
**Synchronous belt drives — Belts with
pitch codes MXL, XXL, XL, L, H, XH and
XXH — Metric and inch dimensions**

*Transmissions synchrones par courroies — Courroies de symboles de pas
MXL, XXL, XL, L, H, XH et XXH — Dimensions métriques et en inches*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 5296 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 4, *Synchronous belt drives*.

This second edition of ISO 5296 cancels and replaces the first editions of ISO 5296-1:1989 and ISO 5296-2:1989.

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Synchronous belt drives — Belts with pitch codes MXL, XXL, XL, L, H, XH and XXH — Metric and inch dimensions

1 Scope

This International Standard specifies the principal characteristics of synchronous endless belts for use in synchronous belt drives for mechanical power transmission and where positive indexing or synchronization is required.

NOTE Synchronous belt drives have been known by various titles, for example timing belt drives, positive belt drives, and gear belt drives.

The principal characteristics include:

- a) nominal tooth dimensions;
- b) length and width dimensions;
- c) tolerances on these dimensions;
- d) length-measurement specifications.

This International Standard is applicable to synchronous belt drives with pitch codes MXL, XXL, XL, L, H, XH and XXH, in both metric and inch dimensions.

2 Pitch codes

The pitch codes and the corresponding belt pitches are given in Table 1.

Table 1 — Pitch codes

Pitch code	Belt pitch ^a	
	mm	in
MXL	2,032	0,080
XXL	3,175	0,125
XL	5,080	0,200
L	9,525	0,375
H	12,700	0,500
XH	22,225	0,875
XXH	31,750	1,250

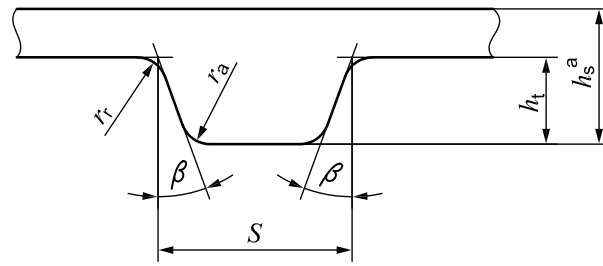
^a Carried to the third decimal place because belt pitch is a defined value.

3 Dimensions and tolerances

3.1 Tooth dimensions

The nominal belt tooth dimensions are the same for one-sided and double-sided belts; they are given in Table 2 and are shown in Figures 1, 2 and 3.

Two types of double-sided synchronous belts are standardized. Type A (see Figure 2) has symmetrical teeth and Type B (see Figure 3) has staggered teeth.



a See Table 5.

Figure 1 — Tooth profile, one-sided

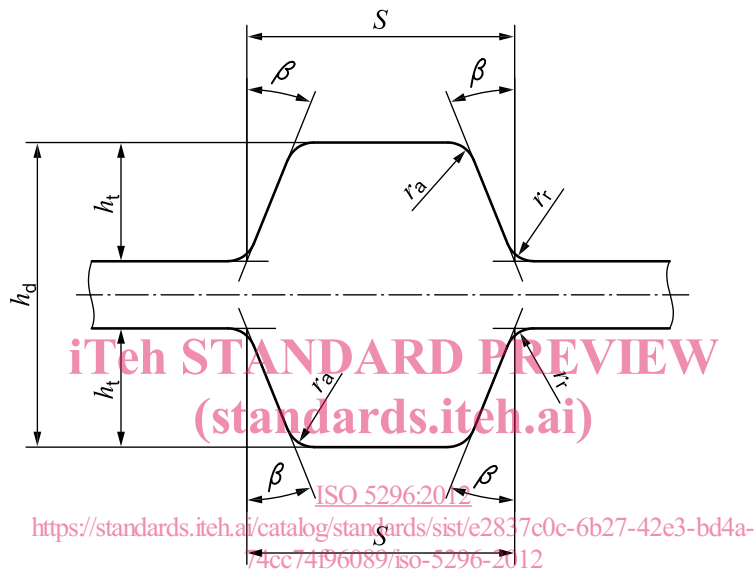


Figure 2 — Tooth profile, double-sided — Type A

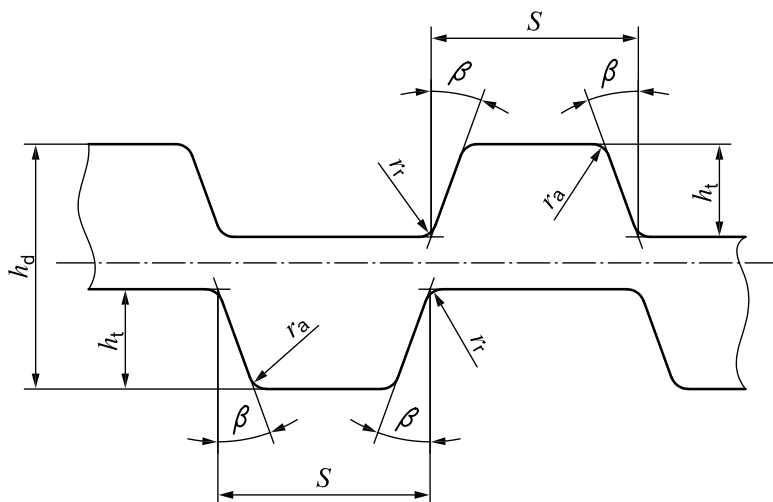


Figure 3 — Tooth profile, double-sided — Type B

Table 2 — Nominal tooth dimensions

Pitch code	2β degrees	s		h_t		r_r		r_a	
		mm	in	mm	in	mm	in	mm	in
MXL	40	1,14	0,045	0,51	0,02	0,13	0,005	0,13	0,005
XXL	50	1,73	0,068	0,76	0,03	0,2	0,008	0,3	0,012
XL	50	2,57	0,101	1,27	0,05	0,38	0,015	0,38	0,015
L	40	4,65	0,183	1,91	0,075	0,51	0,020	0,51	0,02
H	40	6,12	0,241	2,29	0,09	1,02	0,040	1,02	0,04
XH	40	12,57	0,495	6,35	0,25	1,57	0,062	1,19	0,047
XXH	40	19,05	0,750	9,53	0,375	2,29	0,090	1,52	0,06

3.2 Belt pitch lengths and tolerances

3.2.1 Single-sided belts

The belt pitch lengths and tolerances are given in Tables 3 and 4.

Table 3 — Pitch lengths and tolerances — XL, L, H, XH, XXH belt sections

Belt length designation	Pitch length		Tolerance		Number of teeth for standard lengths				
	mm	in	mm	in	XL (0,200)	L (0,375)	H (0,500)	XH (0,875)	XXH (1,250)
60	152,40	6,000	±0,41	±0,016	30				
70	177,80	7,000	±0,41	±0,016	35				
80	203,20	8,000	±0,41	±0,016	40				
90	228,60	9,000	±0,41	±0,016	45				
100	254,00	10,000	±0,41	±0,016	50				
110	279,40	11,000	±0,46	±0,018	55				
120	304,80	12,000	±0,46	±0,018	60				
124	314,33	12,375	±0,46	±0,018		33			
130	330,20	13,000	±0,46	±0,018	65				
140	355,60	14,000	±0,46	±0,018	70				
150	381,00	15,000	±0,46	±0,018	75	40			
160	406,40	16,000	±0,51	±0,020	80				
170	431,80	17,000	±0,51	±0,020	85				
180	457,20	18,000	±0,51	±0,020	90				
187	476,25	18,750	±0,51	±0,020		50			
190	482,60	19,000	±0,51	±0,020	95				
200	508,00	20,000	±0,51	±0,020	100				
210	533,40	21,000	±0,61	±0,024	105	56			
220	558,80	22,000	±0,61	±0,024	110				
225	571,50	22,500	±0,61	±0,024		60			

Table 3 (continued)

Belt length designation	Pitch length		Tolerance		Number of teeth for standard lengths				
	mm	in	mm	in	XL (0,200)	L (0,375)	H (0,500)	XH (0,875)	XXH (1,250)
230	584,20	23,000	±0,61	±0,024	115				
240	609,60	24,000	±0,61	±0,024	120	64	48		
250	635,00	25,000	±0,61	±0,024	125				
255	647,70	25,500	±0,61	±0,024		68			
260	660,40	26,000	±0,61	±0,024	130				
270	685,80	27,000	±0,61	±0,024		72	54		
285	723,90	28,500	±0,61	±0,024		76			
300	762,00	30,000	±0,61	±0,024		80	60		
322	819,15	32,250	±0,66	±0,026		86			
330	838,20	33,000	±0,66	±0,026			66		
345	876,30	34,500	±0,66	±0,026		92			
360	914,40	36,000	±0,66	±0,026			72		
367	933,45	36,750	±0,66	±0,026		98			
390	990,60	39,000	±0,66	±0,026		104	78		
420	1 066,80	42,000	±0,76	±0,030		112	84		
450	1 143,00	45,000	±0,76	±0,030		120	90		
480	1 219,20	48,000	±0,76	±0,030		128	96		
507	1 289,05	50,750	±0,81	±0,032				58	
510	1 295,40	51,000	±0,81	±0,032		136	102		
540	1 371,60	54,000	±0,81	±0,032		144	108		
560	1 422,40	56,000	±0,81	±0,032				64	
570	1 447,80	57,000	±0,81	±0,032			114		
600	1 524,00	60,000	±0,81	±0,032		160	120		
630	1 600,20	63,000	±0,86	±0,034			126	72	
660	1 676,40	66,000	±0,86	±0,034			132		
700	1 778,00	70,000	±0,86	±0,034			140	80	56
750	1 905,00	75,000	±0,91	±0,036			150		
770	1 955,80	77,000	±0,91	±0,036				88	
800	2 032,00	80,000	±0,91	±0,036			160		64
840	2 133,60	84,000	±0,97	±0,038				96	
850	2 159,00	85,000	±0,97	±0,038			170		
900	2 286,00	90,000	±0,97	±0,038			180		72
980	2 489,20	98,000	±1,02	±0,040				112	
1000	2 540,00	100,000	±1,02	±0,040			200		80
1100	2 794,00	110,000	±1,07	±0,042			220		

Table 3 (continued)

Belt length designation	Pitch length		Tolerance		Number of teeth for standard lengths				
	mm	in	mm	in	XL (0,200)	L (0,375)	H (0,500)	XH (0,875)	XXH (1,250)
1120	2 844,80	112,000	±1,12	±0,044				128	
1200	3 048,00	120,000	±1,12	±0,044					96
1250	3 175,00	125,000	±1,17	±0,046			250		
1260	3 200,40	126,000	±1,17	±0,046				144	
1400	3 556,00	140,000	±1,22	±0,048			280	160	112
1540	3 911,60	154,000	±1,32	±0,052				176	
1600	4 064,00	160,000	±1,32	±0,052					128
1700	4 318,00	170,000	±1,37	±0,054			340		
1750	4 445,00	175,000	±1,42	±0,056				200	
1800	4 572,00	180,000	±1,42	±0,056					144

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