

DYSTRYBUTOR



**TECHNICAL**

GRZEGORZ TĘGOS

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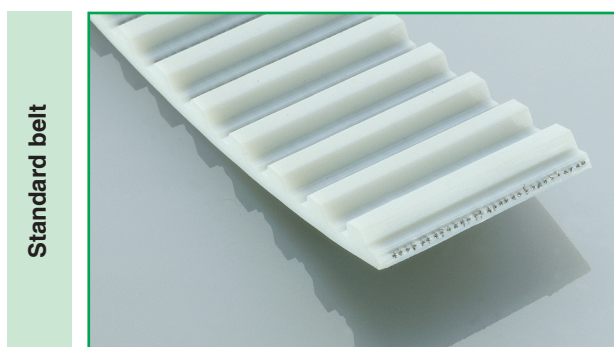
Sklep internetowy  
[www.sklep.technical.pl](http://www.sklep.technical.pl)

**Pasy zębate PU  
z metra  
Total Protection  
T, AT, HTD**

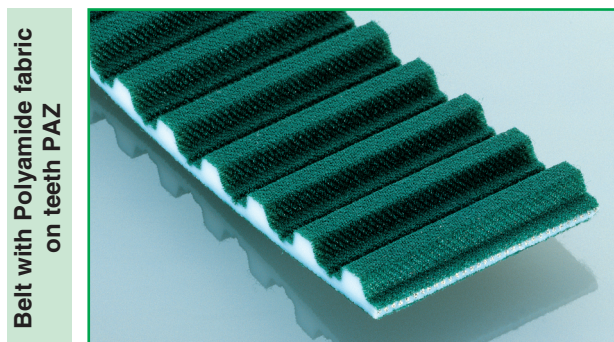


Antriebsselemente

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 declaration**

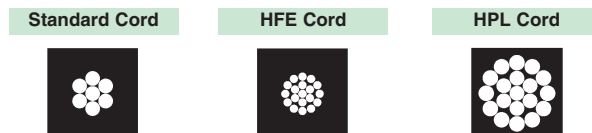
- ELATECH® belts are certified to be according RoHS 2011/65/UE
- On request, it is possible to deliver belts:
  - with antistatic properties according to ISO9563
  - other special certifications available on request

**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:



- **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 roll 100 m profile T :

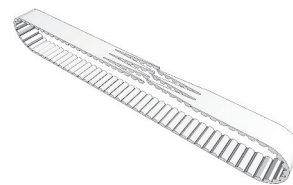
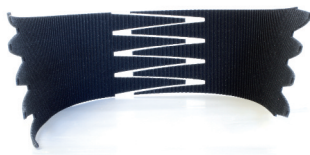
ELATECH® "R" - Roll 100 m	R	025	T	10	A / Z
ELATECH® timing belt type "R"					
Width 25 mm (3 digits)					
Profile "T"					
Pitch 10 mm					
A= steel cords S= inox cords K= Kevlar® cords F= high flexibility cords P= high power cords					
Z= fabric on teeth (PAZ) R= fabric on back (PAR) D= fabric on PAZ + PAR					

#### Ordering example profile H cut to length:

ELATECH® "M" cut to length	M	100	H	A	01000 / Z
ELATECH® timing belt type "M"					
Width (x 0,254 = mm) - 3 digits					
Profile "H"					
A= stainless steel cords S= inox cords K= Kevlar® cords F= high flexibility cords P= high power cords					
Length 1000 mm (5 digits)					
Z= fabric on teeth (PAZ) R= fabric on back (PAR) D= fabric on PAZ + PAR					

### 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. Free combinations with special backing materials and welded profiles, make ELATECH® V belts ideal in synchronized conveying and highly specialised applications.



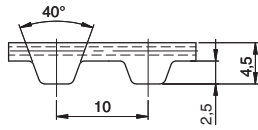
#### Ordering example profile AT :

ELATECH® "V" jointed	V	020	AT5	A	03410 / Z
ELATECH timing belt type "V" jointed					
Width 20 mm (3 digits)					
Profile "AT" - Pitch 5 mm					
A= stainless steel cords S= inox cords K= Kevlar® cords F= high flexibility cords P= high power cords					
Length 3410 mm (5 digits)					
Z= fabric on teeth (PAZ) R= fabric on back (PAR) D= fabric on PAZ + PAR					

#### Ordering example profile XL :

ELATECH® "V" jointed	V	150	XL	A	00750 / Z
ELATECH timing belt type "V" jointed					
Width (x 0,254 = mm) - 3 digits					
Profile "XL"					
A= stainless steel cords S= inox cords K= Kevlar® cords F= high flexibility cords P= high power cords					
Length 750 mm (5 digits)					
Z= fabric on teeth (PAZ) R= fabric on back (PAR) D= fabric on PAZ + PAR					

# T 10 TOTAL PROTECTION



### Belt characteristics

- Polyurethane timing belt with steel tension cords
- Tooth profile according to ISO 17396
- Metric pitch 10 mm
- **TP (Total Protection) belt. The absence of tooth gap makes the belt cords protected against corrosion**
- **Widely used in applications with corrosive environment, high humidity**
- Light blue color available on request

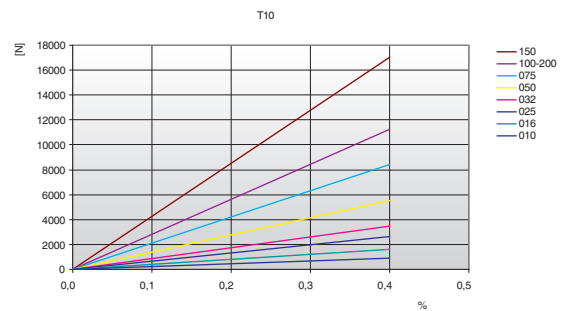
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,5 [mm/m]
- Thickness tolerance: ±0,2 [mm]

## Technical Data

Belt width b [mm]	Allowable tensile load Type M F <sub>Tzul</sub> [N]	Allowable tensile load Type V F <sub>Tzul</sub> [N]	Breaking load Type M F <sub>Br</sub> [N]	Specific spring rate C <sub>spez</sub> [N]	Weight [kg/m]
10	920	460	3360	230000	0,05
16	1610	805	5880	402500	0,07
25	2650	1325	9660	662500	0,11
32	3450	1725	12600	862500	0,15
50	5520	2760	20160	1380000	0,23
75	8400	4200	30660	2100000	0,34
100	11270	5635	41160	2817500	0,45

Other widths are available on request.

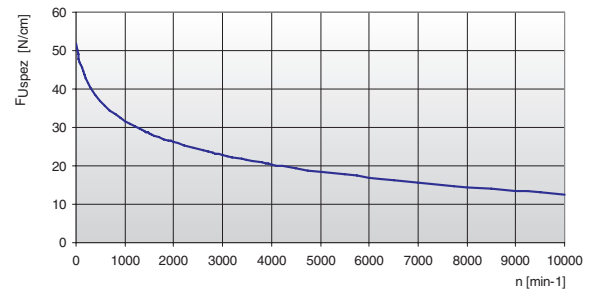
### Load / Elongation [ % ]



### Tooth shear strength

rpm	F <sub>Uspez</sub> [N/cm]	rpm	F <sub>Uspez</sub> [N/cm]	rpm	F <sub>Uspez</sub> [N/cm]	rpm	F <sub>Uspez</sub> [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 strength / rpm



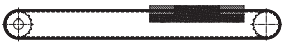
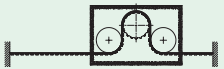
The specific load F<sub>Uspez</sub> is the maximum load which one single belt tooth 1 cm wide can withstand in all operating conditions. This force is related to the drive rpm. The total load F<sub>u</sub> transmissible by the belt in the drive is calculated by:

$$F_u [N] = F_{Uspez} \cdot Z_e \cdot b$$

- F<sub>u</sub> [N] = peripheral force
- F<sub>Uspez</sub> [N/cm] = specific load
- Z<sub>e</sub> = number of teeth in mesh in the small pulley
- Z<sub>e,max</sub> = max. no of teeth in mesh to be considered for the calculation of the drive
- Z<sub>e,max</sub> = 12 for ELATECH® M
- Z<sub>e,max</sub> = 6 for ELATECH® V
- b [cm] = belt width in cm

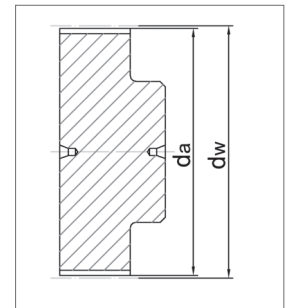
# T 10 TOTAL PROTECTION

### Flexibility

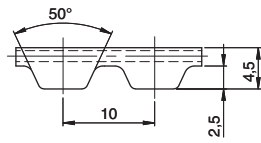
Minimum pulley number of teeth and minimum idler diameter		Type of cord
		STANDARD
Drive without reverse bending 	Timing pulley $z_{min}$	12
	Flat idler running on belt teeth $d_{min}$	60 mm
Drive with reverse bending 	Timing pulley $z_{min}$	20
	Flat idler running on belt back $d_{min}$	60 mm

### Timing pulleys

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



# AT 10 TOTAL PROTECTION



### Belt characteristics

- Polyurethane timing belt with steel tension cords
- Metric pitch 10 mm
- Tooth profile according to ISO 17396
- 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
- **TP (Total Protection) belt. The absence of tooth gap makes the belt cords protected against corrosion**
- **Widely used in applications with corrosive environment, high humidity**
- Light blue color available on request

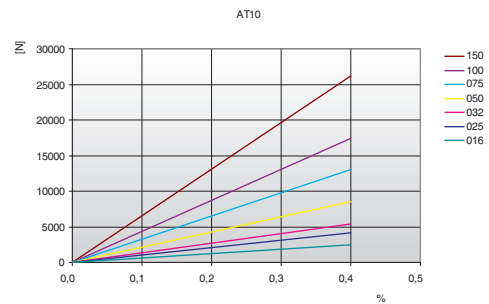
- Width tolerance: ±0,5 [mm]
- Length tolerance: ±0,8 [mm/m]
- Thickness tolerance: ±0,2 [mm]

## Technical Data

Belt width b [mm]	Allowable tensile load <b>Type M</b> F <sub>Tzul</sub> [N]	Allowable tensile load <b>Type V</b> F <sub>Tzul</sub> [N]	Breaking load <b>Type M</b> F <sub>Br</sub> [N]	Specific spring rate C <sub>spez</sub> [N]	Weight [kg/m]
16	2450	1225	9500	612500	0,09
25	4170	2085	16150	1042500	0,15
32	5390	2695	20900	1347500	0,19
50	8580	4290	33250	2145000	0,30
75	12990	6495	50350	3247500	0,44
100	17400	8700	67450	4350000	0,59

Other widths are available on request.

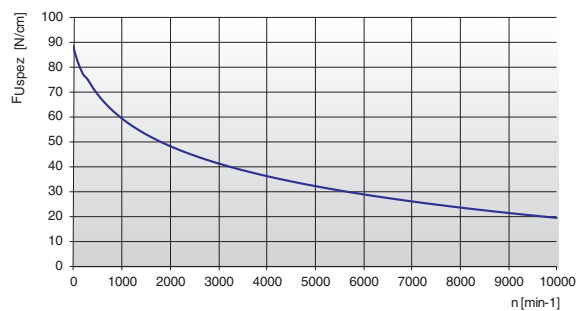
Load / Elongation [ % ]



### Tooth shear strength

rpm	F <sub>Uspez</sub> [N/cm]	rpm	F <sub>Uspez</sub> [N/cm]	rpm	F <sub>Uspez</sub> [N/cm]	rpm	F <sub>Uspez</sub> [N/cm]
0	88,57	800	62,83	1900	49,16	4500	34,08
20	87,06	900	61,09	2000	48,29	5000	32,17
40	85,66	1000	59,49	2200	46,67	5500	30,43
60	84,35	1100	58,02	2400	45,18	6000	28,84
80	83,13	1200	56,66	2600	43,80	6500	27,37
100	81,99	1300	55,39	2800	42,51	7000	26,01
200	77,36	1400	54,20	3000	41,30	7500	24,73
300	75,09	1440	53,74	3200	40,17	8000	23,53
400	71,99	1500	53,08	3400	39,09	8500	22,41
500	69,27	1600	52,02	3600	38,08	9000	21,34
600	66,88	1700	51,02	3800	37,11	9500	20,33
700	64,75	1800	50,06	4000	36,20	10000	19,37

Tooth shear strength / rpm



The specific load F<sub>Uspez</sub> 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<sub>u</sub> transmissible by the belt in the drive is calculated by:

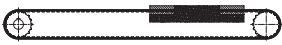
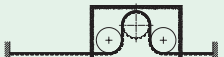
$$F_u [N] = F_{Uspez} \cdot Z_e \cdot b$$

- F<sub>u</sub> [N] = peripheral force
- F<sub>Uspez</sub> [N/cm] = specific load
- Z<sub>e</sub> = number of teeth in mesh in the small pulley
- Z<sub>emax</sub> = max. no of teeth in mesh to be considered for the calculation of the drive
- Z<sub>emax</sub> = 12 for ELATECH® M
- Z<sub>emax</sub> = 6 for ELATECH® V
- b [cm] = belt width in cm



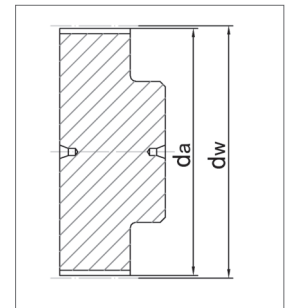
# AT 10 TOTAL PROTECTION

### Flexibility

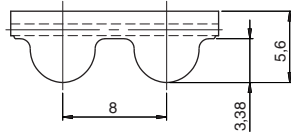
Minimum pulley number of teeth and minimum idler diameter		Type of cord
		STANDARD
Drive without reverse bending 	Timing pulley $z_{min}$	15
	Flat idler running on belt teeth $d_{min}$	50 mm
Drive with reverse bending 	Timing pulley $z_{min}$	25
	Flat idler running on belt back $d_{min}$	120 mm

### Timing pulleys

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



# HTD 8M TOTAL PROTECTION



### Belt characteristics

- Polyurethane timing belt with round tooth profile and high tensile load tension cords.
- Tooth profile 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
- **TP (Total Protection) belt. The absence of tooth gap makes the belt protected against corrosion**
- **Widely used in applications with corrosive environment**
- Light blue color available on request

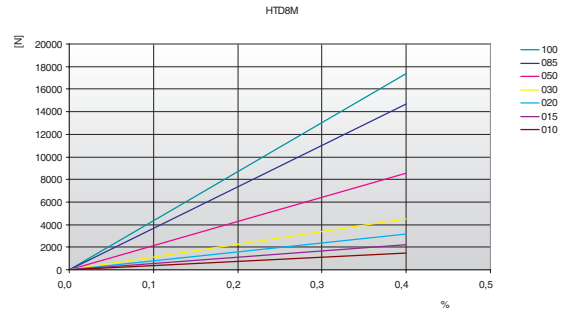
- Width tolerance:  $\pm 0,5$  [mm]
- Length tolerance:  $\pm 0,5$  [mm/m]
- Thickness tolerance:  $\pm 0,2$  [mm]

## 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]
10	1470	735	5700	367500	0,07
15	2210	1105	8550	552500	0,11
20	3190	1595	12350	797500	0,14
30	4900	2450	19000	1225000	0,21
50	8580	4290	33250	2145000	0,35
85	14700	7350	57000	3675000	0,60
100	17400	8700	67450	4350000	0,70

Other widths are available on request.

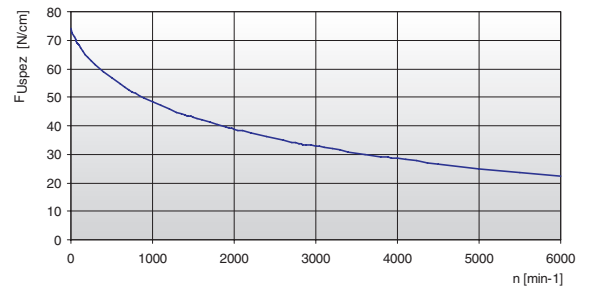
Load / Elongation [ % ]



### Tooth shear strength

rpm	$F_{Uspez}$ [N/cm]	rpm	$F_{Uspez}$ [N/cm]	rpm	$F_{Uspez}$ [N/cm]	rpm	$F_{Uspez}$ [N/cm]
0	74,00	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 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:

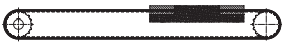
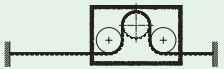
$$F_u [N] = F_{Uspez} \cdot Z_e \cdot b$$

- $F_u [N]$  = 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



# HTD 8M TOTAL PROTECTION

## Flexibility

Minimum pulley number of teeth and minimum idler diameter		Type of cord
		STANDARD
Drive without reverse bending 	Timing pulley $z_{min}$	18
	Flat idler running on belt teeth $d_{min}$	50 mm
Drive with reverse bending 	Timing pulley $z_{min}$	18
	Flat 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	48	120,86	122,23	78	197,25	198,62	108	273,64	275,01
19	47,01	48,38	49	123,40	124,77	79	199,80	201,17	109	276,19	277,56
20	49,56	50,93	50	125,95	127,32	80	202,35	203,72	110	278,74	280,11
21	52,10	53,47	51	128,50	129,87	81	204,89	206,26	111	281,29	282,66
22	54,65	56,02	52	131,05	132,41	82	207,44	208,81	112	283,84	285,21
23	57,20	58,57	53	133,59	134,96	83	209,98	211,35	113	286,38	287,75
24	59,75	61,12	54	136,14	137,51	84	212,53	213,90	114	288,93	290,30
25	62,29	63,66	55	138,68	140,05	85	215,08	216,45	115	291,47	292,84
26	64,84	66,21	56	141,23	142,60	86	217,63	219,00	116	294,02	295,39
27	67,38	68,75	57	143,78	145,15	87	220,17	221,54	117	296,57	297,94
28	70,08	71,30	58	146,32	147,69	88	222,72	224,09	118	299,11	300,48
29	72,59	73,84	59	148,87	150,24	89	225,26	226,63	119	301,66	303,03
30	75,13	76,39	60	151,42	152,79	90	227,81	229,18	120	304,20	305,57
31	77,65	78,94	61	153,96	155,33	91	230,35	231,72			
32	80,16	81,49	62	156,52	157,89	92	232,90	234,27			
33	82,68	84,03	63	159,06	160,43	93	235,45	236,82			
34	85,21	86,58	64	161,60	162,97	94	238,00	239,37			
35	87,76	89,12	65	164,15	165,52	95	240,54	241,91			
36	90,30	91,67	66	166,69	168,06	96	243,09	244,46			
37	92,85	94,22	67	169,24	170,61	97	245,63	247,00			
38	95,40	96,77	68	171,79	173,16	98	248,18	249,55			
39	97,94	99,31	69	174,33	175,70	99	250,73	252,10			
40	100,49	101,86	70	176,88	178,25	100	253,28	254,67			
41	103,04	104,40	71	179,43	180,80	101	255,82	257,19			
42	105,58	106,95	72	181,98	183,35	102	258,37	259,74			
43	108,13	109,50	73	184,52	185,89	103	260,91	262,28			
44	110,68	112,05	74	187,07	188,44	104	263,46	264,83			
45	113,22	114,59	75	189,61	190,98	105	266,01	267,38			
46	115,77	117,14	76	192,16	193,53	106	268,55	269,92			
47	118,31	119,68	77	194,71	196,08	107	271,10	272,47			

