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PEOPLE'S REPUBLIC OF CHINA**

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**Road vehicles - Test of vehicle air braking systems with a
permissible mass of over 3.5t - Acquisition and use of reference
values using a roller brake tester**

(English Translation)

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020

"Directives for standardization - Part 1.Rules for the structure and drafting of standardizing documents".

The modification of this document adopts ISO 21995.2008 "Road vehicles -- Test of vehicle air braking systems with a permissible mass of over 3.5 t -- Acquisition and use of reference values using a roller brake".

Compared with ISO 21995.2008, this document has more structural adjustments. See Annex A for a comparison of the structural number changes between the two documents.

The technical differences between this document and ISO 21995.2008 and their reasons are as follows.

- The terms "brake system", "brake", "braking force", "total braking force", "braking force distribution ratio", "brake start pressure", "maximum chamber working pressure" and their definitions have been deleted. The normative reference GB/T

5620 (see Chapter 3) has been added to adapt to Chinese technical requirements;

- ECER13 has been replaced with the normative reference GB 12676-2014 (see 5.2,

Chapter 7) to adapt to Chinese technical requirements;

- The requirement for the minimum braking deceleration of road vehicles has been changed (see 5.3) to adapt to Chinese regulatory requirements;
- The content of formula (3) has been changed (see 5.5) because the original formula is ambiguous.

The following editorial changes were made to this document.

- Changed the pressure unit bar in ISO 21995.2008 to kPa throughout the document;
- Added Annex A (informative) "Comparison on structure numbers between this document and ISO 21995.2008".

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. The issuing authority shall not be held responsible for identifying any or all such patent rights.

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

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

Road vehicles -- Test of vehicle air braking systems with a permissible mass of over 3.5 t -- Acquisition and use of reference values using a roller brake tester

1 Scope

This document describes a method that uses a roller brake tester to acquire and use vehicle reference values.

This document applies to the testing of air brake systems for road vehicles with a total mass greater than 3.5 t and equipped with air brake systems.

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 -- Vocabulary and definition for braking of automotive vehicles and their trailers

GB 12676-2014, Road vehicle -- Braking systems -- Structure, performance and test methods

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 5620 as well as the followings apply.

3.1 reference braking forces

Braking force on the tyre rim for different brake chamber pressures on a single axle on a roller brake test bench.

3.2 total normal force

The sum of the forces acting perpendicular to the vehicle's support surface on all wheels of the vehicle when stationary.

3.3 roller brake tester

A testing device consisting of two pairs of power rollers used to evaluate the braking performance of a vehicle.

4 Symbols

The following symbols apply to this document.

F_f . Total braking force at maximum total mass.

$F_{f, \min}$. Total braking force required to achieve the required minimum braking intensity.

F_{Ni} . Braking force of the i -th axle at brake chamber pressure p N and at the required minimum braking intensity.

F_{Ri} . Braking force of the i -th axle at brake chamber pressure p R_i .

$\sum F_{Ri}$. Sum of the braking forces of all axles.

F_{RiPTI} . Reference braking force of the i -th axle (at the corresponding brake chamber pressure) when the reference braking force meets the requirements of the periodic

technical inspection of motor vehicles (hereinafter referred to as "PTI").

FRiPTI,front. Reference braking force of the i-th front axle when the reference braking force meets the PTI requirement (at the corresponding brake chamber pressure).

FRiPTI,rear. Reference braking force of the i-th rear axle when the reference braking force meets the PTI requirement (at the corresponding brake chamber pressure).

Gs. Total normal force corresponding to the maximum total mass of the vehicle.

pRi. Brake chamber pressure of the i-th axle.

pRiPTI. Brake chamber pressure of the i-th axle when the PTI requirement is met.

z. Braking intensity.

zmin. Minimum braking intensity to be achieved under the corresponding total normal force when performing a PTI check.

FR1.Braking force provided by the vehicle manufacturer for the first point used to calculate the reference braking force, corresponding to the brake chamber pressure pR1.

pR1.Brake chamber pressure provided by the vehicle manufacturer for the first point used to calculate the reference braking force, corresponding to the braking force FR1.

FR2.Braking force at the second point provided by the vehicle manufacturer for calculating the reference braking force, corresponding to the brake chamber pressure PR2.

PR2.Brake chamber pressure at the second point provided by the vehicle manufacturer for calculating the reference braking force, corresponding to the braking force FR2.

xRi. Braking start pressure of the i-th axis calculated based on the reference braking force provided by the vehicle manufacturer.

5.1 During the test, the vehicle model with the most unfavorable conditions is generally

selected for testing to cover other vehicle models. That is, the certification certificate includes an extended vehicle model with the same braking system as the test vehicle.

For example, in the Type 0 test, although the braking deceleration of a vehicle equipped with an electronic braking system (EBS) and disc brakes can generally reach 6.0 m/s²,