

ICS 43.080
CCS T22



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

GB/T 13061-2017

Replacing GB/T 13061-1991

**Technical specification of air spring used for air suspension of
commercial vehicle**

商用车空气悬架用空气弹簧技术规范

Issued on: October 14, 2017

Implemented on: May 1, 2018

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

Table of Contents

1	Scope
2	Normative references
2.0	Hz ~
3	Terms and definitions
4	Technical requirements
4.1	Technical requirements for air spring assembly
4.2	Technical requirements for each component of air spring
5	Test methods
5.2	Test sample
5.4	Test equipment
5.5	Test procedure
5.5.2	Airtightness test Adjust the air spring to the standard height. Inflate to
5.5.3	Test of elastic-properties
5.5.6	Test of frame's fatigue life Adjust the air spring to the standard height and

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 13061-1991 "Air spring for automotive suspension - Rubber bellows". As compared with GB/T 13061-1991, the main changes of this standard are as follows: - MODIFY the standard name from the original "Air spring for automotive suspension - Rubber bellows" to "Technical specification of air spring used for air suspension of commercial vehicle"; - MODIFY the scope from the original "automotive suspension" to "air suspension for commercial vehicle"; - MODIFY the terms and definitions (see clause 3 of the 1991 version); - MODIFY the technical requirements for the physical-mechanical properties of the materials of air spring bellows, the appearance quality of the air spring, the internal destructive pressure, the fatigue life of the frame of air spring (see 5.1, 5.2, 5.5,

5.7 of the 1991 version); - MODIFY the test items, test conditions, test methods (see 6.1, 6.3,

6.5 of the 1991 version); - MODIFY the airtightness test (see

6.5.3 of the 1991 version); - MODIFY the 24-h pressure drop of the air spring (see

5.4 of the 1991 version); - ADD the definitions of air spring height, design height, maximum

internal pressure, effective diameter, air spring volume (see 3.1, 3.3, 3.5, 3.8, 3.12); - ADD the compressive permanent deformation test, low-temperature resistance test, hot-air aging test, ozone aging resistance test in the test of physical-mechanical performance of the rubber compound of bellows (see A.3.3.2, A.3.3.5, A.3.3.6, A.3.3.7); - ADD the ambient temperature for the use of air spring (see 4.1.1); - ADD the dynamic elastic performance tests and volume tests (see

5.5.3.1 and 5.5.4); - DELETE the product classifications (see clause 4 of the 1991 version); - DELETE the interlayer adhesion strength between the cord fabrics of bellows (see

5.6 of the 1991 version); - DELETE the telescopic test and the peel test (see clause 6.5.2,

6.5.6 of the 1991 version); - DELETE the inspection rules (see clause 7 of the 1991 version); - DELETE the marking, packaging, transportation, storage (see clause 8 of the 1991 version). This standard was proposed by the Ministry of Industry and Information Technology. This standard shall be under the jurisdiction of the National Automotive Standardization Technical Committee (SAC/TC 114). Drafting organizations of this standard. Dongfeng Motor Corporation, Zhuzhou Times New Materials Technology Co., Ltd., Shandong Meichen Technology Co., Ltd., Shanghai Keman Vehicle Parts System Co., Ltd., Guizhou Gaoma Fuguo Advance Rubber Co., Ltd., Xiamen Jinlong United Automobile Industry Co., Ltd., Zhengzhou Nissan Automobile Co., Ltd. The main drafters of this standard. Feng Mei, Chen Yaoming, Ye Aifeng, Yu Boying, Zhang Shangjiao, Wang Jin, Liu Jin, Cheng Haitao, Wang Sheng, Qiu Jianjun, Zhang Guangshi, He Yunjiang, Yuan Zhaozhui, Pan Xueyu, Cui Jining, Zhang Liancang, Wang Lianping, Yang Guoku, Gao Jia. This standard replaces the standard previously issued as follows: - GB/T 13061-1991. Technical specification of air spring used for air suspension of commercial vehicle

1 Scope

GB/T 13061-2017 is the Chinese national standard on technical specification of air spring used for air suspension of commercial vehicle, in the field of road vehicles engineering. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 14 October 2017 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 May 2018. Classification: ICS 43.080, CCS T22. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the technical requirements and test methods for air spring products for the air suspensions of commercial vehicles. This standard applies to the air suspensions

of commercial vehicles. The air springs for other non-air suspension, non-commercial vehicles or non-vehicle may make reference to this standard.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 528 Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties

GB/T 531.1 Rubber vulcanized or thermoplastic - Determination of indentation hardness - Part

3 Terms and definitions

The terms and definitions as defined in GB/T 34591 as well as the following terms and definitions apply to this document.

3.1 Air spring height The distance between the upper and lower support planes for installation of the air spring.

3.2 Standard height A reference height of the air spring, which is used as the start point for the calculation of deformation.

3.3 Design height The installation height of the air spring at the design location of vehicle is referred to as the design height H_d .

3.4 Standard pressure The static pressure at which the air spring is subjected to the rated load at a standard height.

3.5 Maximum pressure p_{max} The static pressure at which the air spring is allowed to be subjected to the maximum load at standard height.

3.6 Standard status The working status of the air spring at standard height and standard pressure.

4.1 Technical requirements for air spring assembly

4.1.1 The general use temperature of the air spring is $-30\text{ }^{\circ}\text{C} \sim 57\text{ }^{\circ}\text{C}$. For the air springs which have special use requirements (such as beyond this temperature range, oil resistance, etc.), it is determined by the supplier and the user through negotiation; and it is permanently identified on the air spring.

4.2 Technical requirements for each component of air spring

4.2.1 The physical-mechanical properties of the rubber compound of air spring's bellow may be found in Appendix A.

4.2.2 The appearance quality of each component of the air spring shall meet the following requirements.

5 Test methods

5.1 Test items The rubber compound for bellow shall be subjected to physical-mechanical property test. The air spring is subjected to airtightness test, elastic-property test, volume test, destructive, frame fatigue test.

5.2 Test sample

5.3 Test conditions The ambient temperature of the test of finished product of air spring assembly shall be controlled at $(23 \pm 5) ^\circ\text{C}$.

5.4 Test equipment

5.4.1 The air spring's elastic-property test is carried out on an electro-hydraulic servo or mechanical test machine which can perform approximate harmonic motion. Record the load-deformation and pressure-deformation correspondence.

5.5 Test procedure

5.5.1 Physical-mechanical property test of rubber compound The physical-mechanical properties of the rubber compound used to make the bellow are as shown in Appendix A.

5.5.2 Airtightness test Adjust the air spring to the standard height. Inflate to

1.3 times the standard pressure. Hold for 30 s. After it stabilizes, reduce the pressure of the air spring to the standard pressure. Close the inflation and exhaust valves. Record the pressure value. Maintain it at stationary status. After 24 hours, measure the pressure drop. If it is not more than

0.05 MPa, it is qualified.

5.5.3 Test of elastic-properties

5.5.4 Volume test First use water to fill the air spring, to discharge the air from inside of the air spring. Then adjust the air spring to the maximum stretching status and ensure the water pressure is at

0.50 MPa.