
**V-belts and V-ribbed belts —
Uniformity of belts — Test method
for determination of centre distance
variation**

*Courroies trapézoïdales et courroies striées — Uniformité des
courroies — Méthode d'essai permettant de déterminer les variations
d'entraxe*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 1, *Friction*.

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This third edition cancels and replaces the second edition (ISO 9608:1994), which has been technically revised.

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The main changes are as follows:

- modification of the title and the scope to add V-ribbed belts;
- modification of the scope to specify that the document does not apply to elastic belts;
- addition in the document of the test report, the definition of centre distance, the rotation speed of pulley, the accuracy of ΔE measurement, V-ribbed belt and references to ISO 1081, ISO 9981 and ISO 9982.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

An irregular running of V-belt and V-ribbed belt drives can arise from non-uniformities in the V-belt and V-ribbed belt sections because force variations induced by the non-uniformities add to the initial force at constant centre distance.

When testing the V-belt and V-ribbed belt length under constant measuring force, these force variations appear as centre distance variations.

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V-belts and V-ribbed belts — Uniformity of belts — Test method for determination of centre distance variation

1 Scope

This document specifies a test method for determining the centre distance variation of V-belt and V-ribbed belt drives as a criterion for the uniformity of V-belts and V-ribbed belts.

This document does not apply to elastic V-ribbed belts.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

3.1

centre distance

E distance between the centres of two pulleys measured in length measuring device

3.2

centre distance variation

ΔE

difference between maximum and minimum *centre distance* (3.1) measured on a standardized measuring fixture

4 Symbols

For the purpose of this document, the symbols given in [Table 1](#) apply.

Table 1 — Symbols

Symbol	Definition	Unit
E	centre distance	mm
F	force	N
ΔE	centre distance variation	mm

5 Test method

5.1 Measurement principle

The device recommended (see [Figure 1](#)) consists essentially of two grooved pulleys of the same dimensions, one of which is movable by a force, F , and the other pulley can rotate at a constant speed of 1 m/s or less.

The centre distance variation, ΔE , can be measured with an accuracy of 0,05 mm.

The specifications of the measuring pulley and the measuring force corresponding to types of V-belts and V-ribbed belts are given in each corresponding ISO standard, see [Table 2](#).

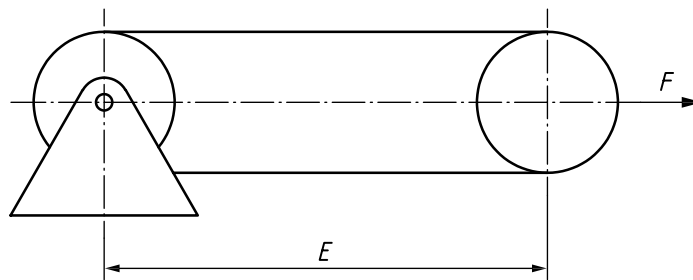


Figure 1 — Measuring device

Table 2 — ISO standard for measuring pulley and force

Types of V-belts	ISO standard
Endless wide V-belts for industrial speed-changers	ISO 1604
Narrow V-belts for the automotive industry	ISO 2790
Agricultural machinery - endless variable-speed V-belts	ISO 3410
Classical and narrow V-belts in datum system	ISO 4184
Agricultural machinery - endless hexagonal belts	ISO 5289
Narrow V-belts - Sections 9 N/J, 15 N/J and 25 N/J in the effective system	ISO 8419
V-ribbed belts for the automotive industry - PK profile	ISO 9981
V-ribbed belts for industrial applications - PH, PJ, PK, PL and PM profiles	ISO 9982

5.2 Procedure

Seat the V-belt or V-ribbed belt properly in the grooves of the two pulleys and apply the measuring force, F , on the movable pulley. To divide the total force equally between the two lengths of the belt, make at least two complete revolutions of the V-belt or V-ribbed belt by rotating the pulleys.

During a subsequent complete revolution of the V-belt, observe the variation of the distance between the axes of the measuring pulleys. Record the maximum and minimum values of the centre distance in the course of one revolution of the V-belt or V-ribbed belt.

The belt speed shall never exceed 1 m/s.

6 Results

Calculate the variation ΔE of the distance between the axes of the pulleys from [Formula \(1\)](#).

$$\Delta E = E_{\max} - E_{\min} \tag{1}$$

7 Test report

For each test, the test report shall include the following information:

- a) a reference to this document, i.e. ISO 9608;
- b) the centre distance variation rounded to the 2nd decimal place;
- c) the belt type, profile and technical design;
- d) the date of manufacture.

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Bibliography

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- [2] ISO 1604, *Belt drives — Endless wide V-belts for industrial speed-changers and groove profiles for corresponding pulleys*
- [3] ISO 2790, *Belt drives — V-belts for the automotive industry and corresponding pulleys — Dimensions*
- [4] ISO 3410, *Agricultural machinery — Endless variable-speed V-belts and groove sections of corresponding pulleys*
- [5] ISO 4184, *Belt drives — Classical and narrow V-belts — Lengths in datum system*
- [6] ISO 5289, *Agricultural machinery — Endless hexagonal belts and groove sections of corresponding pulleys*
- [7] ISO 8419, *Belt drives — Narrow V-belts — Sections 9N/J, 15N/J and 25N/J (lengths in the effective system)*
- [8] ISO 9981, *Belt drives — Pulleys and V-ribbed belts for the automotive industry — PK profile: Dimensions*
- [9] ISO 9982, *Belt drives — Pulleys and V-ribbed belts for industrial applications — PH, PJ, PK, PL and PM profiles: dimensions*

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