from the “power cut off” state to the “drivable” state can only be completed after at least two conscious and different consecutive actions;

b) “power cut off”: the drive system is turned off. In this state, the vehicle cannot be actively driven;

c) “drivable”: only in this state, when the accelerator pedal is used, can the vehicle be driven;

d) When the vehicle is connected to an external circuit (for example, grid and external charger), the vehicle cannot be moved by its own drive system;

e) After the drive system is automatically or manually shut down, it can only be restarted through the normal power-on procedure;

f) An obvious signaling device (for example, acoustical or optical signal) shall be used to indicate the readiness of the drive system permanently or intermittently.

5.2.4.6 If the power is automatically and significantly reduced (for example, due to high temperature of the drive system or power source components), this status shall be indicated through an obvious device.

5.2.4.7 When the remaining power of the power battery is lower than a certain value, it shall be indicated by an obvious signaling device (for example, acoustical or optical signal). The indicated lower limit value of the remaining power shall be specified by the vehicle manufacturer, but it shall simultaneously satisfy the following requirements:

a) It can enable the vehicle to drive for at least 10 km through its own drive system;

b) When the power battery is used as the direct power source of the auxiliary circuit, its minimum residual power shall be able to provide the lighting system with the power required to satisfy the relevant standards.

5.2.4.8 If the reverse driving is realized by changing the rotation direction of the motor, the following requirements shall be satisfied:

a) The switch shift of the forward and reverse driving directions shall be completed by two different operation actions of the driver;

b) If it is completed by only one operation action of the driver, a safety device shall be used, so that the switch can only be shifted to the reverse driving position at standstill or at low speed. The maximum reverse driving speed shall be limited (the speed limit shall comply with the manufacturer's stipulations).

5.2.4.9 When the driver leaves the vehicle, if the drive system is still in the "drivable" state, then, the driver shall be prompted by an obvious signaling device (for example, acoustical or optical signal). When the vehicle is stationary, and the power motor is still rotating, after the power is cut off, it shall be impossible to drive the vehicle.

5.2.4.10 A main switch shall be used to disconnect at least one electrode main switch in the on-board power supply (for example, power battery), the main switch (on and off) shall be controlled by a manual device within the reach of the driver. This disconnection device may be the same device used for the power-on procedure, or a different or additional disconnection device. Each time after the power is cut off, the power supply of the drive system shall be restored through the normal power-on procedure.

5.2.4.11 When the electric tri-wheel vehicle is connected to the charging power source, it shall not be moved by the drive system of the electric tri-wheel vehicle itself. The components used in the charging connection shall have the function of terminating the connection to interrupt the current without causing any damage to the object. Potentially live parts of the system connected to the charging power source shall have proper protective devices under any operating conditions to prevent direct contact.

5.2.4.12 A fail-safe device shall be installed to prevent undesired acceleration, deceleration and reversing in the event of a failure of the drive system (for example, a failure of the power controls). Any undesired disconnection of the electrical connectors shall not result in a hazard to the vehicle. When the auxiliary circuit is electrically connected to the power system, the voltage of the auxiliary circuit shall be prevented from being excessively high. When the current is excessively large, a circuit protector, cut-off device or fuse shall be used to disconnect at least one electrode of the on-board power supply (for example, power battery). Each time after the power is cut off, in the event of a clarified failure, it shall be permitted to re-supply the drive system only through the normal power-on procedure.

5.2.4.13 The heat generated by the electrical and electronic components used by the electric tri-wheel vehicles shall not cause burning, material deterioration or burns of the personnel. The power battery box shall have uniform heat dissipation and ventilation, and an overheating protective device shall be installed in the circuit.

5.3 Usage Information

5.3.1 The usage information of the tri-wheel vehicles is shown in the stipulations of GB 18320. The easily visible parts of the electric tri-wheel vehicles shall be clearly marked

GB 18320.

5.4.10 The compartment of the self-unloading vehicles shall be able to smoothly elevate, fall or stop at any position; the maximum inclination angle shall be not less than 45°. When the engine is running at the rated speed, the time for the unloaded compartment to be elevated to the maximum inclination angle shall be not greater than 20 s.

In the state of 10% overload, when it is elevated to 20°, stay for 5 min; the self-lowering amount of the compartment shall be not greater than 1.5°. After the compartment of the self-unloading vehicles is elevated, it shall be able to accurately return to its position.

5.4.11 For tri-wheel vehicles equipped with a suction and exhaust device, the suction and exhaust device shall be able to satisfy the requirements of suction and exhaust. The suction and exhaust device shall be able to withstand the specified pressure, and maintain for 5 min without manifesting any leakage. When the suction and exhaust device is in the specified vacuum degree, after 10 min, the vacuum degree drop shall be greater than 0.01 MPa.

5.4.12 When an electric tri-wheel vehicle is charged at the charging station, the time required for one charge shall be less than or equal to 6 h. When it is charged by an on-board charger, the time required for one charge shall be less than or equal to 10 h.

5.4.13 When an electric tri-wheel vehicle is fully loaded, and drives at a constant speed of 35 km/h ± 2 km/h (if the maximum vehicle speed does not reach 50 km/h, it shall be driven at a constant speed of 80% ± 2 km/h of the maximum vehicle speed), the driving range on a single charge shall be greater than or equal to 90 km.

5.4.14 The low-temperature starting performance of the electric tri-wheel vehicles: at the ambient temperature of −20 ° C ± 2 °C, after 8 h of parking, they shall be able to smoothly start and run during normal operation.

5.4.15 The radio disturbance characteristics of the electric tri-wheel vehicles are shown in the stipulations of GB 14023.

5.4.16 For tri-wheel vehicles with other special functions, the performance of the special devices shall be able to satisfy the requirements for use.

5.5 Requirements for Environmental Protection

5.5.1 The noise level outside an accelerating tri-wheel vehicle is shown in the stipulations of GB 19757.

5.5.2 The noise level at the driver's working position of a tri-wheel vehicle is shown in the stipulations of GB 18321.

5.5.3 The limits of exhaust smoke and exhaust pollutant emission of tri-wheel vehicles

in free acceleration are shown in the stipulations of GB 18320.

5.6 Reliability

5.6.1 The mean time between failures (MTBF) of tri-wheel vehicles shall be not less than 2,000 km, and not less than 1,500 km for electric tri-wheel vehicles.

5.6.2 The comprehensive rating value (*Q*) trouble-free performance of the tri-wheel vehicles shall be not less than 65.

5.6.3 After the reliability test, the brake performance and environmental pollution value of the vehicle shall reach the relevant national quality indicators for in-use vehicles.

6 Test Methods

6.1 The determination of the dimensions and mass parameters, starting performance test, dynamic performance test, sliding performance test, maneuverability test, brake performance test, environmental pollution determination, self-unloading compartment performance test, noise and cab sealing performance of the tri-wheel vehicles shall comply with the stipulations of GB/T 23931.

6.2 The inspection of head lamps shall be conducted in accordance with the stipulations of GB/T 19124. The photometric characteristics of the external light signaling devices shall comply with the stipulations of GB/T 19123, GB/T 19125 and GB/T 19135.

6.3 The inspection of oil leakage and air leakage shall be observed after parking for 5 min and when the continuous driving distance of the tri-wheel vehicles is not less than 10 km; there shall be no obvious leakage. The inspection of water leakage is conducted when the engine is running and the vehicle is stopped; there shall be no obvious water leakage in the water tank, water pump, cylinder block, cylinder cover, heater and all connection parts.

6.4 The appearance quality of the tri-wheel vehicles shall be inspected in accordance with the stipulations of JB/T 11223. The paints adherence performance shall be inspected in accordance with the stipulations of JB/T 9832.2.

6.5 The inspection of safety items of the tri-wheel vehicles is shown in the stipulations of GB 18320.

6.6 The reliability test of the tri-wheel vehicles shall be conducted in accordance with the stipulations of JB/T 11224.

6.7 The fuel consumption test of the tri-wheel vehicles fueled by diesel engine is shown in the stipulations of GB 21377. The energy consumption rate and driving range of the electric tri-wheel vehicles shall comply with the stipulations of GB/T 18386.

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