GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 21.220.10
J 18

GB/T 18183-2017

Replacing GB/T 18183-2000

Fatigue Test Method for Automotive Synchronous Belt

汽车同步带疲劳试验方法

Issued on: May 12, 2017 **Implemented on: December 1, 2017**

Issued by: General Administration of Quality Supervision, Inspection and Quarantine;
Standardization Administration of PRC.

Table of Contents

Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009.

This Standard replaced GB/T 18183-2000 *Automotive Synchronous Belt Industry – Fatigue Test*. Compared with GB/T 18183-2000, this Standard has the major technical changes as follows besides the editorial modifications:

--- Increase the ZH, YH, ZR, YR, ZS, YS, RU, YU, and other models of automotive synchronous belt; and provide the corresponding technical parameters;

--- Increase the technical parameters of tension wheel (see Table 3);

--- Increase the test belt size (see Clause 5);

--- Increase the requirements for automotive synchronous belt high-temperature fatigue test and water-dropping fatigue test, and specify the test (see Clause 6 and Clause 7);

--- Increase the test items in the test report (see Clause 8);

--- Delete the two-wheel fatigue test method of automotive synchronous belt in Appendix A.

This Standard was proposed by China Machinery Industry Federation.

This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Pulleys and Belts (SAC/TC 428).

Drafting organizations of this Standard: Ningbo Yujiang Special Rubber Belt Co., Ltd., Chinese Mechanical Academy of Science, Changchun University, China Wuxi Belt Co., Ltd., Hubei Maoxin Special Rubber Belts Co., Ltd., Ningbo Fengmao Far-east Rubber Co., Ltd., Ningbo Fulong Synchronous Belt Co., Ltd., Ningbo Jiebao Group Co., Ltd., Jiangsu Mingzhu Testing Machine Co., Ltd., and Zhejiang Sunte Technology Co., Ltd.

Chief drafting staffs of this Standard: Huang Xiaoming, Yu Xuming, Qin Shuan, Li Zhanguo, Wu Yizhen, Xiong Lijun, Feng Jianbin, Pan Hairui, Zhang Rong, Zhu Muzhi, and Shao Haigen.

The historical edition replaced by this Standard is as follows:

--- GB/T 18183-2000.

Fatigue Test Method for Automotive Synchronous Belt

1 Scope

This Standard specifies the fatigue life method of automotive synchronous belt inspected in the laboratory.

This Standard is applicable to the ZA, ZB, ZH, YH, ZR, YR, ZS, YS, RU, YU and other models of automotive synchronous belts (hereinafter referred to as synchronous belt).

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 document.

GB/T 10414.2 Belt Drives – Synchronous Belt Drives – Automotive Pulleys

GB/T 10716 Synchronous Belt Drives – Automotive Belts – Determination of Physical Properties.

3 Method Summary

This Standard specifies the fatigue life of automotive synchronous belt inspected by the three-wheel fatigue tester. Fatigue life refers to the number of hours that the synchronous belt has been continuously operated under the conditions specified in this Standard until the specified operating hours have elapsed or any failure mode has occurred. During the test period, the drive wheel operates as per the specified speed, while exert certain torque onto the driven wheel. The tension force is applied to the test synchronous belt through the tensioning wheel of the tensioning device; the tensioning wheel position shall be locked during the testing period.

4 Testing Device

4.1 Basic requirements

7.2.4 After the internal temperature of the test chamber reaches the specified temperature, re-start the tester, so that it can reach the specified speed; after adjusting the test torque to the specified value; start the test time-counting, turn-off the tester to inspect every 24h; let the tester continuously run, under such condition, till reach the specified number of hours of the synchronous belt or any failure mode is occurred, then the test is over.

7.2.5 After the completion of the test, check wearing situation for each pulley and bearing of the tester, as well as the fixing situation for the supporting seat of the tensioning wheel; so that determine whether the failure of the synchronous belt is caused by the pulley damage or test device failure.

7.3 Water-dropping fatigue test

7.3.1 Before the test, use appropriate solvent to clean the pulley; the pulley teeth surface shall be exempted from the foreign objects.

7.3.2 After any new wheel is replaced, use another belt with the same model as the tested synchronous belt to grind for 48h, after that can the test be started.

7.3.3 Install the tested synchronous belt onto the tester pulley, and exert specified tension force against it; after rotating the synchronous belt for 2 laps by hand, lock the position of the tensioning wheel; start the temperature sensor function and heating device; start the tester, make it reach the specified speed; let the tester stop after rotating for 5min±15s (excluding the starting and braking time); after adjusting the position of tensioning wheel, lock again.

7.3.4 Re-start the tester, make it reach the specified speed; start the water-dropping device, begin the test time-counting; after the tester continuously run for 24h under such conditions, take off the test belt; and stand for 1h~24h in the laboratory; perform the physical performance test as per GB/T 10716:

--- Tensile strength test;

--- Teeth shearing strength test;

--- Core cord bonding strength test;

--- Teeth cloth bonding strength test.

7.4 Failure mode of resistance-to-high-temperature fatigue test

The failure mode of resistance-to-high-temperature fatigue test shall include the following contents:

--- belt teeth falling off;

--- belt pulling off;

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

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