GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 43.040.50

CCS T 22

GB/T 5909-2021

Replacing GB/T 5909-2009

Commercial vehicles - Wheels - Performance requirements and test methods for cornering and radial fatigue

商用车 车轮 弯曲和径向疲劳性能要求及试验方法

(ISO 3894:2015, Road vehicles - Wheels/rims for commercial vehicles - Test methods, MOD)

Issued on: October 11, 2021 **Implemented on: May 01, 2022**

Issued by: State Administration for Market Regulation;

Standardization Administration of the People's Republic of China.

Table of Contents

Commercial vehicles - Wheels - Performance requirements and test methods for cornering and radial fatigue

1 Scope

This Standard specifies the test wheels, performance requirements and test methods for cornering and radial fatigue tests of commercial vehicle wheels.

This Standard is applicable to the wheels used for commercial vehicles and trailers specified in GB/T 3730.1.

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 2933, *Wheels and rims for pneumatic tyres - Vocabulary, designation and marking* (GB/T 2933-2009, ISO 3911:2004, IDT)

GB/T 3730.1, *Motor vehicles and trailers - Types - Terms and definitions* (GB/T 3730.1-2001, ISO/WD 3833:1999, MOD)

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 2933 and GB/T 3730.1 as well as the followings apply.

3.1 wheel-tire assembly

an assembly made up of wheels, tires and valves

3.2 crack

the material separation that occurred during the test expanded to 3mm and above

where,

μ - The set friction coefficient between tire and road surface, see Table 1;

R - The tire static load radius is the maximum tire static radius specified by the vehicle or wheel manufacturer to be used on the wheel, in meters (m);

d - The internal or external offset of the wheel (the internal offset is positive and the external offset is negative), in meters (m); If the wheel uses both internal offset and external offset, the internal offset is used;

Fv - The rated load on the wheels specified by the vehicle or wheel manufacturer, in newtons (N);

S - The strengthening factor, see Table 1.

6.1.3 Test procedures

6.1.3.1 Refer to Figure 1 for a way to clamp the test wheel to the test equipment. Tighten the wheel tightening bolts (or nuts) to the torque value specified by the vehicle or wheel manufacturer. If it is not specified, it is recommended to tighten it according to Table 3. When using the device in Figure 1a) or Figure 1b) to test, check the amount of radial runout at the end of the lever arm. It shall not exceed 0.3mm when empty.

6.1.3.2 Set test parameters such as bending moment, speed and number of cycles. Start the test. In the initial stage of the test, the machine can be shut down to tighten the bolts or nuts once again. If the bolt breaks during the test, continue the test after replacing all the bolts.

6.1.3.3 Shut down after completing the specified number of test cycles. Use penetrant testing or other acceptable methods to check for wheel cracks.

6.1.4 Failure criterion

In any of the following situations, the test is terminated and the wheel fails:

a) The test wheel cannot continue to bear the test load;

b) The original crack develops or stress causes new cracks to invade the wheel section;

c) The offset increment of the loading point exceeds 15% of the initial offset of the test.

6.2 Dynamic radial fatigue test

6.2.1 Test preparation

The test equipment shall have a driven drum and wheel mount to make the wheel-tire assembly rotate under a fixed radial force, see Figure 2. The minimum diameter of the drum is 1700mm. The width shall be wider than the tire section. The surface shall be smooth. The connecting surface of the wheel mount shall have the same assembly dimensional characteristics as the connecting parts usually used on the vehicle. The surface hardness is recommended to be HRC40~HRC50.

The loading system shall maintain the specified load. The deviation does not exceed ±2.5% of the calculated value of the test load. The loading direction is perpendicular to the surface of the drum. And it is consistent with the connection direction between the center of the wheel mount and the center of the drum. The axis of the drum and the axis of the wheel mount shall be parallel. The wheels used as two wheels shall be tested in accordance with the wheels used for single wheels.

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------