ICS 43.020
CCS T04

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 12535-2021

Replacing GB/T 12535-2007

Test method of starting performance for motor vehicle

汽车起动性能试验方法

Issued on: October 11, 2021 **Implemented on: May 1, 2022**

Issued by: State Administration for Market Regulation;
Standardization Administration of China

Table of Contents

1 Scope

GB/T 12535-2021 is the Chinese national standard on test method of starting performance for motor vehicle, in the field of road vehicles engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 11 October 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 May 2022. Classification: ICS 43.020, CCS T04. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the measurement parameters, test conditions, test methods, and test records of starting performance for motor vehicle. This document applies to category M and N motor vehicles.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 12428 Laden mass calculating method for buses

GB/T 12534-1990 Motor vehicles - General rules of road test method

GB/T 15089 Classification of power-driven vehicles and trailers

GB/T 19596 Terminology of electric vehicles

3 Terms and definitions

The terms and definitions defined in GB/T 15089 and GB/T 19596 and the following ones apply to this document.

3.1 Cranking time The time from when the starter is turned on until the engine speed reaches the idling speed specified by the manufacturer under the condition that the motor vehicle's engine is successfully started.

3.2 Starting performance and thermal insulation devices (engine insulation cover, radiator insulation device and battery incubator, etc.). However, the starting accessories shall be the standard configuration of the vehicle manufacturer. It shall not use configurations other than those specified by the manufacturer. During the test, the auxiliary starting devices and the thermal insulation devices shall be operated according to the instruction manual.

5.1.4 The battery, starting cable, and earthed cable specified by the vehicle manufacturer shall be used. All circuits shall be connected reliably. The battery shall work well. Before the vehicle starts to stand still, the electric quantity and voltage of energy storage batteries such as the battery or power battery of the vehicle shall be within the range specified by the vehicle manufacturer.

5.1.5 The parking brake of the test vehicle shall be released.

5.2 Test site

5.2.1 When the test is carried out outdoors, the road on which the test vehicle is parked shall be level, solid, smooth and dry.

5.2.2 When the test is carried out indoors, the environmental test room shall have facilities such as chassis dynamometer, low-temperature environment chamber, and plateau environment chamber that meet the test requirements.

5.3 Test mass and load distribution

5.3.1 For category M1 vehicles, and category N1 vehicles with a maximum design total mass less than 2000 kg, it shall be in accordance with the following requirements: - When 50% of the maximum allowable laden mass of the vehicle is less than or equal to 180 kg, the test mass is the curb mass of the complete vehicle plus 180 kg (including the mass of measuring personnel and instruments); - When 50% of the maximum allowable laden mass

of the vehicle is greater than 180 kg, the test mass of the vehicle is the curb mass of the complete vehicle plus 50% of the maximum allowable laden mass (including the mass of measuring personnel and instruments). The load distribution shall be as uniform as possible.

5.3.2 For category M2 and M3 vehicles, and category N vehicles with a maximum design total mass not less than 2000 kg, it shall be in accordance with the following requirements: - Except for special provisions, 65% of the laden mass is applicable to category M2 and M3 buses; other motor vehicles shall be fully loaded;

6.2.4.1 If the power source for cold starting is engine, carry out the test in accordance with the provisions of 6.2.2.

6.2.4.2 If the power source for cold starting is power battery, carry out the test in accordance with the provisions of 6.2.3.

6.2.5 Cold starting test of fuel cell electric vehicle Start the vehicle in accordance with the vehicle manufacturer's recommended starting procedures. Record the time from when the vehicle is powered on to when the "READY" or "OK" signal device lights up.

6.3 Preheating test

6.3.1 Preheating test of internal combustion engine vehicle After the engine is started, for motor vehicles with manual transmission, the clutch can continue to be disengaged; the gear lever remains in neutral. For motor vehicles with automatic transmission, the transmission remains in P position. Idle in place for 5 min.

6.3.2 Preheating test of pure electric vehicle, extended-range electric vehicle, and fuel cell electric vehicle Pure electric vehicles, extended-range electric vehicles, and fuel cell electric vehicles can directly enter the starting test without preheating test. If preheating is required, the preheating time shall not exceed 5 min.

6.3.3 Preheating test of hybrid electric vehicle except extended-range electric vehicle

6.3.3.1 If the power source for cold starting is engine, carry out the test in accordance with the provisions of 6.3.1.

6.3.3.2 If the power source for cold starting is power battery, carry out the test in accordance with the provisions of 6.3.2.

6.4 Starting test

6.4.1 After starting and preheating tests, put the vehicle in reverse gear and start in reverse; travel no less than 3 m.

6.4.2 After parking, the motor vehicle starts in the lowest forward gear.