

ICS 43.020



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

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**Road load for light-duty vehicles - Reproduction on chassis
dynamometer**

(English Translation)

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1 Scope

This document specifies the method for carrying out road load reproduction of vehicles on chassis dynamometer.

This document is applicable to vehicles with a maximum design total mass not exceeding 3,500 kg. Category M1, M2 and N2 vehicles with a maximum design total mass exceeding 3,500 kg, but not exceeding 4,500 kg, may take this as a reference.

The provisions for setting the chassis dynamometer load by the taxiing method described in this document are applicable to the setting of the test vehicle road load determined by the taxing method or the wind tunnel method.

The provisions for setting the chassis dynamometer load by the torque meter method described in this document are applicable to the setting of the test vehicle running resistance determined by the torque meter method.

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

1: Types

GB/T 15089 Classification of Power-driven Vehicles and Trailers

GB 18352.6 Limits and Measurement Methods for Emissions from Light-duty Vehicles
(China

6)

ISO 10521-1 Road Vehicles - Road Load - Part 1: Determination under Reference
Atmospheric
Conditions

3 Terms and Definitions

What is defined in GB/T 3730.1, GB/T 15089, GB 18352.6 and ISO 10521-1, and the following terms and definitions are applicable to this document.

3.1

road load

The resistance that hinders the running of the vehicle when measured by the taxiing method or equivalent method, including the frictional resistance of the transmission system.

3.2

running resistance

The resistance torque opposite to the direction of the running of the vehicle measured by a torque meter installed on the drive wheels of the vehicle.

3.3

target road load

The road load to be reproduced on a chassis dynamometer.

3.4

target running resistance

The running resistance to be reproduced on a chassis dynamometer.

3.5

chassis-dynamometer setting load

The load set on the power absorption unit of a chassis dynamometer.

3.6

simulated road load

By loading on a chassis dynamometer, the actual measured road load on the road is reproduced in the form of force.

3.7

simulated running resistance

By loading on a chassis dynamometer, the actual measured running resistance on the road is reproduced in the form of force.

3.8

reference speed

The vehicle running speed used to determine road load or chassis dynamometer load.

3.9

speed range

Starting from 20 km/h, in steps of 10 km/h, increase to the maximum reference speed.

3.10

chassis dynamometer of coefficient control

A chassis dynamometer that determines the absorption characteristics using approximate polynomial coefficients for given road loads.

3.11

chassis dynamometer of polygonal control

A chassis dynamometer that determines the absorption characteristics using given load values at several speed points.

b) If the maximum reference speed plus 14 km/h is greater than or equal to the maximum speed of the test vehicle, when determining the road load, or setting the resistance on the chassis dynamometer, this speed shall be eliminated. At this moment, the second highest reference speed becomes the maximum reference speed of the vehicle.

5.2.1 Roller

5.2.1.1

The roller of the chassis dynamometer shall have a clean, dry and rough surface without foreign matters. Counterweights can be placed on or in the vehicle to prevent wheel slipping.

The counterweight conditions shall be recorded.

5.2.1.2

For multi-roller chassis dynamometer, the roller shall be operated in the same coupled or uncoupled state as in subsequent tests. The rotational speed of the chassis dynamometer shall be measured on a roller coupled to a power absorption unit.

5.2.2 Indoor temperature

The laboratory temperature shall be set to $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$, or in accordance with special test demands.

5.3.1 Inertia setting

5.3.1.1

The equivalent inertia shall be set in accordance with 5.3.1.2 and 5.3.1.3. If it cannot be set, the adjacent larger equivalent inertia shall be used for setting, but the maximum shall not exceed 10 kg.

5.3.1.2

When the vehicle is tested on a four-wheel drive chassis dynamometer, if the front and rear axles simultaneously rotate, the equivalent inertia of the chassis dynamometer shall be set to the corresponding vehicle test mass.

5.3.1.3

When the vehicle is tested on a two-wheel drive chassis dynamometer, the equivalent inertia of the chassis dynamometer shall be set to the vehicle test mass plus the effective inertia of the wheels that does not affect the measurement results, or 50% of the rotation mass.

5.3.2 Pre-heating of chassis dynamometer

The chassis dynamometer shall be pre-heated in accordance with the chassis dynamometer manufacturer's instructions, or other suitable methods, until the internal frictional losses can be stabilized.

5.4.1 Adjustment of tyre pressure

Before the test, the tyre pressure shall be adjusted to the recommended value, which shall be the same as in subsequent tests. If a small diameter roller is used, the tyre pressure can be increased to ensure test safety, usually by 50%.

5.4.2 Vehicle setting

5.4.2.1

The vehicle under test shall be installed in the center of the chassis dynamometer roller and fixed in a safe mode. For a single roller, the horizontal distance between the tyre contact point and the top of the roller shall be within $\pm 25\text{ mm}$ or $\pm 2\%$ of the roller diameter, whichever is smaller.