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GB/T 12539-2018

Replacing GB/T 12539-1990

Motor vehicles steep hill climbing test method

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Foreword

This Standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This Standard replaces GB/T 12539-1990 "Motor vehicles - Steep hill climbing - Test method".

Compared with 12539-1990, in addition to editorial modifications, the main technical changes are as follows:

- added Clause 3 "Terms and definitions";
- modified "Test conditions", added 4.3 "Vehicle conditions", 4.4 "Other conditions";
- modified the test methods and calculation formulas of Clause 5;
- modified Annex A "Record table for steep hill climbing test".

This Standard was proposed by Ministry of Industry and Information Technology of the People's Republic of China.

This Standard shall be under the jurisdiction of National Technical Committee on Automobiles of Standardization Administration of China (SAC/TC 114).

Main drafting organizations of this Standard: Anhui Jianghuai Automobile Group Co., Ltd., National Automobile Quality Supervision and Inspection Center (Xiangyang), Liuzhou Wuling Automobile Industry Co., Ltd., China Automotive Technology and Research Center.

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Version of standard substituted by this Standard is:

- GB/T 12539-1990.

Motor vehicles steep hill climbing test method

1 Scope

This Standard specifies the requirements for test conditions, test methods, test results of motor vehicles steep hill climbing test.

This Standard is applicable to vehicles other than electric vehicles. Combination trains shall refer to it for implementation.

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/T 12534, *Motor vehicles - General rules of road test method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 climbing success

during the process of climbing of vehicle, a state that the speed is constantly rising or tends to stabilize through the test section

3.2 maximum gradability

the limit ramp that the vehicle can pass on a good road under full load, represented in percentage of vertical and horizontal distance of the ramp

4 Test conditions

4.1 Requirements for road

The road is shown in Figure 1. The test section slope length is not less than 20 m. There is a gradient section before and after the test section. The straight road section before the slope is not less than 8 m. It shall be a natural ramp (asphalt or concrete pavement) with a smooth surface, solid, dry, and even

4.3.3 Vehicle preparation

4.3.3.1 The vehicle shall be clean. Ventilation in the windows and passenger compartments shall be off unless the test vehicle has special requirements.

4.3.3.2 In addition to the equipment necessary for the test and the daily operating components of the vehicle, the lighting and auxiliary devices on the vehicle shall be turned off.

4.3.3.3 Before the start of the test, the vehicle shall be brought to the normal operating temperature in an appropriate manner.

4.4 Other conditions

4.4.1 Other test conditions such as atmospheric temperature, air pressure, and wind speed shall comply with the provisions of GB/T 12534.

4.4.2 The longitudinal slope more than 40% shall be set with safety device.

5 Test methods

5.1 Specified ramp climbing

5.1.1 The vehicle gear is at the lowest gear. If there is auxiliary transmission, it is also at the lowest gear. The automatic vehicle is at the D gear (or as required by the manufacturer). All-wheel vehicle uses all-wheel drive.

5.1.2 Park the vehicle on a straight road near the ramp area.

5.1.3 Open the throttle after starting. Collect vehicle speed and engine speed change data on the test section. If the speed of the climbing increases or stabilizes through the test section, the climbing shall be successful and the average speed shall be recorded.

5.1.4 Monitor the operation of various instruments (such as water temperature and oil pressure) during the climbing process. After climbing to the top of the slope, stop and check for any abnormalities in each part, and make detailed records.

5.1.5 Analyze the cause of the failure of the climbing when the first climbing fails. If the engine speed does not reach the maximum torque point during the climbing process, the distance from the front end of the vehicle to the ramp area can be relaxed, so that the engine speed is increased to the maximum torque point before the vehicle enters the test section, and the second climbing shall be performed. But it is not more than twice in total. The second climbing shall be specifically stated in the record report.

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