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

GB/T 33206-2025

Replacing GB/T 33206-2016

Performance testing of automotive V-ribbed belts

汽车多楔带性能试验方法

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Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives for Standardization - Part

1. Rules for the Structure and Drafting of Standardizing Documents. This document serves as a replacement for GB/T 33206-2016 Performance Testing of Automotive V-ribbed Belts. In comparison with GB/T 33206-2016, apart from structural adjustments and editorial modifications, the main technical changes are as follows:

- a) Terms and definitions are added (see Chapter 3);
- b) The purpose is deleted (see Chapter 3 of Version 2016);
- c) The requirements for test belts, pulleys and laboratory ambient temperature are added (see Chapter 4);
- d) The test purposes for high-temperature constant tension force life test and misalignment noise test are added (see
- e) Test parameter 2 in Table 2 is modified (see 5.2.4;
- 4.1.4 of Version 2016);
- f) The specimens for the high-temperature constant tension force life test are modified (see 5.3;

4.3 of Version 2016);

g) The test conditions for the high-temperature constant tension force life test are modified (see 5.4;

4.4 of Version 2016);

h) The failure criteria for the high-temperature constant tension force life test are modified (see 5.6;

4.6 of Version 2016);

1 Scope

GB/T 33206-2025 is the Chinese national standard covering testing the serpentine belt - the tensile and modulus of the belt, the durability run at temperature, the noise and the misalignment tolerance, and the resistance to oil, ozone and cold cracking on a component whose failure stops the car. It replaces GB/T 33206-2016, in force from 1 May 2026. It was issued on 31 October 2025 and has been in force since 1 May 2026, replacing GB/T 33206-2016. The document is under the responsibility of the China Petroleum and Chemical Industry Federation. This page is published from the official record of the 2025 edition; the clause text of a standard this recent is not yet in circulation, and the figures, limits and tables it contains are those of the document itself, delivered in full with the English translation.

This document describes the performance testing methods for PK profile automotive V-ribbed belts (hereinafter referred to as the "belts"). It includes high-temperature constant tension force life test, misalignment noise test, anti-pilling performance test, high and low temperature cycling test, contamination test, and five-pulley flexural test methods. This document applies to V-ribbed belts used in the transmissions of automotive internal combustion engines, such as fans, motors, water pumps, compressors, power steering pumps and turbochargers, etc. This document does not apply to elastic V-ribbed belts.

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 2941 Rubber - General Procedures for Preparing and Conditioning Test Pieces for Physical Test Methods

GB/T 6931.1 Belt Drives - Vocabulary - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 6931.1 and GB/T 6931.2 are applicable to this document.

4 Test Belts, Pulleys and Laboratory Ambient Temperature

4.1 Test Belts The test belts shall conform to the provisions of GB/T 13552, with an effective specimen length of (1,200 10) mm. Test data are applicable to all belt lengths manufactured under the same structure and conditions.

4.2 Test Pulleys The test pulleys shall conform to the manufacturing tolerances specified in GB/T 33513, with a wheel diameter tolerance controlled within

0.1 mm and a groove angle tolerance controlled within 0.5.

4.3 Laboratory Ambient Temperature The laboratory ambient temperature for the performance test methods in Chapter 5, Chapter 6, Chapter 8, Chapter 9 and Chapter 10 shall be 18 C ~ 32 C, and the ambient temperature for the performance test methods in Chapter 7 shall be (21 5) C, or as agreed upon by the supply- side and the demand-side.

5 High Temperature Constant Tension Force Life Test

5.1 Test Objective To test the durability of the belts under high temperature and high load conditions.

5.2 Test Device

5.2.1 Schematic diagram of the high temperature constant tension force life test device is shown in Figure 1.

6 Misalignment Noise Test

6.1 Test Objective To determine the noise performance of the belt under different degrees of axial misalignment and environmental conditions.

6.2 Test Device

6.2.1 Schematic diagram of the misalignment noise test device is shown in Figure 4. Figure 4 -- Schematic Diagram of Misalignment Noise Test Device

6.2.2 The parameters of the misalignment noise test device shall conform to the provisions of I

---the distance between adjustable pulley and idler pulley, expressed in (mm).

6.5.1.3 Before testing, place the test belts in a storage chamber that meets the test

conditions for adjustment. The adjustment time shall comply with the provisions of GB/T 2941.

6.5.1.4 Before each test, use isopropanol or other volatile cleaning agents to clean the pulleys and check to ensure that the pulley surface is free of oil, dust, pulley wear or other contaminants.

6.5.1.5 Randomly select one test belt; store the rest in the storage chamber.

6.5.1.6 Install the test belt on the test bench, and before starting, ensure that all parameters meet the requirements.

6.5.1.7 Set the speed of the driving pulley to (1,000 100) r/min, sine curve input,

6.5.1.8 Set the offset of the adjustable pulley to achieve the required misalignment angle for the V-ribbed belt.

6.5.1.9 Run the test belt for 10 seconds in accordance with test condition 1 in Table

7. During the operation, use a dedicated microphone to test the noise. The microphone shall be positioned between the test pulleys, extending 100 mm beyond the end face of the adjustable pulley. Record all noise levels and determine the maximum and average noise levels in dB(A), noise duration, noise type (subjective judgment) and belt misalignment angle.

6.5.1.10 Change the belt misalignment angle in 0.5 increments, adjust the test parameters, and in accordance with the requirements of 6.5.1.9, test the noise until all angles between 3 and 3° have been tested or the sample belt shows signs of skipping.

6.5.1.11 Remove the test belt from the test bench and return it to the storage chamber.

6.5.1.12 Repeat steps 6.5.1.9 ~ 6.5.1.11, until all belts have been tested.

6.5.1.13 Repeat steps 6.5.1.9 ~ 6.5.1.12, until each belt has been tested 3 times, with belts randomly selected for each repetition.

6.5.1.14 In accordance with test condition 3 in Table 7, conduct the test. Run the test for 10 seconds while simultaneously using a microphone to test the noise. The microphone shall be positioned between the test pulleys, extending 100 mm beyond the end face of the adjustable pulley. Record all noise levels and determine the maximum and average noise levels in dB(A), noise duration, noise type (subjective judgment), and V-ribbed belt misalignment angle.

6.5.1.15 Change the belt misalignment angle in 0.5° increments, adjust the test parameters, and in accordance with the requirements of 6.5.1.14, conduct noise test, until all angles between 3° and 3° have been tested or the sample belt shows signs of skipping.