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Synchronous belt drives — Vocabulary

Transmissions synchrones par courroies — Vocabulaire

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Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
Alphabetical index	22

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO 5288:2001), which has been technically revised. The main change compared to the previous edition is the inclusion of include terms related to curvilinear synchronous belts.

Synchronous belt drives — Vocabulary

1 Scope

This document specifies the terms and definitions related to the use of synchronous belt drives for mechanical power transmission and where positive indexing or synchronization is required.

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 terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 General

3.1.1

synchronous belt drive

system composed of a *synchronous belt* (3.2.1.1) and at least one *synchronous pulley* (3.3.1.1)

Note 1 to entry: Synchronized motion and/or power is transmitted through the engagement of teeth on the belt with *grooves* (3.3.2.1) on the pulleys.

Note 2 to entry: This belt drive has been known in the past by various names such as “timing belt drive”, “positive belt drive” or “gear belt drive”.

3.1.2

centre distance

C

shortest distance between the axes of two *synchronous pulleys* (3.3.1.1) when the belt is under the prescribed measuring force

Note 1 to entry: See [Figure 1](#).

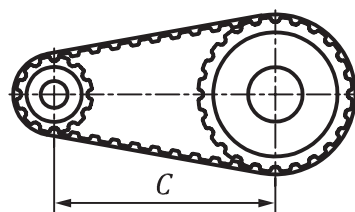


Figure 1

3.1.3

endless synchronous belt drive

synchronous belt drive (3.1.1) with applied endless synchronous belt

Note 1 to entry: See [Figure 2](#).

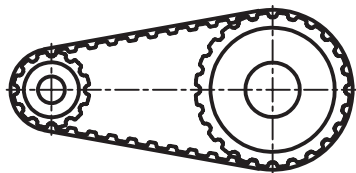


Figure 2

3.1.4

open synchronous belt drive

synchronous belt drive (3.1.1) with applied open synchronous belt

Note 1 to entry: See [Figure 3](#).

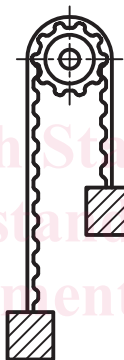


Figure 3

3.2 Synchronous belts

3.2.1 General

3.2.1.1

synchronous belt

belt with transverse teeth of rectangular or curvilinear cross-section extending from the base at regularly spaced intervals

Note 1 to entry: Consult synchronous belt dimensional standards for the full details of belt profiles.

3.2.1.2

tooth pitch

P_b
linear distance between the axes of two consecutive teeth in a section of belt loaded to the prescribed measuring force

Note 1 to entry: See [Figure 4](#).

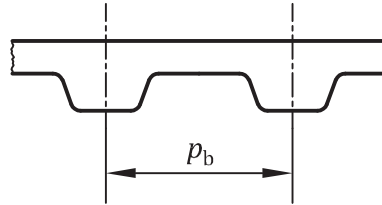


Figure 4

3.2.1.3

pitch line

circumferential line in the belt which keeps the same length when the belt is bent perpendicularly to its base

Note 1 to entry: See [Figure 5](#).



Figure 5

3.2.1.4

pitch line differential

a

<belts> radial distance between the *pitch line* ([3.2.1.3](#)) and the *root line* ([3.2.5.3](#))

Note 1 to entry: See [Figure 6](#).



Figure 6

3.2.1.5

belt pitch length

L_p

length of the *pitch line* ([3.2.1.3](#)) of a belt

3.2.1.6

width

b_s

transverse dimension of the back of the belt

Note 1 to entry: See [Figure 7](#).

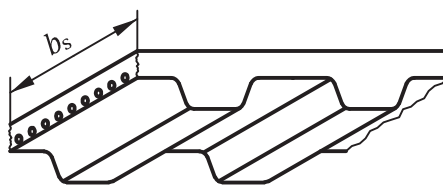


Figure 7

3.2.1.7

height

h_s/h_d

total height of a single-sided or double-sided belt

Note 1 to entry: See [Figure 8](#).

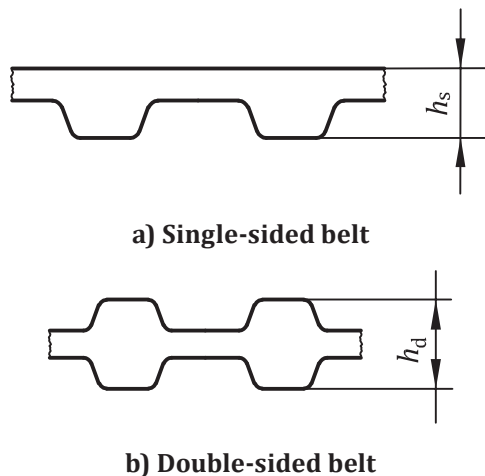


Figure 8

3.2.2 **Tooth profile**

3.2.2.1

trapezoidal profile

transverse *tooth* (3.2.5.1) profile formed by a tooth flank and tip with only straight lines

Note 1 to entry: See [Figure 9](#).

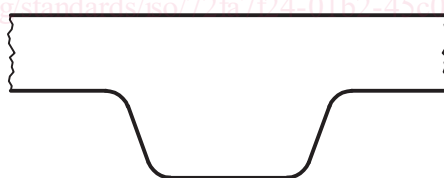


Figure 9

3.2.2.2

curvilinear profile

transverse *tooth* (3.2.5.1) profile formed by a tooth flank or tip with curved lines

Note 1 to entry: See [Figure 10](#).

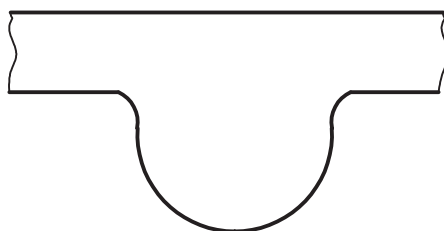


Figure 10

3.2.3 Type of belt drive

3.2.3.1

endless synchronous belt
closed *synchronous belt* (3.2.1.1)

Note 1 to entry: See [Figure 11](#).

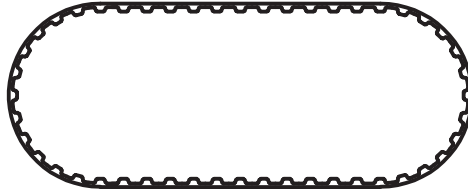


Figure 11

3.2.3.2

open synchronous belt
synchronous belt (3.2.1.1) with two ends

Note 1 to entry: See [Figure 12](#).



Figure 12

3.2.4 Structure

3.2.4.1

single-sided synchronous belt
synchronous belt (3.2.1.1) with teeth located inside of the *pitch line* (3.2.1.3) at regularly spaced intervals

Note 1 to entry: See [Figure 13](#).



Figure 13

3.2.4.2

double-sided synchronous belt
synchronous belt (3.2.1.1) with teeth located on both sides of the *pitch line* (3.2.1.3) at regularly spaced intervals

Note 1 to entry: See [Figure 14](#).

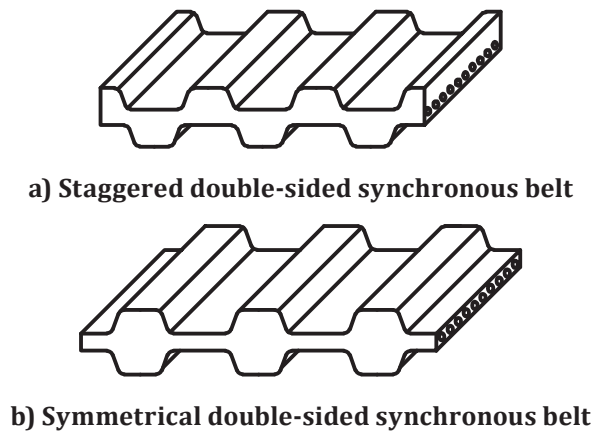


Figure 14

3.2.5 Teeth

3.2.5.1 tooth

generally transverse element protruding from the root of the belt which have the profile necessary to mesh with the *grooves* (3.3.2.1) in a *synchronous pulley* (3.3.1.1)

Note 1 to entry: See [Figure 15](#).

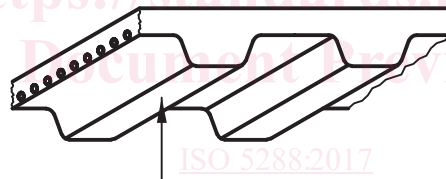


Figure 15

3.2.5.2 tip line

line joining the tips of the belt teeth

Note 1 to entry: See [Figure 16](#).

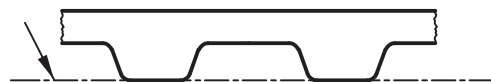


Figure 16

3.2.5.3 root line

line joining the roots between the belt teeth

Note 1 to entry: See [Figure 17](#).