

INTERNATIONAL STANDARD

ISO
10917

First edition
1995-02-15

Synchronous belt drives — Automotive belts and pulleys — Fatigue test

*Transmissions synchrones par courroies — Poulies et courroies pour la
construction automobile — Essai de fatigue*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10917 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 4, *Synchronous belt drives*.

Annex A of this International Standard is for information only.

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International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Synchronous belt drives — Automotive belts and pulleys — Fatigue test

1 Scope

This International Standard specifies a fatigue test for the quality control of synchronous drive belts (principally types ZA and ZB) intended for driving automotive timing and valve mechanisms and, under certain circumstances, for driving auxiliaries of internal combustion engines, whether mobile or static.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 468:1982, *Surface roughness — Parameters, their values and general rules for specifying requirements*.

ISO 683-1:1987, *Heat-treatable steels, alloy steels and free-cutting steels — Part 1: Direct-hardening unalloyed and low-alloyed wrought steel in form of different black products*.

ISO 6508:1986, *Metallic materials — Hardness test — Rockwell test (scales A - B - C - D - E - F - G - H - K)*.

ISO 9011:1987, *Synchronous belt drives — Automotive pulleys*.

3 Principle

Determination of the performance of a belt under specified conditions on the test machine described in clause 4.

A number of conditions have to be agreed between the manufacturers and users, including the power to be transmitted, the tensioning force, the test temperature, the preparation method and the minimum acceptable belt life, in hours.

Belt failure occurs at that point in time at which the belt no longer satisfies the agreed conditions.

4 Apparatus

4.1 Dynamic test machine (see figure 1)

The test machine shall be of robust design so that all components will withstand, with virtually no deflection, the stresses to which they are subjected.

The test machine consists of the following items.

4.1.1 Driver pulley, flanged on both sides, and a suitable mechanism for driving it.

4.1.2 Driven pulley, to which a suitable power absorption unit (4.1.3) is connected.

4.1.3 Power absorption unit, capable of maintaining the test load within $\pm 2\%$ for the duration of the test and capable of being calibrated, for example by dead weights.

In order that tension can be satisfactorily applied to the belt, the idler pulley (4.1.4) and its bearing assembly and the belt shall be free to move as and when necessary in the support bracket along the line of application of the tensioning force F , as shown in figure 1.

In order to accommodate different lengths of belts, the position of relevant driving pulleys and/or the rel-

evant driven pulleys and the position of the idler pulley and/or its support bracket shall be adjustable so that the test layout is attainable for each belt length.

Assuming the coordinate of the driven pulley to be 0;0, the coordinates of the other two pulleys may be determined from the formulae given in table 1.

4.1.4 Idler pulley and arrangement through which tension can be applied to the belt.

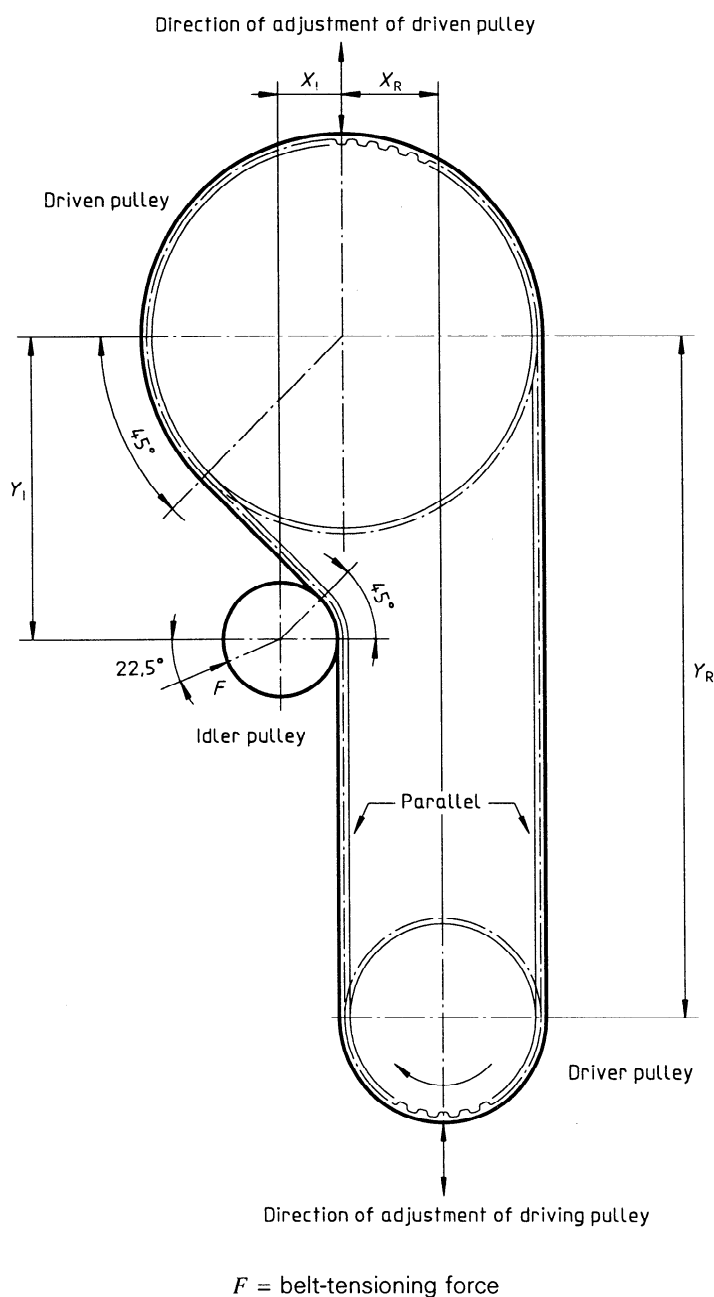


Figure 1