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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Passenger cars -- Stopping distance at straight-line braking
with ABS -- Open loop test method**

乘用车 防抱制动系统(ABS)直线制动距离 开环试验方法
(English Translation)

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Foreword

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

This Standard is developed using the redrafting method and referring to ISO 21994:2007 "Passenger cars - Stopping distance at straight-line braking with ABS - Open-loop test method". The degree of consistency with ISO 21994:2007 is non-equivalent.

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 of Auto Standardization (SAC/TC 114).

Drafting organizations of this Standard: Technology Center of Dongfeng Motor Group Corporation, Dongfeng Motor Group Corporation, Technology Center of China FAW Group Co., Ltd., Pan Asia Automotive Technology Center Co., Ltd., China Automotive Technology Research Center, Bosch Automotive Parts (Suzhou) Co., Ltd., Wuhan Yuanfeng Automotive Electronic Control System Co., Ltd., National Automobile Quality Supervision and Test Center (Guangdong).

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Passenger cars - Stopping distance at straight-line
braking with ABS - Open loop test method

1 Scope

This Standard specifies a test method for measuring the brake distance of vehicles equipped with the anti-lock braking system (ABS) when braking during straight travelling.

This Standard is applicable to M1 vehicles specified in GB/T 15089. N1 vehicles may refer to this Standard.

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 5620 Road vehicles - Braking of automotive vehicles and their trailers
- Vocabulary

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

GB 21670 Technical requirements and testing methods for passenger car
braking systems

QC/T 556 Automotive brakes - Temperature measurement and
thermocouple installation

ISO 8855 Road vehicles - Vehicle dynamics and road-holding ability -
Vocabulary

ISO 15037-1:2006 Road vehicles - Vehicle dynamics test methods - Part 1:
General conditions for passenger cars

3 Terms and definitions

For the purpose of this document, the terms and definitions defined in GB/T 5620, GB/T 15089, GB 21670, ISO 8855, ISO 15037-1:2006 and the following C.2.3.

4.4.1 Ambient wind speed

Ambient wind speed (regardless of wind direction) shall not exceed 3 m/s. When the wind speed is in the range of 3 m/s to 5 m/s, the same number of measurements shall be made in both directions of the track, and the total number of measurements remains the same.

4.4.2 Ambient temperature

The ambient temperature shall be between 5 °C and 35 °C. The variation in temperature during the test shall not exceed 10 °C.

4.4.3 Road surface temperature

During the test, the variation in road surface temperature shall not exceed 10 °C.

4.5.1 Vehicle condition

The condition of the test vehicle shall be in accordance with the vehicle manufacturer's specifications, particularly with respect to the brake system, the suspension geometries, power train (e.g. differentials and locks) configuration and tyres used.

4.5.2.2 Generally, new tyres shall be used for test. If no new tyres are used, it

is required that the tyre shall show a steady wear condition with a tread depth of at least 90 % of the original value across the whole breadth of the tread and around the whole circumference of that of the new tyre.

4.5.2.3 Tyres shall be fitted on the test vehicle according to the manufacturer's

specifications. If not specified otherwise by the tyre manufacturer, tyres shall be fitted on the test vehicle or on an equivalent vehicle and run in for at least 150

km on a road surface with high adhesion coefficient. During running-in, there shall be no violent operation such as acceleration or braking with a longitudinal acceleration or deceleration exceeding 3 m/s² and cornering and hitting the kerb with a lateral acceleration exceeding 3 m/s². Thereafter, tyres shall be fitted at the same position on the vehicle for tests.

5.4.1.1 To ensure that the test results are comparable, the test shall be carried out in the same area on the test road.

5.4.1.2 To avoid road contamination or damage during long-term operation, the initial braking position shall vary on the trajectory when starting a new test.

5.4.2 Tyres and brake system

Before the test begins, the tyres and brake discs shall be subjected to the following operations on the test road surface:

- a) The test vehicle carries out 5 ABS brakings with an initial speed of 100 km/h and a stop speed of 0 km/h. The initial temperature of the brake discs shall be less than 120 °C of each braking;
- b) Cooling down the tyres (normal ride for about 10 km recommended).

5.5.1 Brake temperature

Before the start of each measurement, the initial temperature of the front brake discs shall be between 80 °C and 120 °C, the initial temperature of the rear brake discs shall be lower than 120 °C, and the initial temperature of the brake drums shall be lower than 100 °C. The temperature measurement of brakes is carried out according to the requirements of QC/T 556.

5.5.2 Initial driving condition

During the steady-state straight ahead run of the vehicle (see 6.2.2 of ISO 15037-1:2006), the longitudinal acceleration shall not exceed 0.3 m/s² and the yaw rate shall not exceed 0.5°/s.

The vehicle speed during braking operation is (100 ± 2) km/h. To minimize