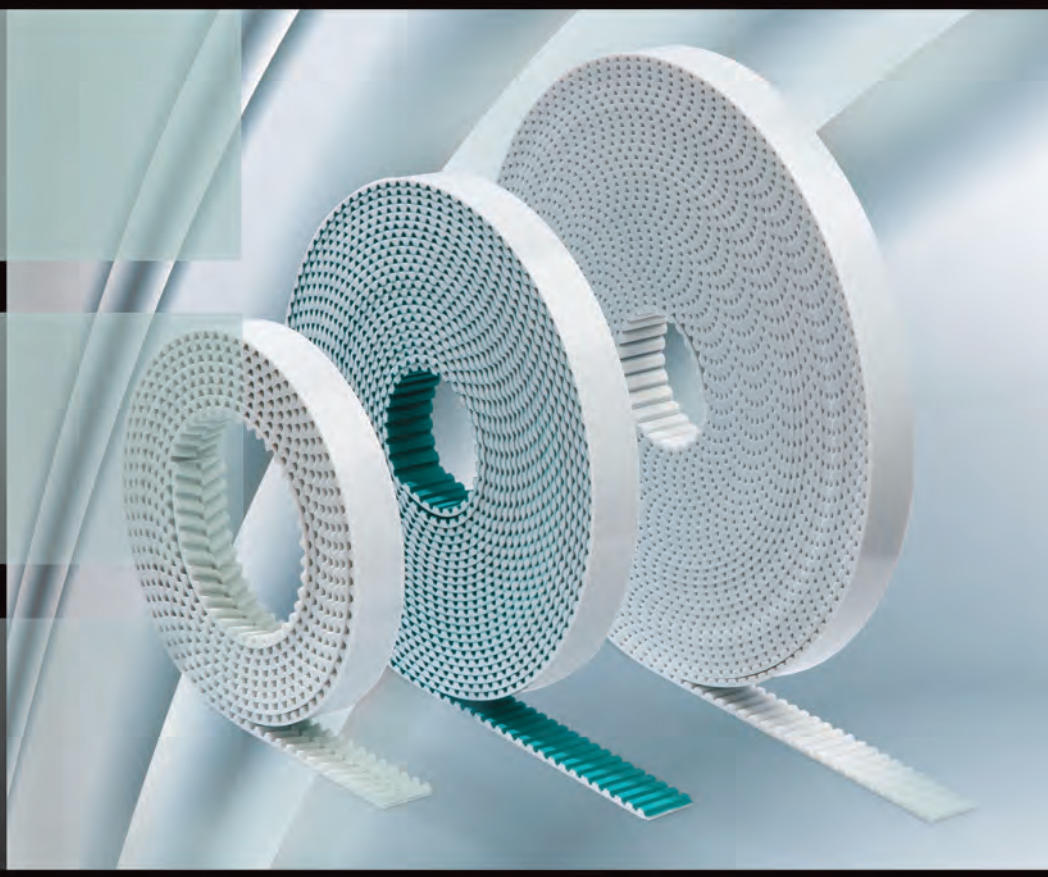
ELATECH® **M and V**



Elatech

Technology in Motion.

The timing belts manufactured by ELATECH® have been designed to comply with 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

Product certification

- ELATECH® belts are certified to be according RoHS 2002/95/EC
- On request, it is possible to deliver belts:
  - according to 94/9/CE ATEX Ex II2G-22D
  - with antistatic properties

Colour

The standard colour ELATECH® timing belt is white.
On demand it is possible to deliver belts in different colours.

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.
Belt length tolerances are valid for steel cord reinforcement. In case of other material (aramid, fibreglass) length tolerance may change.
For application with special cords ask our engineering department.

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 for standard material -10°C +80°C (peaks up to 110°C).
  For very low temperature special compound material is available on request (see dedicated table)
- 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 length:

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

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

Ordering example H cut to length:

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

- Belt number of teeth
- ELATECH® timing belt type “M”
- Belt length (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
- Length 3410 mm
- Pitch 5 mm
- Profile “AT”
- Width 20 mm

Ordering example STD :

50 STD S8M 1800 - V

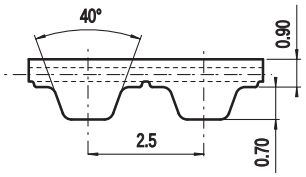
- ELATECH® timing belt type “V” jointed
- Length 1800 mm
- Pitch 8 mm
- Profile “STD”
- Width 50 mm

Ordering example XL :

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

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

T 2,5



Belt characteristics

- Polyurethane timing belt with steel tension cords
- Trapezoidal tooth profile according to DIN 7721 T1
- Metric pitch 2,5 mm
- Ideal for drives where high belt flexibility is requested
- Widely used for conveying, linear drive and light power transmission applications
- Color: white

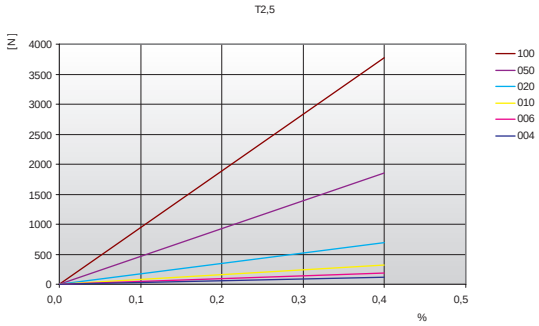
• Width tolerance:	±0,5 [mm]
• Length tolerance:	±0,5 [mm/m]
• Thickness tolerance:	±0,2 [mm]

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 [kg/m]
4	130	65	500	32500	0,004
6	190	95	750	47500	0,007
10	320	160	1250	80000	0,011
20	700	350	2750	175000	0,022
50	1860	930	7250	465000	0,055
100	3780	1890	14750	945000	0,110

Other widths are available on request.

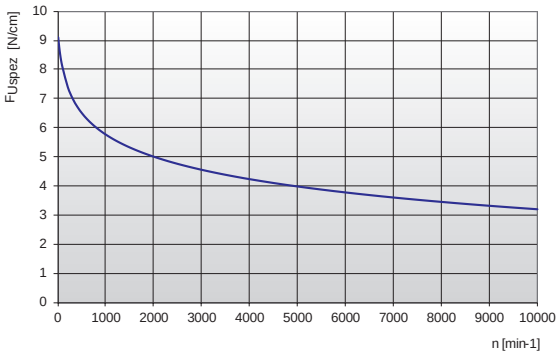
Load / Elongation [%]



Tooth shear strength

rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]	rpm	F_{Uspez} [N/cm]
0	9,10	**700**	6,13	**1800**	5,11	**4000**	4,22
20	8,77	**800**	5,99	**1900**	5,05	**4500**	4,09
40	8,51	**900**	5,86	**2000**	4,99	**5000**	3,97
60	8,30	**1000**	5,75	**2200**	4,88	**5500**	3,86
80	8,13	**1100**	5,64	**2400**	4,79	**6000**	3,76
100	8,00	**1200**	5,55	**2600**	4,70	**6500**	3,67
200	7,39	**1300**	5,46	**2800**	4,62	**7000**	3,59
300	7,00	**1400**	5,38	**3000**	4,54	**7500**	3,51
400	6,71	**1440**	5,35	**3200**	4,47	**8000**	3,44
500	6,48	**1500**	5,31	**3400**	4,40	**8500**	3,37
600	6,29	**1600**	5,24	**3600**	4,34	**9000**	3,30
700	6,13	**1700**	5,17	**3800**	4,28	**10000**	3,18

Tooth shear strength / 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 pulley number of teeth and minimum idler diameter		Type of cord
		STANDARD
Drive without reverse bending	Timing pulley z_{min}	15
	Flat idler running on belt teeth d_{min}	15 mm
Drive with reverse bending	Timing pulley z_{min}	18
	Flat idler running on belt back d_{min}	18 mm

Timing pulleys

z	da	dw
10	7,46	7,96
11	8,25	8,75
12	9,05	9,55
13	9,85	10,35
14	10,64	11,14
15	11,44	11,94
16	12,23	12,73
17	13,03	13,53
18	13,82	14,32
19	14,62	15,12
20	15,42	15,92
21	16,21	16,71
22	17,01	17,51
23	17,80	18,30
24	18,60	19,10
25	19,39	19,89
26	20,19	20,69
27	20,99	21,49
28	21,78	22,28
29	22,58	23,08
30	23,37	23,87
31	24,17	24,67
32	24,97	25,47
33	25,76	26,26
34	26,56	27,06
35	27,35	27,85
36	28,15	28,65
37	28,94	29,44
38	29,74	30,24
39	30,54	31,04
40	31,33	31,83
41	32,13	32,63
42	32,92	33,42

z	da	dw
43	33,72	34,22
44	34,52	35,02
45	35,31	35,81
46	36,11	36,61
47	36,90	37,40
48	37,70	38,20
49	38,49	38,99
50	39,29	39,79
51	40,09	40,59
52	40,88	41,38
53	41,68	42,18
54	42,47	42,97
55	43,27	43,77
56	44,06	44,56
57	44,86	45,36
58	45,66	46,16
59	46,45	46,95
60	47,25	47,75
61	48,04	48,54
62	48,84	49,34
63	49,64	50,14
64	50,43	50,93
65	51,23	51,73
66	52,02	52,52
67	52,82	53,32
68	53,61	54,11
69	54,41	54,91
70	55,21	55,71
71	56,00	56,50
72	56,80	57,30
73	57,59	58,09
74	58,39	58,89
75	59,18	59,68

z	da	dw
76	59,98	60,48
77	60,78	61,28
78	61,57	62,07
79	62,37	62,87
80	63,16	63,66
81	63,96	64,46
82	64,76	65,26
83	65,55	66,05
84	66,35	66,85
85	67,14	67,64
86	67,94	68,44
87	68,73	69,23
88	69,53	70,03
89	70,33	70,83
90	71,12	71,62
91	71,92	72,42
92	72,71	73,21
93	73,51	74,01
94	74,31	74,81
95	75,10	75,60
96	75,90	76,40
97	76,69	77,19
98	77,49	77,99
99	78,28	78,78
100	79,08	79,58
101	79,88	80,38
102	80,67	81,17
103	81,47	81,97
104	82,26	82,76
105	83,06	83,56
106	83,85	84,35
107	84,65	85,15
108	85,45	85,95

z	da	dw
109	86,24	86,74
110	87,04	87,54
111	87,83	88,33
112	88,63	89,13
113	89,43	89,93
114	90,22	90,72
115	91,02	91,52
116	91,81	92,31
117	92,61	93,11
118	93,40	93,90
119	94,20	94,70
120	95,00	95,50
121	95,79	96,29
122	96,59	97,09
123	97,38	97,88
124	98,18	98,68
125	98,97	99,47
126	99,77	100,27
127	100,57	101,07
128	101,36	101,86
129	102,16	102,66
130	102,95	103,45
131	103,75	104,25
132	104,55	105,05
133	105,34	105,84
134	106,14	106,64
135	106,93	107,43
136	107,73	108,23
137	108,52	109,02
138	109,32	109,82
139	110,12	110,62
140	110,91	111,41