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Introduction

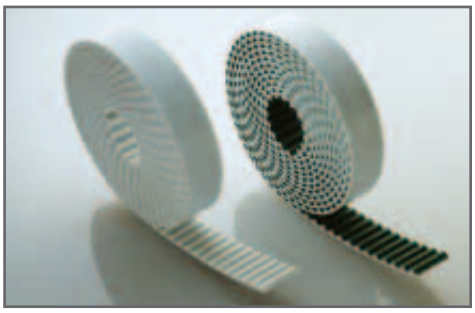
ELATECH® manufactures polyurethane belts for linear motion, conveying and power transmission applications. The combination of a polyurethane body reinforced with special steel or aramid tension members, makes the belt to fulfil the most severe requirements in all industrial applications.
The unique manufacturing processes, realized with the newest generation technologies, the modern and efficient test and control equipment, allow delivering superior products with the highest flexible service.
ELATECH® offers the widest range of tooth profile to enable the design engineer the use of the best drive for every application.

In addition to that, for special applications, ELATECH® studies and delivers innovative and unique solutions to even the most complex requirements.

Product range

ELATECH® M - open end

ELATECH® M belts are produced in standard roll length of 100 m and delivered to any desired length. The excellent precision and dimensional stability, the high abrasion resistance make them ideal in all linear motion applications.

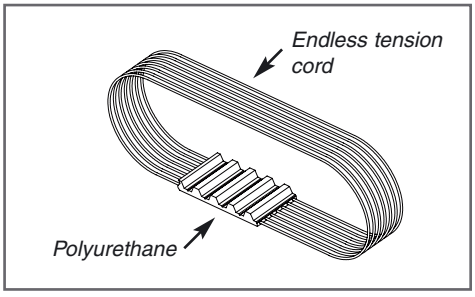


ELATECH® V - jointed

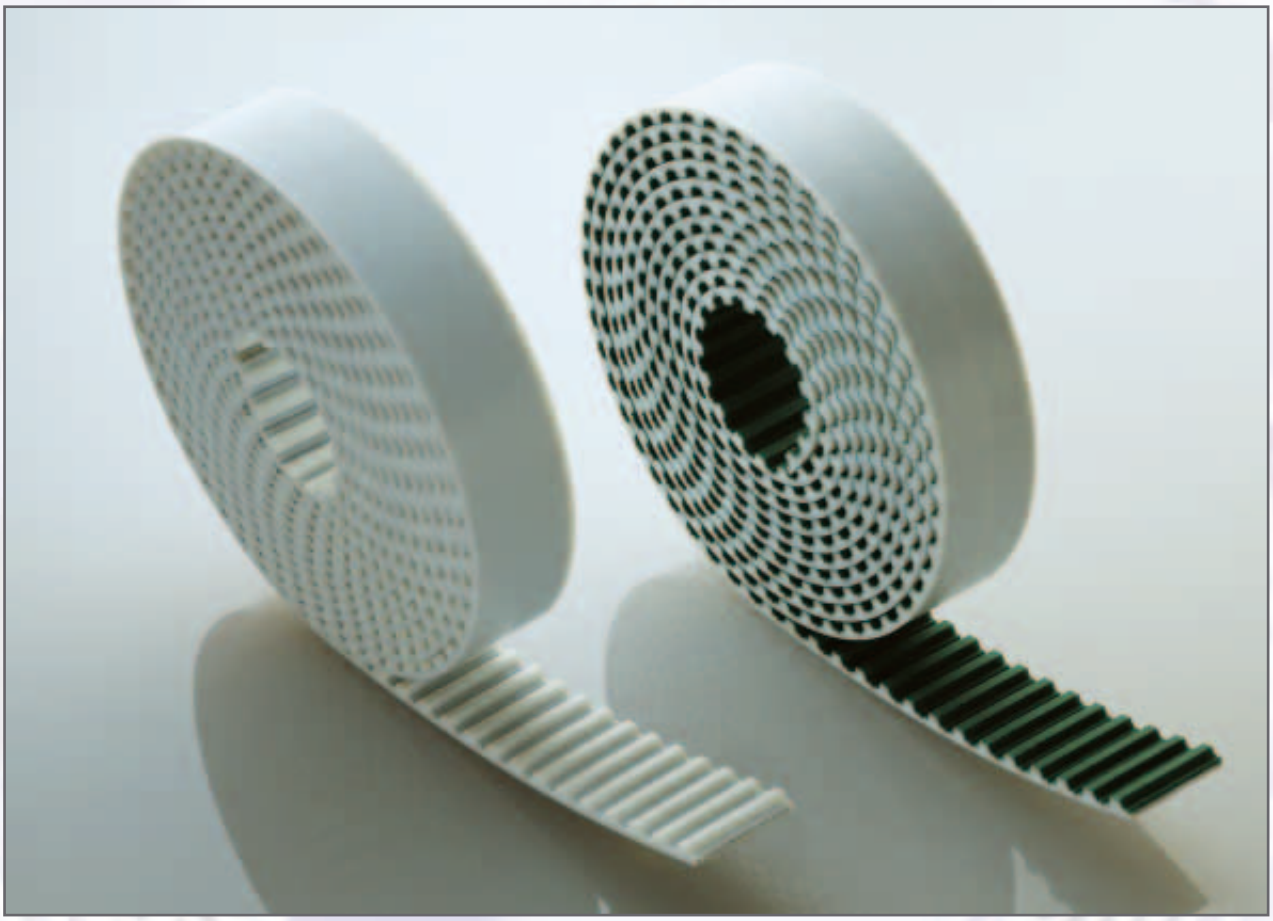
They are jointed belts obtained from open-end belts. The special manufacturing process, allows obtaining any desired length. Due to the high flexibility and to the unique precision in positioning offered, ELATECH V belts are ideal for all conveying applications where synchronisation is needed.

ELA-flex SD™

ELA-flex SD™ Synchro Drive belts are manufactured with truly endless steel tension cords. Having no splice or welding, they have no weak cross section and are therefore ideal for power transmission and high load conveying applications. They are available in a wide range of profiles and pitches and in any length tooth by tooth from 1500 mm to 22000 mm.



ELATECH® M and V

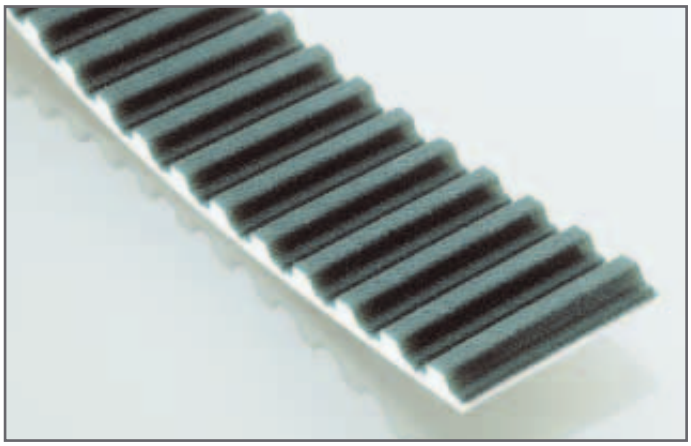


Introduction

The timing belts manufactured by ELATECH® have been designed to comply to every need of the design engineer in linear motion, power transmission and in conveying applications where precise synchronisation is needed. ELATECH® timing belts are manufactured with the body in thermoplastic polyurethane with excellent wear resistance and with high tensile strength steel cords. A special polyamide fabric on the tooth (on request) reduces the coefficient of friction, improves the tooth engagement and reduces noise.

Standard belt

Belt with Polyamide fabric on teeth PAZ



Tension Cords

In order to maximize the application of ELATECH® timing belts, construction with special cords is available on request:

Standard Cord HFE Cord HPL Cord

- HPL high performance cords: the cord cross section is increased compared with standard. This results in a lower belt elongation and more precise positioning accuracy.
- HFE high Flexibility cords: the cord cross section is spread on a higher number of single filaments. This results in a lower bending stress and therefore in a higher resistance at reverse bending of the cords.
  They allow using pulleys and idlers up to 30% smaller in diameter compared to standard.
- INOX stainless steel cords are suitable for application in aggressive environments. They have lower tensile strength than standard cords.
- Aramid: increases belt flexibility and decreases belt weight.

  It is to be noted that steel cords offer the best technical performances and dimensional stability of the belts.
  For application with special cords ask our engineering department.

Product certification

On request, it is possible to deliver belts according to 94/9/CE

ATEX II2G-22D.

Colour

ELATECH® timing belts are produced as standard in white colour. On demand it is possible to deliver belts in different colours.

Mechanical properties:

- Excellent dimensional stability
- High abrasion resistance
- Low pretension and shaft load
- Maintenance free
- High linear and angular positioning precision
- High efficiency

Chemical properties:

High resistance to:

- Hydrolysis
- Ozone
- UVA
- Ageing
- Oils, greases and fats
- Gasoline
- Good resistance to acids
- Working temperatures range -10°C +80°C (peaks up to 110°C)
  For very low temperature special compound material is available on request.
- Silicon free production

Executions

ELATECH® M

They are manufactured in rolls with standard length of 100 m. On request longer or shorter lengths are available. Main applications are linear drives.

Ordering example T :

25 T 10 - M- PAZ *100 m*

- Fabric on tooth PAZ
- ELATECH® timing belt type "M" open end belt
- Pitch 10 mm
- Profile "T"
- Width 25 mm

Ordering example H :

100 H - M- PAR *100 m*

- Fabric on back PAR
- ELATECH® timing belt type "M" open end belt
- Type / Profile
- Belt width (x 0,254 = mm)

Ordering example HTD cut to lenght:

50 HTD - 8M 1800 - M - PAZ-PAR *20 pcs*

- Fabric on tooth and back PAZ + PAR
- ELATECH® timing belt type "M" cut to length
- Lenght 1800 mm
- Pitch 8 mm
- Profile "HTD"
- Width 50 mm

Ordering example H cut to lenght:

100 H 1000 -M- z= 200 *20 pcs*

- Belt number of teeth
- ELATECH® timing belt type "M"
- Belt lenght (x 2,54 = mm)
- Type / Profile
- Belt width (x 0,254 = mm)

ELATECH® V

They are jointed belts manufactured from open-end ELATECH® belts.Thanks to the specific manufacturing process, any length may be obtained tooth by tooth with a minimum of 800 mm length. Free combinations with special backing materials and welded profiles, make ELATECH® V belts ideal in synchronized conveying and highly specialised applications.

Ordering example AT :

20 AT 5 / 3410 - V *10 pcs*

- ELATECH® timing belt type "V" jointed
- Lenght 3410 mm
- Pitch 5 mm
- Profile "AT"
- Width 20 mm

Ordering example STD :

50 STD S8M 1800 - V

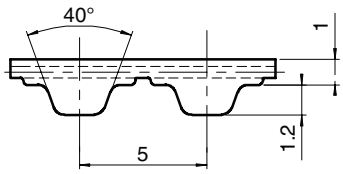
- ELATECH® timing belt type "V" jointed
- Lenght 1800 mm
- Pitch 8 mm
- Profile "STD"
- Width 50 mm

Ordering example XL :

150 XL/ 750 -V- z= 375 *20 pcs*

- Belt number of teeth
- ELATECH® timing belt type "V" jointed
- Belt lenght (x 2,54 = mm)
- Type / Pitch
- Belt width (x 0,254 = mm)

T5



Belt characteristics

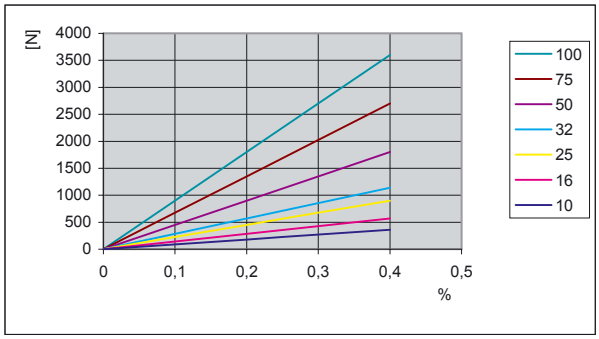
- Polyurethane timing belt with steel tension cords
- Trapezoidal tooth profile according to DIN 7721 T1
- Metric pitch 5 mm
- Ideal for drives where high belt flexibility is requested
- Widely used for conveying, linear drive and light power transmission applications

- Width tolerance: ±0,5 [mm]
- Length tolerance: ± 0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
10	360	180	1500	90000	0,021
16	570	285	2375	142500	0,034
25	900	450	3750	225000	0,053
32	1140	570	4750	285000	0,067
50	1800	900	7500	450000	0,105
75	2700	1350	11250	675000	0,158
100	3600	1800	15000	900000	0,210

Load / Elongation [%]

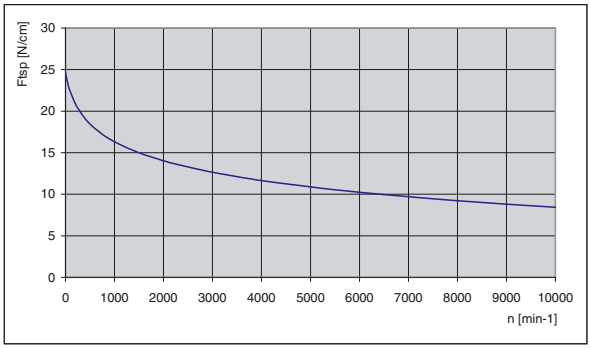


Other widths are available on request.

Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	24,70	800	17,02	1900	14,21	4500	11,25
20	24,07	900	16,65	2000	14,03	5000	10,88
40	23,53	1000	16,32	2200	13,71	5500	10,55
60	23,05	1100	16,01	2400	13,42	6000	10,24
80	22,64	1200	15,73	2600	13,14	6500	9,96
100	22,28	1300	15,47	2800	12,89	7000	9,70
200	20,90	1400	15,22	3000	12,65	7500	9,46
300	19,89	1440	15,13	3200	12,43	8000	9,23
400	19,10	1500	15,00	3400	12,22	8500	9,01
500	18,45	1600	14,78	3600	12,03	9000	8,81
600	17,91	1700	14,58	3800	11,84	9500	8,62
700	17,44	1800	14,39	4000	11,66	10000	8,44

Tooth shear strenght / rpm

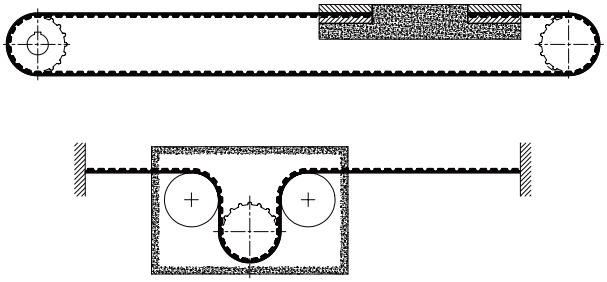


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



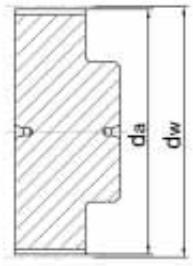
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 10$
- Idler running on belt teeth $d_{min} = 30$ mm

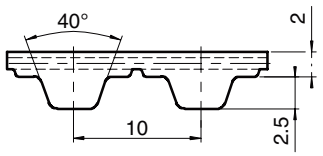
Drive with reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt back $d_{min} = 30$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
10	15,05	15,92	**39**	61,25	62,09	**68**	107,40	108,26	**97**	**153,55**	**154,42**
11	16,65	17,51	**40**	62,85	63,66	**69**	109,00	109,85	**98**	**155,15**	**156,02**
12	18,25	19,10	**41**	64,40	65,27	**70**	110,60	111,44	**99**	**156,75**	**157,61**
13	19,85	20,70	**42**	66,00	66,86	**71**	112,20	113,03	**100**	**158,35**	**159,20**
14	21,45	22,29	**43**	67,70	68,46	**72**	113,75	114,62	**101**	**159,95**	**160,79**
15	23,05	23,88	**44**	69,20	70,05	**73**	115,35	116,22	**102**	**161,55**	**162,38**
16	24,60	25,47	**45**	70,80	71,64	**74**	116,95	117,81	**103**	**163,10**	**163,97**
17	26,20	27,06	**46**	72,40	73,23	**75**	118,55	119,40	**104**	**164,70**	**165,57**
18	27,80	28,65	**47**	73,95	74,82	**76**	120,15	120,99	**105**	**166,30**	**167,16**
19	29,40	30,25	**48**	75,55	76,42	**77**	121,75	122,58	**106**	**167,90**	**168,75**
20	31,00	31,83	**49**	77,15	78,01	**78**	123,30	124,18	**107**	**169,50**	**170,34**
21	32,70	33,43	**50**	78,75	79,60	**79**	124,90	125,77	**108**	**171,10**	**171,94**
22	34,25	35,02	**51**	80,35	81,19	**80**	126,50	127,36	**109**	**172,65**	**173,53**
23	35,85	36,62	**52**	81,95	82,78	**81**	128,10	128,95	**110**	**174,25**	**175,12**
24	37,40	38,21	**53**	83,50	84,38	**82**	129,70	130,54	**111**	**175,85**	**176,71**
25	39,00	39,80	**54**	85,10	85,97	**83**	131,30	132,14	**112**	**177,45**	**178,30**
26	40,60	41,39	**55**	86,70	87,54	**84**	132,85	133,73	**113**	**179,05**	**179,84**
27	42,20	42,98	**56**	88,30	89,15	**85**	134,45	135,32	**114**	**180,65**	**181,49**
28	43,75	44,58	**57**	89,90	90,74	**86**	136,05	136,91	**115**	**182,23**	**183,08**
29	45,35	46,17	**58**	91,50	92,34	**87**	137,65	138,50	**116**	**183,82**	**184,67**
30	46,95	47,76	**59**	93,05	93,93	**88**	139,25	140,10	**117**	**185,42**	**186,26**
31	48,55	49,35	**60**	94,65	95,52	**89**	140,85	141,69	**118**	**187,01**	**187,86**
32	50,10	50,94	**61**	96,25	97,11	**90**	142,45	143,28	**119**	**188,61**	**189,45**
33	51,70	52,54	**62**	97,85	98,70	**91**	144,00	144,87	**120**	**190,21**	**191,04**
34	53,25	54,13	**63**	99,45	100,30	**92**	145,60	146,46			
35	54,85	55,72	**64**	101,05	101,89	**93**	147,20	148,06			
36	56,45	57,31	**65**	102,65	103,48	**94**	148,80	149,65			
37	58,05	58,90	**66**	104,20	105,07	**95**	150,40	151,24			
38	59,65	60,50	**67**	105,80	106,66	**96**	152,00	152,83			



T10



Belt characteristics

- Polyurethane timing belt with steel tension cords
- Trapezoidal tooth profile according to DIN 7721 T1
- Metric pitch 10 mm
- Ideal for drives where high belt flexibility is requested
- Widely used for conveying, linear drive and medium power transmission applications

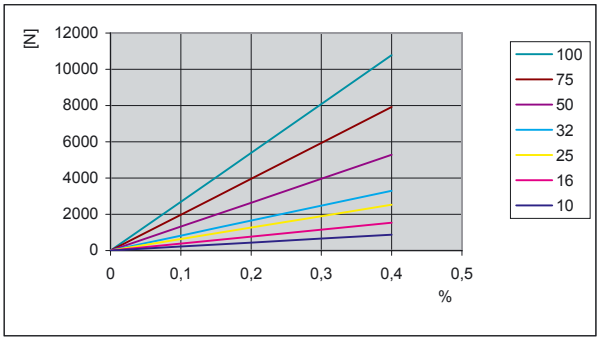
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
10	880	440	3200	220000	0,05
16	1540	770	5600	385000	0,07
25	2530	1265	9200	632500	0,11
32	3300	1650	12000	825000	0,15
50	5280	2640	19200	1320000	0,23
75	7920	3960	28800	1980000	0,34
100	10780	5390	39200	2695000	0,45

Other widths are available on request.

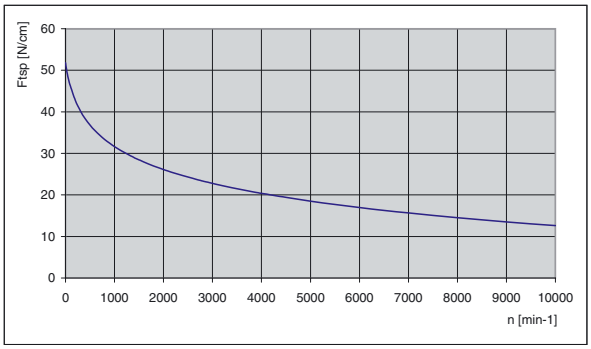
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	51,80	800	33,34	1900	26,53	4500	19,40
20	50,32	900	32,44	2000	26,12	5000	18,51
40	49,04	1000	31,63	2200	25,34	5500	17,70
60	47,92	1100	30,89	2400	24,63	6000	16,97
80	46,95	1200	30,21	2600	23,97	6500	16,29
100	46,11	1300	29,58	2800	23,36	7000	15,66
200	42,75	1400	28,99	3000	22,78	7500	15,07
300	40,28	1440	28,76	3200	22,25	8000	14,52
400	38,36	1500	28,44	3400	21,74	8500	14,00
500	36,80	1600	27,92	3600	21,27	9000	13,51
600	35,49	1700	27,43	3800	20,81	9500	13,05
700	34,35	1800	26,97	4000	20,39	10000	12,61

Tooth shear strenght / rpm

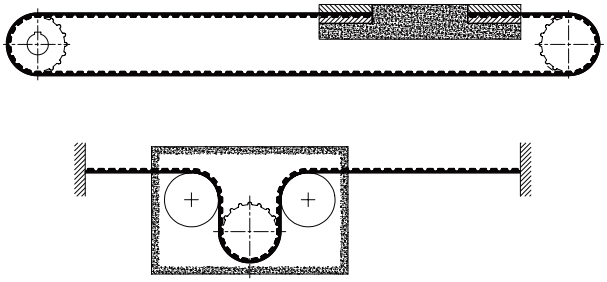


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e •

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



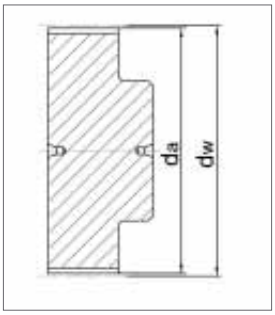
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 12$
- Idler running on belt teeth $d_{min} = 60$ mm

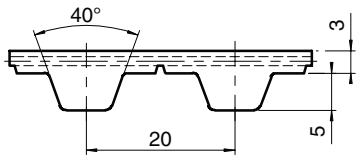
Drive with reverse bending
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 60$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
10	30,05	31,84	**39**	122,30	124,14	**68**	214,60	216,44	**97**	306,90	308,75
11	33,25	35,02	**40**	125,45	127,32	**69**	217,75	219,63	**98**	310,10	311,93
12	36,35	38,20	**41**	128,65	130,50	**70**	220,95	222,81	**99**	313,25	315,12
13	39,50	41,38	**42**	131,85	133,69	**71**	224,15	225,99	**100**	316,45	318,30
14	42,70	44,56	**43**	135,00	136,87	**72**	227,30	229,18	**101**	319,65	321,48
15	45,90	47,75	**44**	138,20	140,05	**73**	230,50	232,36	**102**	322,80	324,66
16	49,05	50,93	**45**	141,40	143,24	**74**	233,70	235,54	**103**	326,00	327,85
17	52,25	54,11	**46**	144,60	146,42	**75**	236,90	238,72	**104**	329,20	331,03
18	55,45	57,29	**47**	147,75	149,60	**76**	240,05	241,94	**105**	332,35	334,21
19	58,65	60,48	**48**	150,95	152,78	**77**	243,25	245,09	**106**	335,55	337,40
20	61,80	63,66	**49**	154,10	155,97	**78**	246,40	248,27	**107**	338,75	340,58
21	65,00	66,84	**50**	157,30	159,15	**79**	249,60	251,46	**108**	341,95	343,76
22	68,15	70,03	**51**	160,50	162,33	**80**	252,80	254,64	**109**	345,15	346,95
23	71,35	73,20	**52**	163,65	165,52	**81**	256,00	257,82	**110**	348,30	350,13
24	74,55	76,39	**53**	166,85	168,70	**82**	259,15	261,00	**111**	351,45	353,31
25	77,70	79,58	**54**	170,05	171,88	**83**	262,30	264,19	**112**	354,65	356,50
26	80,90	82,76	**55**	173,20	175,06	**84**	265,50	267,37	**113**	357,80	359,68
27	84,10	85,95	**56**	176,40	178,25	**85**	268,70	270,55	**114**	361,00	362,86
28	87,25	89,12	**57**	179,60	181,43	**86**	271,90	273,74	**115**	364,19	366,04
29	90,45	92,21	**58**	182,75	184,61	**87**	275,05	276,92	**116**	367,39	369,23
30	93,65	95,49	**59**	185,95	187,80	**88**	278,25	280,10	**117**	370,56	372,41
31	96,85	98,67	**60**	189,10	190,98	**89**	281,45	283,28	**118**	373,76	375,59
32	100,00	101,86	**61**	192,30	194,16	**90**	284,60	286,47	**119**	376,93	378,78
33	103,20	105,04	**62**	195,50	197,35	**91**	287,80	289,65	**120**	380,11	381,96
34	106,40	108,22	**63**	198,65	200,53	**92**	291,00	292,84			
35	109,55	111,41	**64**	201,85	203,71	**93**	294,20	296,02			
36	112,75	114,59	**65**	205,05	206,90	**94**	297,35	299,20			
37	115,90	117,77	**66**	208,20	210,08	**95**	300,55	302,39			
38	119,10	120,95	**67**	211,40	213,26	**96**	303,75	305,57			



T20



Belt characteristics

- Polyurethane timing belt with steel tension cords
- Trapezoidal tooth profile according to DIN 7721 T1
- Metric pitch 20 mm
- Ideal for drives where high belt flexibility is requested
- Widely used for conveying, linear drive and heavy power transmission applications

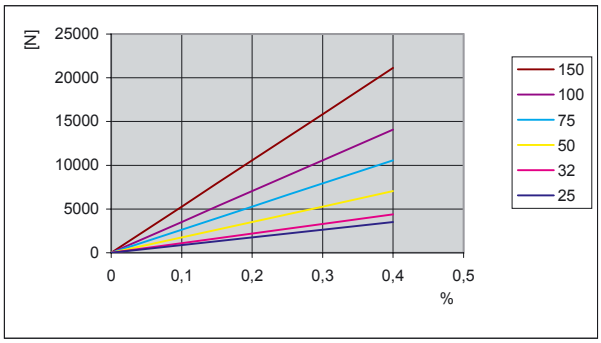
- Width tolerance: ±1,0 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,4 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
25	3520	1760	15200	880000	0,18
32	4400	2200	19000	1100000	0,24
50	7040	3520	30400	1760000	0,37
75	10560	5280	45600	2640000	0,55
100	14080	7040	60800	3520000	0,73
150	21120	10560	91200	5280000	1,10

Other widths are available on request.

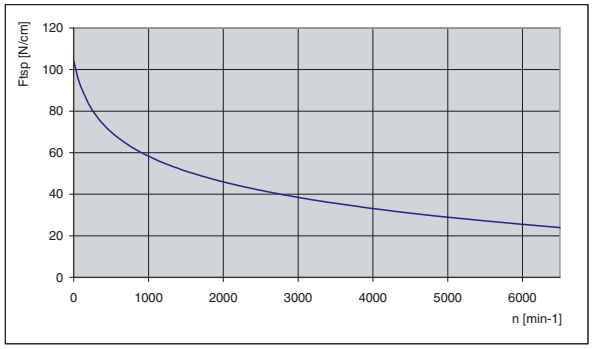
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	104,50	800	62,15	1900	46,88	4500	30,92
20	101,10	900	60,13	2000	45,94	5000	28,93
40	98,15	1000	58,31	2200	44,20	5500	27,14
60	95,58	1100	56,64	2400	42,61	6000	25,49
80	93,35	1200	55,11	2600	41,13	6500	23,97
100	91,41	1300	53,70	2800	39,77		
200	83,50	1400	52,38	3000	38,49		
300	77,84	1440	51,87	3200	37,29		
400	73,49	1500	51,14	3400	36,16		
500	69,96	1600	49,98	3600	35,10		
600	66,98	1700	48,89	3800	34,09		
700	64,41	1800	47,86	4000	33,13		

Tooth shear strenght / rpm

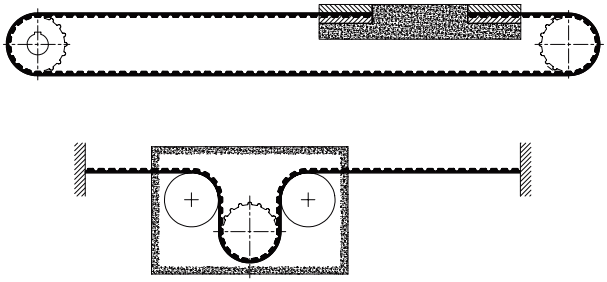


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt teeth $d_{min} = 120$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 120$ mm

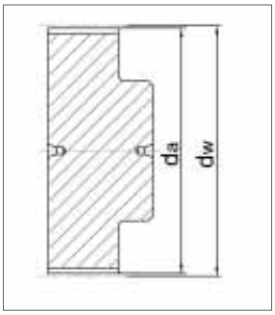
Timing pulleys

z	da	dw
15	92,65	95,49
16	99,00	101,86
17	105,40	108,22
18	111,75	114,59
19	118,10	120,96
20	124,50	127,32
21	130,75	133,69
22	137,20	140,06
23	143,55	146,43
24	149,95	152,78
25	156,30	159,15
26	162,65	165,52
27	169,00	171,89
28	175,40	178,25
29	181,75	184,62
30	188,10	190,99
31	194,50	197,35
32	200,85	203,72
33	207,20	210,09
34	213,60	216,44
35	219,95	222,81
36	226,35	229,18
37	232,70	235,54
38	239,05	241,91
39	245,40	248,28
40	251,75	254,65
41	258,15	261,02
42	264,50	267,37
43	270,85	273,74

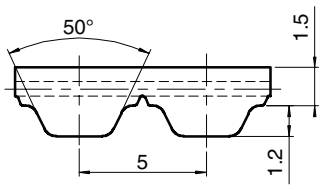
z	da	dw
44	277,25	280,10
45	283,60	286,47
46	289,95	292,84
47	296,35	299,21
48	302,70	305,58
49	309,10	311,93
50	315,45	318,30
51	321,80	324,67
52	328,15	331,03
53	334,50	337,40
54	340,90	343,76
55	347,25	350,13
56	353,60	356,50
57	360,00	362,86
58	366,35	369,23
59	372,75	375,59
60	379,10	381,96
61	385,45	388,33
62	391,85	394,70
63	398,20	401,06
64	404,55	407,43
65	410,95	413,80
66	417,30	420,17
67	423,65	426,52
68	430,05	432,89
69	436,40	439,26
70	442,80	445,63
71	449,15	451,99
72	455,50	458,36

z	da	dw
73	461,85	464,73
74	468,25	471,08
75	474,60	477,45
76	480,95	483,82
77	487,35	490,19
78	493,70	496,56
79	500,05	502,91
80	506,45	509,28
81	512,80	515,65
82	519,15	522,02
83	525,55	528,39
84	531,90	534,74
85	538,25	541,11
86	544,60	547,48
87	551,00	553,85
88	557,35	560,22
89	563,70	566,57
90	570,10	572,94
91	576,45	579,31
92	582,85	585,67
93	589,20	592,04
94	595,55	598,41
95	601,90	604,77
96	608,30	611,14
97	614,65	617,51
98	621,00	623,88
99	627,35	630,25
100	633,75	636,60
101	640,10	642,97

z	da	dw
102	646,50	649,34
103	652,85	655,71
104	659,20	662,06
105	665,60	668,43
106	671,95	674,80
107	678,30	681,17
108	684,70	687,54
109	691,05	693,89
110	697,40	700,26
111	703,80	706,63
112	710,15	712,99
113	716,50	719,36
114	722,90	725,73
115	729,24	732,09
116	735,61	738,46
117	741,96	744,83
118	748,34	751,19
119	754,70	757,56
120	761,07	763,93



AT5



Belt characteristics

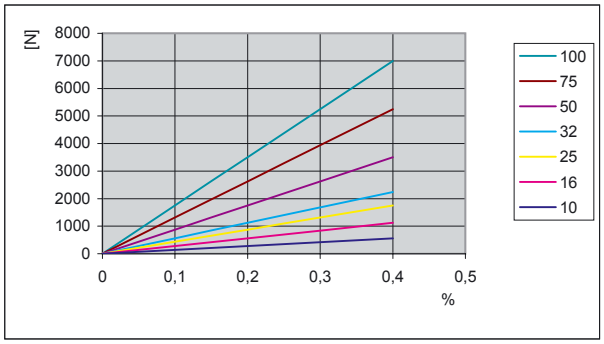
- Polyurethane timing belt with steel tension cords.
- Metric pitch 5 mm
- Tooth profile and dimension are optimised to guarantee uniform load distribution and minimum deformation under load.
- High resistance and low stretch steel cords to guarantee high stability and low elongation
- Reduced polygonal effect with reduced drive vibration.
- Particularly suitable for linear drives and light power transmission applications with high axial and angular positioning accuracy.

- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
10	560	280	2000	140000	0,03
16	1120	560	4000	280000	0,05
25	1750	875	6250	437500	0,09
32	2240	1120	8000	560000	0,11
50	3500	1750	12500	875000	0,17
75	5250	2625	18750	1312500	0,26
100	7000	3500	25000	1750000	0,34

Load / Elongation [%]

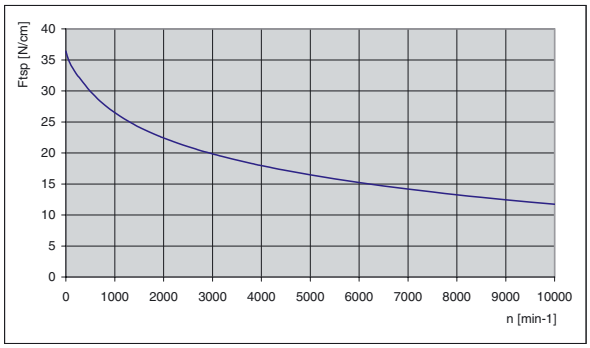


Other widths are available on request.

Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	36,40	800	27,69	1900	22,73	4500	17,18
20	35,88	900	27,06	2000	22,42	5000	16,47
40	35,40	1000	26,49	2200	21,82	5500	15,83
60	34,97	1100	25,96	2400	21,28	6000	15,24
80	34,59	1200	25,47	2600	20,77	6500	14,69
100	34,24	1300	25,01	2800	20,29	7000	14,18
200	32,92	1400	24,57	3000	19,85	7500	13,71
300	31,92	1440	24,41	3200	19,43	8000	13,26
400	30,89	1500	24,16	3400	19,03	8500	12,85
500	29,95	1600	23,78	3600	18,66	9000	12,45
600	29,12	1700	23,41	3800	18,30	9500	12,07
700	28,37	1800	23,07	4000	17,96	10000	11,72

Tooth shear strenght / rpm

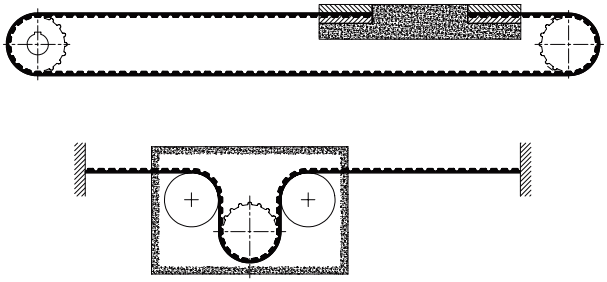


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



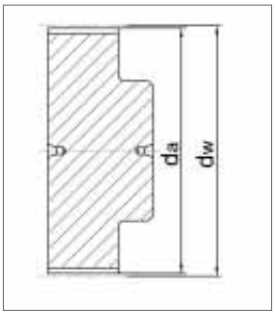
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt teeth $d_{min} = 30$ mm

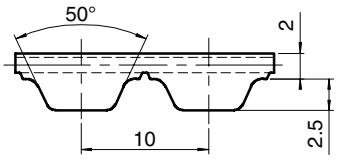
Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 60$ mm

Timing pulleys

z	d_a	d_w
15	22,65	23,88
16	24,20	25,47
17	25,80	27,06
18	27,40	28,65
19	29,00	30,25
20	30,60	31,83
21	32,20	33,43
22	33,80	35,02
23	35,40	36,62
24	37,00	38,21
25	38,60	39,80
26	40,20	41,39
27	41,80	42,98
28	43,35	44,58
29	44,95	46,17
30	46,55	47,76
31	48,15	49,35
32	49,70	50,94
33	51,30	52,54
34	52,85	54,13
35	54,45	55,72
36	56,05	57,31
37	57,65	58,90
38	59,25	60,50
39	60,85	62,09
40	62,45	63,66
41	64,00	65,27
42	65,60	66,86
43	67,30	68,46
44	68,80	70,05
45	70,40	71,64
46	72,00	73,23
47	73,55	74,82
48	75,15	76,42
49	76,75	78,01
50	78,35	79,60
51	79,95	81,19
52	81,55	82,78
53	83,10	84,38
54	84,70	85,97
55	86,30	87,54
56	87,90	89,15
57	89,50	90,74
58	91,10	92,34
59	92,65	93,93
60	94,25	95,52
61	95,85	97,11
62	97,45	98,70
63	99,05	100,30
64	100,65	101,89
65	102,25	103,48
66	103,80	105,07
67	105,40	106,66
68	107,00	108,26
69	108,60	109,85
70	110,20	111,44
71	111,80	113,03
72	113,35	114,62
73	114,95	116,22
74	116,55	117,81
75	118,15	119,40
76	119,75	120,99
77	121,35	122,58
78	122,90	124,18
79	124,50	125,77
80	126,10	127,36
81	127,70	128,95
82	129,30	130,54
83	130,90	132,14
84	132,45	133,73
85	134,05	135,32
86	135,65	136,91
87	137,25	138,50
88	138,85	140,10
89	140,45	141,69
90	142,05	143,28
91	143,60	144,87
92	145,20	146,46
93	146,80	148,06
94	148,40	149,65
95	150,00	151,24
96	151,60	152,83
97	153,15	154,42
98	154,75	156,02
99	156,35	157,61
100	157,95	159,20
101	159,55	160,79
102	161,15	162,38
103	162,70	163,97
104	164,30	165,57
105	165,90	167,16
106	167,50	168,75
107	169,10	170,34
108	170,70	171,94
109	172,25	173,53
110	173,85	175,12
111	175,45	176,71
112	177,05	178,30
113	178,65	179,84
114	180,25	181,49
115	181,85	183,08
116	183,45	184,67
117	185,00	186,26
118	186,60	187,86
119	188,20	189,45
120	189,80	191,04



AT10



Belt characteristics

- Polyurethane timing belt with steel tension cords.
- Metric pitch 10 mm
- Tooth profile and dimension are optimised to guarantee uniform load distribution and minimum deformation under load.
- High resistance and low stretch steel cords to guarantee high stability and low elongation
- Reduced polygonal effect with reduced drive vibration.
- Particularly suitable for linear drives and medium power transmission applications with high axial and angular positioning accuracy.

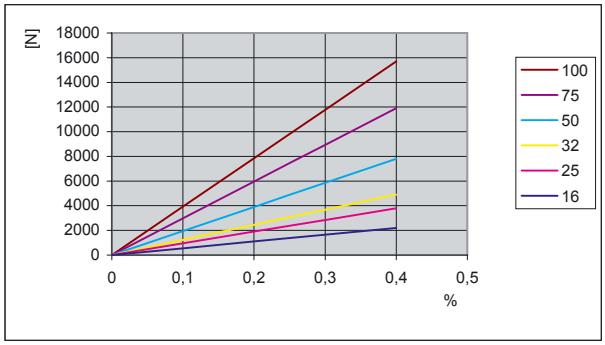
- Width tolerance: ±0,5 [mm]
- Length tolerance: ± 0,5 [mm/m]
- Thickness tolerance: ±0,3 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
16	2200	1100	9500	560000	0,09
25	3800	1900	16150	952000	0,15
32	4900	2450	20900	1232000	0,19
50	7800	3900	33250	1960000	0,30
75	11900	5950	50350	2968000	0,44
100	15700	7850	66500	3920000	0,59

Other widths are available on request.

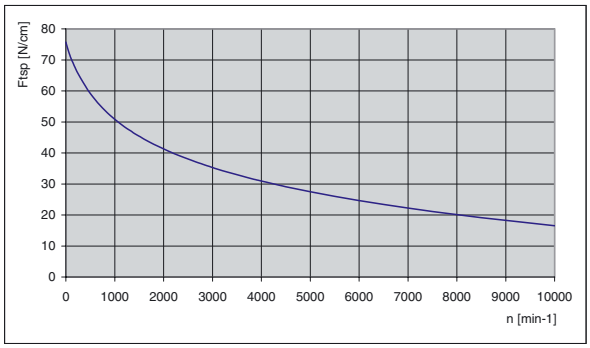
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	75,70	800	53,70	1900	42,02	4500	29,13
20	74,59	900	52,21	2000	41,28	5000	27,50
40	73,55	1000	50,85	2200	39,89	5500	26,01
60	72,57	1100	49,59	2400	38,62	6000	24,65
80	71,65	1200	48,43	2600	37,44	6500	23,40
100	70,78	1300	47,34	2800	36,33	7000	22,23
200	67,13	1400	46,32	3000	35,30	7500	21,14
300	64,18	1440	45,93	3200	34,33	8000	20,12
400	61,53	1500	45,36	3400	33,41	8500	19,15
500	59,21	1600	44,46	3600	32,55	9000	18,24
600	57,16	1700	43,60	3800	31,72	9500	17,38
700	55,34	1800	42,79	4000	30,94	10000	16,56

Tooth shear strenght / rpm

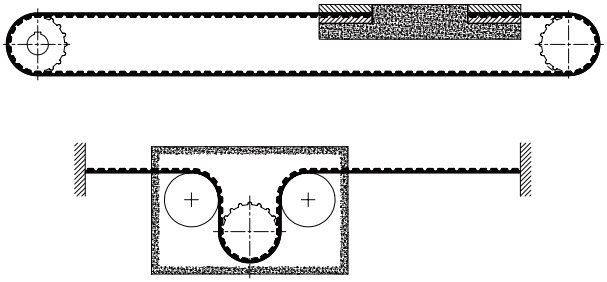


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



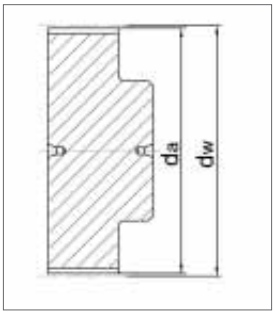
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt teeth $d_{min} = 50$ mm

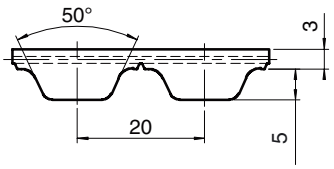
Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 120$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
18	55,45	57,29	**47**	147,75	149,60	**76**	240,05	241,94	**105**	332,35	334,21
19	58,60	60,48	**48**	150,95	152,78	**77**	243,25	245,09	**106**	335,55	337,40
20	61,80	63,66	**49**	154,10	155,97	**78**	246,40	248,24	**107**	338,75	340,58
21	65,00	66,84	**50**	157,30	159,15	**79**	249,60	251,46	**108**	341,90	343,76
22	68,15	70,03	**51**	160,50	162,33	**80**	252,80	254,64	**109**	345,10	346,95
23	71,35	73,20	**52**	163,65	165,52	**81**	255,95	257,82	**110**	348,30	350,13
24	74,55	76,39	**53**	166,85	168,70	**82**	259,15	261,00	**111**	351,45	353,31
25	77,70	79,58	**54**	170,05	171,88	**83**	262,30	264,19	**112**	354,65	356,50
26	80,90	82,76	**55**	173,20	175,06	**84**	265,50	267,37	**113**	357,80	359,68
27	84,10	85,95	**56**	176,40	178,25	**85**	268,70	270,52	**114**	361,00	362,86
28	87,25	89,12	**57**	179,60	181,43	**86**	271,90	273,74	**115**	364,19	366,04
29	90,45	92,21	**58**	182,75	184,61	**87**	275,05	276,92	**116**	367,39	369,23
30	93,65	95,49	**59**	185,95	187,80	**88**	278,25	280,10	**117**	370,56	372,41
31	96,80	98,67	**60**	189,10	190,98	**89**	281,45	283,28	**118**	373,74	375,59
32	100,00	101,86	**61**	192,30	194,16	**90**	284,60	286,47	**119**	376,93	378,78
33	103,20	105,04	**62**	195,50	197,35	**91**	287,80	289,65	**120**	380,11	381,96
34	106,40	108,19	**63**	198,65	200,53	**92**	291,00	292,84			
35	109,55	111,41	**64**	201,85	203,71	**93**	294,20	296,02			
36	112,75	114,59	**65**	205,05	206,90	**94**	297,35	299,20			
37	115,90	117,77	**66**	208,20	210,08	**95**	300,55	302,39			
38	119,10	120,95	**67**	211,40	213,26	**96**	303,70	305,57			
39	122,30	124,14	**68**	214,60	216,44	**97**	306,90	308,75			
40	125,45	127,32	**69**	217,75	219,63	**98**	310,10	311,93			
41	128,65	130,50	**70**	220,95	222,81	**99**	313,25	315,12			
42	131,85	133,69	**71**	224,15	225,99	**100**	316,45	318,30			
43	135,00	136,87	**72**	227,30	229,18	**101**	319,65	321,48			
44	138,20	140,05	**73**	230,50	232,33	**102**	322,80	324,66			
45	141,40	143,24	**74**	233,70	235,54	**103**	326,00	327,85			
46	144,55	146,42	**75**	236,90	238,72	**104**	329,20	331,03			



AT20



Belt characteristics

- Polyurethane timing belt with steel tension cords.
- Metric pitch 20 mm
- Tooth profile and dimension are optimised to guarantee uniform load distribution and minimum deformation under load.
- High resistance and low stretch steel cords to guarantee high stability and low elongation
- Reduced polygonal effect with reduced drive vibration.
- Particularly suitable for linear drives and heavy power transmission applications with high axial and angular positioning accuracy.

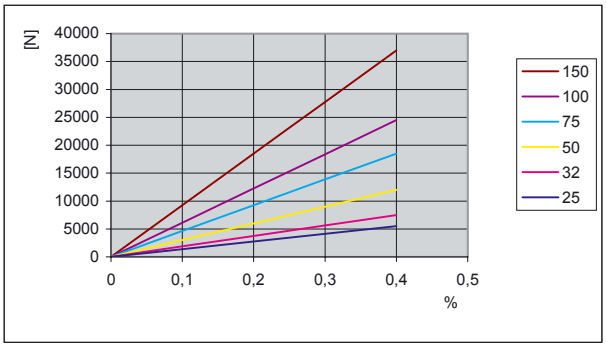
- Width tolerance: ±1,0 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,4 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
25	5500	2750	19030	1375000	0,24
32	7500	3750	25950	1875000	0,31
50	12000	6000	41520	3000000	0,48
75	18500	9250	64010	4625000	0,73
100	24500	12250	84770	6125000	0,97
150	37000	18500	128020	9250000	1,45

Other widths are available on request.

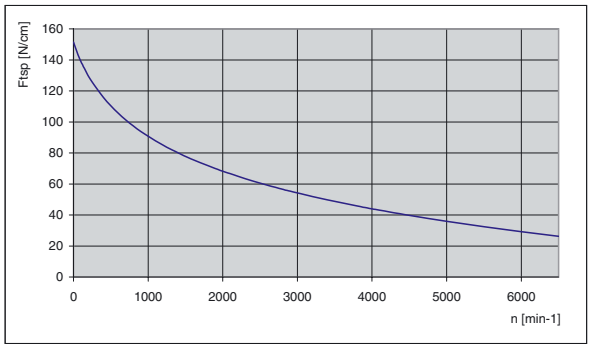
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	151,40	800	97,44	1900	69,96	4500	39,72
20	148,56	900	93,93	2000	68,22	5000	35,90
40	145,89	1000	90,73	2200	64,97	5500	32,42
60	143,38	1100	87,77	2400	61,98	6000	29,23
80	141,01	1200	85,02	2600	59,20	6500	26,29
100	138,78	1300	82,47	2800	56,62		
200	129,43	1400	80,07	3000	54,20		
300	122,28	1440	79,16	3200	51,92		
400	115,96	1500	77,82	3400	49,77		
500	110,45	1600	75,70	3600	47,74		
600	105,61	1700	73,69	3800	45,80		
700	101,31	1800	71,77	4000	43,96		

Tooth shear strenght / rpm

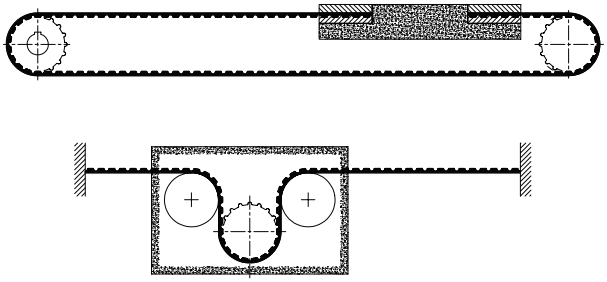


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



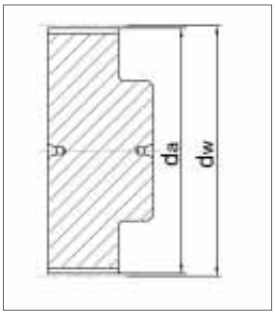
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt teeth $d_{min} = 120$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 180$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
18	111,75	114,59	**47**	296,35	299,21	**76**	480,95	483,82	**105**	665,60	668,43
19	118,10	120,95	**48**	302,70	305,58	**77**	487,35	490,19	**106**	671,95	674,80
20	124,50	127,32	**49**	309,10	311,93	**78**	493,70	496,56	**107**	678,30	681,17
21	130,75	133,69	**50**	315,45	318,30	**79**	500,05	502,91	**108**	684,70	687,54
22	137,20	140,05	**51**	321,80	324,67	**80**	506,45	509,28	**109**	691,05	693,89
23	143,55	146,42	**52**	328,20	331,03	**81**	512,80	515,65	**110**	697,40	700,26
24	149,95	152,78	**53**	334,55	337,40	**82**	519,15	522,02	**111**	703,80	706,63
25	156,30	159,15	**54**	340,90	343,76	**83**	525,55	528,39	**112**	710,15	712,99
26	162,65	165,52	**55**	347,30	350,13	**84**	531,90	534,74	**113**	716,50	719,36
27	169,05	171,88	**56**	353,65	356,50	**85**	538,25	541,11	**114**	722,90	725,72
28	175,40	178,25	**57**	360,00	362,86	**86**	544,60	547,48	**115**	729,24	732,09
29	181,75	184,62	**58**	366,40	369,23	**87**	551,00	553,85	**116**	735,61	738,46
30	188,15	190,99	**59**	372,75	375,59	**88**	557,35	560,22	**117**	741,96	744,83
31	194,50	197,35	**60**	379,10	381,96	**89**	563,70	566,57	**118**	748,34	751,19
32	200,85	203,72	**61**	385,45	388,33	**90**	570,10	572,94	**119**	754,70	757,56
33	207,20	210,09	**62**	391,85	394,69	**91**	576,45	579,31	**120**	761,07	763,93
34	213,60	216,44	**63**	398,20	401,06	**92**	582,85	585,67			
35	219,95	222,81	**64**	404,55	407,43	**93**	589,20	592,04			
36	226,35	229,18	**65**	410,95	413,79	**94**	595,55	598,40			
37	232,70	235,54	**66**	417,30	420,16	**95**	601,90	604,77			
38	239,05	241,91	**67**	423,65	426,52	**96**	608,30	611,14			
39	245,45	248,27	**68**	430,05	432,89	**97**	614,65	617,50			
40	251,80	254,64	**69**	436,40	439,26	**98**	621,00	623,87			
41	258,15	261,01	**70**	442,80	445,63	**99**	627,35	630,24			
42	264,50	267,37	**71**	449,15	451,99	**100**	633,75	636,60			
43	270,90	273,74	**72**	455,50	458,36	**101**	640,10	642,97			
44	277,25	280,10	**73**	461,85	464,73	**102**	646,50	649,34			
45	283,60	286,47	**74**	468,25	471,08	**103**	652,85	655,71			
46	290,00	292,84	**75**	474,60	477,45	**104**	659,20	662,06			



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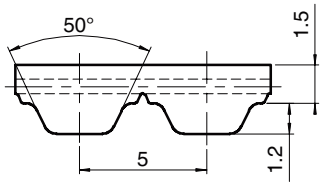


Belt characteristics

- High performance polyurethane timing belt with HPL steel tension cords.
- Metric pitch 5,0 mm
- Specially designed for linear drives
- Tension cords with increased allowable tensile load compared to standard for lower elongation.
- Produced with special pretension and pitch tolerance to guarantee high positioning precision in linear drives.

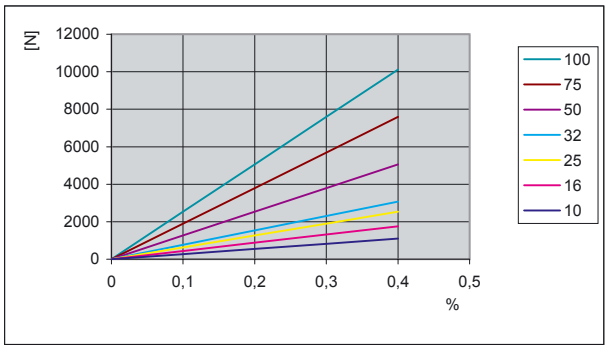
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
10	1100	4000	275000	0,04
16	1760	6400	440000	0,06
25	2530	9200	632500	0,10
32	3080	11200	770000	0,12
50	5060	18400	1265000	0,19
75	7590	27600	1897500	0,29
100	10120	36800	2530000	0,38

Other widths are available on request.

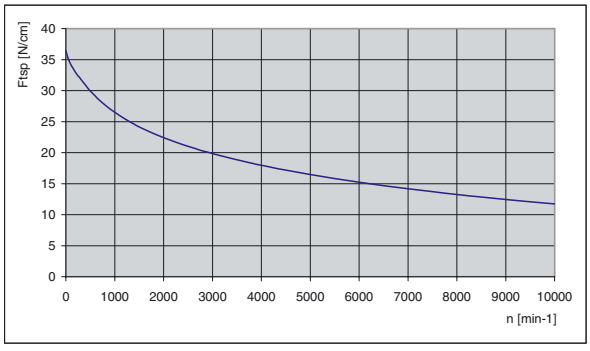
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	36,40	800	27,69	1900	22,73	4500	17,18
20	35,88	900	27,06	2000	22,42	5000	16,47
40	35,40	1000	26,49	2200	21,82	5500	15,83
60	34,97	1100	25,96	2400	21,28	6000	15,24
80	34,59	1200	25,47	2600	20,77	6500	14,69
100	34,24	1300	25,01	2800	20,29	7000	14,18
200	32,92	1400	24,57	3000	19,85	7500	13,71
300	31,92	1440	24,41	3200	19,43	8000	13,26
400	30,89	1500	24,16	3400	19,03	8500	12,85
500	29,95	1600	23,78	3600	18,66	9000	12,45
600	29,12	1700	23,41	3800	18,30	9500	12,07
700	28,37	1800	23,07	4000	17,96	10000	11,72

Tooth shear strenght / rpm

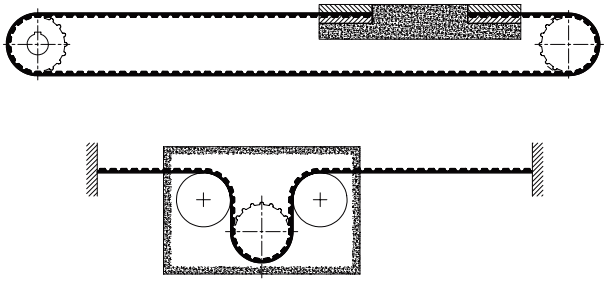


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



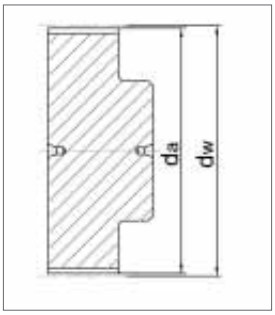
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt teeth $d_{min} = 40$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 60$ mm

Timing pulleys

z	d_a	d_w	z	d_a	d_w	z	d_a	d_w	z	d_a	d_w
15	22,65	23,88	**44**	68,80	70,05	**73**	114,95	116,22	**102**	161,15	162,38
16	24,20	25,47	**45**	70,40	71,64	**74**	116,55	117,81	**103**	162,70	163,97
17	25,80	27,06	**46**	72,00	73,23	**75**	118,15	119,40	**104**	164,30	165,57
18	27,40	28,65	**47**	73,55	74,82	**76**	119,75	120,99	**105**	165,90	167,16
19	29,00	30,25	**48**	75,15	76,42	**77**	121,35	122,58	**106**	167,50	168,75
20	30,60	31,83	**49**	76,75	78,01	**78**	122,90	124,18	**107**	169,10	170,34
21	32,20	33,43	**50**	78,35	79,60	**79**	124,50	125,77	**108**	170,70	171,94
22	33,80	35,02	**51**	79,95	81,19	**80**	126,10	127,36	**109**	172,25	173,53
23	35,40	36,62	**52**	81,55	82,78	**81**	127,70	128,95	**110**	173,85	175,12
24	37,00	38,21	**53**	83,10	84,38	**82**	129,30	130,54	**111**	175,45	176,71
25	38,60	39,80	**54**	84,70	85,97	**83**	130,90	132,14	**112**	177,05	178,30
26	40,20	41,39	**55**	86,30	87,54	**84**	132,45	133,73	**113**	178,65	179,84
27	41,80	42,98	**56**	87,90	89,15	**85**	134,05	135,32	**114**	180,25	181,49
28	43,35	44,58	**57**	89,50	90,74	**86**	135,65	136,91	**115**	181,85	183,08
29	44,95	46,17	**58**	91,10	92,34	**87**	137,25	138,50	**116**	183,45	184,67
30	46,55	47,76	**59**	92,65	93,93	**88**	138,85	140,10	**117**	185,00	186,26
31	48,15	49,35	**60**	94,25	95,52	**89**	140,45	141,69	**118**	186,60	187,86
32	49,70	50,94	**61**	95,85	97,11	**90**	142,05	143,28	**119**	188,20	189,45
33	51,30	52,54	**62**	97,45	98,70	**91**	143,60	144,87	**120**	189,80	191,04
34	52,85	54,13	**63**	99,05	100,30	**92**	145,20	146,46			
35	54,45	55,72	**64**	100,65	101,89	**93**	146,80	148,06			
36	56,05	57,31	**65**	102,25	103,48	**94**	148,40	149,65			
37	57,65	58,90	**66**	103,80	105,07	**95**	150,00	151,24			
38	59,25	60,50	**67**	105,40	106,66	**96**	151,60	152,83			
39	60,85	62,09	**68**	107,00	108,26	**97**	153,15	154,42			
40	62,45	63,66	**69**	108,60	109,85	**98**	154,75	156,02			
41	64,00	65,27	**70**	110,20	111,44	**99**	156,35	157,61			
42	65,60	66,86	**71**	111,80	113,03	**100**	157,95	159,20			
43	67,30	68,46	**72**	113,35	114,62	**101**	159,55	160,79			



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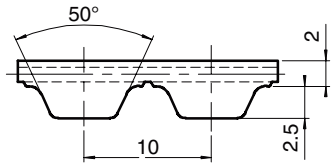


Belt characteristics

- High performance polyurethane timing belt with HPL steel tension cords.
- Metric pitch 10 mm
- Specially designed for linear drives
- Tension cords with increased allowable tensile load compared to standard for lower elongation.
- Produced with special pretension and pitch tolerance to guarantee high positioning precision in linear drives.

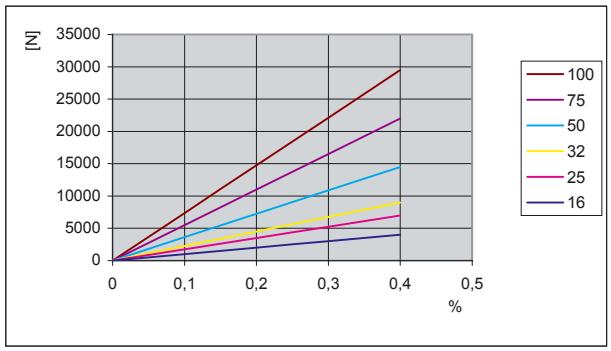
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
16	4000	13840	1000000	0,11
25	7000	24220	1750000	0,17
32	9000	31140	2250000	0,22
50	14500	50170	3625000	0,35
75	22000	76120	5500000	0,52
100	29500	102070	7375000	0,69

Other widths are available on request.

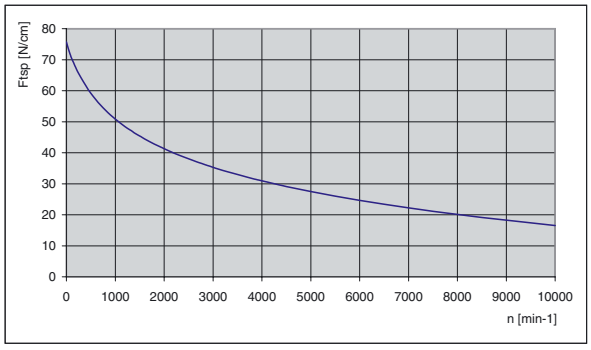
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	75,70	800	53,70	1900	42,02	4500	29,13
20	74,59	900	52,21	2000	41,28	5000	27,50
40	73,55	1000	50,85	2200	39,89	5500	26,01
60	72,57	1100	49,59	2400	38,62	6000	24,65
80	71,65	1200	48,43	2600	37,44	6500	23,40
100	70,78	1300	47,34	2800	36,33	7000	22,23
200	67,13	1400	46,32	3000	35,30	7500	21,14
300	64,18	1440	45,93	3200	34,33	8000	20,12
400	61,53	1500	45,36	3400	33,41	8500	19,15
500	59,21	1600	44,46	3600	32,55	9000	18,24
600	57,16	1700	43,60	3800	31,72	9500	17,38
700	55,34	1800	42,79	4000	30,94	10000	16,56

Tooth shear strenght / rpm

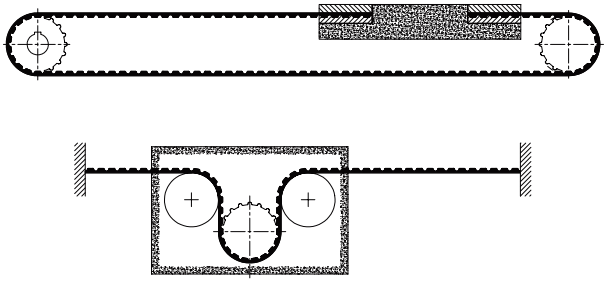


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



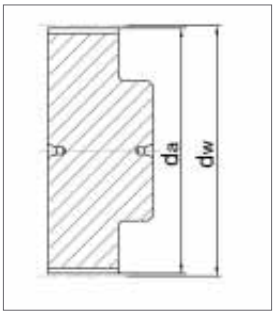
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt teeth $d_{min} = 80$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 150$ mm

Timing pulleys

z	d_a	d_w	z	d_a	d_w	z	d_a	d_w	z	d_a	d_w
18	55,45	57,29	**47**	147,75	149,60	**76**	240,05	241,94	**105**	332,35	334,21
19	58,60	60,48	**48**	150,95	152,78	**77**	243,25	245,09	**106**	335,55	337,40
20	61,80	63,66	**49**	154,10	155,97	**78**	246,40	248,24	**107**	338,75	340,58
21	65,00	66,84	**50**	157,30	159,15	**79**	249,60	251,46	**108**	341,90	343,76
22	68,15	70,03	**51**	160,50	162,33	**80**	252,80	254,64	**109**	345,10	346,95
23	71,35	73,20	**52**	163,65	165,52	**81**	255,95	257,82	**110**	348,30	350,13
24	74,55	76,39	**53**	166,85	168,70	**82**	259,15	261,00	**111**	351,45	353,31
25	77,70	79,58	**54**	170,05	171,88	**83**	262,30	264,19	**112**	354,65	356,50
26	80,90	82,76	**55**	173,20	175,06	**84**	265,50	267,37	**113**	357,80	359,68
27	84,10	85,95	**56**	176,40	178,25	**85**	268,70	270,52	**114**	361,00	362,86
28	87,25	89,12	**57**	179,60	181,43	**86**	271,90	273,74	**115**	364,19	366,04
29	90,45	92,21	**58**	182,75	184,61	**87**	275,05	276,92	**116**	367,39	369,23
30	93,65	95,49	**59**	185,95	187,80	**88**	278,25	280,10	**117**	370,56	372,41
31	96,80	98,67	**60**	189,10	190,98	**89**	281,45	283,28	**118**	373,74	375,59
32	100,00	101,86	**61**	192,30	194,16	**90**	284,60	286,47	**119**	376,93	378,78
33	103,20	105,04	**62**	195,50	197,35	**91**	287,80	289,65	**120**	380,11	381,96
34	106,40	108,19	**63**	198,65	200,53	**92**	291,00	292,84			
35	109,55	111,41	**64**	201,85	203,71	**93**	294,20	296,02			
36	112,75	114,59	**65**	205,05	206,90	**94**	297,35	299,20			
37	115,90	117,77	**66**	208,20	210,08	**95**	300,55	302,39			
38	119,10	120,95	**67**	211,40	213,26	**96**	303,70	305,57			
39	122,30	124,14	**68**	214,60	216,44	**97**	306,90	308,75			
40	125,45	127,32	**69**	217,75	219,63	**98**	310,10	311,93			
41	128,65	130,50	**70**	220,95	222,81	**99**	313,25	315,12			
42	131,85	133,69	**71**	224,15	225,99	**100**	316,45	318,30			
43	135,00	136,87	**72**	227,30	229,18	**101**	319,65	321,48			
44	138,20	140,05	**73**	230,50	232,33	**102**	322,80	324,66			
45	141,40	143,24	**74**	233,70	235,54	**103**	326,00	327,85			
46	144,55	146,42	**75**	236,90	238,72	**104**	329,20	331,03			



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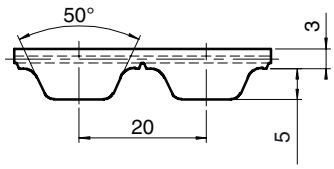


Belt characteristics

- High performance polyurethane timing belt with HPL steel tension cords.
- Metric pitch 20 mm
- Specially designed for linear drives
- Tension cords with increased allowable tensile load compared to standard for lower elongation.
- Produced with special pretension and pitch tolerance to guarantee high positioning precision in linear drives.

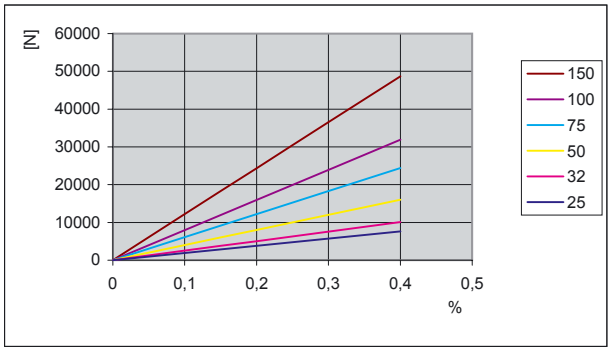
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
25	7600	29700	1890000	0,28
32	10100	39600	2520000	0,36
50	16000	62700	3990000	0,56
75	24400	95700	6090000	0,84
100	31900	125400	7980000	1,12
150	48700	191400	12180000	1,68

Other widths are available on request.

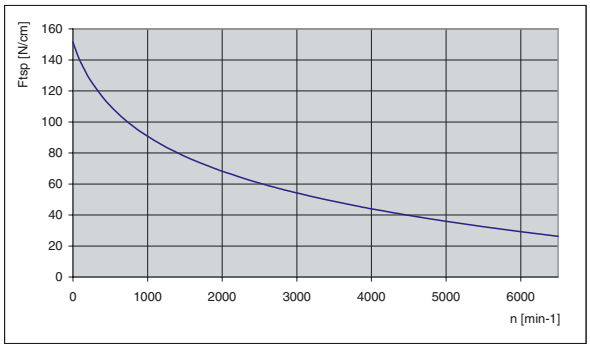
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	151,40	800	97,44	1900	69,96	4500	39,72
20	148,56	900	93,93	2000	68,22	5000	35,90
40	145,89	1000	90,73	2200	64,97	5500	32,42
60	143,38	1100	87,77	2400	61,98	6000	29,23
80	141,01	1200	85,02	2600	59,20	6500	26,29
100	138,78	1300	82,47	2800	56,62	7000	0,00
200	129,43	1400	80,07	3000	54,20	7500	0,00
300	122,28	1440	79,16	3200	51,92	8000	0,00
400	115,96	1500	77,82	3400	49,77	8500	0,00
500	110,45	1600	75,70	3600	47,74	9000	0,00
600	105,61	1700	73,69	3800	45,80	9500	0,00
700	101,31	1800	71,77	4000	43,96	10000	0,00

Tooth shear strenght / rpm

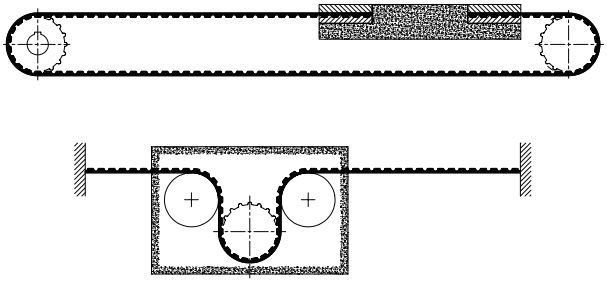


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



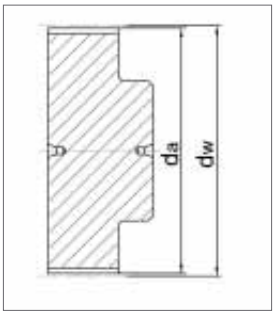
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt teeth $d_{min} = 160$ mm

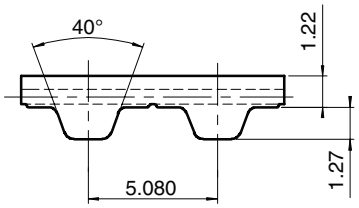
Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 250$ mm

Timing pulleys

z	d_a	d_w	z	d_a	d_w	z	d_a	d_w	z	d_a	d_w
18	111,75	114,59	**47**	296,35	299,21	**76**	480,95	483,82	**105**	665,60	668,43
19	118,10	120,95	**48**	302,70	305,58	**77**	487,35	490,19	**106**	671,95	674,80
20	124,50	127,32	**49**	309,10	311,93	**78**	493,70	496,56	**107**	678,30	681,17
21	130,75	133,69	**50**	315,45	318,30	**79**	500,05	502,91	**108**	684,70	687,54
22	137,20	140,05	**51**	321,80	324,67	**80**	506,45	509,28	**109**	691,05	693,89
23	143,55	146,42	**52**	328,20	331,03	**81**	512,80	515,65	**110**	697,40	700,26
24	149,95	152,78	**53**	334,55	337,40	**82**	519,15	522,02	**111**	703,80	706,63
25	156,30	159,15	**54**	340,90	343,76	**83**	525,55	528,39	**112**	710,15	712,99
26	162,65	165,52	**55**	347,30	350,13	**84**	531,90	534,74	**113**	716,50	719,36
27	169,05	171,88	**56**	353,65	356,50	**85**	538,25	541,11	**114**	722,90	725,72
28	175,40	178,25	**57**	360,00	362,86	**86**	544,60	547,48	**115**	729,24	732,09
29	181,75	184,62	**58**	366,40	369,23	**87**	551,00	553,85	**116**	735,61	738,46
30	188,15	190,99	**59**	372,75	375,59	**88**	557,35	560,22	**117**	741,96	744,83
31	194,50	197,35	**60**	379,10	381,96	**89**	563,70	566,57	**118**	748,34	751,19
32	200,85	203,72	**61**	385,45	388,33	**90**	570,10	572,94	**119**	754,70	757,56
33	207,20	210,09	**62**	391,85	394,69	**91**	576,45	579,31	**120**	761,07	763,93
34	213,60	216,44	**63**	398,20	401,06	**92**	582,85	585,67			
35	219,95	222,81	**64**	404,55	407,43	**93**	589,20	592,04			
36	226,35	229,18	**65**	410,95	413,79	**94**	595,55	598,40			
37	232,70	235,54	**66**	417,30	420,16	**95**	601,90	604,77			
38	239,05	241,91	**67**	423,65	426,52	**96**	608,30	611,14			
39	245,45	248,27	**68**	430,05	432,89	**97**	614,65	617,50			
40	251,80	254,64	**69**	436,40	439,26	**98**	621,00	623,87			
41	258,15	261,01	**70**	442,80	445,63	**99**	627,35	630,24			
42	264,50	267,37	**71**	449,15	451,99	**100**	633,75	636,60			
43	270,90	273,74	**72**	455,50	458,36	**101**	640,10	642,97			
44	277,25	280,10	**73**	461,85	464,73	**102**	646,50	649,34			
45	283,60	286,47	**74**	468,25	471,08	**103**	652,85	655,71			
46	290,00	292,84	**75**	474,60	477,45	**104**	659,20	662,06			



XL



Belt characteristics

- Polyurethane timing belt with trapezoidal tooth profile according to DIN/ISO 5296 with steel tension cords.
- Imperial pitch 1/5" = 5,08 mm
- Allow to use small diameter pulley.
- Mainly used in applications where inch pitch is an advantage (USA / UK)

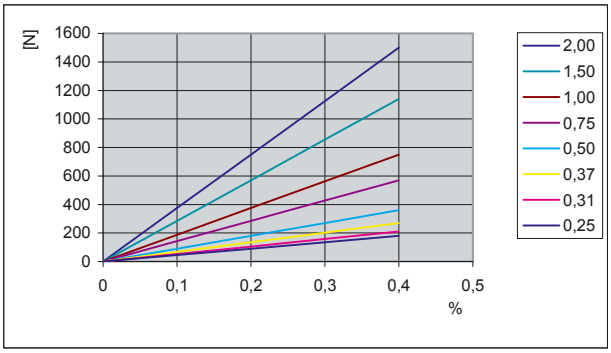
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b Code /mm	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]]	Breaking load Type M F_{Br} [N]	Specific spring rate C_{spez} [N]	Weight per metre [kg/m]
025 / 6,35	180	90	750	45000	0,015
031 / 7,94	210	105	875	52500	0,019
037 / 9,53	270	135	1125	67500	0,023
050 / 12,7	360	180	1500	90000	0,031
075 / 19,1	570	285	2375	142500	0,046
100 / 25,4	750	375	3125	187500	0,061
150 / 38,1	1140	570	4750	285000	0,092
200 / 50,8	1500	750	6250	375000	0,122

Other widths are available on request.

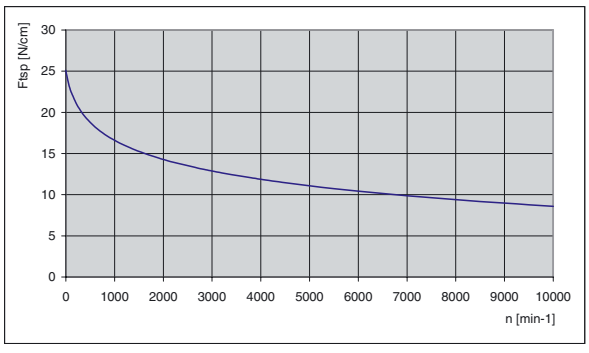
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	25,10	800	17,32	1900	14,46	4500	11,45
20	24,46	900	16,94	2000	14,28	5000	11,08
40	23,90	1000	16,60	2200	13,96	5500	10,74
60	23,42	1100	16,29	2400	13,66	6000	10,43
80	23,00	1200	16,01	2600	13,38	6500	10,14
100	22,63	1300	15,74	2800	13,12	7000	9,87
200	21,24	1400	15,49	3000	12,88	7500	9,63
300	20,22	1440	15,40	3200	12,65	8000	9,39
400	19,42	1500	15,26	3400	12,44	8500	9,17
500	18,77	1600	15,04	3600	12,24	9000	8,97
600	18,22	1700	14,84	3800	12,05	9500	8,77
700	17,74	1800	14,64	4000	11,87	10000	8,59

Tooth shear strenght / rpm

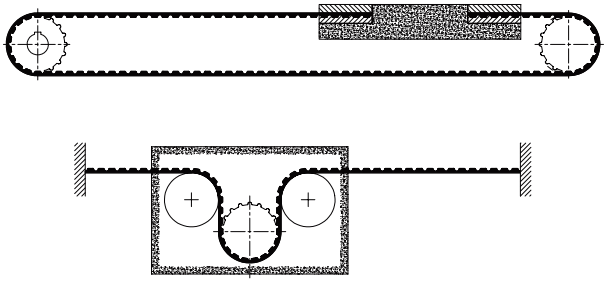


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



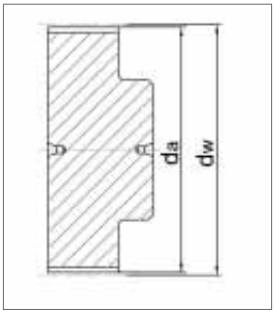
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 10$
- Idler running on belt teeth $d_{min} = 30$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt back $d_{min} = 30$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
10	15,66	16,17	**39**	62,55	63,06	**68**	109,45	109,96	**97**	156,34	156,85
11	17,28	17,79	**40**	64,17	64,68	**69**	111,06	111,57	**98**	157,96	158,47
12	18,89	19,40	**41**	65,79	66,30	**70**	112,68	113,19	**99**	159,57	160,08
13	20,51	21,02	**42**	67,40	67,91	**71**	114,30	114,81	**100**	161,19	161,70
14	22,13	22,64	**43**	69,02	69,53	**72**	115,92	116,43	**101**	162,81	163,32
15	23,74	24,25	**44**	70,64	71,15	**73**	117,53	118,04	**102**	164,42	164,93
16	25,36	25,87	**45**	72,26	72,77	**74**	119,15	119,66	**103**	166,04	166,55
17	26,98	27,49	**46**	73,87	74,38	**75**	120,77	121,28	**104**	167,66	168,17
18	28,60	29,11	**47**	75,49	76,00	**76**	122,38	122,89	**105**	169,28	169,79
19	30,21	30,72	**48**	77,11	77,62	**77**	124,00	124,51	**106**	170,89	171,40
20	31,83	32,34	**49**	78,72	79,23	**78**	125,62	126,13	**107**	172,51	173,02
21	33,45	33,96	**50**	80,34	80,85	**79**	127,23	127,74	**108**	174,13	174,64
22	35,06	35,57	**51**	81,96	82,47	**80**	128,85	129,36	**109**	175,74	176,25
23	36,68	37,19	**52**	83,57	84,08	**81**	130,47	130,98	**110**	177,36	177,87
24	38,30	38,81	**53**	85,19	85,70	**82**	132,08	132,59	**111**	178,98	179,49
25	39,92	40,43	**54**	86,81	87,32	**83**	133,70	134,21	**112**	180,59	181,10
26	41,53	42,04	**55**	88,42	88,93	**84**	135,32	135,83	**113**	182,21	182,72
27	43,15	43,66	**56**	90,04	90,55	**85**	136,93	137,44	**114**	183,83	184,34
28	44,77	45,28	**57**	91,66	92,17	**86**	138,55	139,06	**115**	185,44	185,95
29	46,38	46,89	**58**	93,28	93,79	**87**	140,17	140,68	**116**	187,06	187,57
30	48,00	48,51	**59**	94,89	95,40	**88**	141,75	142,30	**117**	188,68	189,19
31	49,62	50,13	**60**	96,51	97,02	**89**	143,36	143,91	**118**	190,30	190,81
32	51,23	51,74	**61**	98,13	98,64	**90**	145,02	145,53	**119**	191,91	192,42
33	52,85	53,36	**62**	99,74	100,25	**91**	146,64	147,15	**120**	193,53	194,04
34	54,47	54,98	**63**	101,36	101,87	**92**	148,25	148,76			
35	56,09	56,60	**64**	102,98	103,49	**93**	149,87	150,38			
36	57,70	58,21	**65**	104,60	105,11	**94**	151,49	152,00			
37	59,32	59,83	**66**	106,21	106,72	**95**	153,11	153,62			
38	60,94	61,45	**67**	107,83	108,34	**96**	154,72	155,23			



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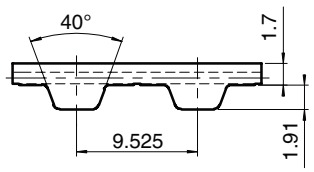


Belt characteristics

- Polyurethane timing belt with trapezoidal tooth profile according to DIN/ISO 5296 with steel tension cords.
- Imperial pitch 3/8" = 9,525 mm
- Allow to use small diameter pulley.
- Mainly used in applications where inch pitch is an advantage (USA / UK)

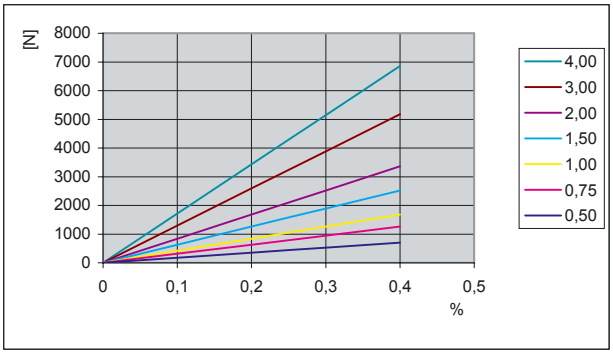
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b Code /mm	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
050 / 12,7	700	350	2500	175000	0,049
075 / 19,1	1260	630	4500	315000	0,073
100 / 25,4	1680	840	6000	420000	0,098
150 / 38,1	2520	1260	9000	630000	0,146
200 / 50,8	3360	1680	12000	840000	0,195
300 / 76,2	5180	2590	18500	1295000	0,293
400 / 101,6	6860	3430	24500	1715000	0,390

Other widths are available on request.

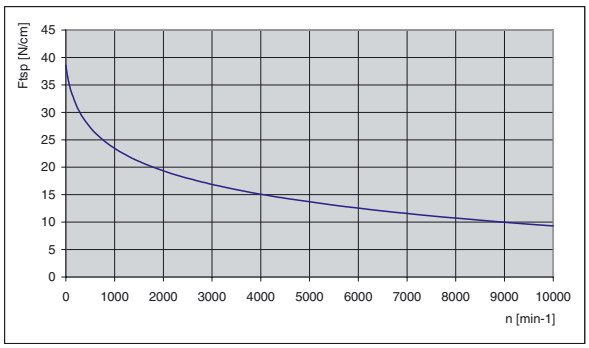
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	38,60	800	24,70	1900	19,66	4500	14,36
20	37,42	900	24,04	2000	19,35	5000	13,70
40	36,40	1000	23,44	2200	18,77	5500	13,10
60	35,51	1100	22,89	2400	18,24	6000	12,55
80	34,74	1200	22,38	2600	17,76	6500	12,05
100	34,07	1300	21,91	2800	17,30	7000	11,58
200	31,59	1400	21,48	3000	16,88	7500	11,14
300	29,79	1440	21,31	3200	16,48	8000	10,73
400	28,39	1500	21,07	3400	16,10	8500	10,35
500	27,25	1600	20,69	3600	15,75	9000	9,98
600	26,28	1700	20,33	3800	15,41	9500	9,64
700	25,44	1800	19,98	4000	15,09	10000	9,31

Tooth shear strenght / rpm

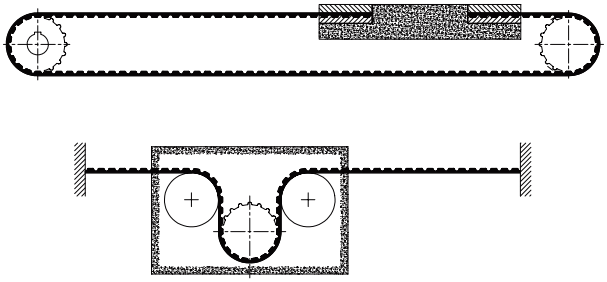


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



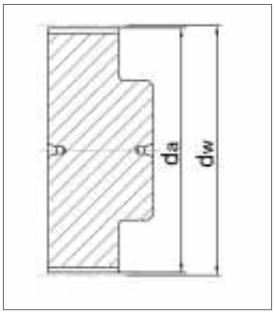
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt teeth $d_{min} = 60$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 60$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
10	29,56	30,32	**39**	117,47	118,24	**68**	205,41	206,17	**97**	293,33	294,09
11	32,59	33,35	**40**	120,52	121,27	**69**	208,44	209,20	**98**	296,36	297,12
12	35,62	36,38	**41**	123,55	124,30	**70**	211,47	212,23	**99**	299,40	300,15
13	38,65	39,41	**42**	126,58	127,33	**71**	214,50	215,26	**100**	302,43	303,18
14	41,68	42,44	**43**	129,61	130,36	**72**	217,53	218,29	**101**	305,46	306,21
15	44,71	45,47	**44**	132,64	133,39	**73**	220,56	221,32	**102**	308,49	309,24
16	47,74	48,50	**45**	135,67	136,44	**74**	223,59	224,35	**103**	311,52	312,29
17	50,77	51,53	**46**	138,70	139,47	**75**	226,62	227,38	**104**	314,55	315,32
18	53,80	54,56	**47**	141,73	142,50	**76**	229,65	230,41	**105**	317,58	318,35
19	56,83	57,61	**48**	144,76	145,53	**77**	232,70	233,46	**106**	320,61	321,38
20	59,88	60,64	**49**	147,80	148,56	**78**	235,73	236,49	**107**	323,64	324,41
21	62,91	63,67	**50**	150,83	151,59	**79**	238,76	239,52	**108**	326,69	327,44
22	65,94	66,70	**51**	153,86	154,62	**80**	241,79	242,55	**109**	329,72	330,47
23	68,97	69,73	**52**	156,89	157,65	**81**	244,82	245,58	**110**	332,75	333,50
24	72,00	72,76	**53**	159,92	160,68	**82**	247,85	248,61	**111**	335,78	336,53
25	75,03	75,80	**54**	162,95	163,71	**83**	250,88	251,64	**112**	338,81	339,56
26	78,06	78,83	**55**	166,00	166,76	**84**	253,91	254,67	**113**	341,84	342,61
27	81,09	81,86	**56**	169,03	169,79	**85**	256,94	257,70	**114**	344,87	345,64
28	84,12	84,89	**57**	172,06	172,82	**86**	259,97	260,73	**115**	347,90	348,67
29	87,15	87,92	**58**	175,09	175,85	**87**	263,02	263,78	**116**	350,93	351,70
30	90,20	90,95	**59**	178,12	178,88	**88**	266,05	266,81	**117**	353,96	354,73
31	93,23	93,98	**60**	181,15	181,91	**89**	269,08	269,84	**118**	357,00	357,76
32	96,26	97,01	**61**	184,18	184,94	**90**	272,11	272,87	**119**	360,03	360,79
33	99,29	100,04	**62**	187,21	187,97	**91**	275,14	275,90	**120**	363,07	363,82
34	102,32	103,07	**63**	190,24	191,00	**92**	278,17	278,93			
35	105,35	106,12	**64**	193,27	194,03	**93**	281,20	281,96			
36	108,38	109,15	**65**	196,30	197,06	**94**	284,23	285,00			
37	111,41	112,18	**66**	199,33	200,11	**95**	287,26	288,03			
38	114,44	115,21	**67**	202,38	203,14	**96**	290,30	291,06			



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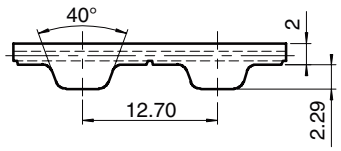


Belt characteristics

- Polyurethane timing belt with trapezoidal tooth profile according to DIN/ISO 5296 with steel tension cords.
- Imperial pitch 1/2" = 12,7 mm
- Allow to use small diameter pulley.
- Mainly used in applications where inch pitch is an advantage (USA / UK)

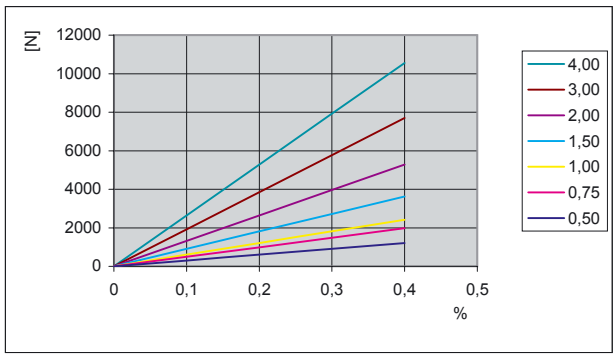
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b Code /mm	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
050 / 12,7	1210	605	4400	302500	0,05
075 / 19,1	1980	990	7200	495000	0,08
100 / 25,4	2420	1210	8800	605000	0,11
150 / 38,1	3630	1815	13200	907500	0,16
200 / 50,8	5280	2640	19200	1320000	0,22
300 / 76,2	7700	3850	28000	1925000	0,32
400 / 101,6	10560	5280	38400	2640000	0,43

Other widths are available on request.

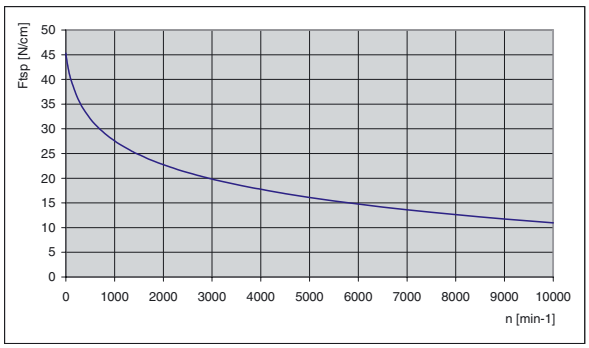
Load / Elongation [%]



Tooth shear strength

rpm	FUspez [N/cm]	rpm	FUspez [N/cm]	rpm	FUspez [N/cm]	rpm	FUspez [N/cm]
0	45,30	800	29,04	1900	23,11	4500	16,88
20	43,95	900	28,26	2000	22,74	5000	16,11
40	42,78	1000	27,55	2200	22,07	5500	15,41
60	41,77	1100	26,90	2400	21,44	6000	14,76
80	40,88	1200	26,31	2600	20,87	6500	14,17
100	40,11	1300	25,76	2800	20,34	7000	13,62
200	37,22	1400	25,25	3000	19,84	7500	13,11
300	35,07	1440	25,05	3200	19,37	8000	12,63
400	33,41	1500	24,77	3400	18,93	8500	12,18
500	32,05	1600	24,32	3600	18,51	9000	11,75
600	30,90	1700	23,89	3800	18,12	9500	11,35
700	29,91	1800	23,49	4000	17,75	10000	10,96

Tooth shear strenght / rpm

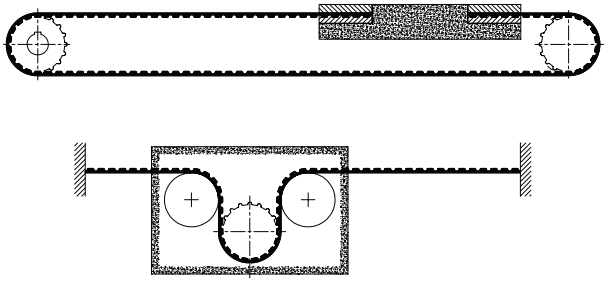


The specific load FUspez is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load FU transmissible by the belt in the drive is calculated by:

$F_U\ [N] = F_{Uspez} \cdot z_e \cdot b$

F_U [N]	= peripheral force
F_{Uspez} [N/cm]	= specific load
z_e	= number of teeth in mesh in the small pulley
z_{emax}	= max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax}	= 12 for ELATECH® M
z_{emax}	= 6 for ELATECH® V
b [cm]	= belt width in cm

Flexibility



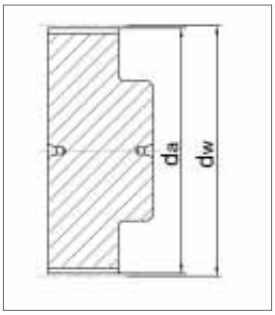
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 14$
- Idler running on belt teeth $d_{min} = 60$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 80$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
14	55,23	56,60	**43**	172,46	173,82	**72**	289,68	291,05	**101**	406,92	408,28
15	59,27	60,64	**44**	176,50	177,86	**73**	293,72	295,10	**102**	410,96	412,34
16	63,31	64,68	**45**	180,54	181,90	**74**	297,78	299,14	**103**	415,00	416,38
17	67,35	68,72	**46**	184,58	185,96	**75**	301,82	303,18	**104**	419,04	420,42
18	71,40	72,76	**47**	188,62	190,00	**76**	305,86	307,22	**105**	423,08	424,46
19	75,44	76,80	**48**	192,67	194,04	**77**	309,90	311,26	**106**	427,14	428,50
20	79,48	80,84	**49**	196,71	198,08	**78**	313,94	315,32	**107**	431,18	432,54
21	83,52	84,88	**50**	200,75	202,13	**79**	317,98	319,36	**108**	435,22	436,58
22	87,57	88,94	**51**	204,80	206,17	**80**	322,02	323,40	**109**	439,26	440,62
23	91,61	92,98	**52**	208,84	210,21	**81**	326,06	327,44	**110**	443,30	444,68
24	95,65	97,02	**53**	212,88	214,25	**82**	330,12	331,48	**111**	447,34	448,72
25	99,69	101,06	**54**	216,92	218,29	**83**	334,16	335,52	**112**	451,38	452,76
26	103,73	105,10	**55**	220,96	222,33	**84**	338,20	339,56	**113**	455,42	456,80
27	107,77	109,14	**56**	225,00	226,37	**85**	342,24	343,60	**114**	459,48	460,84
28	111,81	113,18	**57**	229,04	230,41	**86**	346,28	347,66	**115**	463,52	464,88
29	115,85	117,22	**58**	233,10	234,47	**87**	350,33	351,70	**116**	467,56	468,92
30	119,91	121,28	**59**	237,14	238,51	**88**	354,37	355,74	**117**	471,60	472,96
31	123,95	125,32	**60**	241,18	242,55	**89**	358,41	359,78	**118**	475,64	477,02
32	127,99	129,36	**61**	245,22	246,59	**90**	362,45	363,82	**119**	479,68	481,06
33	132,03	133,40	**62**	249,26	250,63	**91**	366,50	367,86	**120**	483,72	485,10
34	136,07	137,44	**63**	253,30	254,67	**92**	370,54	371,90			
35	140,11	141,48	**64**	257,34	258,71	**93**	374,58	375,94			
36	144,15	145,52	**65**	261,38	262,75	**94**	378,62	380,00			
37	148,20	149,56	**66**	265,44	266,81	**95**	382,66	384,04			
38	152,24	153,62	**67**	269,48	270,85	**96**	386,70	388,08			
39	156,28	157,66	**68**	273,52	274,89	**97**	390,74	392,12			
40	160,32	161,70	**69**	277,56	278,93	**98**	394,80	396,16			
41	164,36	165,74	**70**	281,60	282,97	**99**	398,84	400,20			
42	168,42	169,78	**71**	285,64	287,01	**100**	402,88	404,24			



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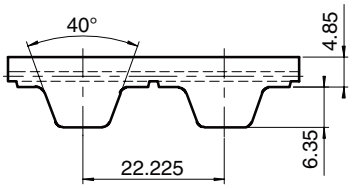


Belt characteristics

- Polyurethane timing belt with trapezoidal tooth profile according to DIN/ISO 5296 with steel tension cords.
- Imperial pitch 7/8" = 22,225 mm
- Mainly used in applications where inch pitch is an advantage (USA / UK)

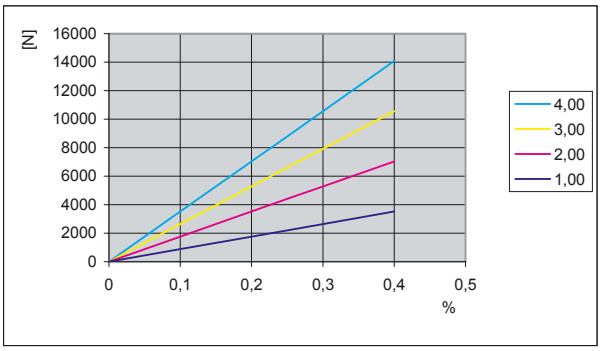
- Width tolerance: ±1,0 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,4 [mm]

Technical data

Belt width b Code /mm	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
100 / 25,4	3520	1760	15200	880000	0,26
200 / 50,8	7040	3520	30400	1760000	0,54
300 / 76,2	10560	5280	45600	2640000	0,80
400 / 101,6	14080	7040	60800	3520000	1,06

Other widths are available on request.

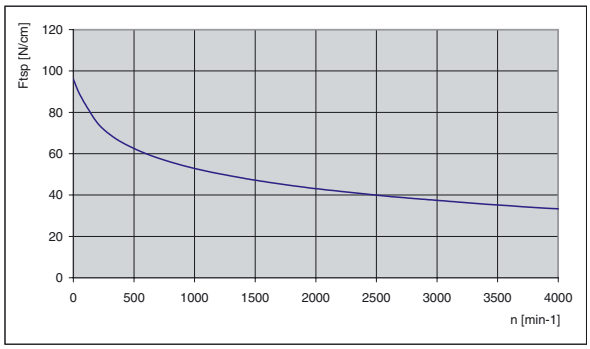
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	96,00	800	55,99	1900	43,86	4000	33,31
20	92,98	900	54,35	2000	43,14		
40	90,27	1000	52,88	2200	41,79		
60	87,85	1100	51,55	2400	40,56		
80	85,68	1200	50,33	2600	39,43		
100	83,73	1300	49,20	2800	38,37		
200	74,80	1400	48,16	2880	37,98		
300	69,42	1440	47,77	3000	37,40		
400	65,53	1500	47,19	3200	36,48		
500	62,48	1600	46,29	3400	35,62		
600	59,97	1700	45,43	3600	34,81		
700	57,84	1800	44,62	3800	34,04		

Tooth shear strenght / rpm

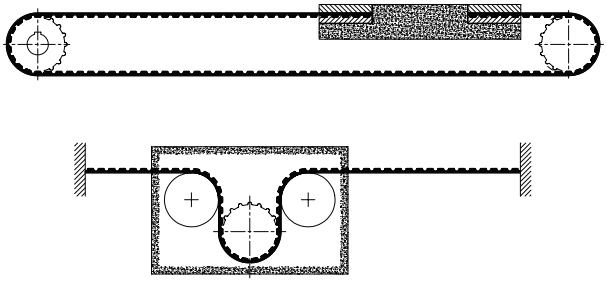


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



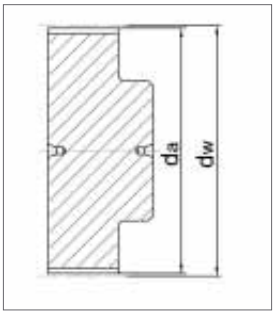
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt teeth $d_{min} = 150$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 180$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
18	127,34	124,55	**47**	332,49	329,70	**76**	537,65	534,84	**105**	742,80	740,01
19	134,41	131,62	**48**	339,57	336,77	**77**	544,72	541,93	**106**	749,87	747,08
20	141,48	138,68	**49**	346,66	343,87	**78**	551,79	549,00	**107**	756,96	754,15
21	148,55	145,76	**50**	353,73	350,93	**79**	558,88	556,07	**108**	764,03	761,22
22	155,64	152,84	**51**	360,80	358,00	**80**	565,95	563,15	**109**	771,10	768,30
23	162,71	159,91	**52**	367,87	365,07	**81**	573,02	570,22	**110**	778,17	775,37
24	169,78	167,00	**53**	374,94	372,14	**82**	580,09	577,29	**111**	785,26	782,44
25	176,85	174,07	**54**	382,01	379,21	**83**	587,18	584,36	**112**	792,33	789,51
26	183,94	181,13	**55**	389,08	386,30	**84**	594,25	591,43	**113**	799,40	796,60
27	191,01	188,20	**56**	396,17	393,37	**85**	601,32	598,60	**114**	806,47	803,67
28	198,08	195,27	**57**	403,24	400,44	**86**	608,39	605,61	**115**	813,54	810,74
29	205,15	202,37	**58**	410,31	407,51	**87**	615,46	612,68	**116**	820,63	817,81
30	212,22	209,44	**59**	417,38	414,58	**88**	622,55	619,75	**117**	827,70	824,88
31	219,31	216,51	**60**	424,47	421,68	**89**	629,62	626,82	**118**	834,77	831,95
32	226,38	223,58	**61**	431,54	428,75	**90**	636,69	633,89	**119**	841,84	839,03
33	233,45	230,66	**62**	438,61	435,90	**91**	643,76	640,96	**120**	848,93	846,12
34	240,52	237,73	**63**	445,68	442,90	**92**	650,85	648,04			
35	247,59	244,80	**64**	452,75	449,97	**93**	657,92	655,11			
36	254,68	251,87	**65**	459,84	457,05	**94**	664,99	662,18			
37	261,75	258,94	**66**	466,91	464,10	**95**	672,06	669,25			
38	268,82	266,02	**67**	473,98	471,20	**96**	679,13	676,33			
39	275,89	273,11	**68**	481,05	478,25	**97**	686,22	683,40			
40	282,98	280,18	**69**	488,12	485,32	**98**	693,29	690,47			
41	290,05	287,25	**70**	495,21	492,39	**99**	700,36	697,55			
42	297,12	294,33	**71**	502,28	499,48	**100**	707,43	704,62			
43	304,19	301,40	**72**	509,35	506,57	**101**	714,50	711,70			
44	311,26	308,47	**73**	516,42	513,63	**102**	721,59	718,77			
45	318,35	315,54	**74**	523,51	520,70	**103**	728,66	725,85			
46	325,42	322,61	**75**	530,58	527,77	**104**	735,73	732,92			



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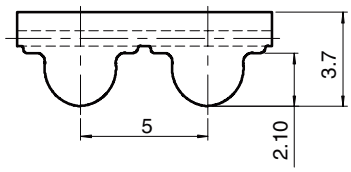


Belt characteristics

- Polyurethane timing belt with round tooth profile and high tensile load tension cords. Produced according to ISO 13050
- Metric pitch 5 mm
- The round tooth profile allows a uniform load distribution that guarantees high performances, high transmissible torque and precise tooth engagement.
- Widely used in linear positioning, light power transmission applications.

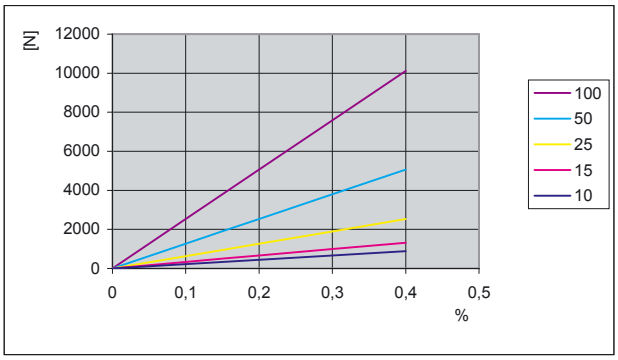
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
10	880	440	3200	220000	0,05
15	1320	660	4800	330000	0,07
25	2530	1265	9200	632500	0,12
50	5060	2530	18400	1265000	0,24
100	10120	5060	36800	2530000	0,48

Other widths are available on request.

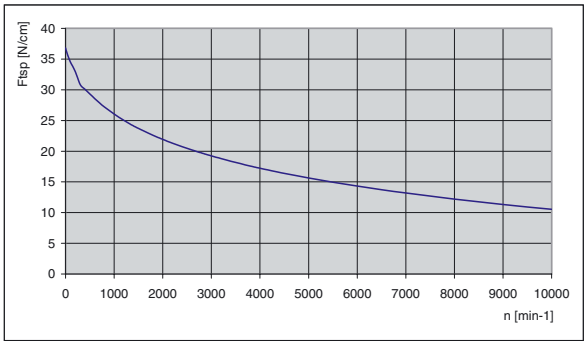
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	36,80	800	27,21	1900	22,24	4500	16,40
20	36,25	900	26,61	2000	21,91	5000	15,64
40	35,75	1000	26,05	2200	21,30	5500	14,95
60	35,30	1100	25,52	2400	20,72	6000	14,32
80	34,89	1200	25,03	2600	20,19	6500	13,74
100	34,52	1300	24,56	2800	19,69	7000	13,19
200	33,13	1400	24,13	3000	19,23	7500	12,68
300	30,87	1440	23,96	3200	18,78	8000	12,20
400	30,10	1500	23,71	3400	18,37	8500	11,75
500	29,31	1600	23,32	3600	17,97	9000	11,33
600	28,56	1700	22,94	3800	17,59	9500	10,92
700	27,86	1800	22,58	4000	17,23	10000	10,53

Tooth shear strenght / rpm

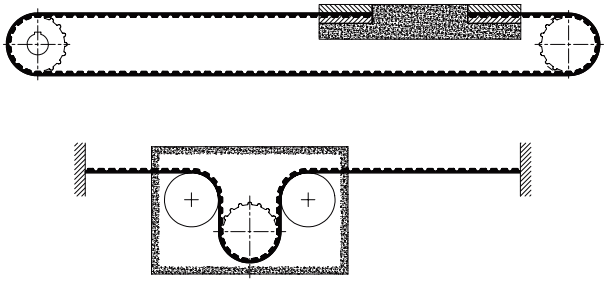


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



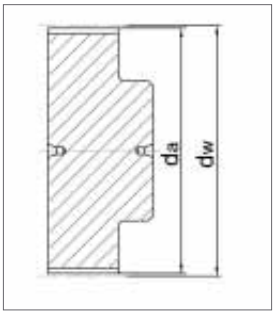
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 16$
- Idler running on belt teeth $d_{min} = 50$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 50$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
10	14,77	15,91	**39**	60,93	62,07	**68**	107,08	108,22	**97**	153,24	154,38
11	16,36	17,50	**40**	62,52	63,66	**69**	108,67	109,81	**98**	154,83	155,97
12	17,96	19,10	**41**	64,11	65,25	**70**	110,27	111,41	**99**	156,42	157,56
13	19,55	20,69	**42**	65,70	66,84	**71**	111,86	113,00	**100**	158,01	159,15
14	21,14	22,28	**43**	67,29	68,43	**72**	113,45	114,59	**101**	159,61	160,75
15	22,73	23,87	**44**	68,88	70,02	**73**	115,04	116,18	**102**	161,20	162,34
16	24,32	25,46	**45**	70,47	71,61	**74**	116,63	117,77	**103**	162,81	163,95
17	25,91	27,05	**46**	72,06	73,20	**75**	118,22	119,36	**104**	164,38	165,52
18	27,51	28,65	**47**	73,65	74,79	**76**	119,81	120,95	**105**	165,97	167,11
19	29,09	30,23	**48**	75,24	76,38	**77**	121,40	122,54	**106**	167,56	168,70
20	30,69	31,83	**49**	76,84	77,98	**78**	122,99	124,13	**107**	169,09	170,23
21	32,28	33,42	**50**	78,44	79,58	**79**	124,58	125,72	**108**	170,75	171,89
22	33,87	35,01	**51**	80,03	81,17	**80**	126,18	127,32	**109**	172,34	173,48
23	35,46	36,60	**52**	81,62	82,76	**81**	127,77	128,91	**110**	173,93	175,07
24	37,06	38,20	**53**	83,21	84,35	**82**	129,36	130,50	**111**	175,52	176,66
25	38,64	39,78	**54**	84,80	85,94	**83**	130,95	132,09	**112**	177,11	178,25
26	40,24	41,38	**55**	86,39	87,53	**84**	132,54	133,68	**113**	178,70	179,84
27	41,83	42,97	**56**	87,98	89,12	**85**	134,14	135,28	**114**	180,29	181,43
28	43,42	44,56	**57**	89,57	90,71	**86**	135,73	136,87	**115**	181,88	183,02
29	45,01	46,15	**58**	91,17	92,31	**87**	137,32	138,46	**116**	183,47	184,61
30	46,61	47,75	**59**	92,76	93,90	**88**	138,91	140,05	**117**	185,07	186,21
31	48,19	49,33	**60**	94,35	95,49	**89**	140,51	141,65	**118**	186,66	187,80
32	49,79	50,93	**61**	95,94	97,08	**90**	142,10	143,24	**119**	188,25	189,39
33	51,38	52,52	**62**	97,53	98,67	**91**	143,69	144,83	**120**	189,84	190,98
34	52,97	54,11	**63**	99,12	100,26	**92**	145,28	146,42			
35	54,56	55,70	**64**	100,72	101,86	**93**	146,87	148,01			
36	56,16	57,30	**65**	102,31	103,45	**94**	148,46	149,60			
37	57,75	58,89	**66**	103,90	105,04	**95**	150,06	151,20			
38	59,34	60,48	**67**	105,49	106,63	**96**	151,64	152,78			



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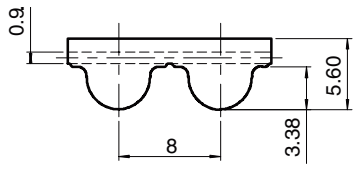


Belt characteristics

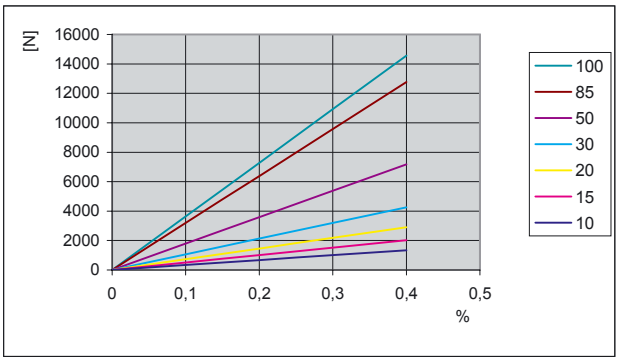
- Polyurethane timing belt with round tooth profile and high tensile load tension cords. Produced according to ISO 13050
- Metric pitch 8 mm
- The round tooth profile allows a uniform load distribution that guarantees high performances, high transmissible torque and precise tooth engagement.
- Widely used in linear positioning, medium power transmission applications.

- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
10	1340	670	5700	336000	0,07
15	2020	1010	8550	504000	0,10
20	2910	1455	12350	728000	0,14
30	4260	2130	18050	1064000	0,21
50	7170	3585	30400	1792000	0,35
85	12770	6385	54150	3192000	0,59
100	14560	7280	61750	3640000	0,69

Load / Elongation [%]

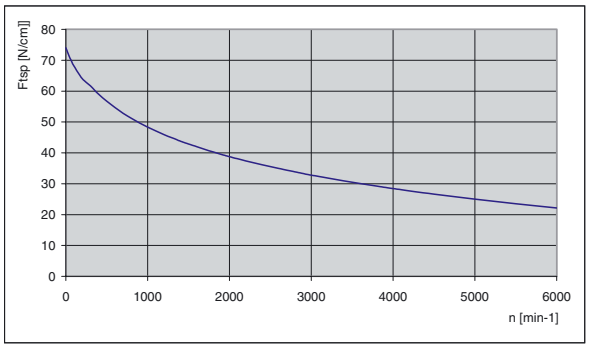


Other widths are available on request.

Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	74,00	800	51,20	1900	39,52	4500	26,63
20	72,62	900	49,71	2000	38,78	5000	25,00
40	71,34	1000	48,35	2200	37,39	5500	23,51
60	70,16	1100	47,09	2400	36,12	6000	22,15
80	69,07	1200	45,93	2600	34,94		
100	68,07	1300	44,84	2800	33,83		
200	64,09	1400	43,82	3000	32,80		
300	61,68	1440	43,43	3200	31,83		
400	59,03	1500	42,86	3400	30,91		
500	56,71	1600	41,96	3600	30,05		
600	54,66	1700	41,10	3800	29,22		
700	52,84	1800	40,29	4000	28,44		

Tooth shear strenght / rpm

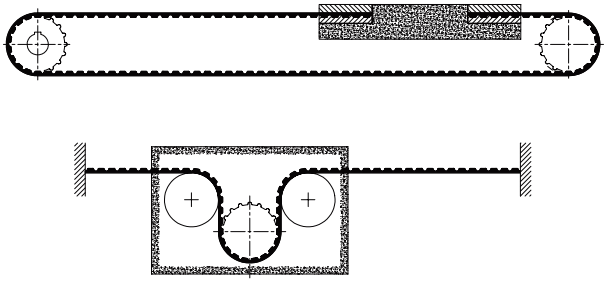


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



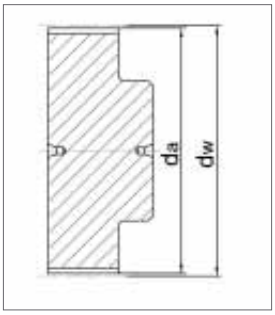
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt teeth $d_{min} = 50$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt back $d_{min} = 120$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
18	44,46	45,83	**47**	118,31	119,68	**76**	192,16	193,53	**105**	266,01	267,38
19	47,01	48,38	**48**	120,86	122,23	**77**	194,71	196,08	**106**	268,55	269,92
20	49,56	50,93	**49**	123,40	124,77	**78**	197,25	198,62	**107**	271,10	272,47
21	52,10	53,47	**50**	125,95	127,32	**79**	199,80	201,17	**108**	273,64	275,01
22	54,65	56,02	**51**	128,50	129,87	**80**	202,35	203,72	**109**	276,19	277,56
23	57,20	58,57	**52**	131,05	132,41	**81**	204,89	206,26	**110**	278,74	280,11
24	59,75	61,12	**53**	133,59	134,96	**82**	207,44	208,81	**111**	281,29	282,66
25	62,29	63,66	**54**	136,14	137,51	**83**	209,98	211,35	**112**	283,84	285,21
26	64,84	66,21	**55**	138,68	140,05	**84**	212,53	213,90	**113**	286,38	287,75
27	67,38	68,75	**56**	141,23	142,60	**85**	215,08	216,45	**114**	288,93	290,30
28	70,08	71,30	**57**	143,78	145,15	**86**	217,63	219,00	**115**	291,47	292,84
29	72,59	73,84	**58**	146,32	147,69	**87**	220,17	221,54	**116**	294,02	295,39
30	75,13	76,39	**59**	148,87	150,24	**88**	222,72	224,09	**117**	296,57	297,94
31	77,65	78,94	**60**	151,42	152,79	**89**	225,26	226,63	**118**	299,11	300,48
32	80,16	81,49	**61**	153,96	155,33	**90**	227,81	229,18	**119**	301,66	303,03
33	82,68	84,03	**62**	156,52	157,89	**91**	230,35	231,72	**120**	304,20	305,57
34	85,21	86,58	**63**	159,06	160,43	**92**	232,90	234,27			
35	87,76	89,12	**64**	161,60	162,97	**93**	235,45	236,82			
36	90,30	91,67	**65**	164,15	165,52	**94**	238,00	239,37			
37	92,85	94,22	**66**	166,69	168,06	**95**	240,54	241,91			
38	95,40	96,77	**67**	169,24	170,61	**96**	243,09	244,46			
39	97,94	99,31	**68**	171,79	173,16	**97**	245,63	247,00			
40	100,49	101,86	**69**	174,33	175,70	**98**	248,18	249,55			
41	103,04	104,40	**70**	176,88	178,25	**99**	250,73	252,10			
42	105,58	106,95	**71**	179,43	180,80	**100**	253,28	254,67			
43	108,13	109,50	**72**	181,98	183,35	**101**	255,82	257,19			
44	110,68	112,05	**73**	184,52	185,89	**102**	258,37	259,74			
45	113,22	114,59	**74**	187,07	188,44	**103**	260,91	262,28			
46	115,77	117,14	**75**	189,61	190,98	**104**	263,46	264,83			



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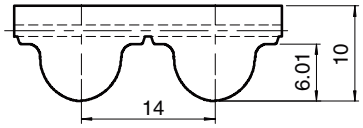


Belt characteristics

- Polyurethane timing belt with round tooth profile and high tensile load tension cords. Produced according to ISO 13050
- Metric pitch 14 mm
- The round tooth profile, allows a uniform load distribution that guarantees high performances high transmissible torque and precise tooth engagement.
- Widely used in linear positioning, heavy power transmission applications.

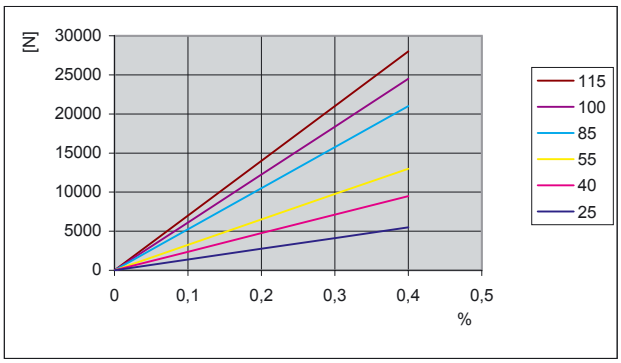
- Width tolerance: ±1,0 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,4 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
40	9500	4750	32870	2375000	0,44
55	13000	6500	44980	3250000	0,61
85	21000	10500	72660	5250000	0,94
115	28000	14000	96880	7000000	1,30

Other widths are available on request.

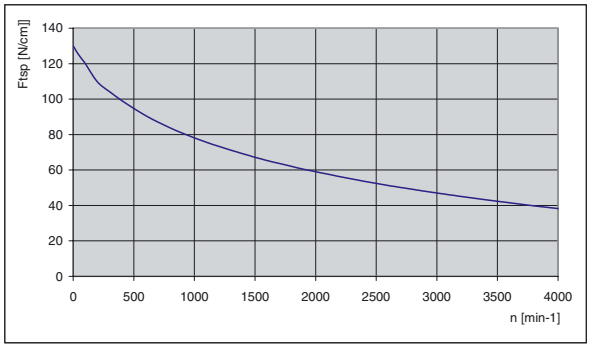
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	130,00	800	83,80	1900	60,49
20	127,69	900	80,85	2000	59,01
40	125,56	1000	78,14	2200	56,23
60	123,60	1100	75,63	2400	53,68
80	121,78	1200	73,31	2600	51,30
100	120,11	1300	71,14	2800	49,09
200	109,77	1400	69,11	3000	47,01
300	104,29	1440	68,33	3200	45,06
400	99,19	1500	67,19	3400	43,22
500	94,65	1600	65,38	3600	41,48
600	90,64	1700	63,67	3800	39,82
700	87,04	1800	62,04	4000	38,24

Tooth shear strenght / rpm

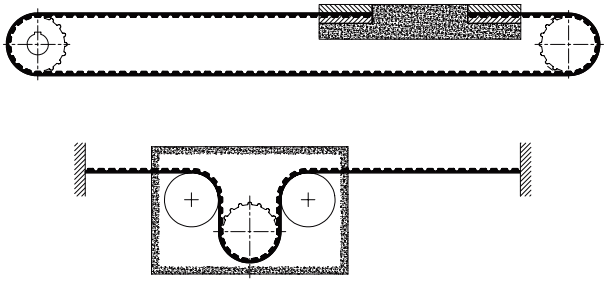


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 28$
- Idler running on belt teeth $d_{min} = 120$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 28$
- Idler running on belt back $d_{min} = 180$ mm

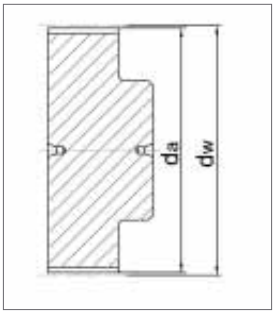
Timing pulleys

z	da	dw
28	122,12	124,77
29	126,58	129,22
30	130,99	133,69
31	135,45	138,14
32	139,88	142,59
33	144,35	147,06
34	148,79	151,51
35	153,25	155,96
36	157,68	160,41
37	162,14	164,88
38	166,60	169,34
39	171,02	173,79
40	175,48	178,24
41	179,92	182,71
42	184,37	187,16
43	188,83	191,61
44	193,29	196,08
45	197,75	200,53
46	202,21	204,98
47	206,65	209,43
48	211,11	213,90
49	215,57	218,35
50	220,03	222,80
51	224,49	227,27
52	228,95	231,72
53	233,39	236,18
54	237,85	240,64
55	242,30	245,09
56	246,76	249,55

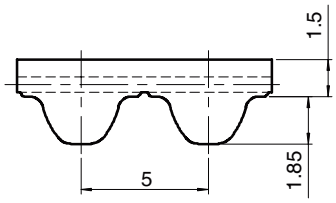
z	da	dw
57	251,22	254,01
58	255,68	258,46
59	260,14	262,91
60	264,60	267,38
61	269,04	271,83
62	273,50	276,28
63	277,96	280,75
64	282,42	285,20
65	286,88	289,65
66	291,32	294,11
67	295,78	298,56
68	300,24	303,03
69	304,70	307,48
70	309,16	311,93
71	313,61	316,40
72	318,07	320,85
73	322,53	325,30
74	326,98	329,77
75	331,44	334,22
76	335,90	338,67
77	340,34	343,12
78	344,80	347,59
79	349,26	352,04
80	353,72	356,49
81	358,17	360,96
82	362,63	365,41
83	367,09	369,86
84	371,54	374,33
85	376,00	378,78

z	da	dw
86	380,46	383,23
87	384,91	387,70
88	389,37	392,15
89	393,83	396,60
90	398,29	401,07
91	402,73	405,52
92	407,19	409,97
93	411,65	414,44
94	416,10	418,89
95	420,56	423,35
96	425,02	427,80
97	429,48	432,25
98	433,94	436,72
99	438,38	441,17
100	442,84	445,62
101	447,30	450,09
102	451,76	454,54
103	456,21	459,00
104	460,67	463,45
105	465,13	467,90
106	469,58	472,37
107	474,03	476,82
108	478,49	481,28
109	482,95	485,74
110	487,41	490,19
111	491,87	494,64
112	496,32	499,10
113	500,78	503,55
114	505,23	508,02

z	da	dw
115	509,69	512,47
116	514,14	516,93
117	518,60	521,38
118	523,06	525,83
119	527,51	530,30
120	531,97	534,75



STD5M



Belt characteristics

- Polyurethane timing belt with evolvent tooth, high tensile load steel cords and high torque capacity. Produced according to ISO 13050
- Metric pitch 5 mm
- Low noise generation in high speed drives
- Offers excellent operational reliability in linear positioning and light power transmission applications
- The special profile allows smooth running properties

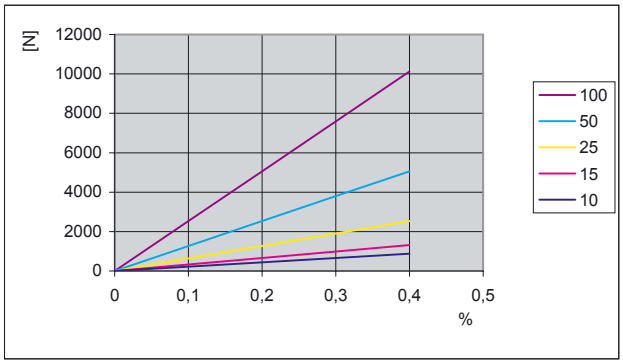
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
10	880	440	3200	220000	0,05
15	1320	660	4800	330000	0,07
25	2530	1265	9200	632500	0,12
50	5060	2530	18400	1265000	0,23
100	10120	5060	36800	2530000	0,46

Other widths are available on request.

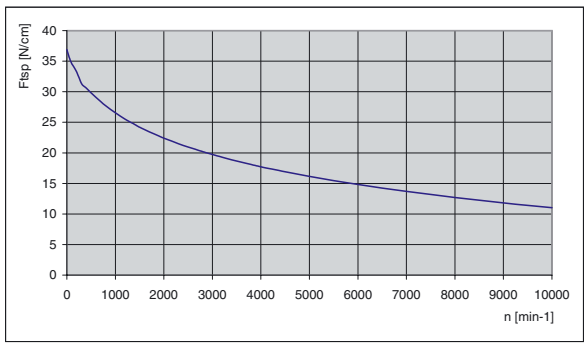
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	36,90	800	27,71	1900	22,74	4500	16,90
20	36,35	900	27,11	2000	22,41	5000	16,14
40	35,85	1000	26,55	2200	21,80	5500	15,45
60	35,40	1100	26,02	2400	21,22	6000	14,82
80	34,99	1200	25,53	2600	20,69	6500	14,24
100	34,62	1300	25,06	2800	20,19	7000	13,69
200	33,23	1400	24,63	3000	19,73	7500	13,18
300	31,37	1440	24,46	3200	19,28	8000	12,70
400	30,60	1500	24,21	3400	18,87	8500	12,25
500	29,81	1600	23,82	3600	18,47	9000	11,83
600	29,06	1700	23,44	3800	18,09	9500	11,42
700	28,36	1800	23,08	4000	17,73	10000	11,03

Tooth shear strenght / rpm

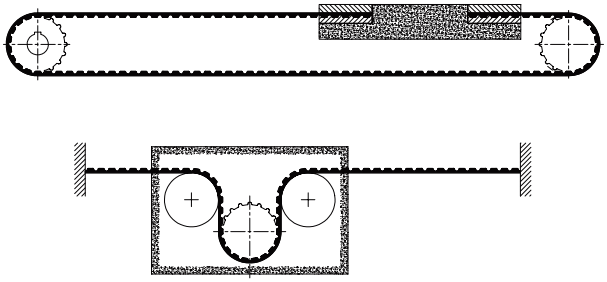


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



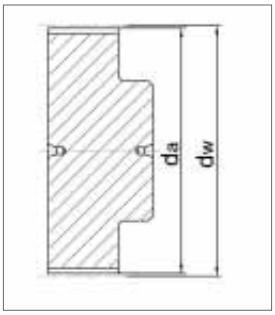
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 16$
- Idler running on belt teeth $d_{min} = 50$ mm

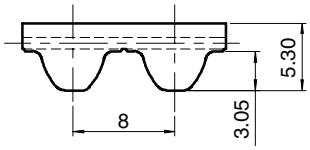
Drive with reverse bending
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 50$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
10	14,95	15,91	**39**	61,11	62,07	**68**	107,27	108,23	**97**	153,42	154,38
11	16,54	17,50	**40**	62,70	63,66	**69**	108,86	109,82	**98**	155,01	155,97
12	18,14	19,10	**41**	64,30	65,26	**70**	110,45	111,41	**99**	156,60	157,56
13	19,73	20,69	**42**	65,89	66,85	**71**	112,04	113,00	**100**	158,19	159,15
14	21,32	22,28	**43**	67,48	68,44	**72**	113,63	114,59	**101**	159,79	160,75
15	22,91	23,87	**44**	69,07	70,03	**73**	115,23	116,19	**102**	161,38	162,34
16	24,51	25,47	**45**	70,66	71,62	**74**	116,82	117,78	**103**	162,99	163,95
17	26,10	27,06	**46**	72,25	73,21	**75**	118,41	119,37	**104**	164,56	165,52
18	27,69	28,65	**47**	73,84	74,80	**76**	120,00	120,96	**105**	166,15	167,11
19	29,27	30,23	**48**	75,43	76,39	**77**	121,59	122,55	**106**	167,74	168,70
20	30,87	31,83	**49**	77,03	77,99	**78**	123,18	124,14	**107**	169,34	170,30
21	32,46	33,42	**50**	78,62	79,58	**79**	124,77	125,73	**108**	170,93	171,89
22	34,05	35,01	**51**	80,21	81,17	**80**	126,36	127,32	**109**	172,52	173,48
23	35,65	36,61	**52**	81,80	82,76	**81**	127,95	128,91	**110**	174,10	175,06
24	37,23	38,19	**53**	83,39	84,35	**82**	129,54	130,50	**111**	175,70	176,66
25	38,83	39,79	**54**	84,99	85,95	**83**	131,14	132,10	**112**	177,29	178,25
26	40,42	41,38	**55**	86,58	87,54	**84**	132,73	133,69	**113**	178,88	179,84
27	42,01	42,97	**56**	88,17	89,13	**85**	134,32	135,28	**114**	180,47	181,43
28	43,60	44,56	**57**	89,76	90,72	**86**	135,91	136,87	**115**	182,06	183,02
29	45,19	46,15	**58**	91,35	92,31	**87**	137,51	138,47	**116**	183,65	184,61
30	46,79	47,75	**59**	92,94	93,90	**88**	139,09	140,05	**117**	185,25	186,21
31	48,38	49,34	**60**	94,53	95,49	**89**	140,69	141,65	**118**	186,84	187,80
32	49,97	50,93	**61**	96,13	97,09	**90**	142,28	143,24	**119**	188,43	189,39
33	51,56	52,52	**62**	97,72	98,68	**91**	143,87	144,83	**120**	190,02	190,98
34	53,15	54,11	**63**	99,31	100,27	**92**	145,46	146,42			
35	54,75	55,71	**64**	100,90	101,86	**93**	147,05	148,01			
36	56,34	57,30	**65**	102,49	103,45	**94**	148,64	149,60			
37	57,93	58,89	**66**	104,08	105,04	**95**	150,24	151,20			
38	59,52	60,48	**67**	105,67	106,63	**96**	151,83	152,71			



STD8M



Belt characteristics

- Polyurethane timing belt with evolvent tooth, high tensile load steel cords and high torque capacity. Produced according to ISO 13050
- Metric pitch 8 mm
- Low noise generation in high speed drives
- Offers excellent operational reliability in linear positioning and medium power transmission applications
- Widely used in automatic doors
- The special profile allows smooth running properties

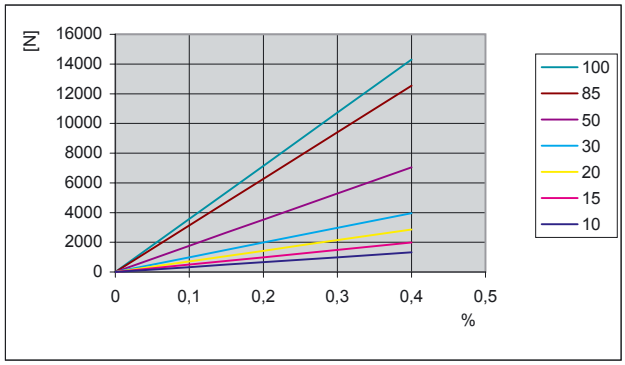
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
10	1320	660	5700	330000	0,07
15	1980	990	8550	495000	0,10
20	2860	1430	12350	715000	0,13
30	3960	1980	17100	990000	0,20
50	7040	3520	30400	1760000	0,33
85	12540	6270	54150	3135000	0,56
100	14300	7150	61750	3575000	0,66

Other widths are available on request.

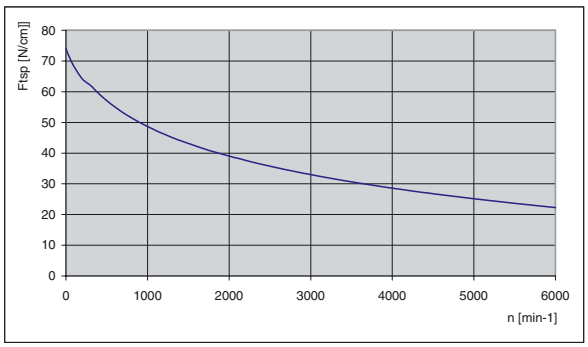
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	74,10	800	51,53	1900	39,76	4500	26,79
20	73,05	900	50,03	2000	39,02	5000	25,14
40	72,06	1000	48,66	2200	37,62	5500	23,65
60	71,13	1100	47,39	2400	36,34	6000	22,28
80	70,26	1200	46,22	2600	35,15		
100	69,43	1300	45,12	2800	34,04		
200	65,98	1400	44,10	3000	33,00		
300	62,11	1440	43,70	3200	32,02		
400	59,43	1500	43,13	3400	31,10		
500	57,08	1600	42,22	3600	30,23		
600	55,02	1700	41,36	3800	29,40		
700	53,18	1800	40,54	4000	28,61		

Tooth shear strenght / rpm

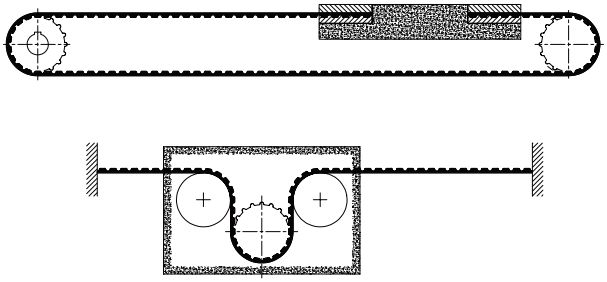


The specific load F_{Uspez} is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm.
The total load F_U transmissible by the belt in the drive is calculated by:

F_U [N] = F_{Uspez} • z_e • b

F_U [N] = peripheral force
F_{Uspez} [N/cm] = specific load
z_e = number of teeth in mesh in the small pulley
z_{emax} = max. no of teeth in mesh to be considered for the calculation of the drive
z_{emax} = 12 for ELATECH® M
z_{emax} = 6 for ELATECH® V
b [cm] = belt width in cm

Flexibility



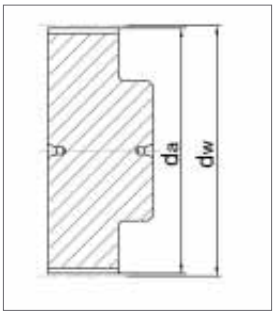
Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt teeth $d_{min} = 50$ mm

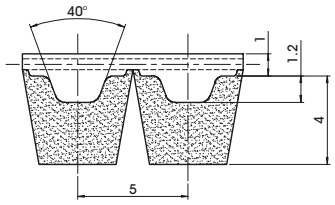
Drive with reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt back $d_{min} = 120$ mm

Timing pulleys

z	da	dw	z	da	dw	z	da	dw	z	da	dw
18	44,46	45,83	**47**	118,31	119,68	**76**	192,16	193,53	**105**	266,01	267,38
19	47,01	48,38	**48**	120,86	122,23	**77**	194,71	196,08	**106**	268,55	269,92
20	49,56	50,93	**49**	123,40	124,77	**78**	197,25	198,62	**107**	271,10	272,47
21	52,10	53,47	**50**	125,95	127,32	**79**	199,80	201,17	**108**	273,64	275,01
22	54,65	56,02	**51**	128,50	129,87	**80**	202,35	203,72	**109**	276,19	277,56
23	57,20	58,57	**52**	131,04	132,41	**81**	204,89	206,26	**110**	278,74	280,11
24	59,75	61,12	**53**	133,59	134,96	**82**	207,44	208,81	**111**	281,29	282,66
25	62,29	63,66	**54**	136,14	137,51	**83**	209,98	211,35	**112**	283,84	285,21
26	64,84	66,21	**55**	138,68	140,05	**84**	212,53	213,90	**113**	286,38	287,75
27	67,38	68,75	**56**	141,23	142,60	**85**	215,08	216,45	**114**	288,93	290,30
28	69,93	71,30	**57**	143,78	145,15	**86**	217,63	219,00	**115**	291,47	292,84
29	72,47	73,84	**58**	146,32	147,69	**87**	220,17	221,54	**116**	294,02	295,39
30	75,02	76,39	**59**	148,87	150,24	**88**	222,72	224,09	**117**	296,57	297,94
31	77,57	78,94	**60**	151,42	152,79	**89**	225,26	226,63	**118**	299,11	300,48
32	80,12	81,49	**61**	153,96	155,33	**90**	227,81	229,18	**119**	301,66	303,03
33	82,66	84,03	**62**	156,52	157,89	**91**	230,35	231,72	**120**	304,20	305,57
34	85,21	86,58	**63**	159,06	160,43	**92**	232,90	234,27			
35	87,75	89,12	**64**	161,60	162,97	**93**	235,45	236,82			
36	90,30	91,67	**65**	164,15	165,52	**94**	238,00	239,37			
37	92,85	94,22	**66**	166,69	168,06	**95**	240,54	241,91			
38	95,40	96,77	**67**	169,24	170,61	**96**	243,09	244,46			
39	97,94	99,31	**68**	171,79	173,16	**97**	245,63	247,00			
40	100,49	101,86	**69**	174,33	175,70	**98**	248,18	249,55			
41	103,03	104,40	**70**	176,88	178,25	**99**	250,73	252,10			
42	105,58	106,95	**71**	179,43	180,80	**100**	253,30	254,67			
43	108,13	109,50	**72**	181,98	183,35	**101**	255,82	257,19			
44	110,68	112,05	**73**	184,52	185,89	**102**	258,37	259,74			
45	113,22	114,59	**74**	187,07	188,44	**103**	260,91	262,28			
46	115,77	117,14	**75**	189,61	190,98	**104**	263,46	264,83			



TK5



Belt characteristics

- Polyurethane self tracking timing belt with steel tension cords
- Profile T5 with central guide
- Central guide height 4,0 mm
- Allow to use pulleys without flanges
- The central guide is notched in order to maximize belt flexibility
- Ideal for conveying applications where a side load is generated by loading/unloading transferring a product

Technical data

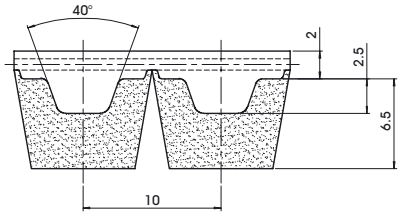
Belt width [mm]	32	50	75	100
Allowable tensile load type V [N]	570	900	1350	1800
Weight per metre [kg]	0,08	0,13	0,20	0,26

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt teeth $d_{min} = 60$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 80$ mm

TK10



Belt characteristics

- Polyurethane self track timing belt with steel tension cords
- Profile T10 with central guide
- Central guide height 6,5 mm
- Allow to use pulleys without flanges
- The central guide is notched in order to maximize belt flexibility
- Ideal for conveying applications where a side load is generated by loading/unloading transferring a product

Technical data

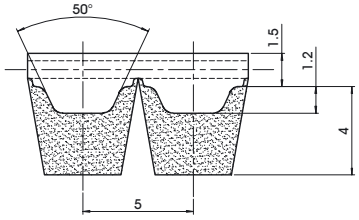
Belt width [mm]	32	50	75	100
Allowable tensile load type V [N]	1650	2660	3960	5390
Weight per metre [kg]	0,22	0,30	0,41	0,53

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt teeth $d_{min} = 80$ mm

Drive with reverse bending
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 80$ mm

ATK5



Belt characteristics

- Polyurethane self track timing belt with steel tension cords
- Profile AT5 with central guide
- Central guide height 4,0 mm
- Allow to use pulleys without flanges
- The central guide is notched in order to maximize belt flexibility
- Ideal for conveying applications where a side load is generated by loading/unloading transferring a product

Technical data

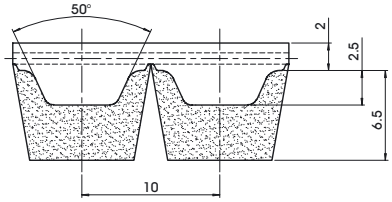
Belt width [mm]	32	50	75	100
Allowable tensile load type V [N]	1120	1750	2625	3500
Weight per metre [kg]	0,11	0,19	0,29	0,38

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley z_{min} = 25
- Idler running on belt teeth d_{min} = 60 mm

Drive with reverse bending
- Timing pulley z_{min} = 25
- Idler running on belt back d_{min} = 80 mm

ATK10



Belt characteristics

- Polyurethane self track timing belt with steel tension cords
- Profile AT10 with central guide
- Central guide height 6,5 mm
- Allow to use pulleys without flanges
- The central guide is notched in order to maximize belt flexibility
- Ideal for conveying applications where a side load is generated by loading/unloading transferring a product

Technical data

Belt width [mm]	32	50	75	100
Allowable tensile load type V [N]	2450	3900	5950	7850
Weight per metre [kg]	0,27	0,36	0,50	0,72

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley z_{min} = 25
- Idler running on belt teeth d_{min} = 80 mm

Drive with reverse bending
- Timing pulley z_{min} = 25
- Idler running on belt back d_{min} = 120 mm

F1

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
10	360	180	1500	90000	0,02
20	750	375	3125	187500	0,04
30	1200	600	5000	300000	0,05
40	1500	750	6250	375000	0,08
50	1800	900	7500	450000	0,09

Other widths are available on request.

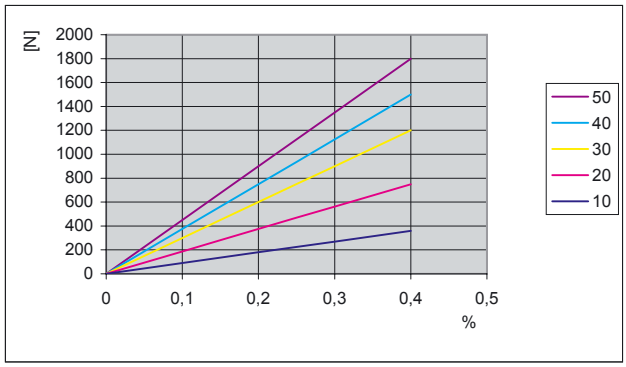
Minimum pulley diameter	Drive without reverse bending [mm]	Drive with reverse bending [mm]
	16	30

Belt characteristics

- Polyurethane flat belt with steel tension cords
- It is mainly used in lifting applications where there is no need for synchronization
- Allows the use of small diameter pulleys

- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Load / Elongation [%]



F2

Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
10	1320	660	5700	330000	0,03
15	1980	990	8550	495000	0,05
25	3080	1540	13300	770000	0,08
30	3960	1980	17100	990000	0,10
50	7040	3520	30400	1760000	0,17
75	10560	5280	45600	2640000	0,25
100	14300	7150	61750	3575000	0,34

Other widths are available on request.

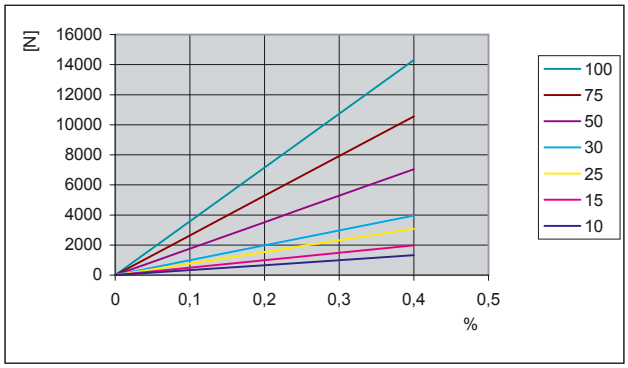
Minimum pulley diameter	Drive without reverse bending [mm]	Drive with reverse bending [mm]
	50	100

Belt characteristics

- Polyurethane flat belt with steel tension cords
- It is mainly used in lifting application where there is no need for synchronization
- Allows the use of small diameter pulleys

- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Load / Elongation [%]



F4

Belt characteristics

- Polyurethane flat belt with steel tension cords
- It is mainly used in lifting application where there is no need of synchronization
- Allows the use of small diameter pulleys

- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

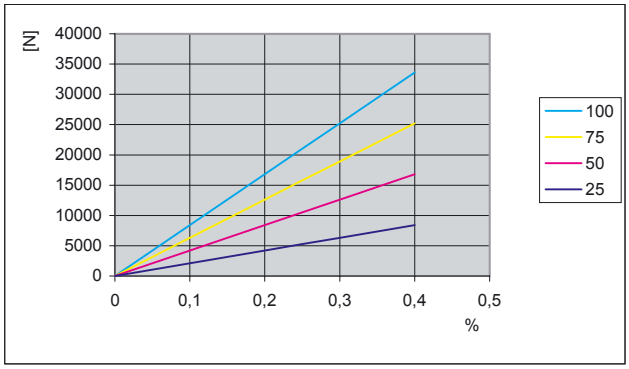
Technical data

Belt width b [mm]	Allowable tensile load Type M F_{Tzul} [N]	Allowable tensile load Type V F_{Tzul} [N]	Breaking load Type M F_{Br} [N]	Specific spring rate Cspez [N]	Weight per metre [kg/m]
25	8400	4200	33000	2100000	0,20
50	16800	8400	66000	4200000	0,40
75	25200	12600	99000	6300000	0,60
100	33600	16800	132000	8400000	0,80

Other widths are available on request.

Minimum pulley diameter	Drive without reverse bending [mm]	Drive with reverse bending [mm]
	120	150

Load / Elongation [%]



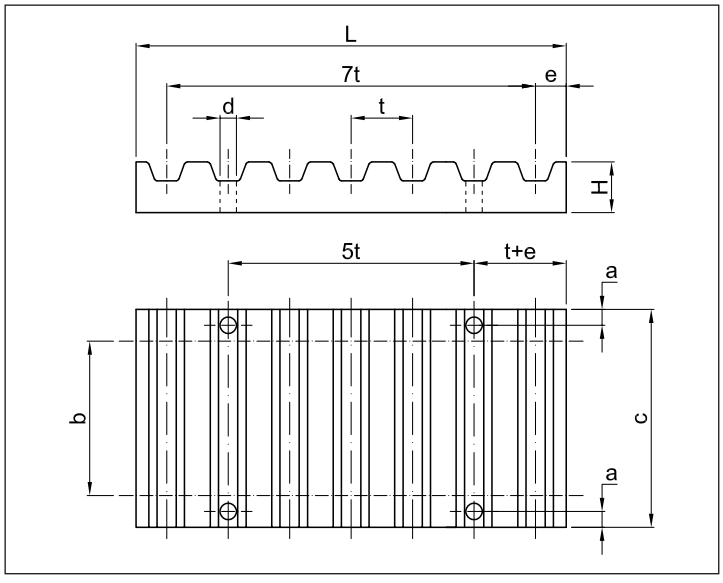
Clamp plates

Clamp plates may be used as positive attachement of the belt ends in numerous applications in linear drives. Clamp plates must have the correct belt profile, guarantee a uniform clamping force on all the clamped belt surface and must be rigid.
For standard applications a minimum of 7 teeth in clamp is recommended.
For use with timing belts with HPL cords, a minumum of 12 teeth in clamp is recommended.

Type	a	d	e	L	H	Belt width b (mm)							
						6	10	16	25	32	50	75	100
						C							
T5	6	5,5	3,2	41,8	8	-	29	35	44	-	-	-	-
AT5	6	5,5	3,2	41,8	8	-	29	35	44	-	-	-	-
T10	8	9	5	80	15	-	-	41	50	57	75	100	125
AT10	8	9	5	80	15	-	-	41	50	57	75	100	125
T20	10	11	10	160	20	-	-	-	56	63	81	106	132
AT20	10	11	10	160	20	-	-	-	56	63	81	106	132

Type	a	d	e	L	H	Belt width b (inch/100)							
						025	031	037	050	075	100	150	200
						C							
XL	6	5,5	3,5	42,5	8	25,5	27	28,5	-	-	-	-	-
L	8	9	6	76,6	15	-	-	36	39	45	51,5	64	77
H	10	11	9	106,9	22	-	-	-	45	51	57,5	70	83

Type	a	d	e	L	H	Belt width b (mm)								
						15	20	25	30	40	50	55	85	115
						C								
5M	6	5,5	3,4	41,8	8	34	-	44	-	-	-	-	-	-
8M	8	9	5	66	15	40	45	-	55	-	75	-	110	-
14M	10	11	9	116	22	-	-	56	-	71	-	86	116	146



Drive calculation

GUIDELINES

Pulleys

It is recommended to use pulleys with the maximum diameter allowed by the application in order to maximise the number of teeth in mesh and increase the belt peripheral speed. For applications where high positioning precision is required, it might be useful to use zero backlash pulleys.
In order to guarantee a reliable drive, it is recommended to use superior quality pulleys

Machine structure

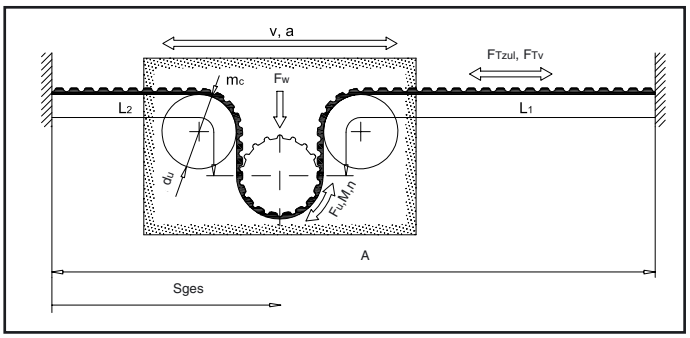
For a trouble free drive, it is recommended that the structure of application of the timing belt drive, is as rigid as possible.
That will guarantee high work repeatability.

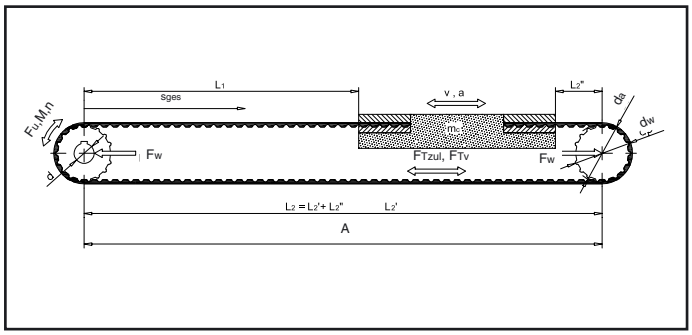
Clamping plates

In case of use of clamping plates, they must have the belt profile, be rigid and guarantee a uniform clamping force on all the surface. It is recommended to have a minimum of 7 teeth in clamp to guarantee catalogue performances. In case of belts with HPL cords, the recommended number of teeth in clamp is 12.

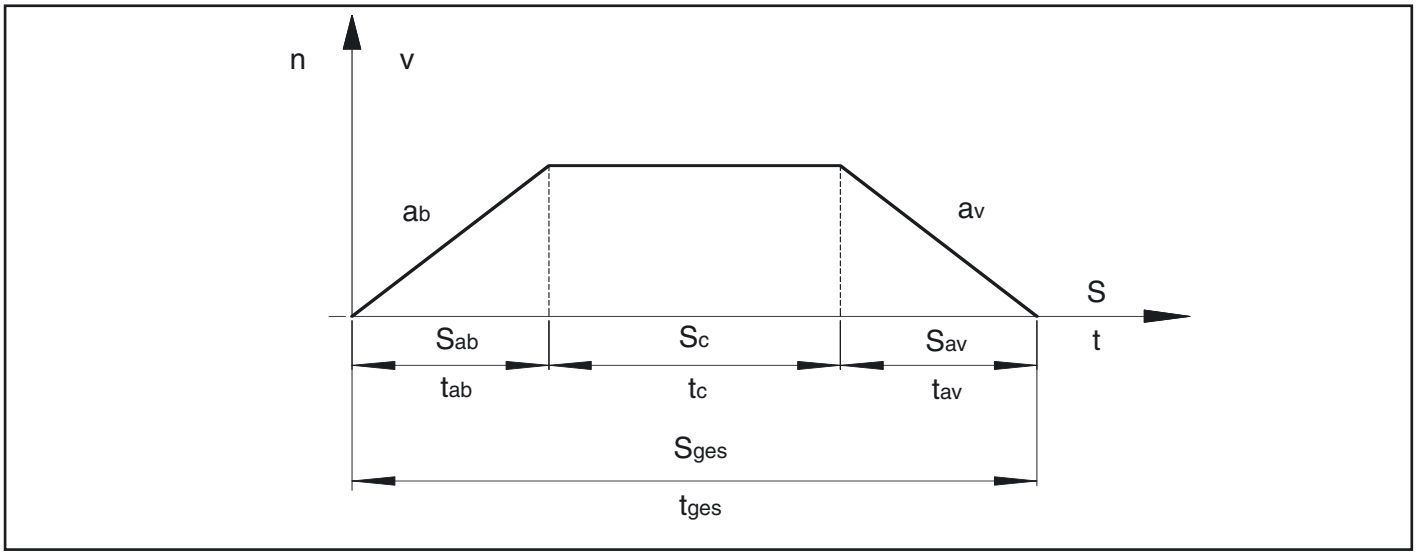
DEFINITIONS AND TRANSMISSION CYCLE

In most cases linear drives may be taken back to one of the two layouts shown, where a specific system of forces acts.





Transmission cycle (rmp/time)



Definitions and abbreviations

a_b	(m/s^2)	Acceleration
a_v	(m/s^2)	Deceleration
B	(mm)	Pulley width
b	(cm)	Belt width
t	(mm)	Belt pitch
C	(N/mm)	Belt modulus / spring rate
C_{spez}	(N)	Specific spring rate
A	(mm)	Centre distance
A_{eff}	(mm)	Effective centre distance
d	(mm)	Bore diameter
d_a	(mm)	Outside pulley diameter
d_w	(mm)	Pitch circle diameter
d_U	(mm)	Idler pulley diameter
F_{wdyn}	(N)	Dynamic shaft load
F_{wsta}	(N)	Static shaft load
F_{Tmax}	(N)	Maximum span force
F_R	(N)	Resisting force of friction
F_{Uspez}	(N/cm)	Specific tooth shear strength
F_{Tv}	(N)	Pretension force per belt side
F_{Tzul}	(N)	Allowable tensile load
F_U	(N)	Peripheral force
F_H	(N)	Vertical lifting force
F_{ab}	(N)	Acceleration force
F_{av}	(N)	Deceleration force
g	(m/s^2)	Acceleration due to gravity (= 9,81 m/s^2)
Δ l	(mm)	Elongation
Δ s	(mm)	Difference of position due to force
L_1,L_2	(mm)	Length of tight and slack side
L_R	(mm)	Belt length
M	(Nm)	Torque
M_{ab}	(Nm)	Torque during acceleration
M_{av}	(Nm)	Braking torque
ρ	(kg/dm^3)	Specific weight
m	(kg)	Total mass
m_R	(kg)	Mass of belt
m_c	(kg)	Mass of carriage / slide
m_S	(kg)	Pulley mass
m_{Sred}	(kg)	Pulley reduced mass
m_U	(kg)	Idler mass
m_{Ured}	(kg)	Idler reduced mass
n	(min^{-1})	Rpm
n_1	(min^{-1})	Rpm driver pulley
Δ n	(min^{-1})	Rpm variation
c_0	-	Total service factor
c_1	-	Service factor
c_2	-	Speed up factor
P	(kW)	Power
s_{ges}	(mm)	Total travel
s_{ab}	(mm)	Travel during acceleration
s_{av}	(mm)	Travel during deceleration / braking
s_c	(mm)	Travel at constant speed
t_{ges}	(sec^{-1})	Total time of travel
t_{ab}	(sec^{-1})	Acceleration time
t_{av}	(sec^{-1})	Deceleration time / braking time
t_c	(sec^{-1})	Time at constant speed
v	(m/s)	Peripheral speed
z	-	No. of teeth of pulley
z_k	-	No. of teeth of small pulley
z_g	-	No. of teeth of big pulley
z_R	-	No. of teeth of belt
z_e	-	No. of teeth in mesh
i	-	Drive ratio
ω	(s^{-1})	Angular velocity
μ	-	Coefficient of friction

Calculation formula

Torque

$$M = \frac{F_U \cdot d_W}{2000} = \frac{P \cdot 9550}{2000}$$

Power

$$P = \frac{M \cdot n}{9550} = \frac{F_U \cdot v}{1000}$$

Peripheral force

$$F_U = \frac{2000 \cdot M}{d_W} = \frac{P \cdot 1000}{v}$$

Linear speed

$$v = \frac{d_W \cdot n}{19100} = \frac{n \cdot z \cdot t}{60000}$$

Angular velocity

$$\omega = \frac{\pi \cdot n}{30}$$

Rpm

$$n = \frac{19100 \cdot v}{d_W} = \frac{60000 \cdot v}{z \cdot t}$$

Acceleration time

$$t_{ab} = \frac{v}{a_b} = \sqrt{\frac{2 \cdot s_{ab}}{a_b \cdot 1000}}$$

Acceleration travel

$$s_{ab} = \frac{a_b \cdot t_{ab}^2 \cdot 1000}{2} = \frac{v^2 \cdot 1000}{2 \cdot a_b}$$

Braking time

$$t_{av} = \frac{v}{a_v} = \sqrt{\frac{2 \cdot s_{a_v}}{a_v \cdot 1000}}$$

Braking travel

$$s_{av} = \frac{a_v \cdot t_{av}^2 \cdot 1000}{2} = \frac{v^2 \cdot 1000}{2 \cdot a_v}$$

Total time

$$t_{ges} = t_{ab} + t_c + t_{av}$$

Total travel

$$s_{ges} = s_{ab} + s_c + s_{av}$$

Time at constant speed

$$t_c = \frac{s_c}{v \cdot 1000}$$

Travel at constant speed

$$s_c = v \cdot t_c \cdot 1000$$

Safety factor

ELATECH® belts do not need any safety factor. However if there are unknown peaks or shock loads or swings in the peripheral force unknown at design time, which therefore can not be included in the calculation parameters, a suitable safety factor should be considered by the designer.

Steady load	k = 1

Peak or fluctuating loads:

Light	k = 1,4
Medium	k = 1,7
Heavy	k = 2,0

Calculation

Linear drives are correctly dimensioned when the total peripheral force, necessary for the requested work, satisfies the 3 technical parameters of the selected belt:

- **tooth shear strength**
- **allowable tensile load**
- **flexibility**

The necessary data for the calculation are: the mass to be moved, the transmission cycle, the drive layout with the related forces, the resisting force of friction.
Friction force is generally determined by the linear bearing manufacturer.
In case of conveying applications, it is resulting from the weight of the conveyed goods and the coefficient of friction between slider bed and belt surface. In case of accumulating conveyors the friction between the conveyed goods and the backside of the belt must be considered additionally.

Select belts and pulleys

For initial belt profile and pitch selection, use the graphs available in the related catalogue section.
For the choice of the pulleys it is recommended to use pulleys with the largest possible diameter.
That will reduce the belt width and optimise drive performances.

Calculate total mass in motion (m)

$$m = m_c + m_R + m_{Sred} + m_{Ured}$$

With:

$$m_{Sred} = \frac{m_S}{2} \cdot \left(1 + \frac{d^2}{d_a{}^2}\right) \quad ; \quad \textit{inertia of the idler timing pulley}$$

$$m_{Ured} = \frac{m_U}{2} \cdot \left(1 + \frac{d^2}{d_u{}^2}\right) \quad ; \quad \textit{inertia of the idler tensioning pulley}$$

Calculate the necessary total pheripheral force F_t and torque M

$$F_U = m \cdot a_b + m \cdot g + m \cdot g \cdot \mu$$

$$F_U = F_{ab} + F_H + F_R$$

The load ($m \bullet g \bullet \sin\alpha$) must be considered only in vertical or inclined drives when a mass is lifted against gravity.

$$M = \frac{F_U \cdot d_w}{2000}$$

Determine the belt width

$$b = \frac{F_U \cdot c_0}{F_{Uspez} \cdot z_e}$$

with F_{tsp} depending on the rpm of the small pulley (see technical data on tooth shear strength for the selected belt type).

Note: z_{emax} = 12 for belts ELATECH® M
z_{emax} = 6 for belts ELATECH® V

Determine installation pretension F_{TV}

Linear motion drives are correctly tensioned when in the slack side a minimum tension is guaranteed in all working conditions and for every value of F_{Tmax} (acceleration, deceleration).
It is recommended a pretension F_v of:

$F_{TV} \geq F_U$ for linear drives with ELATECH® M belts
$F_{TV} \geq 0{,}5 \bullet F_U$ for conveying applications with ELATECH® V belts

Verify of allowable tensile load

The maximum load on the belt will appear when both the pretension F_{Tv} and the working load F_U will act at the same time:

$$F_{Tmax} = F_{TV} + F_U$$

The maximum allowable tensile load of the belt F_{tzul} (see technical tables of corresponding selected belt) must be greater than the maximum working load:

$$F_{Tzul} > F_{Tmax}$$

Verify flexibiliy

The diameter of the chosen pulleys, must be greater or equal to the minimum recommended diameter for the specific belt profile chosen (see technical data).

Calculate shaft load

The shaft load under static conditions is:

$F_{Wsta} = 2 \cdot F_{TV}$

The shaft load under dynamic conditions is:

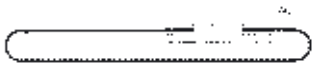
$F_{Wdyn} = 2 \cdot F_{TV} + F_U$

Calculate necessary static elongation

Installation tension generates a belt elongation "Δl" between the shafts (for linear drives) or the clamping plates (for "Omega" drives).

Linear drive

$$\Delta l = \frac{F_{TV} \cdot L_R}{2 \cdot C_{spez}}$$



"Omega" drive

$$\Delta l = \frac{F_{TV} \cdot L_R}{C_{spez}}$$

If the resulting elongation is not acceptable for the application, it is possible to reduce it by increasing the belt width.

Determine the positioning accuracy

The stiffness coefficient of linear drives depends on the lenght of slack and tight side in the drive. Every position of the system has its own stiffness coefficient calculated with the formula:

$$C = \frac{L_R}{L_1 \cdot L_2} \cdot C_{spez} \qquad L_R = L_1 + L_2$$

For C_{spez} value see technical data of selected belt type.

Stiffness coefficient will be minimum when slack and tight side will have the same length during the working cycle.

$$C_{min} = \frac{4 \cdot C_{spez}}{L_R}$$

With L_R equal to the belt length free to elongate (excluding contact length on timing pulleys).

Being F_U the resulting force on the slide, the positioning deviation generated by belt elongation is:

$$\Delta_S = \frac{F_U}{C}$$

The positioning accuracy is also depending on other parameters and therefore for an accurate calculation, please consult our technical department.

Installation and drive pretensioning:

In order to pretension a drive is possible to use one of the following methods:

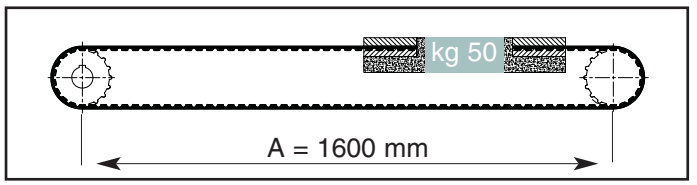
1) Measuring elongation
ELATECH® timing belts with steel cords have a constant elongation to the maximum allowable load F_{Tzul}. Therefore the correct pretension can be set by measuring the belt elongation with a gauge and using as a reference the graph load/elongation of the selected belt type. This is a simple method but requires a good accessibility of the drive.

2) Using span deflection
The pretension is checked by applying a force in the centre of the span length and measuring the span deflection

3) Measuring frequency
The tension of the belt is calculated from the natural frequency of vibration of the belt span which is measured by means of a special belt tension meter. This is the most accurate and easiest method.
A suitable belt tension meter is availabile from ELATECH®

Calculation example

Linear positioning drive



Data

Slide mass	m_c	= 50	[kg]
Center distance	A	= 1600	[mm]
Acceleration	a_b	= 20	[m/s^2]
Maximum allowable pulley diameter	d_w	= 110	[mm]
Friction force	F_R	= 100	[N]
Total travel	s_{ges}	= 1100	[mm]
Linear speed	v	= 5	[m/s]
Shaft diameter	d	= 28	[mm]

Select belt

From selection graph mass/acceleration of AT belts (preferred for linear positioning because of the higher stiffness) select a 25 AT10 belt with aluminium pulleys z = 32 (d_e=100,00 mm and d_p=101,86 mm).

Rpm $$n = \frac{19100 \cdot 5}{101{,}86} = 937{,}56$$

Calculation of total mass in motion

$$L_R = L_1 + L_2 = 1600 \cdot 2 = 3200 \text{ mm}$$

Belt mass m_R:

$$m_R = 3{,}2 \cdot 0{,}15 = 0{,}48 \text{ kg}$$

Pulley mass m_s:

$$\frac{(d_a^2 - d^2) \cdot \pi \cdot \rho \cdot B}{4 \cdot 10^6} = \frac{(100^2 - 28^2) \cdot \pi \cdot 2{,}8 \cdot 30}{4 \cdot 10^6} = 0{,}61 \text{ kg}$$

Reduced pulley mass m_{sred}:

$$\frac{m_S}{2} \cdot \left(1 + \frac{d^2}{d_a^2}\right) = \frac{0{,}61}{2} \cdot \left(1 + \frac{28^2}{100^2}\right) = 0{,}33 \text{ kg}$$

$$m = m_c + m_R + m_{Sred} = 50 + 0{,}48 + 0{,}33 = 50{,}81 \text{ kg}$$

Calculate total pheripheral force F_U

$$F_U = m \bullet a_b + F_R = 1116{,}2 \text{ N}$$

$$M = \frac{1116{,}2 \cdot 101{,}86}{2000} = 56{,}85 \text{ Nm}$$

Check belt width

$$b = \frac{1116{,}2}{52{,}21 \cdot 12} = 1{,}78 \text{ cm} \approx 18 \text{ mm}$$

A belt width 25 mm is selected as next standard width.

Determine effective installation tension F_{TV}

$F_{TV} > F_U = 1116{,}2$ N ; choose $F_{TV} = 1200$ N

Verify allowable tensile load

$F_{Tmax} = F_{TV} + F_U = 2316{,}2$ N

$F_{Tzul} > F_{Tmax}$ 3800 N > 2316,2 N

Determine necessary elongation

$$\Delta l = \frac{1200 \cdot 3200}{2 \cdot 952000} = 2{,}02 \text{ mm} \cong 0{,}63 \text{ ‰}$$

Should the elongation be too high, a larger width must be selected or ATL10 type of the same width can be used.

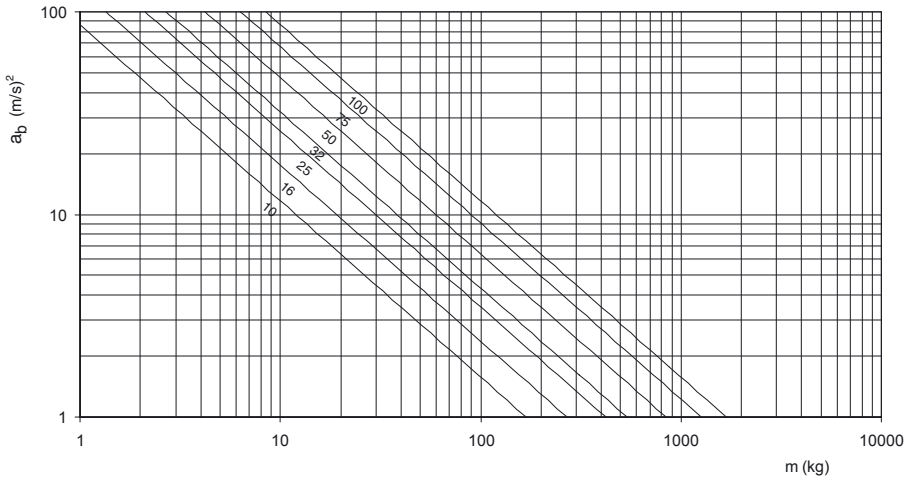
Check flexibility

The minimum pulleys diameter are respected.

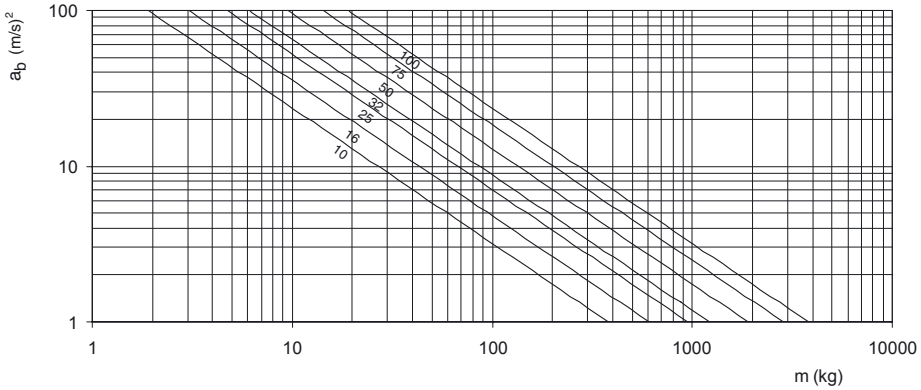
Selection graphs mass / acceleration

The selection graphs **mass/acceleration**, are a useful aid to the designer for the initial selection of the belt type and width in the linear motion applications. The graphs have been designed considering the maximum speed (rpm) generally used in the applications for every belt profile and pitch and have included a safety factor increasing with the acceleration. Therefore, depending on the specific values of the application, it might be needed to change the belt width upon calculation.

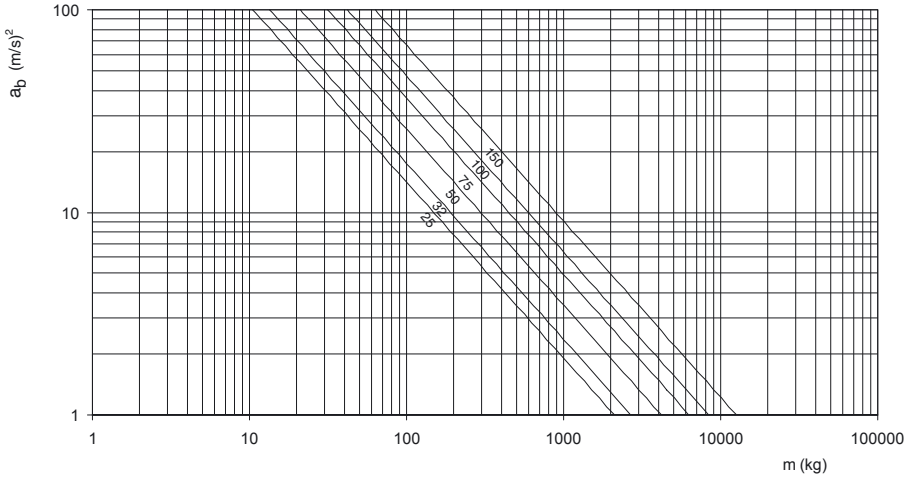
T5



T10

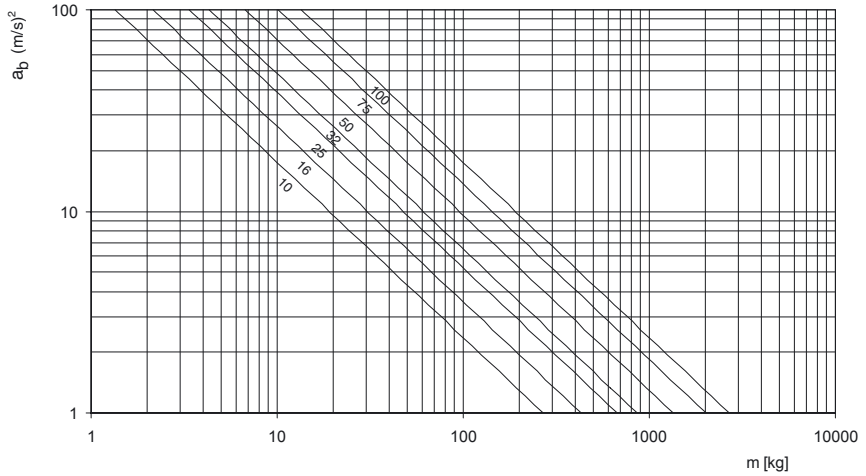


T20

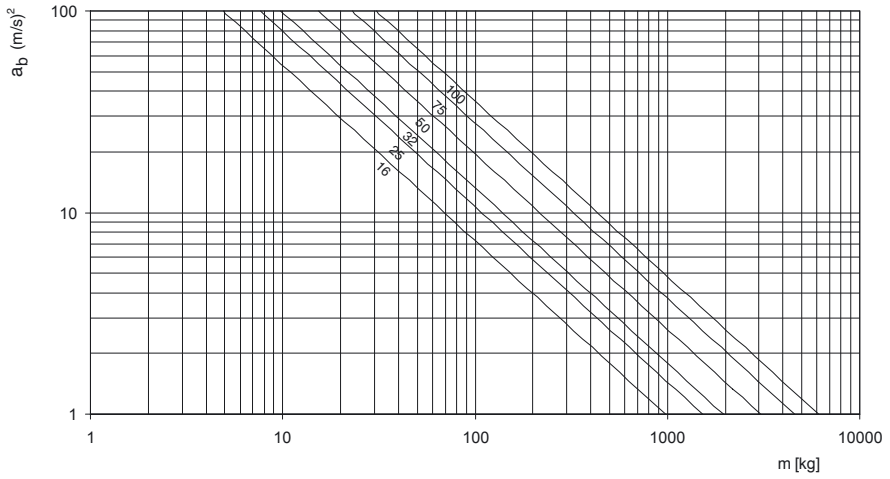


The selection graphs **mass/acceleration**, are a useful aid to the designer for the initial selection of the belt type and width in the linear motion applications. The graphs have been designed considering the maximum speed (rpm) generally used in the applications for every belt profile and pitch and have included a safety factor increasing with the acceleration. Therefore, depending on the specific values of the application, it might be needed to change the belt width upon calculation.

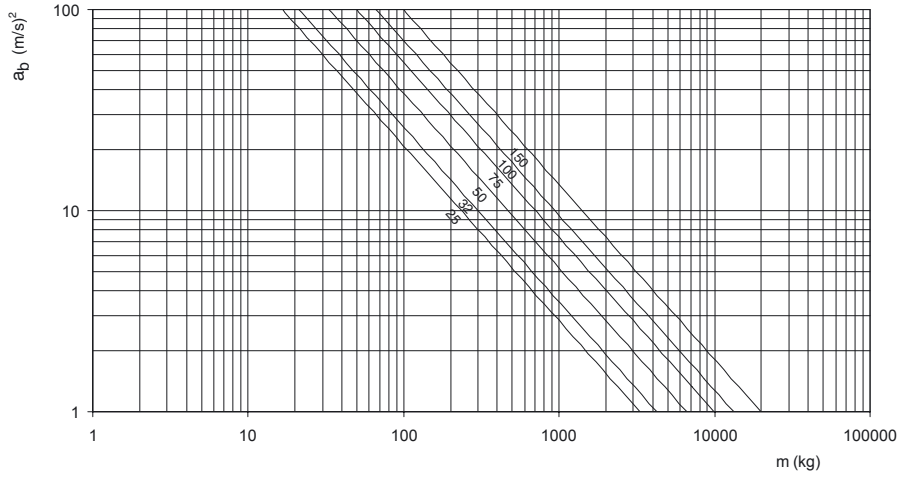
AT5 - ATL5



AT10 - ATL10

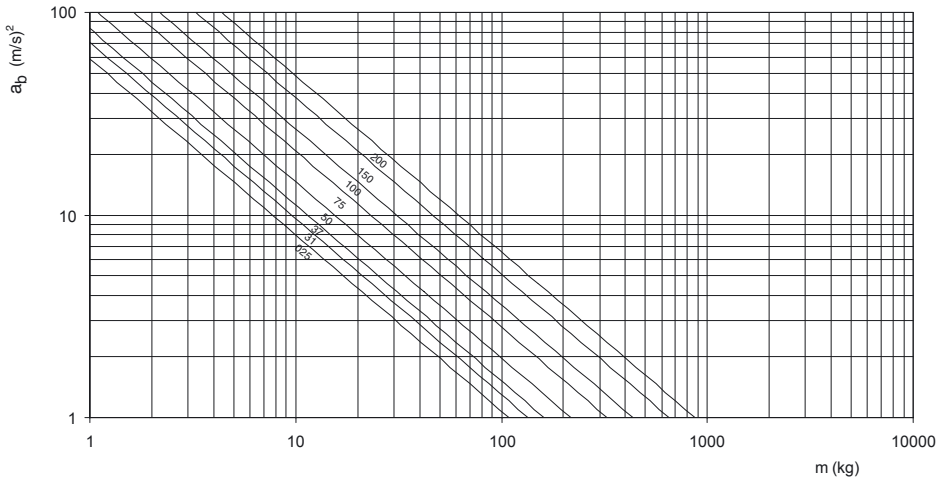


AT20 - ATL20

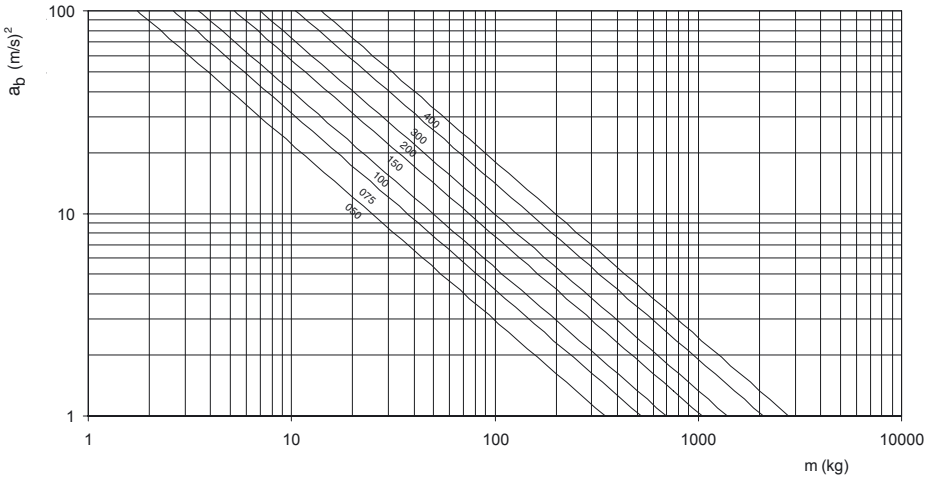


The selection graphs **mass/acceleration**, are a useful aid to the designer for the initial selection of the belt type and width in the linear motion applications. The graphs have been designed considering the maximum speed (rpm) generally used in the applications for every belt profile and pitch and have included a safety factor increasing with the acceleration. Therefore, depending on the specific values of the application, it might be needed to change the belt width upon calculation.

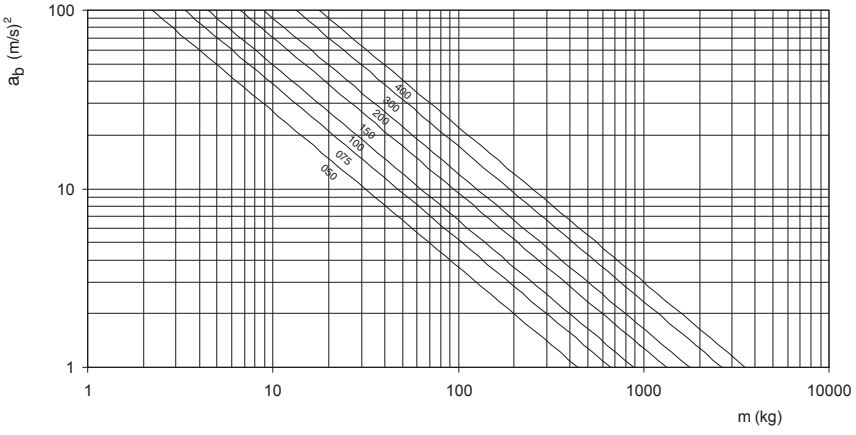
XL



L

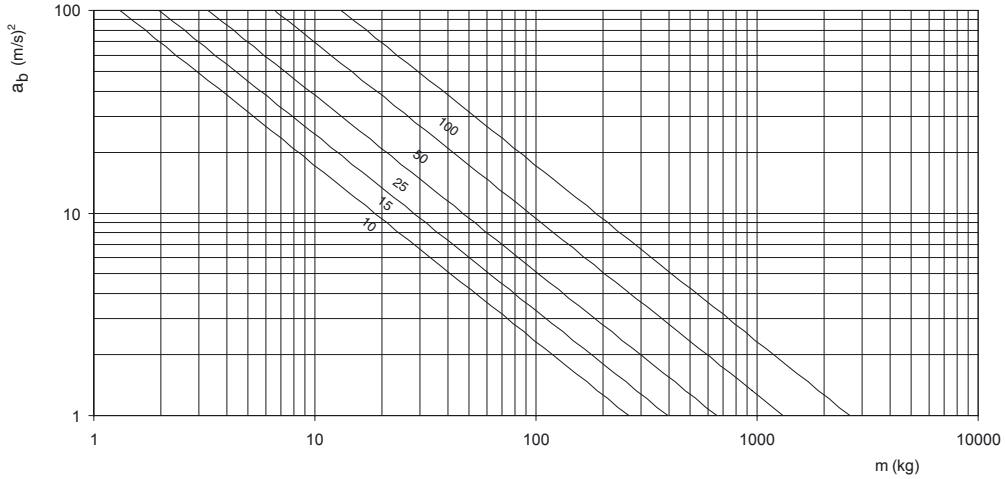


H

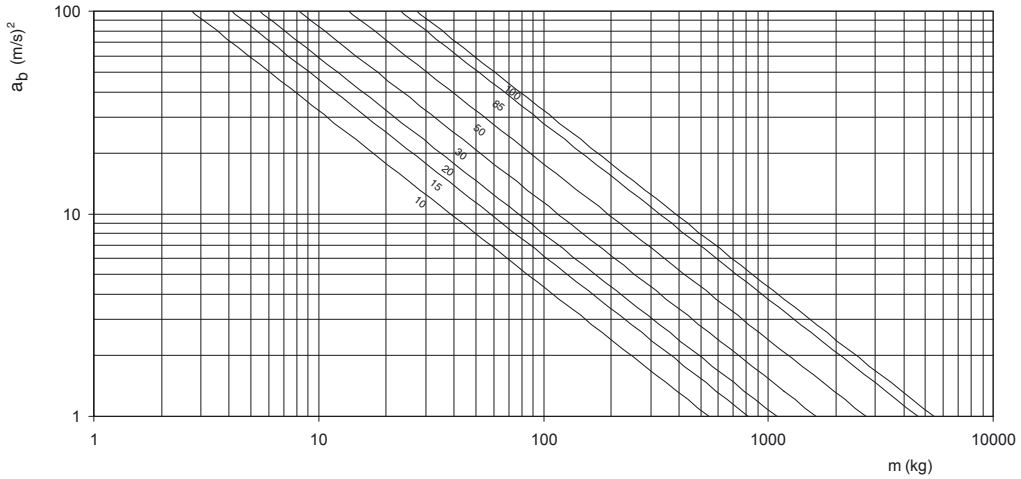


The selection graphs **mass/acceleration**, are a useful aid to the designer for the initial selection of the belt type and width in the linear motion applications. The graphs have been designed considering the maximum speed (rpm) generally used in the applications for every belt profile and pitch and have included a safety factor increasing with the acceleration. Therefore, depending on the specific values of the application, it might be needed to change the belt width upon calculation.

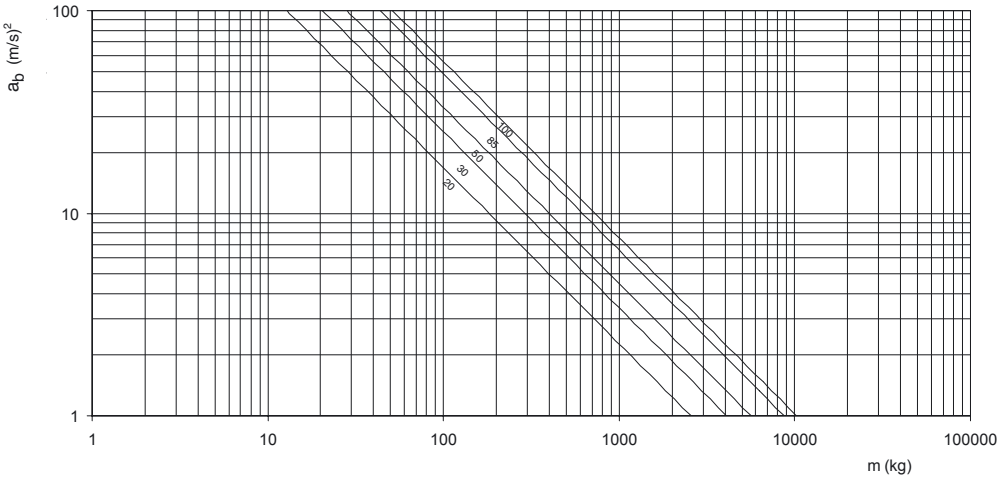
HTD5M



HTD8M

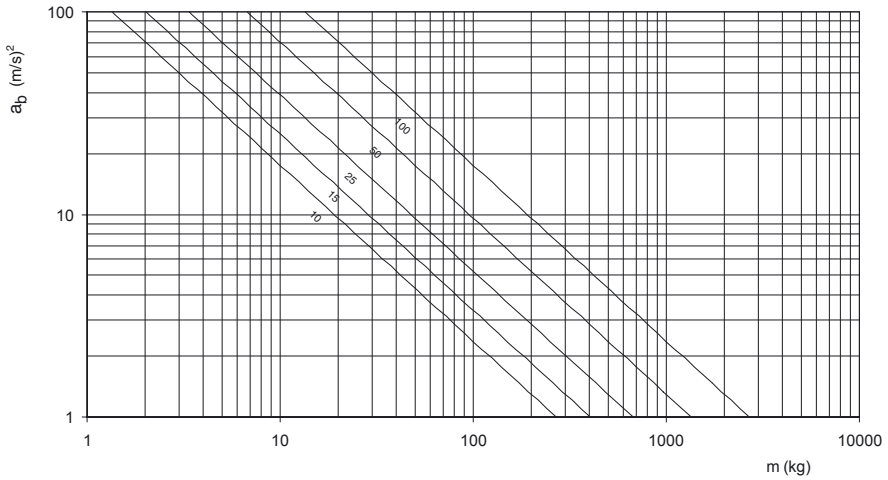


HTD14M

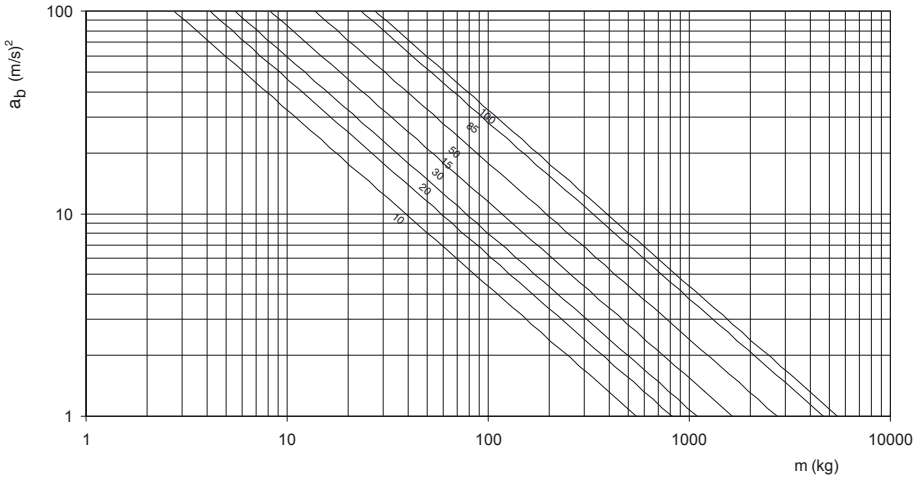


The selection graphs **mass/acceleration**, are a useful aid to the designer for the initial selection of the belt type and width in the linear motion applications. The graphs have been designed considering the maximum speed (rpm) generally used in the applications for every belt profile and pitch and have included a safety factor increasing with the acceleration. Therefore, depending on the specific values of the application, it might be needed to change the belt width upon calculation.

STD5M

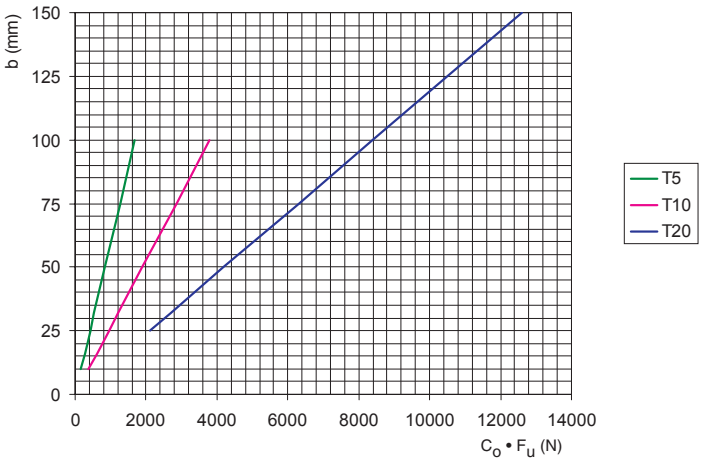


STD8M



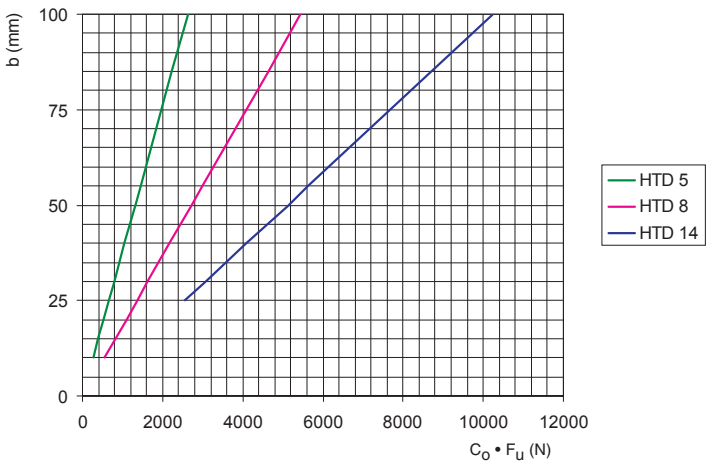
Selection graphs corrected peripheral force / belt width

T profile

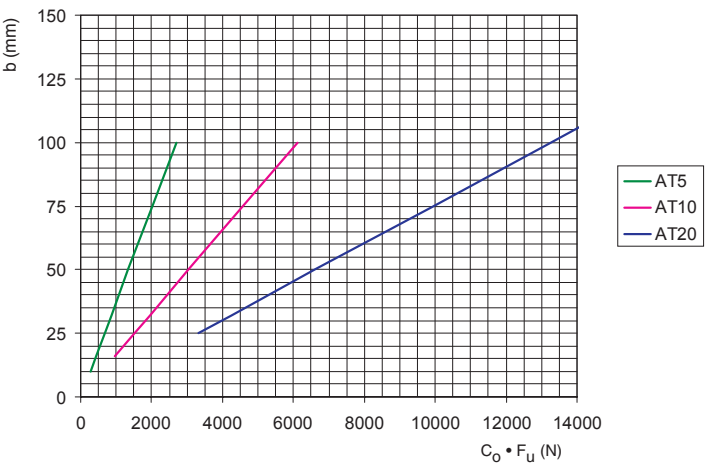


The selection graphs **corrected peripheral force / belt width** provide a quick indication on the belt width needed for each belt profile when a specific corrected load is applied. The graphs have been designed considering the maximum speed (rpm) generally used in the applications for every belt profile and pitch. No safety factor is included as usually depending on acceleration. Therefore, depending on the specific values of the application, it might be needed to change the belt width upon calculation.

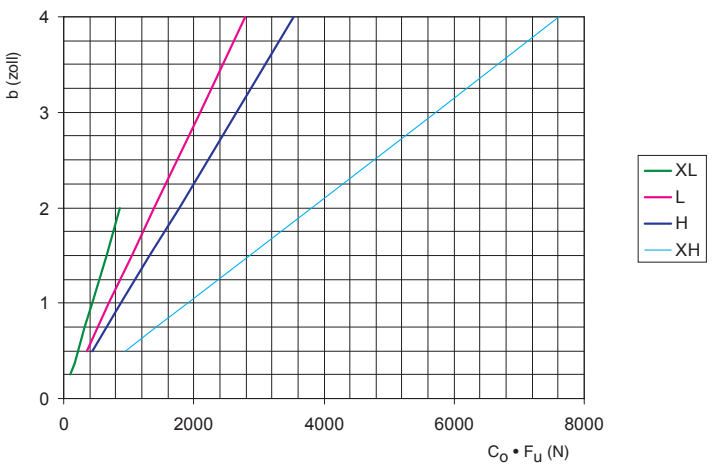
HTD profile



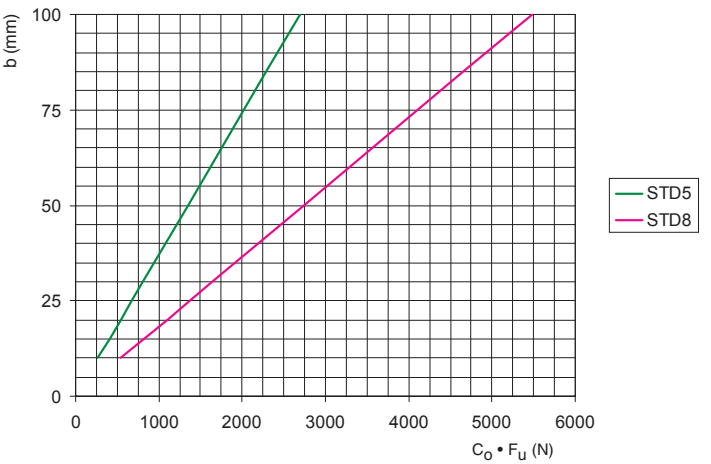
AT profile



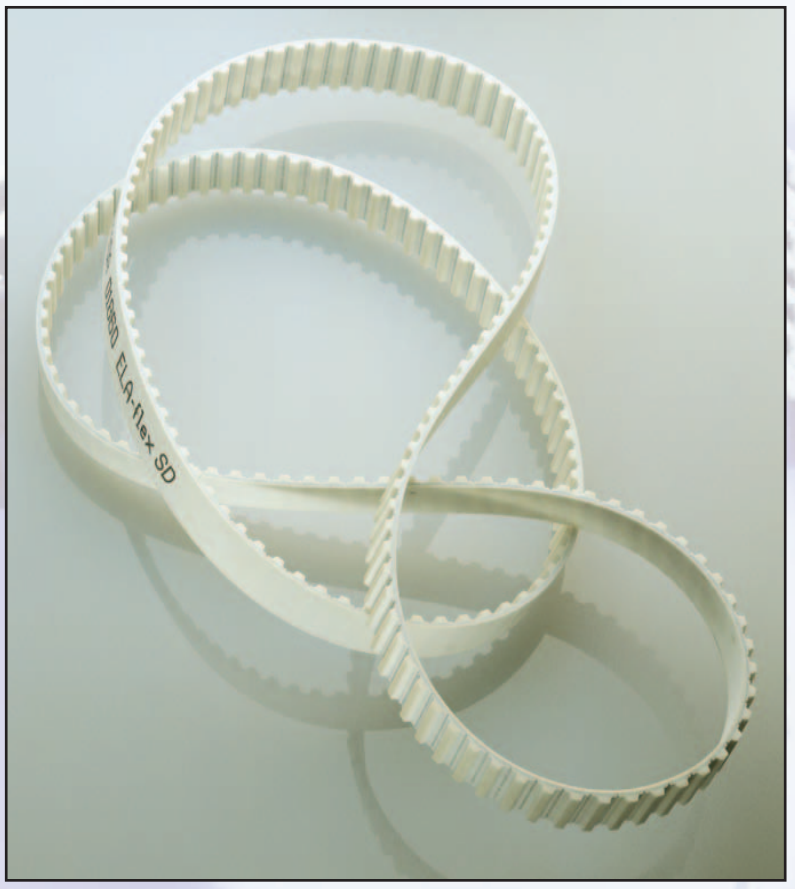
Inches profile



STD profile

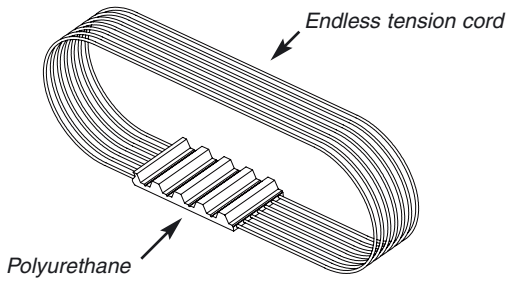


ELA-flex SD™ timing belts



ELA-flex SD™ Synchro Drive timing belts

ELA-flex SD™ timing belts are manufactured with truly endless high tension strenght steel tension cords and high wear, abrasion and tear resistance polyurethane.



Having no splice or welding, the belts have no weak cross section. ELA-flex SD™ timing belts are therefore ideal for high speed power transmission and high load conveying applications.

The unique high tech manufacturing process designed by our research and development allows the production of every belt length, tooth by tooth from a minimum of 1500 mm to a maximum of 22000 mm to permit the best flexibility in application.

Lenght tolerances

Belt lenght [mm]	Lenght tolerance [mm] (+/-)	Belt lenght [mm]	Lenght tolerance [mm] (+/-)
1700	1,13	4500	2,32
1900	1,22	4750	2,40
2120	1,30	5000	2,52
2240	1,35	5300	2,64
2360	1,44	5600	2,72
2500	1,49	6000	2,92
2650	1,57	6300	3,04
2800	1,61	6700	3,19
3000	1,70	7100	3,35
3550	1,91	7500	3,51
3750	2,03	8000	3,70
4000	2,11	9000	4,09
4250	2,24	more	on request

Double sided timing belts
On demand it is possible to supply ELA-flex SD™ as double sided belts. Please ask for the minimum quantity.

Special cords

In order to solve any design need, ELA-flex SD™ belts may be produced with special cords:

HPL high performance
HFE high Flexibility
INOX stainless steel for high aggressive environments
ARAMID low weight, non magnetic

Antistatic belts

On request it is possible to deliver ELA-flex™ SD™ belts with antistatic properties by using a specific electrically conductive coating or a special compound. A minimum quantity is applied.

Product certification

On request, it is possible to deliver belts according to 94/9/CE

ATEX II 2G/22D.

Thickness and width tolerance

ELA-flex SD™ belts are ground on the back as a standard and are manufactured at precise width (see technical tables).
For special application needs, special thickness and width tolerances can be produced.

Belt designation

Metric pitch

75 AT 20 / 11200 EFX

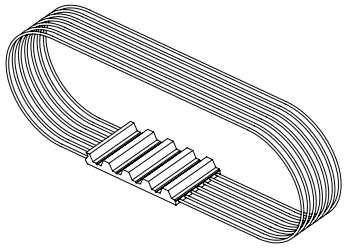
- EFX — ELA-flex SD™ belt
- 11200 — Lenght 11.200 mm
- 20 — Pitch 20 mm
- AT — Profile AT
- 75 — Width 75 mm

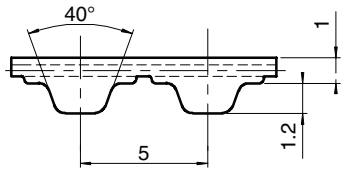
Inch pitch

1700 H 200 EFX Z= 340 Belt number of theeth

- EFX — ELA-flex SD™ belt
- 200 — Belt width (x 0,254 = mm)
- H — Type / Pitch
- 1700 — Belt lenght (x 2,54 = mm)

T5 ELA-flex SD™





Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords according to DIN 7721 T1
- Metric pitch 5 mm
- Ideal for drives where high belt flexibility is requested
- Allows to use small diameter pulleys
- Transmissible power up to 5 kW
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	10	16	25	32	50	75	100	150
Allowable tensile load [N]	337	540	843	1080	1687	2531	3375	5062
Weight per metre [kg/m]	0,02	0,03	0,05	0,07	0,11	0,16	0,21	0,32

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	1,966	0,000	1200	1,252	1,573	3400	0,972	3,462
20	1,915	0,040	1300	1,231	1,676	3600	0,957	3,609
40	1,872	0,078	1400	1,211	1,776	3800	0,942	3,749
60	1,834	0,115	1440	1,204	1,815	4000	0,928	3,886
80	1,802	0,151	1500	1,194	1,875	4500	0,895	4,218
100	1,773	0,186	1600	1,176	1,971	5000	0,866	4,533
200	1,663	0,348	1700	1,160	2,065	5500	0,840	4,835
300	1,583	0,497	1800	1,145	2,158	6000	0,815	5,120
400	1,520	0,637	1900	1,131	2,250	6500	0,793	5,395
500	1,468	0,769	2000	1,116	2,338	7000	0,772	5,658
600	1,425	0,895	2200	1,091	2,513	7500	0,753	5,912
700	1,388	1,017	2400	1,068	2,684	8000	0,735	6,153
800	1,354	1,135	2600	1,046	2,847	8500	0,717	6,382
900	1,325	1,249	2800	1,026	3,007	9000	0,701	6,607
1000	1,299	1,360	3000	1,007	3,162	9500	0,686	6,824
1100	1,274	1,467	3200	0,989	3,314	10000	0,672	7,033

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

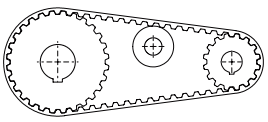
$$Z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

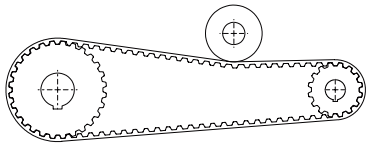
Flexibility

Minimum number of teeth and minimum diameter

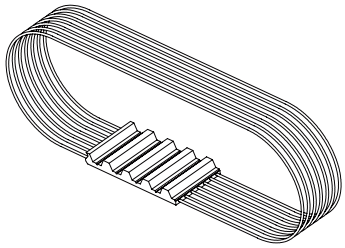
Drive without reverse bending
- Timing pulley $z_{min} = 10$
- Idler running on belt teeth $d_{min} = 30$ mm

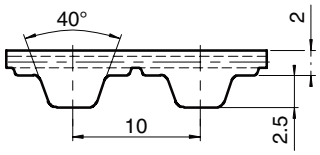


Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 15$
- Idler running on belt back $d_{min} = 30$ mm



T10 ELA-flex SD™





Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords according to DIN 7721 T1
- Metric pitch 10 mm
- Ideal for drives where high belt flexibility is requested
- Allows to use small diameter pulleys
- Transmissible power up to 30 kW
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm

Technical data

Belt width [mm]	10	16	25	32	50	75	100	150
Allowable tensile load [N]	1000	1600	2400	3100	4800	7200	9600	14300
Weight per metre [kg/m]	0,05	0,07	0,12	0,15	0,23	0,35	0,46	0,69

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	8,244	0,000	1200	4,808	6,042	3400	3,460	12,318
20	8,009	0,168	1300	4,708	6,409	3600	3,385	12,761
40	7,805	0,327	1400	4,614	6,764	3800	3,312	13,179
60	7,627	0,479	1440	4,577	6,902	4000	3,245	13,592
80	7,472	0,626	1500	4,526	7,109	4500	3,088	14,549
100	7,339	0,768	1600	4,444	7,445	5000	2,946	15,424
200	6,804	1,425	1700	4,366	7,771	5500	2,817	16,224
300	6,411	2,014	1800	4,292	8,090	6000	2,701	16,969
400	6,105	2,557	1900	4,222	8,401	6500	2,593	17,646
500	5,857	3,066	2000	4,157	8,706	7000	2,492	18,269
600	5,648	3,549	2200	4,033	9,291	7500	2,398	18,836
700	5,467	4,007	2400	3,920	9,851	8000	2,311	19,359
800	5,306	4,445	2600	3,815	10,386	8500	2,228	19,832
900	5,163	4,866	2800	3,718	10,901	9000	2,150	20,264
1000	5,034	5,271	3000	3,626	11,389	9500	2,077	20,661
1100	4,916	5,663	3200	3,541	11,866	10000	2,007	21,015

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

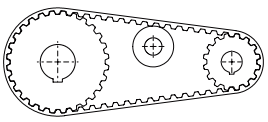
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

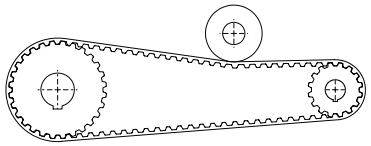
Flexibility

Minimum number of teeth and minimum diameter

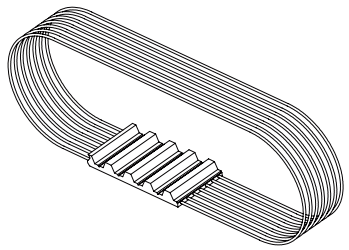
Drive without reverse bending
- Timing pulley $z_{min} = 12$
- Idler running on belt teeth $d_{min} = 60$ mm

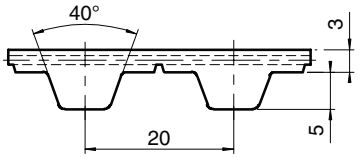


Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 60$ mm



T20 ELA-flex SD™





Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords according to DIN 7721 T1
- Metric pitch 20 mm
- Ideal for drives where high belt flexibility is requested
- Transmissible power up to 100 kW
- Rpm up to 6.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±1,0 [mm]
- Thickness tolerance: ±0,2 [mm

Technical data

Belt width [mm]	25	32	50	75	100	150
Allowable tensile load [N]	4000	5100	7900	11900	15800	23700
Weight per metre [kg/m]	0,18	0,23	0,37	0,55	0,73	1,1

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	33,263	0,000	1200	17,542	22,042	3400	11,510	40,978
20	32,181	0,674	1300	17,093	23,268	3600	11,173	42,117
40	31,242	1,309	1400	16,673	24,442	3800	10,851	43,178
60	30,424	1,911	1440	16,511	24,896	4000	10,546	44,170
80	29,714	2,489	1500	16,278	25,568	4500	9,842	46,377
100	29,097	3,047	1600	15,909	26,654	5000	9,209	48,213
200	26,579	5,566	1700	15,562	27,702	5500	8,639	49,753
300	24,777	7,783	1800	15,234	28,714	6000	8,114	50,976
400	23,393	9,798	1900	14,922	29,689	6500	7,630	51,931
500	22,269	11,659	2000	14,623	30,624	7000		
600	21,320	13,395	2200	14,069	32,411	7500		
700	20,502	15,028	2400	13,563	34,086	8000		
800	19,783	16,572	2600	13,092	35,643	8500		
900	19,140	18,038	2800	12,659	37,116	9000		
1000	18,561	19,435	3000	12,252	38,487	9500		
1100	18,029	20,766	3200	11,870	39,773	10000		

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \bullet z_e \bullet z_k \bullet b / 1000$

$M\ [Nm] = M_{spez} \bullet z_e \bullet z_k \bullet b / 100$

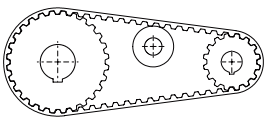
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

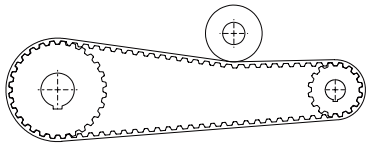
Flexibility

Minimum number of teeth and minimum diameter

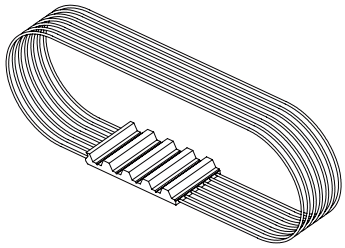
Drive without reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt teeth $d_{min} = 120$ mm

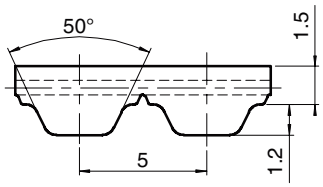


Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 120$ mm



AT5 ELA-flex SD™





Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords. Metric pitch 5 mm
- Tooth profile and dimension are optimised to guarantee uniform load distribution and mini mum deformation under load
- High resistance and low stretch steel cords to guarantee high stability and low elongation
- Reduced polygonal effect with reduced drive vibration and noise
- Transmissible power up to 15 kW
- Rpm up to 10.000 [1/min]
- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	10	16	25	32	50	75	100	150
Allowable tensile load [N]	1000	1600	2400	3100	4800	7200	9600	14300
Weight per metre [kg/m]	0,03	0,05	0,08	0,11	0,17	0,25	0,33	0,50

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	2,897	0,000	1200	2,027	2,547	3400	1,514	5,391
20	2,855	0,060	1300	1,990	2,709	3600	1,485	5,598
40	2,817	0,118	1400	1,955	2,866	3800	1,456	5,795
60	2,783	0,175	1440	1,942	2,929	4000	1,429	5,986
80	2,753	0,231	1500	1,923	3,020	4500	1,367	6,442
100	2,725	0,285	1600	1,892	3,170	5000	1,311	6,862
200	2,620	0,549	1700	1,863	3,316	5500	1,260	7,255
300	2,540	0,798	1800	1,836	3,460	6000	1,213	7,619
400	2,458	1,030	1900	1,809	3,599	6500	1,169	7,957
500	2,383	1,248	2000	1,784	3,736	7000	1,128	8,271
600	2,317	1,456	2200	1,736	4,000	7500	1,091	8,568
700	2,258	1,655	2400	1,693	4,256	8000	1,055	8,839
800	2,204	1,846	2600	1,653	4,500	8500	1,023	9,101
900	2,153	2,029	2800	1,615	4,734	9000	0,991	9,337
1000	2,108	2,207	3000	1,580	4,962	9500	0,961	9,555
1100	2,066	2,379	3200	1,546	5,181	10000	0,933	9,766

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

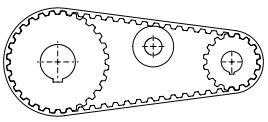
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

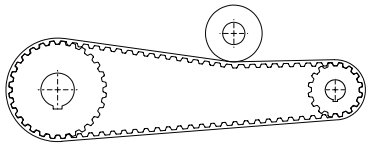
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt teeth $d_{min} = 30$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 60$ mm



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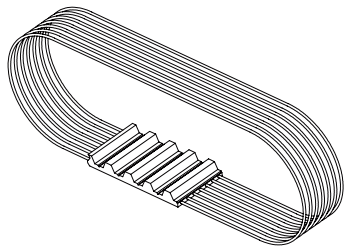
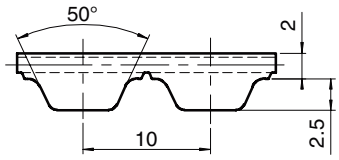




Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords. Metric pitch 10 mm
- Tooth profile and dimension are optimised to guarantee uniform load distribution and mini mum deformation under load
- High resistance and low stretch steel cords to guarantee high stability and low elongation
- Reduced polygonal effect with reduced drive vibration and noise
- Transmissible power up to 70 kW
- Rpm up to 10.000 [1/min]
- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	16	25	32	50	75	100	150
Allowable tensile load [N]	2600	4000	5100	7900	11900	15800	23700
Weight per metre [kg/m]	0,09	0,14	0,18	0,29	0,43	0,57	0,86

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	12,048	0,000	1200	7,708	9,685	3400	5,317	18,931
20	11,871	0,249	1300	7,534	10,256	3600	5,180	19,529
40	11,706	0,490	1400	7,372	10,807	3800	5,048	20,088
60	11,550	0,726	1440	7,310	11,022	4000	4,924	20,625
80	11,403	0,955	1500	7,219	11,339	4500	4,636	21,846
100	11,265	1,180	1600	7,076	11,855	5000	4,377	22,915
200	10,684	2,238	1700	6,939	12,352	5500	4,140	23,841
300	10,215	3,209	1800	6,810	12,836	6000	3,923	24,648
400	9,793	4,102	1900	6,688	13,305	6500	3,724	25,348
500	9,424	4,934	2000	6,570	13,759	7000	3,538	25,933
600	9,097	5,716	2200	6,349	14,625	7500	3,365	26,423
700	8,808	6,456	2400	6,147	15,447	8000	3,202	26,825
800	8,547	7,159	2600	5,959	16,223	8500	3,048	27,127
900	8,309	7,831	2800	5,782	16,953	9000	2,903	27,358
1000	8,093	8,474	3000	5,618	17,649	9500	2,766	27,516
1100	7,893	9,091	3200	5,464	18,308	10000	2,636	27,598

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

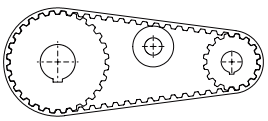
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

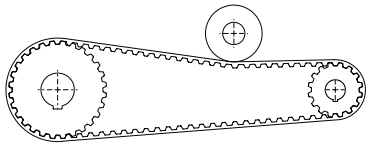
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt teeth $d_{min} = 50$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 120$ mm



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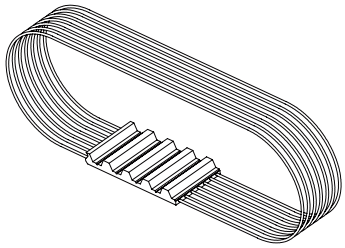
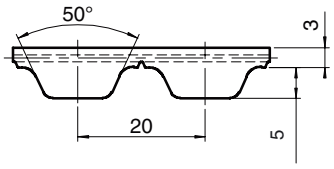




Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords. Metric pitch 10 mm
- Tooth profile and dimension are optimised to guarantee uniform load distribution and mini mum deformation under load
- High resistance and low stretch steel cords to guarantee high stability and low elongation
- Reduced polygonal effect with reduced drive vibration and noise
- Transmissible power up to 200 kW
- Rpm up to 6.000 [1/min]
- Maximum width: 150 mm
- Width tolerance: ±1,0 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	25	32	50	75	100	150
Allowable tensile load [N]	6700	8600	13400	20100	26800	40200
Weight per metre [kg/m]	0,24	0,31	0,48	0,73	0,97	1,45

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{tsp} [Ncm/cm]	P_{sp} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	48,192	0,000	1200	27,063	34,006	3400	15,842	56,402
20	47,288	0,990	1300	26,251	35,734	3600	15,196	57,284
40	46,438	1,945	1400	25,487	37,363	3800	14,579	58,009
60	45,639	2,867	1440	25,197	37,994	4000	13,993	58,609
80	44,885	3,760	1500	24,771	38,907	4500	12,643	59,576
100	44,175	4,626	1600	24,096	40,370	5000	11,427	59,829
200	41,199	8,628	1700	23,456	41,755	5500	10,320	59,432
300	38,923	12,227	1800	22,845	43,059	6000	9,304	58,456
400	36,911	15,460	1900	22,269	44,305	6500		
500	35,157	18,407	2000	21,715	45,477	7000		
600	33,617	21,120	2200	20,681	47,641	7500		
700	32,248	23,637	2400	19,729	49,580	8000		
800	31,016	25,982	2600	18,844	51,303	8500		
900	29,899	28,177	2800	18,023	52,841	9000		
1000	28,880	30,241	3000	17,252	54,196	9500		
1100	27,938	32,180	3200	16,527	55,377	10000		

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

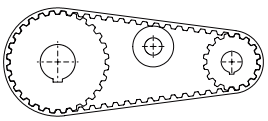
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

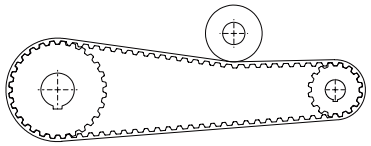
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt teeth $d_{min} = 120$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 25$
- Idler running on belt back $d_{min} = 180$ mm



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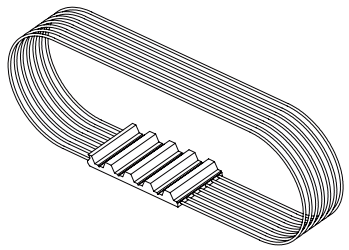
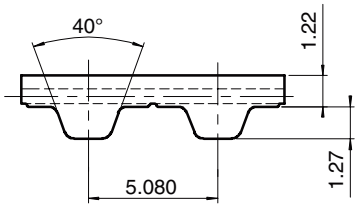




Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords and trapezoidal tooth profile according to DIN/ISO 5296.
- Imperial pitch 1/5" = 5,08 mm
- Allow to use small diameter pulley
- Mainly used in applications where inch pitch is an advantage
- Transmissible power up to 5 kW
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [inch]	0,25	0,31	0,37	0,50	0,75	1,00	1,50	2,00	4,00
Allowable tensile load [N]	220	280	330	440	650	870	1300	1720	3440
Weight per metre [kg/m]	0,016	0,020	0,024	0,033	0,049	0,065	0,098	0,130	0,260

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	2,029	0,000	1200	1,294	1,626	3400	1,006	3,581
20	1,978	0,041	1300	1,273	1,732	3600	0,990	3,730
40	1,932	0,081	1400	1,252	1,836	3800	0,974	3,877
60	1,894	0,119	1440	1,245	1,877	4000	0,960	4,020
80	1,860	0,156	1500	1,234	1,938	4500	0,926	4,362
100	1,830	0,192	1600	1,216	2,037	5000	0,896	4,690
200	1,717	0,360	1700	1,200	2,136	5500	0,868	5,001
300	1,635	0,514	1800	1,184	2,231	6000	0,843	5,298
400	1,570	0,658	1900	1,169	2,326	6500	0,820	5,580
500	1,518	0,795	2000	1,155	2,418	7000	0,798	5,849
600	1,473	0,926	2200	1,129	2,600	7500	0,779	6,115
700	1,434	1,051	2400	1,104	2,776	8000	0,759	6,360
800	1,400	1,173	2600	1,082	2,945	8500	0,741	6,599
900	1,370	1,291	2800	1,061	3,110	9000	0,725	6,835
1000	1,342	1,405	3000	1,041	3,271	9500	0,709	7,053
1100	1,317	1,517	3200	1,023	3,427	10000	0,695	7,272

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

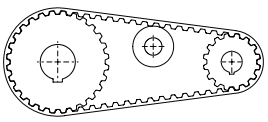
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

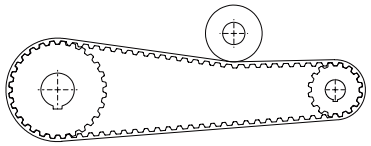
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 10$
- Idler running on belt teeth $d_{min} = 30$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 15$
- Idler running on belt back $d_{min} = 30$ mm



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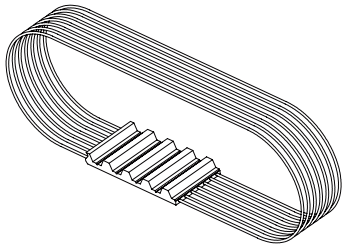
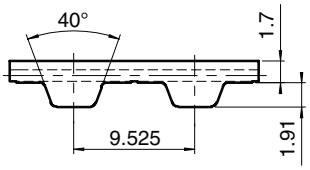




Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords and trapezoidal tooth profile according to DIN/ISO 5296.
- Imperial pitch 3/8" = 9,525 mm
- Mainly used in applications where inch pitch is an advantage
- Transmissible power up to 20 kW
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [inch]	0,50	0,75	1,00	1,50	2,00	3,00	4,00	6,00
Allowable tensile load [N]	1220	1820	2430	3640	4850	7260	9680	14520
Weight per metre [kg/m]	0,05	0,08	0,10	0,15	0,20	0,30	0,40	0,60

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	5,852	0,000	1200	3,393	4,263	3400	2,441	8,689
20	5,673	0,119	1300	3,321	4,521	3600	2,388	9,000
40	5,518	0,231	1400	3,256	4,774	3800	2,336	9,295
60	5,383	0,338	1440	3,230	4,871	4000	2,288	9,581
80	5,266	0,441	1500	3,194	5,017	4500	2,177	10,258
100	5,165	0,541	1600	3,137	5,255	5000	2,077	10,874
200	4,789	1,003	1700	3,082	5,486	5500	1,986	11,437
300	4,516	1,419	1800	3,029	5,709	6000	1,903	11,953
400	4,304	1,803	1900	2,980	5,930	6500	1,827	12,433
500	4,131	2,163	2000	2,933	6,143	7000	1,755	12,867
600	3,984	2,503	2200	2,845	6,555	7500	1,689	13,263
700	3,857	2,827	2400	2,765	6,949	8000	1,627	13,626
800	3,744	3,137	2600	2,692	7,330	8500	1,569	13,965
900	3,644	3,434	2800	2,623	7,689	9000	1,513	14,258
1000	3,553	3,721	3000	2,559	8,039	9500	1,461	14,537
1100	3,470	3,997	3200	2,498	8,371	10000	1,411	14,779

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

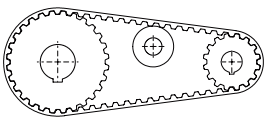
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

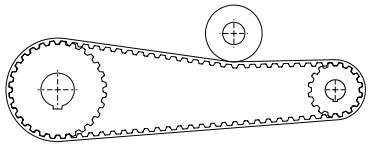
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 15$
- Idler running on belt teeth $d_{min} = 60$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 60$ mm



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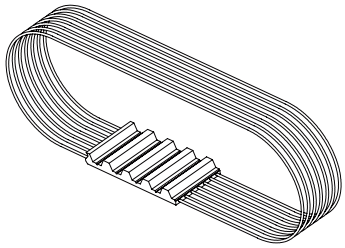
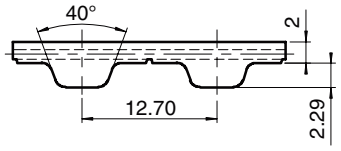




Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords and trapezoidal tooth profile according to DIN/ISO 5296.
- Imperial pitch 1/2" = 12,7 mm
- Allow to use small diameter pulley
- Mainly used in applications where inch pitch is an advantage
- Transmissible power up to 30 kW
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [inch]	0,50	0,75	1,00	1,50	2,00	3,00	4,00	6,00
Allowable tensile load [N]	1220	1820	2430	3640	4850	7260	9680	14520
Weight per metre [kg/m]	0,056	0,084	0,113	0,169	0,225	0,338	0,450	0,675

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	9,156	0,000	1200	5,318	6,682	3400	3,826	13,622
20	8,883	0,186	1300	5,207	7,088	3600	3,741	14,104
40	8,647	0,362	1400	5,104	7,482	3800	3,663	14,573
60	8,443	0,530	1440	5,063	7,635	4000	3,588	15,027
80	8,263	0,692	1500	5,007	7,864	4500	3,412	16,077
100	8,107	0,849	1600	4,916	8,236	5000	3,256	17,049
200	7,523	1,576	1700	4,829	8,596	5500	3,115	17,939
300	7,089	2,227	1800	4,748	8,949	6000	2,983	18,744
400	6,753	2,829	1900	4,671	9,293	6500	2,864	19,494
500	6,478	3,392	2000	4,596	9,626	7000	2,753	20,179
600	6,246	3,924	2200	4,461	10,277	7500	2,650	20,811
700	6,046	4,431	2400	4,334	10,891	8000	2,553	21,385
800	5,870	4,917	2600	4,218	11,485	8500	2,462	21,912
900	5,712	5,383	2800	4,111	12,054	9000	2,375	22,382
1000	5,569	5,831	3000	4,010	12,597	9500	2,294	22,821
1100	5,437	6,263	3200	3,915	13,119	10000	2,215	23,197

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

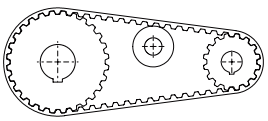
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

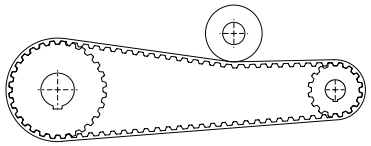
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 14$
- Idler running on belt teeth $d_{min} = 60$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 80$ mm



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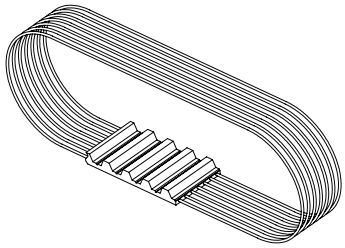
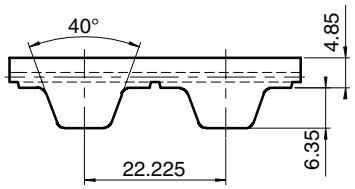




Belt characteristics

- Truly endless polyurethane timing belt with steel tension cords and trapezoidal tooth profile according to DIN/ISO 5296.
- Imperial pitch 7/8" = 22,225 mm
- Mainly used in applications where inch pitch is an advantage
- Transmissible power up to 100 kW
- Rpm up to 5.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±1,0 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [inch]	1,00	2,00	3,00	4,00	6,00
Allowable tensile load [N]	4010	8010	12010	16010	24010
Weight per metre [kg/m]	0,27	0,53	0,80	1,06	1,59

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	33,957	0,000	1200	17,802	22,369	3400	12,904	43,237
20	32,889	0,689	1300	17,405	23,692	3600	12,599	44,855
40	31,932	1,337	1400	17,037	24,975	3800	12,312	46,411
60	31,074	1,952	1440	16,897	25,477	4000	12,040	47,907
80	30,306	2,539	1500	16,693	26,220	4500	11,782	49,347
100	29,618	3,101	1600	16,372	27,430	5000		
200	26,460	5,541	1700	16,070	28,606	5500		
300	24,554	7,713	1800	15,785	29,752	6000		
400	23,178	9,708	1900	15,515	30,867	6500		
500	22,100	11,571	2000	15,259	31,955	7000		
600	21,213	13,327	2200	14,782	34,053	7500		
700	20,459	14,996	2400	14,347	36,054	8000		
800	19,804	16,590	2600	13,946	37,967	8500		
900	19,224	18,117	2800	13,574	39,798	9000		
1000	18,704	19,586	3000	13,433	40,509	9500		
1100	18,233	21,001	3200	13,228	41,553	10000		

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

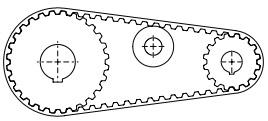
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

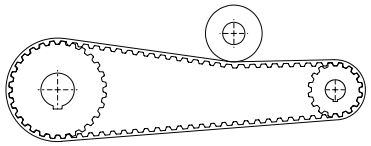
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt teeth $d_{min} = 150$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 180$ mm



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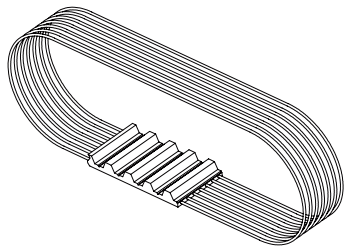
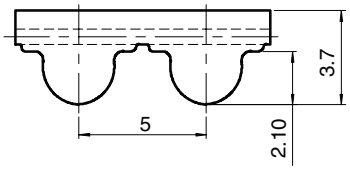




Belt characteristics

- Truly endless polyurethane timing belt with round tooth profile and steel tension cords. Produced according to ISO 13050
- Metric pitch 5 mm
- The round tooth profile allows a uniform load distribution that guarantees high performance, high transmissible torque and precise tooth engagement
- Transmissible power up to 6 kW
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	10	15	25	50	100	150
Allowable tensile load [N]	1000	1500	2400	4800	9600	14300
Weight per metre [kg/m]	0,05	0,07	0,11	0,23	0,46	0,68

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	2,928	0,000	1200	1,992	2,503	3400	1,461	5,203
20	2,885	0,060	1300	1,955	2,661	3600	1,430	5,390
40	2,845	0,119	1400	1,920	2,814	3800	1,400	5,570
60	2,809	0,176	1440	1,906	2,875	4000	1,371	5,743
80	2,776	0,233	1500	1,887	2,964	4500	1,305	6,148
100	2,747	0,288	1600	1,855	3,109	5000	1,245	6,517
200	2,637	0,552	1700	1,826	3,250	5500	1,190	6,854
300	2,457	0,772	1800	1,797	3,387	6000	1,140	7,161
400	2,395	1,003	1900	1,770	3,521	6500	1,093	7,440
500	2,333	1,221	2000	1,744	3,652	7000	1,050	7,695
600	2,273	1,428	2200	1,695	3,904	7500	1,009	7,926
700	2,217	1,625	2400	1,649	4,145	8000	0,971	8,135
800	2,166	1,814	2600	1,607	4,375	8500	0,935	8,324
900	2,118	1,996	2800	1,567	4,595	9000	0,901	8,493
1000	2,073	2,170	3000	1,530	4,806	9500	0,869	8,644
1100	2,031	2,339	3200	1,495	5,009	10000	0,838	8,778

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \bullet z_e \bullet z_k \bullet b / 1000$

$M\ [Nm] = M_{spez} \bullet z_e \bullet z_k \bullet b / 100$

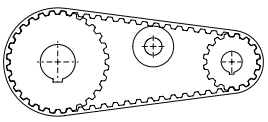
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

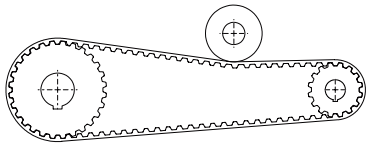
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 16$
- Idler running on belt teeth $d_{min} = 50$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 50$ mm



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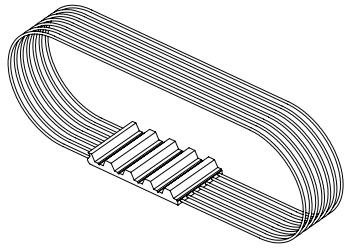
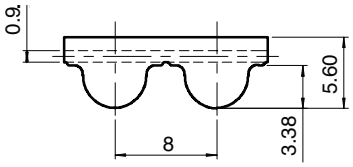




Belt characteristics

- Truly endless polyurethane timing belt with round tooth profile and steel tension cords. Produced according to ISO 13050
- Metric pitch 8 mm
- The round tooth profile, allows a uniform load distribution that guarantees high performance, high transmissible torque and precise tooth engagement
- Transmissible power up to80 kW
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	10	15	20	30	50	85	100	150
Allowable tensile load [N]	1600	2400	3200	4800	7900	13400	15800	23700
Weight per metre [kg/m]	0,07	0,10	0,13	0,20	0,33	0,56	0,66	1,00

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	9,422	0,000	1200	5,848	7,348	3400	3,936	14,013
20	9,246	0,194	1300	5,709	7,772	3600	3,826	14,421
40	9,083	0,380	1400	5,580	8,180	3800	3,721	14,805
60	8,933	0,561	1440	5,530	8,338	4000	3,621	15,166
80	8,794	0,737	1500	5,458	8,572	4500	3,390	15,975
100	8,666	0,907	1600	5,343	8,951	5000	3,183	16,663
200	8,160	1,709	1700	5,233	9,316	5500	2,994	17,241
300	7,853	2,467	1800	5,130	9,669	6000	2,821	17,720
400	7,516	3,148	1900	5,031	10,010	6500		
500	7,220	3,780	2000	4,937	10,340	7000		
600	6,959	4,372	2200	4,761	10,968	7500		
700	6,728	4,931	2400	4,599	11,557	8000		
800	6,519	5,461	2600	4,448	12,110	8500		
900	6,330	5,965	2800	4,308	12,630	9000		
1000	6,156	6,446	3000	4,176	13,119	9500		
1100	5,996	6,907	3200	4,053	13,580	10000		

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

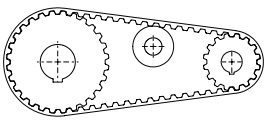
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

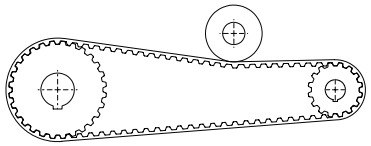
Flexibility

Minimum number of teeth and minimum diameter

Drive without reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt teeth $d_{min} = 50$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 18$
- Idler running on belt back $d_{min} = 120$ mm



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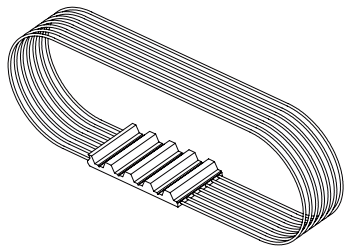
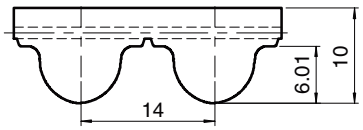




Belt characteristics

- Truly endless polyurethane timing belt with round tooth profile and steel tension cords. Produced according to ISO 13050
- Metric pitch 14 mm
- The round tooth profile, allows a uniform load distribution that guarantees high performance, high transmissible torque and precise tooth engagement
- Transmissible power up to 200 kW
- Rpm up to 6.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	40	55	85	115	150
Allowable tensile load [N]	10800	14800	22800	30900	41000
Weight per metre [kg/m]	0,42	0,57	0,89	1,24	1,7

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	28,966	0,000	1200	16,335	20,526	3400	9,630	34,286
20	28,452	0,596	1300	15,852	21,578	3600	9,242	34,837
40	27,978	1,172	1400	15,398	22,573	3800	8,872	35,303
60	27,540	1,730	1440	15,225	22,957	4000	8,521	35,688
80	27,136	2,273	1500	14,972	23,516	4500		
100	26,762	2,802	1600	14,569	24,408	5000		
200	24,458	5,122	1700	14,187	25,254	5500		
300	23,239	7,300	1800	13,824	26,056	6000		
400	22,100	9,257	1900	13,478	26,816	6500		
500	21,091	11,042	2000	13,148	27,536	7000		
600	20,195	12,688	2200	12,530	28,865	7500		
700	19,394	14,216	2400	11,960	30,056	8000		
800	18,672	15,641	2600	11,431	31,121	8500		
900	18,014	16,976	2800	10,938	32,069	9000		
1000	17,410	18,230	3000	10,476	32,908	9500		
1100	16,853	19,411	3200	10,041	33,645	10000		

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

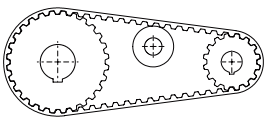
$$Z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

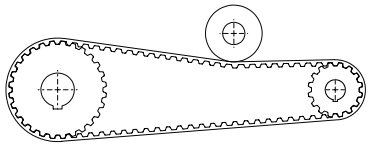
Flexibility

Minimum number of teeth and minimum diameter

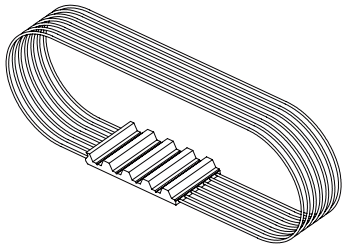
Drive without reverse bending
- Timing pulley $z_{min} = 28$
- Idler running on belt teeth $d_{min} = 120$ mm

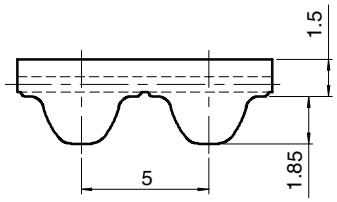


Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 28$
- Idler running on belt back $d_{min} = 180$ mm



STD5M ELA-flex SD™





Belt characteristics

- Truly endless polyurethane timing belt with high tensile load steel cords and high torque capacity - produced according to ISO 13050
- Metric pitch 5 mm
- Low noise generation in high speed drives
- Offer excellent operational reliability
- The special profile allows smooth running properties
- Transmissible power up to 6 Kw
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	10	15	25	50	100	150
Allowable tensile load [N]	1000	1500	2400	4800	9600	14300
Weight per metre [kg/m]	0,046	0,068	0,114	0,228	0,456	0,684

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	2,936	0,000	1200	2,031	2,553	3400	1,501	5,345
20	2,892	0,061	1300	1,995	2,715	3600	1,470	5,540
40	2,853	0,119	1400	1,960	2,873	3800	1,440	5,728
60	2,817	0,177	1440	1,946	2,935	4000	1,411	5,910
80	2,784	0,233	1500	1,927	3,026	4500	1,345	6,336
100	2,755	0,288	1600	1,895	3,175	5000	1,285	6,726
200	2,645	0,554	1700	1,865	3,321	5500	1,230	7,083
300	2,497	0,784	1800	1,837	3,462	6000	1,180	7,411
400	2,435	1,020	1900	1,810	3,600	6500	1,133	7,711
500	2,372	1,242	2000	1,784	3,735	7000	1,090	7,987
600	2,313	1,453	2200	1,734	3,996	7500	1,049	8,238
700	2,257	1,654	2400	1,689	4,245	8000	1,011	8,469
800	2,205	1,847	2600	1,647	4,483	8500	0,975	8,678
900	2,157	2,033	2800	1,607	4,712	9000	0,941	8,868
1000	2,113	2,212	3000	1,570	4,931	9500	0,909	9,040
1100	2,071	2,385	3200	1,535	5,142	10000	0,878	9,195

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \bullet z_e \bullet z_k \bullet b / 1000$

$M\ [Nm] = M_{spez} \bullet z_e \bullet z_k \bullet b / 100$

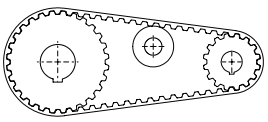
$$z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

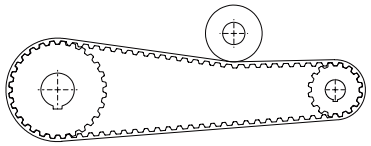
Flexibility

Minimum number of teeth and minimum diameter

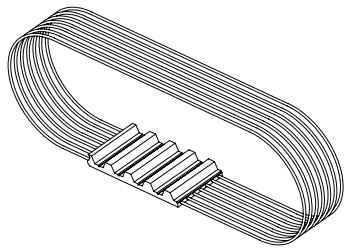
Drive without reverse bending
- Timing pulley $z_{min} = 16$
- Idler running on belt teeth $d_{min} = 50$ mm

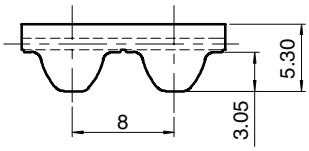


Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 20$
- Idler running on belt back $d_{min} = 50$ mm



STD8M ELA-flex SD™





Belt characteristics

- Truly endless polyurethane timing belt with high tensile load steel cords and high torque capacity - produced according to ISO 13050
- Metric pitch 5 mm
- Low noise generation in high speed drives
- Offer excellent operational reliability
- The special profile allows smooth running properties
- Transmissible power up to 80 Kw
- Rpm up to 10.000 [1/min]

- Maximum width: 150 mm
- Width tolerance: ±0,5 [mm]
- Thickness tolerance: ±0,2 [mm]

Technical data

Belt width [mm]	10	15	20	30	50	85	100	150
Allowable tensile load [N]	1600	2400	3200	4800	7900	13400	15800	23700
Weight per metre [kg/m]	0,07	0,10	0,13	0,20	0,33	0,56	0,66	1,00

Other widths are available on request

Tooth shear strength

rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]	rpm [min^{-1}]	M_{spez} [Ncm/cm]	P_{spez} [W/cm]
0	9,435	0,000	1200	5,885	7,394	3400	3,960	14,098
20	9,301	0,195	1300	5,745	7,821	3600	3,849	14,508
40	9,176	0,384	1400	5,615	8,231	3800	3,743	14,894
60	9,057	0,569	1440	5,565	8,391	4000	3,643	15,257
80	8,946	0,749	1500	5,492	8,626	4500	3,410	16,070
100	8,841	0,926	1600	5,376	9,007	5000	3,201	16,762
200	8,401	1,759	1700	5,266	9,374	5500	3,011	17,343
300	7,908	2,484	1800	5,162	9,729	6000	2,837	17,824
400	7,567	3,169	1900	5,063	10,072	6500		
500	7,268	3,805	2000	4,968	10,404	7000		
600	7,005	4,401	2200	4,790	11,035	7500		
700	6,772	4,963	2400	4,627	11,628	8000		
800	6,561	5,496	2600	4,475	12,184	8500		
900	6,370	6,003	2800	4,334	12,707	9000		
1000	6,195	6,487	3000	4,202	13,199	9500		
1100	6,034	6,950	3200	4,077	13,662	10000		

The total power "P" and the total torque "M" transmitted by the belt, are calculated with the following formulas:

$P\ [Kw] = P_{spez} \cdot z_e \cdot z_k \cdot b / 1000$

$M\ [Nm] = M_{spez} \cdot z_e \cdot z_k \cdot b / 100$

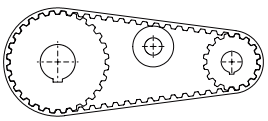
$$Z_e = \frac{Z_k}{180} \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

P = power in Kw
M = torque in Nm
P_{spez} = specific power
M_{spez} = specific torque
z_e = number of teeth in mesh of the small pulley
z_{emax} = 12
z_k = number of teeth of the small pulley
b = belt width in cm
A = centre distance [mm]

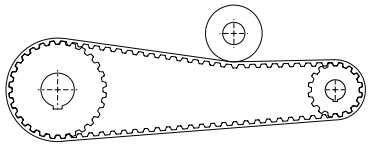
Flexibility

Minimum number of teeth and minimum diameter

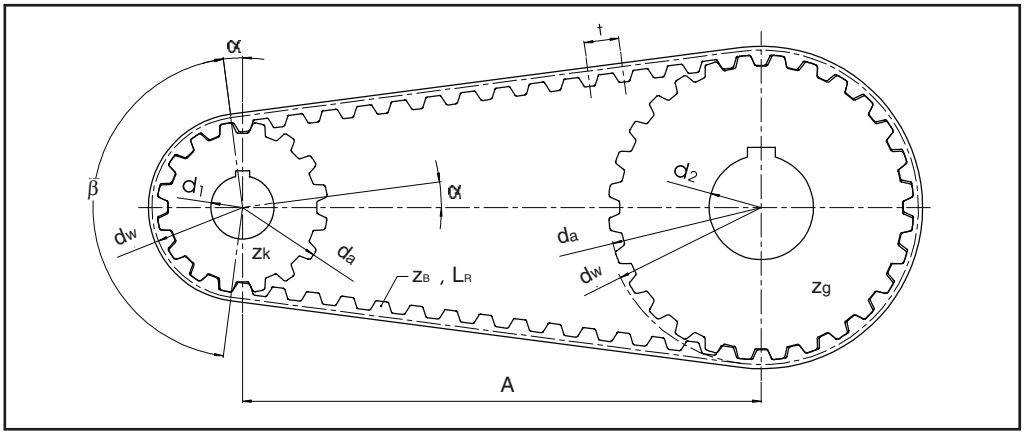
Drive without reverse bending
- Timing pulley $z_{min} = 18$
- Idler running on belt teeth $d_{min} = 50$ mm



Drive with reverse bending and double sided belt
- Timing pulley $z_{min} = 18$
- Idler running on belt back $d_{min} = 120$ mm



Drive calculation



Definitions

b	(cm)	Belt width
L_R	(mm)	Belt lenght
z_R	-	Number of teeth of the belt
B	(mm)	Pulley width
A	(mm)	Center distance
A_{eff}	(mm)	Effective center distance
d	(mm)	Pulley bore diameter
d_a	(mm)	Pulley outside diameter
d_{ak}	(mm)	Small pulley outside diameter
d_{ag}	(mm)	Large pulley outside diameter
d_w	(mm)	Pulley pitch diameter
d_{wk}	(mm)	Small pulley pitch circle diameter
d_{wg}	(mm)	Large pulley pitch circle diameter
F_{Wsta}	(N)	Static Shafts load
F_{TV}	(N)	Pretension force per belt side
F_{Tzul}	(N)	Allowable tensile load

F_U	(N)	Peripheral force
M	(Nm)	Torque
P	(kW)	Power
t_{ab}	(s)	Acceleration time
t_{av}	(s)	Deceleration time
v	(m/s)	Peripheral speed
z_e	-	N. of teeth in mesh
z_k	-	Number of teeth of the small pulley
z_g	-	Number of teeth of the large pulley
i	-	Drive ratio ($n_1 : n_2$)
ρ	(kg/dm^3)	Specific weight
J	(kgm^2)	Moment of inertia
t	(mm)	Pitch
n	(min^{-1})	Rpm
n_1	(min^{-1})	Rpm of driver pulley
ω	(s^{-1})	Angular speed
β	(°)	Wrap angle

Calculation formula

Power

$$P = \frac{M \cdot n}{9550} \quad ; \quad P = \frac{F_u \cdot d_w \cdot n}{19100 \cdot 10^3}$$

Peripheral force

$$F_u = \frac{19100 \cdot P \cdot 10^3}{n \cdot d_w} \quad ; \quad F_u = \frac{2000 \cdot M}{d_w}$$

Torque

$$M = \frac{F_U \cdot d_W}{2000} \quad ; \quad M = \frac{P \cdot 9550}{n}$$

Angular speed

$$\omega = \frac{\pi \cdot n}{30}$$

pheripheral speed

$$v = \frac{d_w \cdot n}{19100}$$

Acceleration torque

$$M_{ab} = \frac{J \cdot \Delta n}{9{,}55 \cdot t_{ab}}$$

Moment of inertia

$$J = 98{,}2 \cdot 10^{-15} \cdot B \cdot \rho \cdot \left(d_a^4 - d^4\right)$$

rpm

$$n = \frac{19100 \cdot v}{d_w}$$

Safety factors

Belt selection is made according to a constant working load. In case of peak loads and vibrations a safety factor c_1 must be considered.

Transmission with steady load	$c_1 = 1,0$

Transmission with peak or fluctuating loads:

Light	$c_1 = 1,4$
Medium	$c_1 = 1,7$
Heavy	$c_1 = 2,0$

For speed up driver factor c_2 must be considered:

i = from 0,66 to 1	$c_2 = 1,1$
i = from 0,40 to 0,66	$c_2 = 1,2$
i < 0,40	$c_2 = 1,3$

The resulting total safety factor is:

$c_0 = c_1 \cdot c_2$

Drive calculation

The necessary data for drive calculation are:

• Power to be transmitted	P	[kW]
• Driver rpm	n_1	[min^{-1}]
• Motor starting torque	M_{ab}	[Nm]
• Required center distance	A	[mm]
• Maximum driver pulley diameter	d_{w1}	[mm]

Select type of belt

For the initial drive selection, use the selection graphs illustrated in the relative ELA-flex SD™ cataloge section. For initial pulley choice, it is recommended to use the driver pulley with maximum diameter allowable in the application.

Calculate drive ratio

$$i = \frac{n_{driver}}{n_{driven}}$$

Calculate belt lenght

Belt lenght for drive with ratio i # 1

$$L_R \approx \frac{t}{2} \cdot (z_g + z_k) + 2A + \frac{1}{4A} \cdot \left[\frac{(z_g - z_k) \cdot t}{\pi} \right]^2$$

and more precisely:

$$L_R = 2A \cdot \sin \cdot \frac{\beta}{2} + \frac{t}{2} \cdot \left[z_g + z_k + \left(1 - \frac{\beta}{180} \right) \cdot (z_g - z_k) \right]$$

Belt lenght for drive with ratio i = 1

$$L_R = 2 \cdot A + \pi \cdot d_w = 2 \cdot A + z \cdot t$$

Calculate teeth in mesh

$$z_e = \frac{\beta}{360} \cdot z_k$$

with β [°] = wrap angle

$$\beta = 2 \cdot \arccos \cdot \left[\frac{t \cdot (z_g - z_k)}{2 \cdot \pi \cdot A} \right]$$

Determine belt width

$$b = \frac{P \cdot 1000 \cdot c_0}{z_k \cdot z_e \cdot P_{spez}} \qquad b = \frac{100 \cdot M \cdot c_0}{z_k \cdot z_e \cdot M_{spez}}$$

Verifiy allowable tensile load

The allowable tensile load of the belt must be highter than the total corrected peripheral force.

$$F_{Tzul} > c_0 \cdot F_U \quad \text{with} \quad F_U = \frac{2000 \cdot M}{d_W}$$

Calculate shaft load

$$F_{Wsta} = 2 \cdot F_{Tv} \cdot \cos \cdot \beta$$
$$F_{Wsta} = 2 \cdot F_{Tv} \, (\text{for } i = 1)$$

Determine installation tension

A drive is correctly tensioned when the belt slack side is tensioned in all working conditions. It is also important to use the minimum necessary tension to minimize shaft loads. Belt tension is dependent also on belt length L_R and its number of teeth Z_R. According to belt number of teeth, following tension is suggested:

2 shafts drive

$Z_R < 75$	$F_{TV} = 1/3\ F_U$
$75 < Z_R < 150$	$F_{TV} = 1/2\ F_U$
$Z_R > 150$	$F_{TV} = 2/3\ F_U$

More than 2 shafts drive

$F_{TV} > F_U$

In order to ensure the correct drive installation tension, it is recommended to use the special belt tension meter available from ELATECH®.

Calculation example

- Power to be transmitted 20 Kw
- Driver rpm n_1 1500 1/min
- Driven rpm n_2 1500 1/min
- Motor torque M 250 Nm
- Required center distance A 1800 mm
- Max allowable driver pulley diameter d_w 150 mm
- Safety factor c_1 1,4

Calculate drive ratio

$$\frac{n_1}{n_2}=1$$

Select belt type and pitch

From HTD selection graphs and the corrected power of 28 Kw, a 8M pitch is chosen.

Calculate pulley diameter

From the maximum allowable pulleys diameter, the drive ratio and the type of belt selected, the number of teeth of the driver and driven pulley is calculated.

$$z=\frac{150\cdot\pi}{8}=$$ 58,9 - select z = 56 with d_w = 142,60 mm

The maximum allowable diameter is chosen to minimize belt width.

$z_1 = 56$
$z_2 = 56$

Calculate belt length

$$L_R=2\cdot A+\pi\cdot d_w=2\cdot A+z\cdot t$$

$$L_R=2\cdot 1800+56\cdot 8=4048 \text{ mm}$$

Calculate teeth in mesh

Being the drive ratio 1, the pulleys have 28 teeth in mesh.
$z_e = 28$

Calculate belt width

$$b=\frac{1000\cdot 20\cdot 1{,}4}{56\cdot 12\cdot 8{,}572}=4{,}86 \text{ cm} = 48{,}6 \text{ mm}$$

A belt width of 50 mm is selected .
The belt width is verified according to the peak torque (starting torque) for n = 0 with 1,4 x 250 Nm as start up torque

$$b=\frac{100\cdot 350}{56\cdot 12\cdot 9{,}422}=5{,}53 \text{ cm} = 55 \text{ mm}$$

The next belt width 85 mm is chosen.

Verify allowable tensile load

$$F_U=\frac{2000\cdot 350}{142{,}6}=4908{,}83 \text{ N}$$

Determine installation tension according to belt number of teeth

$$z_R=\frac{4048}{8}=506 \text{ teeth}$$

The installation tension per belt side F_{TV} is therefore:

$$F_{TV}=\frac{2}{3}\cdot F_U = 3272{,}55 \text{ N with } z_R = 506 > 150$$

From the technical data for ELA-flex SD™ belts HTD 8M, the maximum allowable tensile load for belt width 85 mm is: 13400 N.

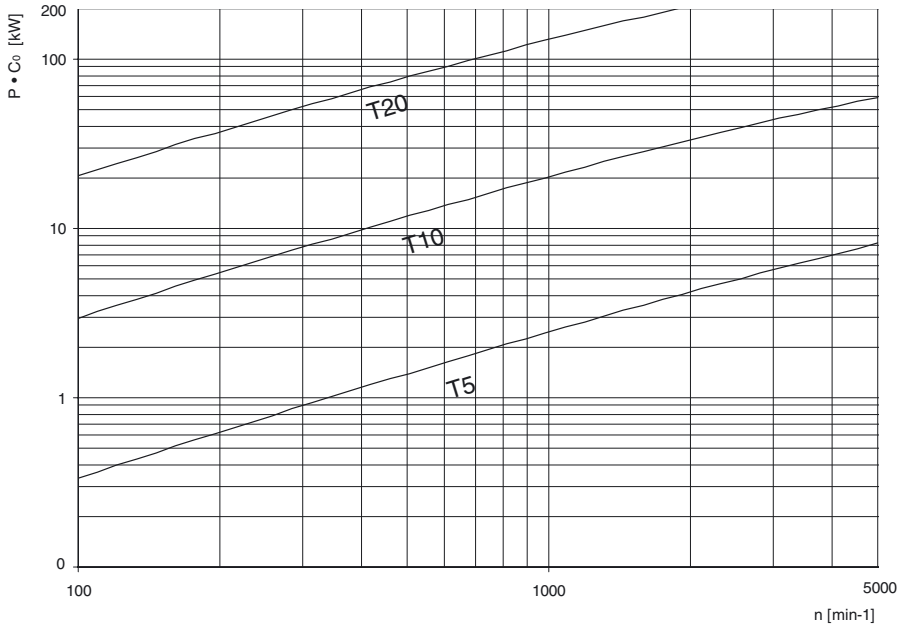
F_{Tzul} = 13400 N > F_{TV} + F_U = 3272,55 + 4908,83 = 8181,38 N

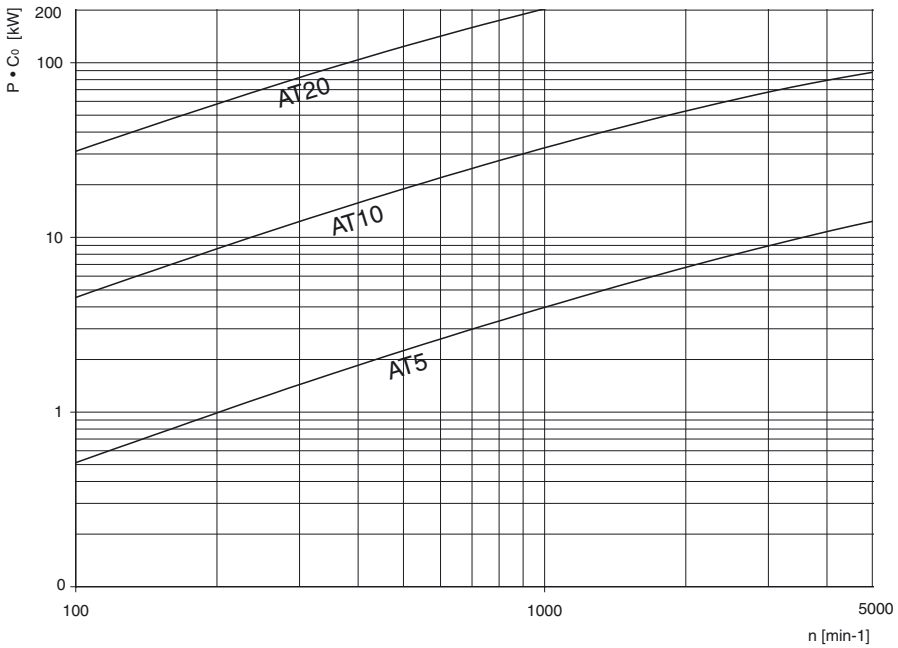
Verify flexibility

The minimum pulley diameters are respected.

Selection graphs

The selection graphs enable to select the most suitable timing belt pitch, for each belt profile, for the power to be transmitted. The rpm on the horizontal axis refers to the small pulley. The corrected power (safety factor x nominal power) is read on the vertical axis.





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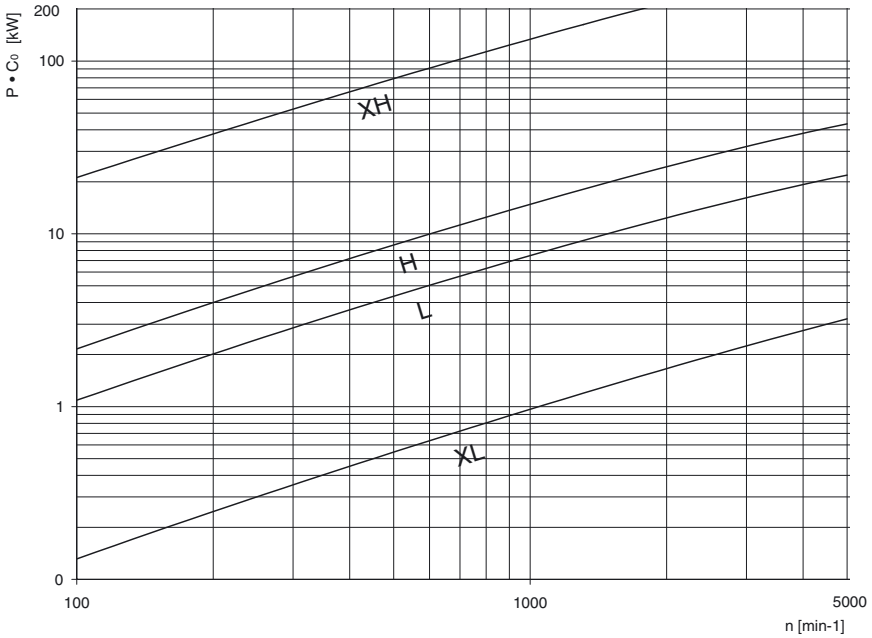
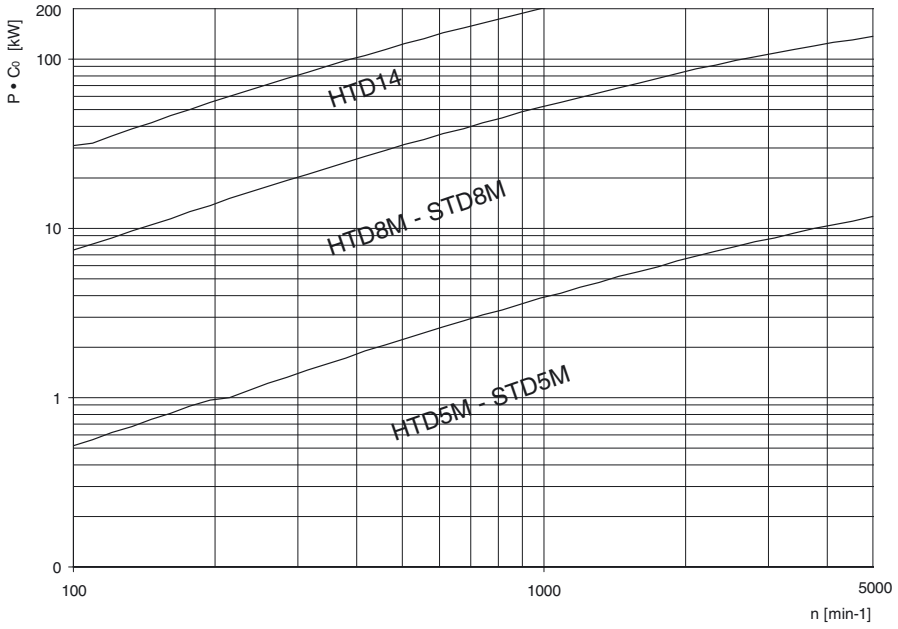
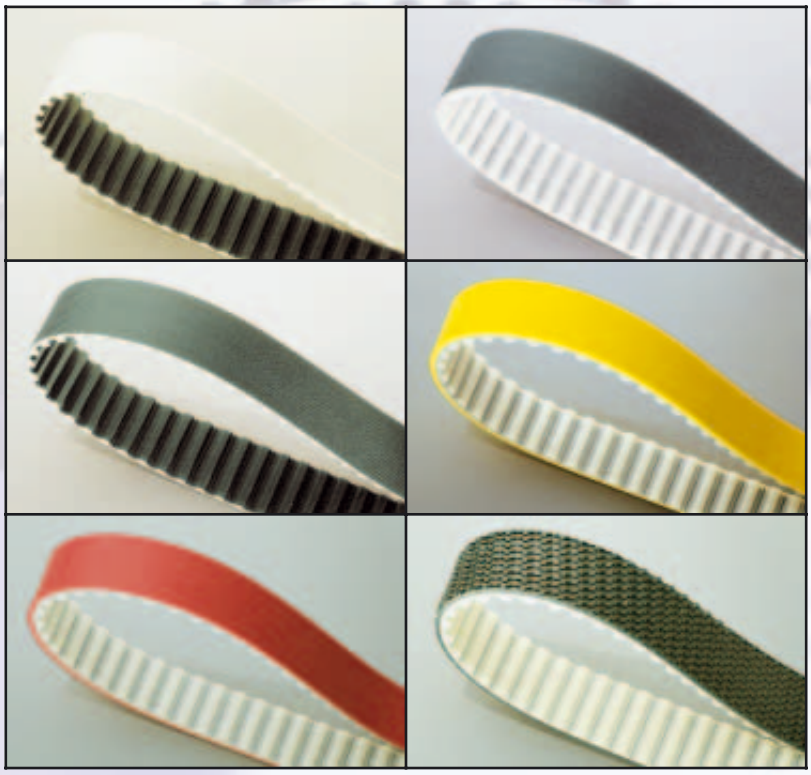




Polyurethane belts for conveying applications



Polyurethane belts for conveying applications

The unique chemical and mechanical characteristics of ELATECH® belts together with the possibility of a wide variety of backings in different materials make ELATECH® belts ideal for all conveying applications where synchronization is required. The engineer designer has unlimited possibilities to make unique designs.

Polyamide fabric backings

The special polyamide fabric backings allow a reduction of the friction coefficient and when applied on teeth, decrease noise in high speed drives. They are very useful in applications with sliding surfaces or product accumulation.

PAZ: Polyamide backing on tooth side
Reduces coefficient of friction and allows a smother tooth engagement.

PAR: Polyamide backing on back side
Reduces coefficient of friction.

PAZ-PAR: Polyamide backing on both tooth and back side

Coefficent of friction

- Polyurethane on steel $\mu = 0,7$
- Polyammide on steel $\mu = 0,35$

	PAZ	PAR	PAZ-PAR
			
	Tooth facing fabric	Nylon fabric on the belt back	Nylon fabric on tooth facing and on belt back
Material	Polyamide	Polyamide	Polyamide
Color	Green	Green	Green
Mechanical charateristics	Low coefficient of friction	Low coefficient of friction	Low coefficient of friction
Chemical properties	Moderate resistance to oils and greases	Moderate resistance to oils and greases	Moderate resistance to oils and greases

Polyurethane film backing (foil)

Among all synthetic materials and rubber compounds, polyurethane is the material which offers the best resistance to abrasion. Polyurethane films of different thickness and different shore hardness, applied on ELATECH® belts, are an ideal solution in many applications in the wood processing, ceramic and glass industry. On request it is possible to supply polyurethane backings FDA approved.

	PUR 85	PUR 70
		
Material	TPU	TPU
Color	Trasparent	Trasparent
Hardness	85 Sh A	70 Sh A
Standard thickness	2 mm	2-3-4-5 mm
Max working temperature	85° C	80° C
Mechanical charateristics	High coefficient of friction, high abrasion and wear resistance	High coefficient of friction, high abrasion and wear resistance
Chemical properties	Good resistance to oils and greases	Good resistance to oils and greases

Polyurethane foam backings

Polyurethane foams are easily compressible according to the cellular structure of the material. Due to this main characteristic, common applications are: labelling equipment, light and/or fragile materials conveying, glass and paper industry, vacuum conveyors.

	PU YELLOW	CELLOFLEX
		
Material	Polyurethane	Polyurethane foam
Color	Yellow	Beige
Hardness	55 Sh A	-
Standard thickness	2,3,4,5, mm	2,4,6,8,10 mm
Max working temperature	60° C	80° C
Mechanical charateristics	Good wear resistance	High flexibility and high coefficient of friction
Chemical properties	Moderate resistance to oils and greases	Moderate resistance to oils and greases

PVC backings

PVC has a high coefficient of friction and a good resistance to acids. Due to its versatility, it is used in many applications in the paper, glass, ceramic industry, labelling and packing equipment. FDA quality allows the application in food industry processes.

	SUPERGRIP	FISHBONE	PVC BLUE/WHITE
			
Material	PVC	PVC	PVC
Color	Green / Blue	White	Blue / White
Hardness	ca. 30 Sh A	40 Sh A	ca. 40 Sh A
Standard thickness	4mm	ca. 4 mm	1,2,3 mm
Max working temperature	60° C	80° C	80° C
Mechanical charateristics	High coefficient of friction	Good wear resistance, high coefficient of friction	Good wear resistance, high coefficient of friction
Chemical properties	Good resistance to oils and greases	FDA approved, good resistance to oils and greases	Good resistance to oils and greases. White type is FDA approved.

Rubber backing

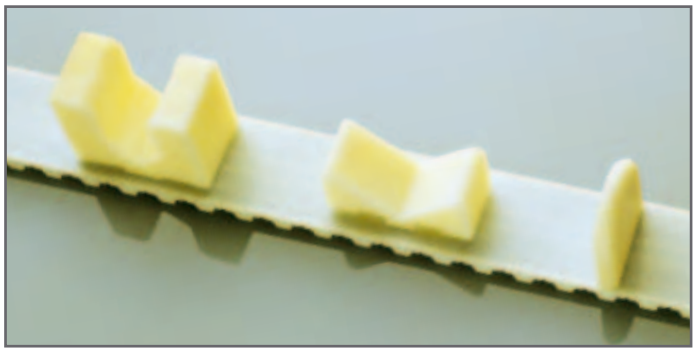
Many different rubber backings in both synthetic and natural rubber are available. Due to rubber high friction coefficient and high temperature resistance, ELATECH® polyurethane belt with rubber backing are used in many different conveying application: paper industry, ceramic industry, wood processing industry, glass industry, labelling and packaging machines.

	LINATEX	POROL	ISOGUM
			
Material	Natural rubber	Cellular rubber	Natural rubber
Color	Red	Black	Red
Hardness	ca. 40 Sh A	ca. 190 g/dm^3	ca. 40 Sh A
Standard thickness	1,6; 2,4; 3,2; 4,8; 6,4; 12,7 mm	ca. 4 mm	2, 3, 4, 6, 10, 12 mm
Max working temperature	60° C	60° C	60° C
Mechanical charateristics	Hight coefficient of friction, very good resistance to cut and tear	Good wear and tear resistance, high coefficient of friction	Truly endless backing which guarantee long belt life. Hight coefficient of friction, very good resistance to cut and tear
Chemical properties	Good resistance to oils	Good resistance to non aggressive oils	Good resistance to oils

More types of backing are available. Please consult with our technical department.

ELATECH® polyurethane belts with profiles

It is possible to attach profiles on all ELATECH® and ELA-flex SD™ polyurethane belts for conveying, handling and positioning applications.



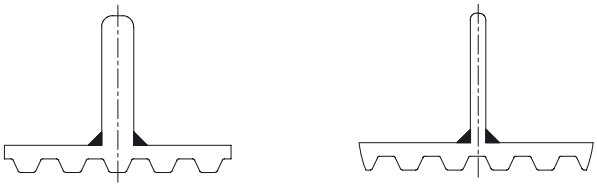
Characteristics and guidelines

Pitch

It is recommended to chose the pitch of the profile corresponding to the belt profile or multiple. This allows to minimize the effects of the belt overall length tolerance on profile spacing.

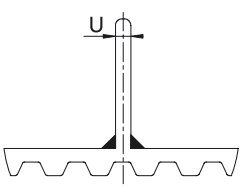
Position

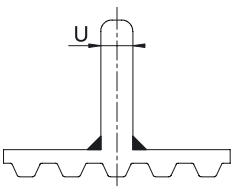
Profiles position may be over the tooth or not over the tooth. Belt Flexibility is maximised when the profiles are applied over the tooth.



Arc of contact

It is to be noted that the belt's arc of contact may be restricted by the jointed profile. It is therefore recommended to select profiles with the minimum allowable thickness "U".





Tolerances

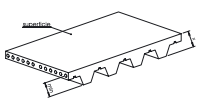
The tolerance of position of the profiles is +/- 0,5 mm. During the welding process a bead of polyurethane of about 0,5-1 mm develops at the meeting point between the profile and the belt. Should it be necessary for the application, it is possible to remove it with a mechanical machining.

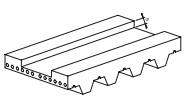
Ordering

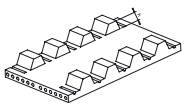
When ordering it is necessary to indicate: type of belt (width, profile, pitch, length), the belt length in number of teeth, the belt and profile drawing with the number and the pitch of the requested profiles

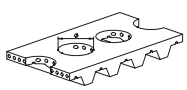
Special execution

On demand it is possible to produce special belts with special machining both on the teeth and on the back of the belt.



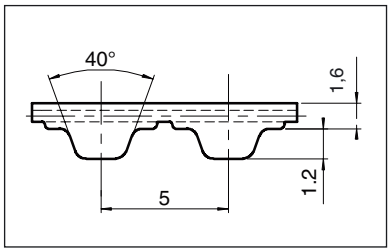






TT5 Polyurethane timing belts

ELATECH® manufactures special TT5 belts which have been expressly designed for application in circular knitting machines drives.



ELATECH® belts TT5 are available in the following executions:

ELATECH® - V

- A special slicing and welding process offers superior traction load resistance.
- They are available both with steel and aramid cords.
- Standard colour is white. Special colours available on demand.
- Available in any lenght tooth by tooth.

ELA-flex SD™ truly endless

- ELA-flex SD™ TT5 have no splice and welding and therefore offer best traction resistance load.
- They are available both with steel and aramid cords.
- Standard colour is white. Special colours available on demand.
- Available in all lengths tooth by tooth up to a length of 13500 mm.

Notes:

The data contained in this publication are for information purposes only and do not enlarge, amend or imply any warranty other than provided by the manufacturer with the product. In the spirit of continuos technical improvement, the specifications in this catalogue are subject to change without notice.