
Synchronous belt drives — Belts —

Part 2:

Pitch codes MXL and XXL — Metric dimensions

Transmissions synchrones par courroies — Courroies —

Partie 2: Symboles de pas MXL et XXL — Dimensions métriques



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 approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5296-2 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*.

ISO 5296 consists of the following parts, under the general title *Synchronous belt drives — Belts*:

- Part 1: *Pitch codes MXL, XL, L, H, XH and XXH — Metric and inch dimensions*
- Part 2: *Pitch codes MXL and XXL — Metric dimensions*

Annex A of this part of ISO 5296 is for information only.

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Synchronous belt drives — Belts —

Part 2:

Pitch codes MXL and XXL — Metric dimensions

1 Scope

This part of ISO 5296 specifies the principal characteristics of synchronous endless belts for use in synchronous belt drives¹⁾ for mechanical power transmission and where positive indexing or synchronization may be required.

The principal characteristics include

- nominal tooth dimensions;
- length and width dimensions;
- tolerances on these dimensions;
- length measuring specifications.

This part of ISO 5296 applies to synchronous belt drives having a pitch equal to 2,032 mm or 3,175 mm designated by the symbols MXL and XXL.

As far as the dimensions are concerned, belts with pitch code MXL are interchangeable with those of pitch code MXL in ISO 5296-1.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 5296. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5296 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5296-1 : 1989, *Synchronous belt drives — Belts — Part 1: Pitch codes MXL, XL, L, H, XH and XXH — Metric and inch dimensions*

3 Pitch codes

The pitch code and corresponding belt pitch are given in table 1.

Table 1 — Pitch codes

Pitch code	Belt pitch ^{*)} mm
MXL	2,032
XXL	3,175

^{*)} Carried to the third decimal place because belt pitch is a defined value.

4 Dimensions and tolerances

4.1 Tooth dimensions

The nominal belt tooth dimensions (see figure 1) are given in table 2.

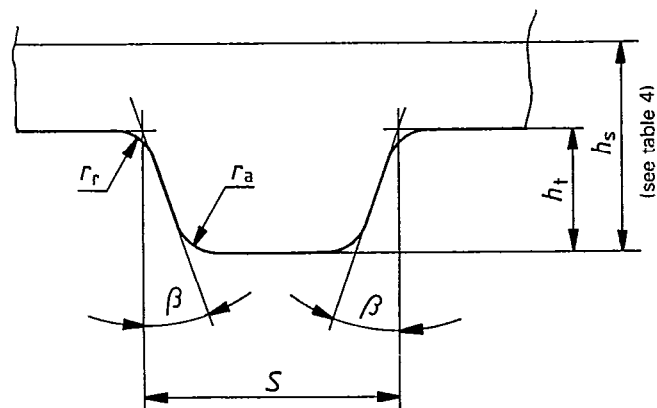


Figure 1 — Tooth profile

1) Synchronous belt drives have been known by various titles in the past: for example, timing belt drives, positive belt drives, gear belt drives.

Table 2 – Nominal tooth dimensions

Dimensions in millimetres

Pitch code	2β degrees	S	h_t	r_r	r_a
MXL	40	1,14	0,51	0,13	0,13
XXL	50	1,73	0,76	0,2	0,3

4.2 Lengths

The belt pitch lengths and tolerances are given in table 3.

Table 3 – Pitch lengths and tolerances

Dimensions in millimetres

Number of teeth		Pitch length	Tolerance
MXL	XXL		
45	—	91,44	±0,41
50	—	101,6	
55	—	111,76	
60	—	121,92	
—	40	127	
70	—	142,24	
75	48	152,4	
80	—	162,56	
—	56	177,8	
90	—	182,88	
100	64	203,2	
110	—	223,52	
—	72	228,6	
125	80	254	
—	88	279,4	
140	—	284,48	
—	96	304,8	
155	—	314,96	
—	104	330,2	
175	112	355,6	
—	120	381	
200	128	406,4	±0,51
225	144	457,2	
250	160	508	
—	176	558	±0,61

4.3 Widths and heights

The belt widths and tolerances, and the nominal heights, are given in table 4.

Table 4 – Widths and heights

Dimensions in millimetres

Pitch code	Nominal heights (see figure 1) h_s	Widths		Tolerance for belt width
		Dimension	Designation	
MXL	1,14	3,2	3,2	+0,5 -0,8
		4,8	4,8	
XXL	1,52	6,4	6,4	

5 Belt designation

The belt designation consists of the letter B (for belt), the number of teeth, the pitch code and the width designation in millimetres.

EXAMPLE

A synchronous belt of 100 teeth, pitch code MXL (2,032 mm pitch) and belt width 4,8 mm is designated:

B 100 MXL 4,8

NOTE — The designation of this belt according to ISO 5296-1 is **80,0 MXL 019**.

6 Pitch length measurement

6.1 Measurement

The pitch length shall be determined in accordance with ISO 5296-1 : 1989, clause 5.

6.2 Measuring pulleys

The dimensions and tolerances of the pulleys for use in measuring belt lengths are given in table 5.

The appropriate minimum clearance, C_m , is shown in figure 2 and table 5.

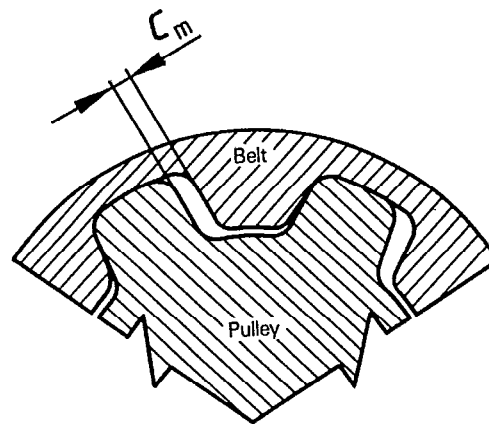


Figure 2 – Clearance between measuring pulley and belt

Table 5 – Belt pitch length measuring pulleys

Dimensions in millimetres

Pitch code	Number of teeth	Pitch circumference	Outside diameter	Radial run-out	Axial run-out	Minimum clearance
			$\pm 0,013$	TIR ¹⁾	TIR ¹⁾	C_m
MXL	20	40,64	12,428	0,013	0,025	0,25
XXL	16	50,8	15,662			0,3

1) Total indicator reading (maximum)

6.3 Total measuring force

The total forces to be applied for measuring belt pitch lengths are given in table 6.

Table 6 – Total measuring force

Belt width designation	Belt width mm	Force for pitch code	
		MXL	XXL
3,2	3,2	13	14
4,8	4,8	20	22
6,4	6,4	27	31

Annex A
(informative)

Bibliography

ISO 5288 : 1982, *Synchronous belt drives — Vocabulary.*

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Descriptors : synchronous transmission, belt drives, belts, power transmission belts, synchronous belts, dimensions, dimensional measurements, designation.

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