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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 47352-2026

Technical specification for the battery swapping systems of electric motorcycles and mopeds

电动摩托车和电动轻便摩托车换电系统技术规范

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1 Scope

GB/T 47352-2026 is the Chinese national standard covering swapping the battery instead of charging it - the pack and its interface, the cabinet that holds and charges the spares, the identification and authorisation, and the safety of a battery being handled by the public several times a week. For delivery riders, swapping is the model that works. It is also how the charging fires in apartment blocks are avoided. First edition, in force since 1 October 2026. It was issued on 31 March 2026 and takes effect on 1 October 2026, as a first edition. The document is under the responsibility of the Ministry of Industry and Information Technology. This page is published from the official record of the 2026 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This Document specifies the technical requirements, test methods, and type tests for battery swapping systems in pure electric motorcycles and pure electric mopeds that utilize a battery swapping mechanism. This Document applies to pure electric motorcycles and pure electric mopeds (unless otherwise specified, hereinafter referred to as "vehicles") powered by lithium-ion or sodium-ion swappable batteries. It does not apply to vehicles powered by lead-acid batteries.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in 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) is applicable to this Document.

GB/T 5169.16-2017 Fire hazard testing for electric and electronic products - Part

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in GB/T 5359 (all parts), GB/T 15367, GB/T 19596 and the following apply.

3.1 Battery swapping The process of quickly replacing the power battery of a vehicle using a special device or manually to achieve vehicle electric power replenishment.

3.2 Battery swapping system A system on a vehicle consisting of components related to battery swapping operations or functions. NOTE. It includes one or more swappable batteries, a battery swapping coupler, a battery compartment, and battery fixing mechanism. See Figure 1 for a schematic diagram.

3.6 Battery fixing mechanism Devices or mechanisms that are used to secure swappable batteries to maintain their proper function.

3.7 Charing/battery swap infrastructure A general term for all facilities that provide electrical power to vehicles. [Source: GB/T 29317-2021, 3.1, modified]

4.1 General requirements

4.1.1 Battery swapping operation steps Vehicle manufacturers shall clearly explain the battery swapping operation steps in the provided product instruction manual. Common steps for battery swapping operation are shown in Appendix A.

4.1.2 Battery swapping system requirements

4.1.2.1 The design and manufacture of the battery swapping system shall meet the requirements of safety, fast speed, and reliability.

4.1.2.2 The vehicle can only be started when the battery swapping system is in normal condition [including the physical condition of the battery swapping system (such as temperature and voltage), mechanical position, and system connection status].

4.1.2.3 When the vehicle is in drivable mode or in driving mode, the battery fixing mechanism shall be able to maintain the swappable battery in the normal position. The vehicle can monitor and maintain the status in real time by detecting the swappable battery position, the connection status of the battery compartment or battery swapping coupler, etc.

4.1.2.4 If the battery swapping system has consumable parts, a list of consumable parts

and their maintenance and replacement requirements shall be provided in the vehicle product instruction manual. Consumable parts shall not malfunction or fail within the maintenance period specified by the vehicle manufacturer.

4.1.2.5 The battery swapping system shall not have pre-installed interfaces or wiring for expanding the swappable battery. The swappable battery shall be reasonably matched with the battery compartment installation position. The maximum gap between the swappable battery and the battery compartment wall shall be less than or equal to 30 mm, and there shall be no wobbling.

4.1.2.6 The vehicle can only start when the vehicle's nominal voltage and the swappable battery's nominal voltage meet the following conditions.

a) When the vehicle's battery swapping system has only one swappable battery or consists of multiple swappable batteries connected in parallel, the vehicle's nominal voltage shall be consistent with the swappable battery's nominal voltage;

b) When the vehicle's battery swapping system consists of multiple swappable batteries connected in series, the vehicle's nominal voltage shall be consistent with the total nominal voltage of the series-connected swappable batteries.

4.1.3 Requirements for battery compartment and battery swapping coupler

4.1.3.1 The surface of the battery compartment and battery swapping coupler shall be free of burrs, foreign objects, flash, and similar sharp edges.

4.1.3.2 The battery compartment and battery swapping coupler shall be securely connected and have a structure to prevent incorrect coupling.

4.1.3.3 Recommended structure and dimensions for the battery swapping coupler are given in Appendix B.

4.1.3.4 The battery swapping coupler shall have a certain guiding function, allowing for separation and connection via operating equipment or manually within the design-permitted angle. NOTE

1.Separation is defined as the complete disconnection of the vehicle-side battery swapping coupler and the battery-side battery swapping coupler without physical contact. NOTE

2.Connection is defined as coupling the vehicle-side battery swapping coupler and the battery- side battery swapping coupler to mutually limiting or securing positions, according to the requirements of technical documents provided by the vehicle manufacturer.

4.1.4 Battery fixing mechanism The assembly status of the battery fixing mechanism shall meet the requirements of technical documents provided by the vehicle manufacturer, and be safe and reliable.

4.2.1 Energy consumption rate and remaining power indication

4.2.1.1 The vehicle shall be equipped with a remaining power indicator and a remaining power warning device; and shall undergo energy consumption rate and remaining power indication tests in accordance with 5.2.

4.2.1.2 The energy consumption rate and remaining power indication parameters shall meet the

4.2.4.4 Temperature rise The temperature rise of the battery swapping coupler shall be tested according to 5.5.4.The temperature rise at each point of the coupler shall not exceed 55 K.

4.2.4.5 Insertion and withdrawal durability The battery swapping coupler shall undergo an insertion and withdrawal durability test according to 5.5.5.The number of insertion and withdrawal tests shall be no less than 9,000. After the test, the temperature rise of the battery swapping coupler shall still meet the requirements of 4.2.4.4, and there shall be no deformation, cracks, or connection failures that affect its function.

4.2.5 Rain test The vehicle shall undergo a rain test in accordance with 5.6.After the test, the insulation resistance of the battery swapping coupler (vehicle-side) shall be measured immediately in accordance with 5.5.3 (while the battery swapping coupler is still wet). The insulation resistance value shall be greater than 500 Omega/V.

5.1 General

5.1.1 Unless otherwise specified, the test shall be conducted under the following environmental conditions.

a) Ambient temperature. 18°C~28°C;

b) Relative humidity. 15%~90%;

c) Atmospheric pressure. 86 kPa~106 kPa.

5.1.2 All measuring instruments and equipment shall have sufficient accuracy, exceeding the accuracy of the measured index by at least one order of magnitude or having an error less than one-third of the permissible error of the measured parameter.

5.1.3 The appearance, structure, and function of the battery swapping coupler, battery compartment, and battery fixing mechanism shall be inspected visually, by equipment, or by manual operation before, during, and after the test.

5.1.4 When testing with a complete vehicle, consumable parts shall be maintained or replaced according to the vehicle manufacturer's provisions.

5.2 Energy consumption rate and remaining power indication test