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General specifications for electric motorcycles and electric mopeds

电动摩托车和电动轻便摩托车通用技术条件

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General specifications for electric motorcycles and electric mopeds

1 Scope

This Standard specifies the model establishment, technical requirements and test methods for electric motorcycles and electric mopeds.

This Standard applies to pure electric motorcycles and pure electric mopeds (unless otherwise specified, hereinafter referred to as electric motorcycles).

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 518, *Motorcycle tyres*

GB 4599, *Motor vehicle headlamps equipped with filament lamps*

GB 4660, *Motor vehicle front fog lamps equipped with filament lamps*

GB/T 5359.1, *Term for motorcycles and mopeds - Part 1: Types of vehicles*

GB/T 5359.2, *Term for motorcycles and mopeds - Part 2: Performance of vehicles*

GB/T 5359.3, *Term for motorcycles and mopeds - Part 3: Dimensions of vehicle with two and three wheels*

GB/T 5359.4, *Term for motorcycles and mopeds - Part 4: Mass of vehicle with two and three wheels*

GB/T 5373, *Measuring method of dimensions and masses parameter for motorcycles and mopeds*

GB/T 5374, *Test method of reliability for motorcycles and mopeds*

GB/T 5375, *Code of designation for motorcycles and mopeds*

GB/T 5378, *Methods of road test for motorcycles and mopeds*

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

GB 11554, *Photometric characteristics of rear fog lamp for power-driven vehicles and their trailers*

GB 11564, *Retro reflector for motor vehicles*

GB 14023, *Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of off-board receivers*

GB 15084, *Motor vehicles - Devices for indirect vision - Requirements of performance and installation*

GB 15235, *Photometric characteristics of reversing lamps for power-driven vehicles*

GB 15365, *Symbols for controls - Indicators and tell tales for motorcycles and mopeds*

GB/T 15367, *Motorcycles and mopeds - Part and component - Designations for vehicle with two and three wheels*

GB 15742, *Performance requirements and test methods of horn for motor vehicles*

GB 16735, *Road vehicle - Vehicle identification number (VIN)*

GB 17352, *Performance and installation requirements of rear views mirrors for motorcycles and mopeds*

GB 17353, *Protective devices against unauthorized use for motorcycles and mopeds*

GB 17509, *Photometric characteristics of direction indicators for motor vehicles and their trailers*

GB 17510, *Photometric characteristics of light-signaling devices for motorcycles*

GB 18100.1, *Provisions for installation of lighting and light-signaling devices for motorcycles - Part 1: Two wheels motorcycle*

GB 18100.2, *Provisions for installation of lighting and light-signaling devices for motorcycles - Part 2: Two wheels moped*

GB 18100.3, *Provisions for installation of lighting and light-signaling devices for motorcycles - Part 3: Three-wheel motorcycles*

GB 19152, *Photometric characteristics of moped headlamps*

GB/T 19596, *Terminology of electric vehicles*

GB 20073, *Performance and measurement method for braking of motorcycles and mopeds*

The first letter of the uppercase Chinese pinyin in the name of the enterprise (or trademark) shall not exceed three Chinese characters.

4.2.2 Specification code

The code of the rated power of the electric motorcycle drive motor. It is directly expressed in numbers. It is the rated power of the electric motorcycle drive motor, in watts (W).

4.2.3 Code of electric motorcycle

It is represented by a capital letter D.

4.2.4 Type code

The classification code of electric motorcycles. It shall be in accordance with the provisions of GB/T 5375.

4.2.5 Design sequence number

The design sequence number of the basic vehicle with the same enterprise (or trademark) name, specification and type. Use Arabic numerals 1, 2, 3... to indicate the design sequence of electric motorcycles in turn. It shall be omitted when the design sequence number is 1.

4.2.6 Improvement code

Serial number of vehicle modification. It is used to distinguish the characteristics and series of vehicles. It is indicated by uppercase English letters (I, O, Q letters cannot be used).

4.3 Example of model compilation

Example 1:

For the electric two-wheel moped designed for the third time and improved for the sixth time, whose brand trademark is XX, the motor rated output power is 500W, its model is represented by XX500DQT-3F.

Example 2:

For the electric moto three-wheel motorcycle (for cargo) designed for the first time and improved for the second time, whose brand trademark is YY, the motor rated output power is 1000W, its model is represented by YY1000DZH-B.

5 Technical requirements

5.1 Basic requirements

5.1.1 Vehicle identification number (VIN)

The composition of the vehicle identification number (VIN) and the engraving of the code shall comply with the provisions of GB 16735 and GB 7258.

5.1.2 Vehicle signs and labels

Vehicle signs and labels shall comply with the provisions of GB 7258.

5.1.3 Main dimensions and quality parameters

The main dimensions and quality parameters shall comply with the requirements of drawings and design documents. The overall dimensions, axle load and quality parameters of the vehicle shall comply with the provisions of GB 7258.

5.1.4 Special safety requirements

The special safety requirements for electric motorcycles shall comply with the provisions of GB 24155.

5.1.5 Steering device

The steering device shall comply with the provisions of GB 7258.

5.1.6 Maximum speed of vehicles with limited speed

The maximum speed of vehicles with limited speed shall comply with the provisions of GB 7258.

5.1.7 Number of passengers

The number of passengers shall comply with the provisions of GB 7258.

5.1.8 Speedometer

Electric motorcycles shall be equipped with speedometers. The error of the indicated value of the speedometer shall comply with the provisions of GB 7258.

5.1.9 Graphical symbols for controls, indicators and signaling devices

5.1.9.1 Graphical symbols of operating parts, indicators and signaling devices shall comply with the provisions of GB 15365.

5.1.9.2 It shall be equipped with battery remaining power indicator device. The device

shall comply with the provisions of GB 24155.

5.1.10 Horn

The horn shall have the function of continuous sound. The horn performance and its installation shall comply with the provisions of GB 7258 and GB 15742.

5.1.11 Indirect vision device

The performance and installation requirements of the indirect vision device shall comply with the provisions of GB 17352 or GB 15084 and GB 7258.

5.1.12 Windshield wipers

The front windshield wiper (if any) shall comply with the provisions of GB 7258.

5.1.13 Roll stability and parking stability angle

Rolling stability and parking stability angle shall comply with the provisions of GB 7258.

5.1.14 Anti-theft device

The anti-theft device shall comply with the provisions of GB 17353.

5.1.15 Passenger armrest

Passenger armrests shall comply with the provisions of GB 20075.

5.1.16 External protrusions

External protrusions shall comply with the provisions of GB 20074.

5.1.17 Braking performance

Braking performance shall comply with the provisions of GB 20073.

5.1.18 Radio disturbance characteristics

Radio disturbance characteristics shall comply with the provisions of GB 14023.

5.1.19 Lighting and signaling devices

5.1.19.1 Installation of lighting and signaling devices

The installation of lighting and signaling devices shall comply with the provisions of GB 18100.1 or GB 18100.2 or GB 18100.3.

The installation of lamps and lanterns shall be firm and effective. It shall not be loosened, damaged, disabled or redirected by vehicle vibrations. All light switches shall

a) The controller can still work normally after being exposed to rain or washed with a high-pressure cleaning system;

b) The controller shall be able to ensure that when the accelerator and brake operate simultaneously, no unexpected driving or acceleration occurs;

c) For the controller with a driving speed control device (regardless of the speed control method adopted), when any one of the front and rear wheels is braked, the speed control device shall be invalid immediately;

d) For the controller with motor (magnetic) brake, the braking device shall be able to slowly apply the braking force to assist the braking during braking. The motor shall not stop suddenly due to the sudden increase of excitation current, which will cause the vehicle to skid or drift;

e) Controllers used in electric mopeds shall have a tamper-resistant design in terms of technical characteristics. It shall be ensured that the maximum speed of the vehicle complies with the requirements of GB 7258.

5.2.5 The manufacturer shall provide the main technical parameters and performance indicators of the electric motorcycle in the accompanying technical documents. See Annex B for main technical parameter items. The manufacturer can also add corresponding items as needed.

5.3 Main performance requirements

The maximum vehicle speed (V_{10}) and maximum vehicle speed (V_{200}) in 10min, acceleration performance, gradeability, energy consumption rate, driving range, and rated output power of the motor shall comply with the relevant provisions of GB 7258 and product technical documents provided by the manufacturer.

5.4 Reliability requirements

The reliability requirements shall meet the requirements of the product technical documents provided by the manufacturer. If there is no relevant requirement, the following requirements can be followed, and the reliability mileage shall be in accordance with the provisions of GB/T 5374. After the reliability test is over, the structural parts such as the frame of the test vehicle must not be deformed, cracked or otherwise damaged. The main performance and technical indicators listed in 5.3 shall not drop by more than 5% as specified in the technical conditions, except for power batteries.

5.5 Assembly quality requirements

5.5.1 General assembly requirements

5.5.1.1 Assembly shall meet the requirements of product drawings and technical documents. Do not install wrongly or missing-component.

5.5.1.2 The manufacturer, model specification, power of the supporting motor shall be consistent with the requirements of the technical documents of the vehicle (such as product standards, product instruction manuals, certificates).

5.5.1.3 Lubricating parts shall be filled with lubricant according to product drawings or technical documents.

5.5.1.4 Fastener assembly shall be firm and reliable. The pre-tightening torque of important bolted connections shall comply with the product drawings and technical documents.

5.5.1.5 The moving parts of the operating mechanism shall be flexible and reliable. A normal reset must not be interfered with.

5.5.1.6 The assembly of the covering pieces shall be firmly fixed. Do not fall off due to vehicle vibration.

5.5.1.7 The side bucket, box body and driver's cab shall be firmly installed on the frame. Do not loosen due to vehicle vibration.

5.5.1.8 The doors and windows of the closed compartment shall be well sealed. Doors and windows shall be easy to open and close. Door locks shall be firm and reliable. Do not open by themselves due to vehicle vibration.

5.5.1.9 The baffle and floor of the open box shall be flat. Seats, seat cushions and armrests shall be installed firmly and reliably without loosening.

5.5.2 Symmetry and outline dimension requirements

5.5.2.1 The difference in height BETWEEN the two sides of left and right symmetrical parts such as handlebars and deflectors AND the ground shall not be greater than 10mm.

5.5.2.2 The height difference BETWEEN the two sides of the left and right symmetrical components such as the driver's cab and carriage of the electric moto three-wheeled motorcycle AND the ground shall not be greater than 20mm.

5.5.2.3 The deviation BETWEEN the center plane of the front wheel AND the center plane of the rear wheel of the main vehicle of electric two-wheeled motorcycles and electric side three-wheeled motorcycles shall not be greater than 10mm.

5.5.2.4 The deviation BETWEEN the center plane of the front wheel AND the symmetrical center plane of the two rear wheels of the electric moto three-wheeled motorcycle shall not be greater than 20mm.

5.5.2.5 The tolerance of the overall size of the vehicle shall not be greater than ±3% or ±50mm of the nominal size.

5.5.3 Installation requirements for traction battery

of the pattern on the tire crown shall be greater than or equal to 0.8mm.

5.5.7.3 Web and spoke wheel fasteners are complete. They shall be tightened according to the pre-tightening torque specified in the technical documents.

5.5.7.4 The shock absorber must not be stuck or make abnormal noise during driving. The stiffness of the left and right shock absorber springs shall be kept basically the same.

5.5.8 Assembly requirements for instruments and electrical equipment

5.5.8.1 The installation of signals, instruments and other electrical equipment and their switches shall be reliable, intact and effective. They must not be loosened, damaged or invalid due to vehicle vibration during driving. The switch must not turn itself on and off due to vehicle vibrations.

5.5.8.2 All electrical wires shall be bundled, neatly arranged, and fixed tightly. The connectors shall be connected reliably without loosening.

5.5.8.3 Electrical instruments shall work normally, with reliable insulation and without short circuit. The battery has no leakage or corrosion.

5.5.8.4 The speedometer shall be able to work normally.

5.5.9 Assembly requirements for safety protection devices

5.5.9.1 The anti-theft device shall be installed firmly and reliably. It can be effectively locked.

5.5.9.2 The installation of the indirect vision device shall be firm and reliable. It can effectively maintain its position. When pedestrians accidentally touch the indirect vision device, it shall have the effect of mitigating the impact.

5.6 Appearance requirements

5.6.1 The appearance of electric motorcycles shall be neat. All parts are intact. The connection of connectors shall be firm.

5.6.2 Covering pieces shall be flat and integrated, with even gaps and without obvious misalignment. The surface of the coating is smooth, flat, uniform in color, and firmly bonded. There shall be no obvious pits, spots, variegated colors, cracks, bubbles, scratches, and flow marks on the exposed surface. There shall be no exposed bottom or obvious flow marks and cracks on the non-exposed surface.

5.6.3 The surface color of the coating is uniform. There shall be no blackening, bubbling, peeling, rusting, exposed bottom, burrs or scratches.

5.6.4 The surface of plastic parts shall be uniform in color, without obvious scratches or unevenness.

5.6.5 Welds of metal structural parts shall be smooth and even. There shall be no defects such as missing welds, virtual welds, slag inclusions, cracks, pores and spatters on the surface. If there are welding bumps and welding slags higher than the working surface, they must be ground and smoothed.

5.6.6 The seat cushion shall have no dents. The surface is smooth, without wrinkles or damages.

5.6.7 The decals shall be flat and smooth without air bubbles, warped edges or obvious dislocations.

5.6.8 The outer cover of the carriage shall be flat, with a smooth transition, without obvious bumps or scratches.

6 Test methods

6.1 Tests for basic requirements

6.1.1 Main dimensions and quality parameters

The main dimensions and quality parameters are determined according to the methods specified in GB/T 5373.

6.1.2 Special safety requirements

Special safety requirements are tested in accordance with the methods specified in GB 24155.

6.1.3 Steering device

The steering device shall be inspected according to the relevant regulations of GB 7258.

6.1.4 Verification of the number of passengers

The number of passengers shall be verified according to the method stipulated in GB 7258.

6.1.5 Calibration of indicated value of speedometer

The indicated value of the speedometer shall be checked according to the method specified in GB/T 5378.

6.1.6 Graphical symbols for operating parts, indicators and signaling devices

6.1.6.1 Check the graphical symbols of the operating parts, indicators and signaling devices according to the provisions of GB 15365.

6.1.6.2 Visually inspect the power indicator light.

6.1.16.2 Performance of lighting and light signaling devices

6.1.16.2.1 The light distribution performance of headlamps shall be tested in accordance with the methods specified in GB 19152 or GB 4599 (except for enclosed lamps).

6.1.16.2.2 The light distribution performance of front position lamps, rear position lamps, brake lamps and rear license plate lamps shall be tested according to the method specified in GB 17510.

6.1.16.2.3 The light distribution performance of turn signal lamps shall be tested according to the method specified in GB 17509 or GB 17510.

6.1.16.2.4 The light distribution performance of non-triangular rear retro-reflectors and non-triangular side retro-reflectors shall be tested according to the method specified in GB 11564.

6.1.16.2.5 The light distribution performance of front fog lamps shall comply with the requirements of GB 4660. The light distribution performance of rear fog lamps shall be tested according to the method specified in GB 11554.

6.1.16.2.6 The light distribution performance of the reversing lamp shall be tested according to the method specified in GB 15235.

6.1.16.2.7 The irradiation position of the headlight and the luminous intensity of the beam of the high beam shall be tested according to the method specified in GB 7258.

6.2 Electrical component test

6.2.1 Lithium-ion batteries for electric motorcycles shall be tested according to the method of GB/T 36672.

6.2.2 Conductive on-board battery chargers for electric motorcycles shall be tested according to the methods specified in QC/T 895.

6.2.3 The electric motors and their controllers for electric motorcycles shall be tested according to the methods specified in QC/T 792.

6.3 Main performance test

6.3.1 The maximum speed test, gradeability test and acceleration performance test shall be carried out according to the method specified in GB/T 24156.

6.3.2 The energy consumption rate test and driving range test shall be carried out according to the method specified in GB/T 24157.

6.4 Vehicle reliability test

The vehicle reliability test shall be carried out according to the method specified in

protection value, the output shall be automatically turned off, and an alarm message will be issued. After troubleshooting, it shall have the function of automatically returning to normal operation.

A.2.4.3 Short circuit protection

Before the on-board charger is started, when the output is short-circuited, it shall not be able to start automatically after power-on, and an alarm will be issued.

During the working process, when the output is short-circuited, it shall automatically close the output, and there will be an alarm prompt message. After troubleshooting, the on-board charger shall work normally.

A.2.4.4 Over-temperature protection

When the temperature of the temperature sampling point of the on-board charger exceeds the set value of the over-temperature protection, it shall automatically enter the over-temperature protection state. Run with reduced power or stop. After the temperature of the on-board charger returns to normal, it shall have an automatic recovery function.

A.2.4.5 Reverse polarity protection

If the output port of the on-board charger is not anti-reversely connected, when the DC output terminal is reversely connected to the positive and negative poles of the on-board energy storage device, it shall not be able to start after power-on, and an alarm message will be issued. After troubleshooting, the on-board charger shall work normally.

A.2.4.6 Potential equalization

The resistance BETWEEN the conductive part that can be directly touched by the human body AND the potential equalization point in the on-board charger shall not be greater than 0.1Ω.

A.2.4.7 Grounding protection

If the on-board charger has a grounding point, the grounding point shall have an obvious grounding mark.

A.2.4.8 Power-off protection

The on-board charger shall have the ability to quickly cut off the power supply under abnormal circumstances.

A.2.5 Electrical safety requirements

The insulation performance of the on-board charger shall meet the following requirements:

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