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Synchronous belt drives — Vocabulary

Transmissions synchrones par courroies — Vocabulaire

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Contents

Page

Foreword

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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).

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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.

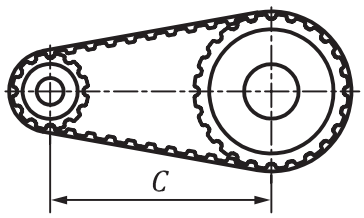


Figure 1

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.

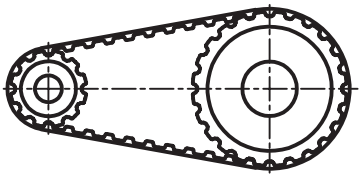


Figure 2

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.

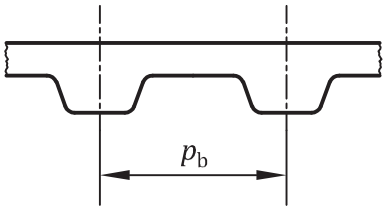


Figure 4

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.

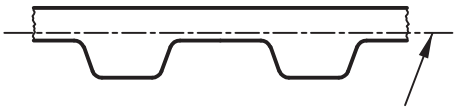


Figure 5

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.

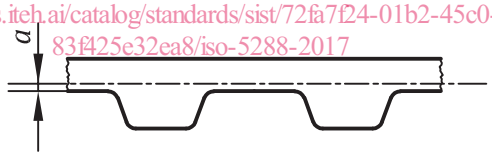


Figure 6

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.

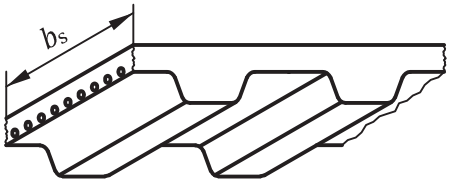
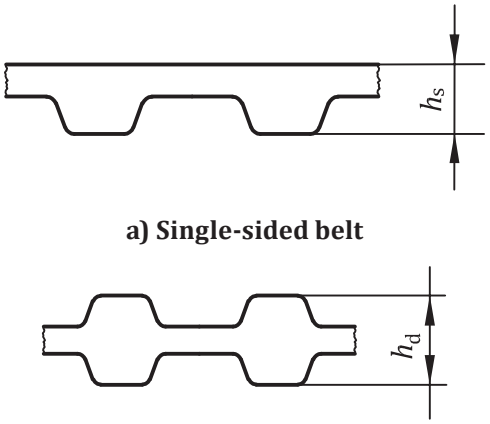


Figure 7

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.



a) Single-sided belt

b) Double-sided belt

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.

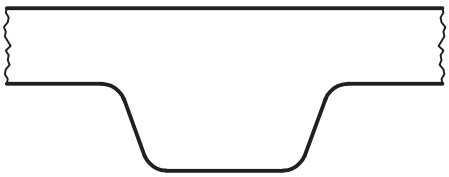


Figure 9

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.

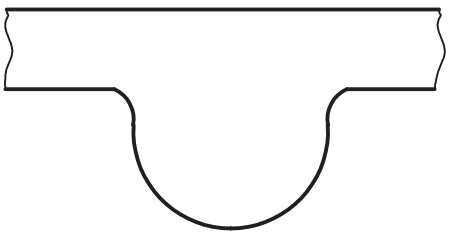


Figure 10

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.

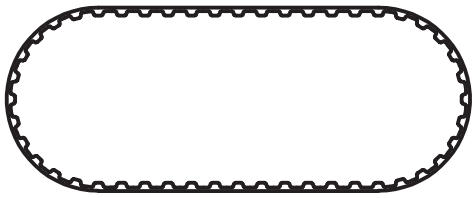


Figure 11

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.

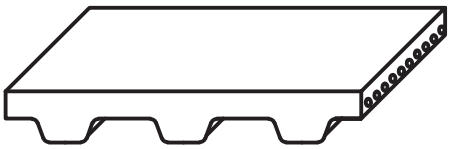
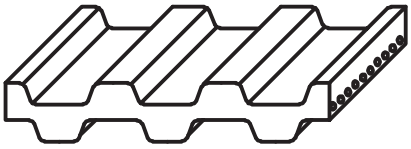


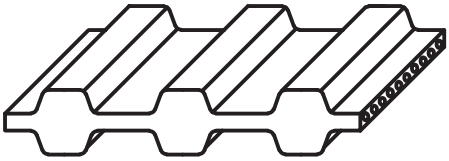
Figure 13

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.



a) Staggered double-sided synchronous belt



b) Symmetrical double-sided synchronous belt

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.

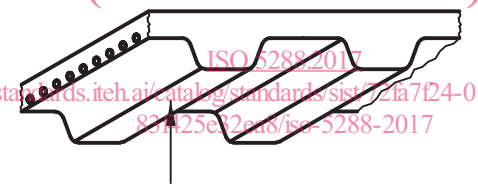


Figure 15

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.

Figure 17

3.2.5.4
tooth height
h_t
distance between the *tip line* (3.2.5.2) and the *root line* (3.2.5.3)

Note 1 to entry: See Figure 18.

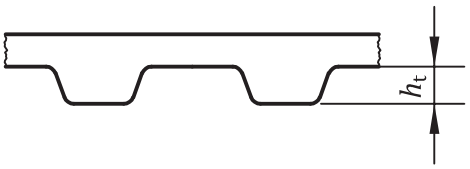
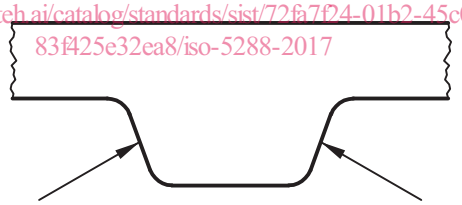


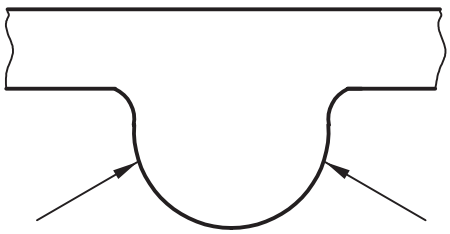
Figure 18

3.2.5.5
flank
area defined by the *width* (3.2.1.6) of the belt *tooth* (3.2.5.1) and the portion of the tooth section contained between the tooth tip radius and the tooth root radius or, if there is no tooth tip radius, contained between the *tip line* (3.2.5.2) and the tooth root radius

Note 1 to entry: See Figure 19.



a)



b)

Figure 19

3.2.5.6
working flank
<teeth> *flank* (3.2.5.5) of a belt *tooth* (3.2.5.1) in contact with the pulley groove flank when it is transmitting power

Note 1 to entry: See Figure 20.