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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 19752-2024

Replacing GB/T 19752-2005

Hybrid electric vehicles - Power performance - Test method

混合动力电动汽车 动力性能 试验方法

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1 Scope

China's national test method for the power performance of hybrid electric vehicles. It describes the test method for power performance and applies to category M and category N hybrid electric vehicles. Power performance means the things a driver experiences as the vehicle's capability - maximum speed, acceleration through defined speed ranges, and gradeability - and for a conventional vehicle they are simple to measure because the engine delivers the same output on the tenth run as on the first. A hybrid does not. Its available power is the sum of an engine and one or more electric machines, and the electric contribution depends on the state of charge of the battery, on its temperature, and on what the energy management strategy is willing to release at that moment. A hybrid tested with a full battery gives a figure it cannot repeat; tested with a depleted one it gives a figure that understates what a driver will normally get. That is the whole problem this standard solves, and it solves it by specifying the state of charge condition under which each measurement is made, the preconditioning that establishes it, the number of runs and how they are combined, and the tolerance within which the battery state must remain for a run to count. Around that sit the ordinary requirements that make a road or chassis dynamometer test valid: the test track or dynamometer and its condition, the ambient limits, the wind, the vehicle mass and tyre condition, the instrumentation and its accuracy, and the correction of results. Issued on 23 August 2024 and in force since 1 March 2025, it replaces GB/T 19752-2005.

This document describes the test method for the power performance of hybrid electric vehicles. This document is applicable to Category-M and Category-N hybrid electric 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 3730.1 Terms and Definitions of Motor Vehicles, Trailers and Combination Vehicle - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 19596-2017, GB/T 18385, GB/T 3730.1 and GB/T 3730.2, and the following are applicable to this document.

3.1 rechargeable electrical energy storage system; REESS An energy storage system that

is rechargeable and can provide electrical energy.

3.2 hybrid mode A working mode, in which, all on-board systems, including the internal combustion engine (or other heat engine) and drive motor, simultaneously provide energy to the vehicle or drive the vehicle in accordance with the management logic (vehicle control strategy).

3.3 pure thermal mode A working mode, in which, the vehicle is merely driven by the internal combustion engine (or other heat engine).

3.4 pure electric mode A working mode, in which, the vehicle does not consume fuel, and merely obtains energy from the rechargeable energy / energy storage device, which drives the vehicle.

4.1 Requirements for Test Vehicle

4.1.1 The specifications and filling amounts of lubricating oil and coolant for mechanical moving components shall comply with the vehicle manufacturer's provisions.

4.1.2 Except for the purpose of driving, all energy storage systems shall be charged to the values specified by the vehicle manufacturer (electrical energy, hydraulic pressure and pneumatic pressure, etc.).

4.1.3 Before the test, the test vehicle shall be run-in, and it may also be run-in in accordance with the technical requirements of the vehicle manufacturer. If the vehicle is installed with REESS, the run-in shall be carried out with the REESS installed, and the run-in mileage needs to be greater than 300 km.

4.1.4 The trailer matched to the tractor shall not increase the windward area of the tractor or adopt a trailer recommended by the vehicle manufacturer for the test.

4.2 Environmental Conditions

4.2.1 Air density The air density of the test environment is calculated in accordance with Formula (1). Compared with the air density of the standard environment, its change shall not exceed 7.5%.

4.2.2 Wind speed For Category-M1 vehicles and Category-N1 vehicles with a maximum design total mass less than 2 t, the measurement shall be carried out at

0.7 m above the road surface. For other vehicles, the measurement shall be carried out at

1.6 m above the road surface. The average wind speed shall not exceed 3 m/s, and the maximum wind speed shall not exceed 5 m/s.

4.2.3 Relative humidity The relative humidity shall be less than 95%.

4.4 Road Conditions

4.4.1 Overall requirements The test shall be carried out on dry straight roads, circular roads and test rampways. The road surface shall be solid, smooth, clean and have good adhesion properties.

4.4.2.2 Circular roads

4.4.3 Road conditions for acceleration ability test The measurement zone shall be a flat, dry, clean concrete or asphalt (or similar) straight road. The longitudinal slope of the measurement zone shall not exceed 0.1%, and the transverse slope shall not exceed 3%.

5.1 Charging of REESS

5.1.1 Overall requirements If the hybrid electric vehicles can be externally charged, the REESS shall be charged in accordance with the provisions of

5.1.2 and 5.1.3.If the hybrid electric vehicles cannot be externally charged, in accordance with the illustrative materials provided by the vehicle Test Section

5.1.2 Regular charging Regular charging should adopt the AC charging mode. If the vehicle has a DC charging mode, in accordance with the vehicle manufacturer's recommendations, the DC charging mode may be selected.

5.3.1 Test mass and load distribution requirements for various categories of vehicles

5.3.1.1 Category-M1 vehicles and Category-N1 vehicles with a maximum design total mass less than 2 t

5.3.1.2 Category-M2 vehicles, Category-M3 vehicles, and Category-N vehicles with a maximum design total mass not less than 2 t Except for special provisions, the test mass applicable to Category-M2 and Category-M3 urban buses shall be the curb weight of the complete vehicle plus 65% of the maximum design loading mass. The test mass of semi-trailer tractors and tractor trucks shall be the maximum design total mass in the combination vehicle state specified by the vehicle manufacturer.

5.3.2 Test mass and load distribution requirements for various test items When carrying out the maximum thirty-minutes speed test, maximum speed test and acceleration ability test, the vehicle shall respectively be loaded in accordance with the provisions of

5.3.1 and this clause.

6 Determination of Test Items

6.1 The test items of power performance are shown in Table 2.