E2 / 20166 ED 2011

Catalogue
Polyurethane Timing Belts

Gates®

Gates Mectrol – Passion for Products

Company Profiles

Gates Mectrol is a multi-national, leading manufacturer of technological forward-looking power transmission and conveyor belts made out of highly abrasion-resistant polyurethane used in various industries and applications.
Gates Mectrol's Polyurethane Timing Belts provide long-lasting, energy-efficient solutions for power transmission and linear applications. Available are open ended and truly endless belts with different sizes, designs and tooth shapes for various applications.
For processes requiring a specific belt design, contact Gates Mectrol. Gates Mectrol offers a variety of customized polyurethane belts to meet the most challenging requirements.

Our Service

With production and distribution partners worldwide Gates Mectrol features global service to solve your challenges. As a total integrated facility, Gates Mectrol combines in-house extrusion, molding as well as fabrication capabilities.

Our Quality

Specialization, research and quality control are the basis of Gates Mectrol's success. Gates Mectrol keeps investing in quality, research and development in order to meet its customer's current and future demands. Our continuous development of our products and plants guarantees highest quality according to **ISO 9001, ISO 14001** and **ISO 18001.**

REACH
Registration, Evaluation, Authorization of Chemical substances

Gates Mectrol takes its responsibility for human health and the environment very seriously and complies with the requirements laid down in the REACH regulation. All substances in our belts requiring registration will be duly registered in the central database run by the European Chemicals Agency (ECHA).

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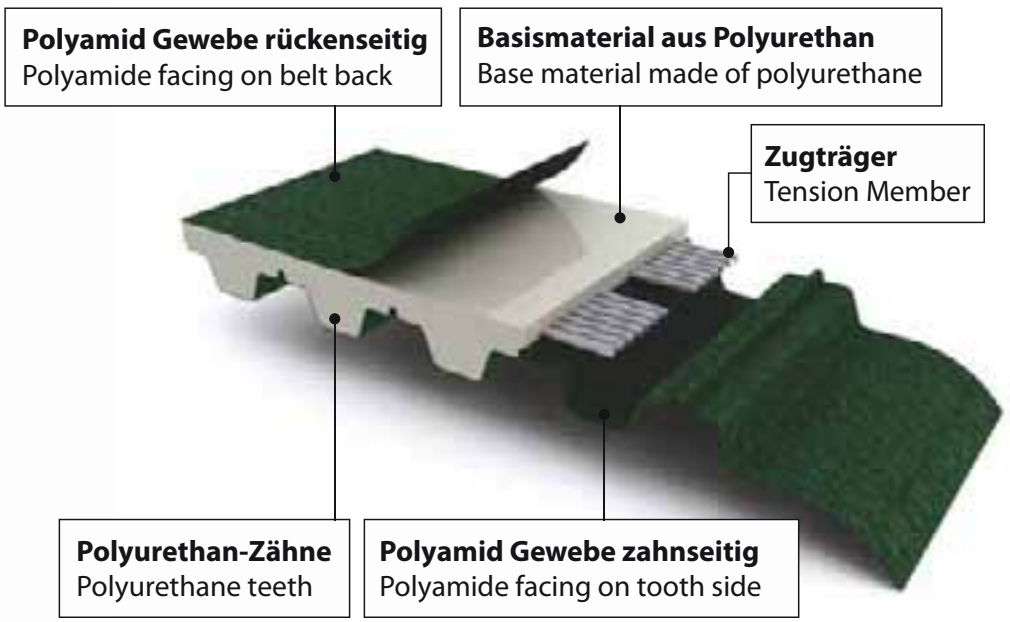


Gates Mectrol's Polyurethane Timing Belts are manufactured with **high quality, abrasion-resistant polyurethane** in combination with **high-strength steel** or **aramid cords.** Subsequent to our extrusion process nearly every belt type can be processed through **coatings, profiles** or **machining.**

Attributes

- Low-maintenance polyurethane construction
- High tensile strength
- Abrasion and UV resistant
- Low pre-tension
- Excellent durability vs. moisture
- Temperature resistant from -5° C up to +70° C
  Extended service temperature range is available on request

Chemical Attributes

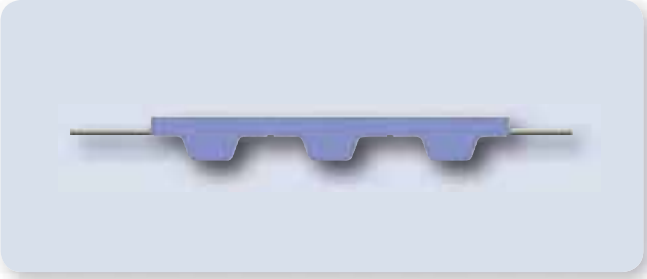
- Non-aging
- High chemical resistance
- High durability vs. detergent
- Excellent durability vs. oil and fat
- Conditionally permanent vs. acids and bases

Technical Data
Coefficient of Friction

Polyurethane vs. steel	dry	**0.5 to 0.7**
Polyurethane vs. Aluminum	dry	**0.5 to 0.6**
Polyurethane vs. UHMWPE	dry	**0.2 to 0.4**
Polyamide vs. steel	dry	**0.2 to 0.4**
Polyamide vs. UHMWPE	dry	**0.1 to 0.3**

Tooth Pitch Comparison

Imperial Profile Belts

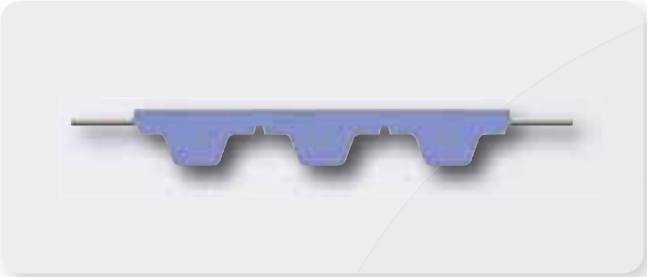


Pitch XL / L / H / XH

Attributes Low tooth Profiles with large surface area

Applications Sliding conveyor applications
Paper Handling
Bulk Conveying

T Profile Belts

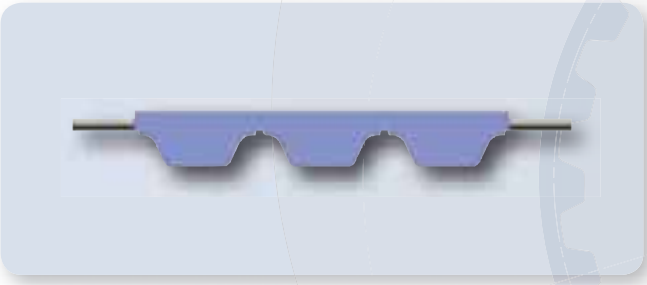


Pitch T2.5 / T5 / T10 / T20

Attributes Higher tooth, less tendency to jump

Applications Sliding conveyor applications
Paper Handling
Bulk Conveying

AT Profile Belts

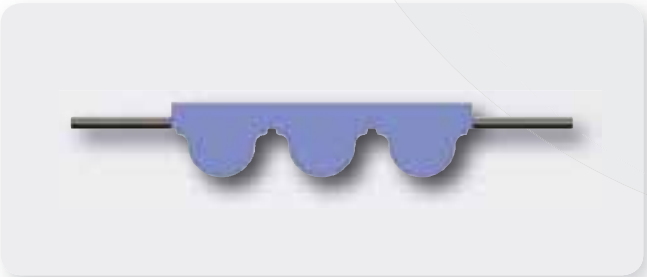


Pitch AT5 / AT10 / AT20

Attributes Developed to enable higher load carrying capacity combined with low backlash

Applications Linear Positioning
Power Transmission

HTD® Profile Belts



Pitch HTD®5 / HTD®8 / HTD®14

Attributes Higher tooth meshing
Equal tension distribution and load transmission

Applications Linear / Rotary Positioning
Power Transmission

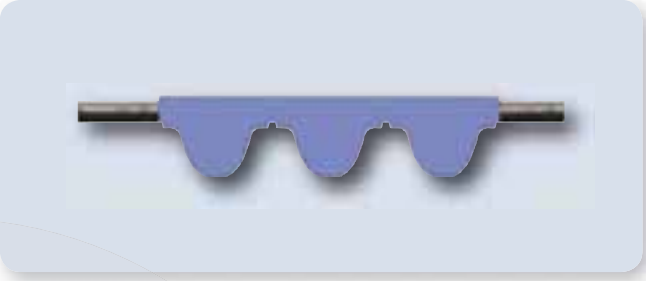
Tooth Pitch Comparison

HPL® Profile Belts

Pitch HPL®14

Attributes
High-performance synchronous belt
Higher capability than HTD®
PolyChain® 14M tooth shape
Higher carrying capacity
due to PCGT14 pulley

Applications
Linear Positioning
Lifting

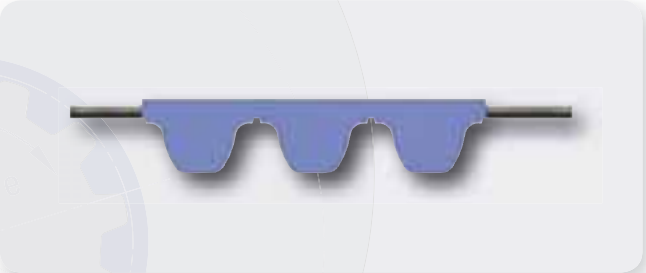


STD Profile Belts

Pitch STD5 / STD8

Attributes Reduced wear and noise characteristics

Applications
Linear Positioning
Power Transmission

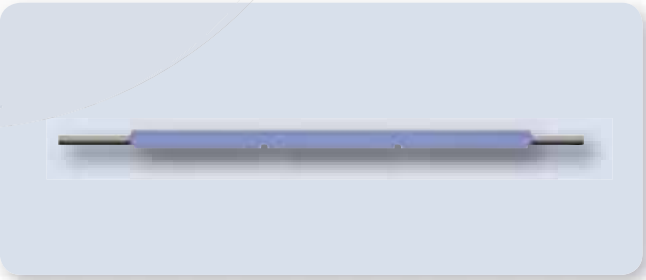


Flat Belts

Pitch F8 / FL8 / F12 / FL12

Attributes
Easy belt guiding
Small pulley diameters

Applications Lifting

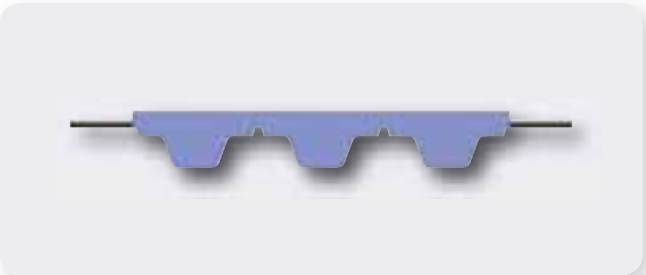


Wide Belts

Pitch WT10 / WH / GMT3™

Attributes
Widths up to 450 mm available
Alternative to plastic modular chains
and flat belting

Applications
Synchronous Conveying
Exact Positioning
Food Industry applications



Overview — Linear Timing Belts

Gates Mectrol's Linear Timing Belts are manufactured out of extruded, open ended belts in different sizes, constructions and tooth shapes. Various possibilities offer the best solution for your application needs.

Linear Belts are available as roll stock material, open ended material, punched only material or endless, thermal welded timing belts.

Linear Belts are designed to provide high class performance on both power transmission and linear applications and are very well suited to a broad range of demands, speeds and applications.

Our product quality is highlighted in the details.
Narrow tolerances and perfect tooth engagement are guaranteed.

Attributes

- Thermoplastic polyurethane construction
- High tensile strength and stiffness
- Parallel cord construction for uniform tensioning
- Smooth, low- noise operation
- Temperature resistant from -5° C up to +70° C
  Extended service temperature range is available on request
- FDA Approval for XL / L / H / T5 / T10 / AT10 / WT10 / WH / F8 / F12 pitch
- EU Food Approval for T5 / T10 / AT10 / GMT3™ pitch

Applications

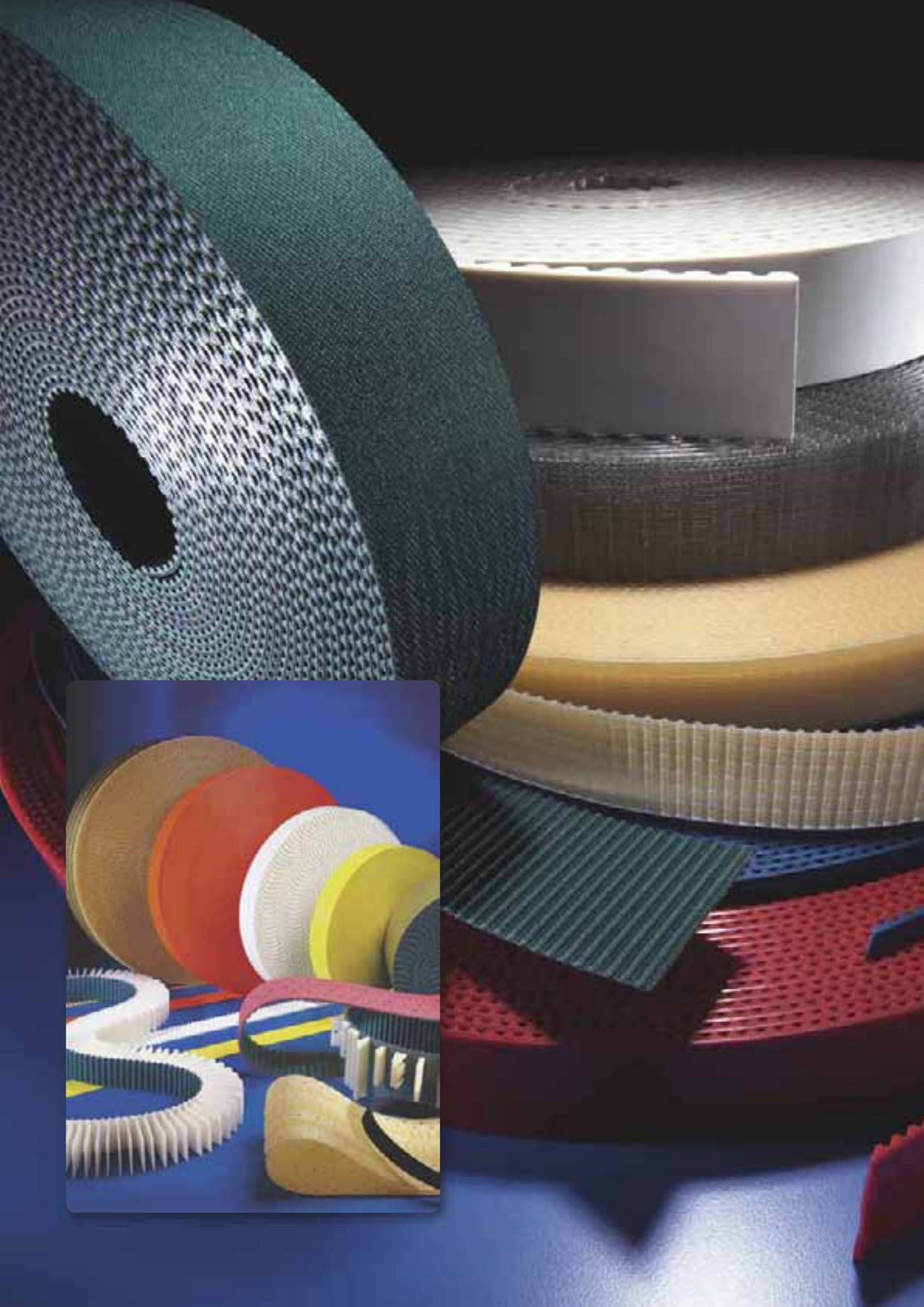
- Conveying- and handling equipment
- Linear applications
- Synchronous conveying applications
- Automatic assembly machines
- Door Drives
- Textile Industry

Processing Options

- Backings ***Further information on page 60***
- Profiles ***Further information on page 74***
- Special processing ***Further information on page 82***

Accessories

- Welding machine
- Steel Rule Dies
- Welding Plates
- Sonic Tension Meter 507 C
- Hand Slitter ***Further information on page 116***



Imperial Pitch Belts — XL

Pitch 0,200“ / 5,08 mm

Standard Widths 1/4“ to 4“
6,35 mm to 101,6 mm

Width Tolerance
up to 2“ width ± 0,020“ / 0,51 mm
2“ to 4“ width ± 0,030“ / 0,76 mm

Slitting Lanes
Standard 0,25“ / 6,35 mm
Optional N/A

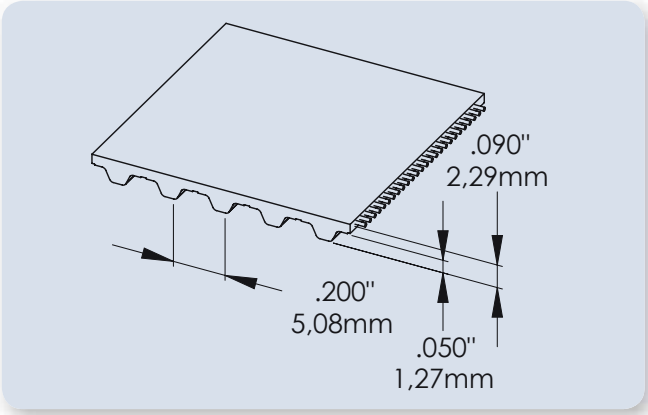
Minimum Welded Belt Length 19,2“ / 487,68 mm

Standard Roll Length (± 1 %) 200 feet / 61 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 10

Minimum Pulley Diameter 0,64“ / 16,25 mm



Minimum Back Bend Diameter
1,125“ / 28,6 mm

FDA Approval
Yes / Only available with Aramid Cord

Technical Data

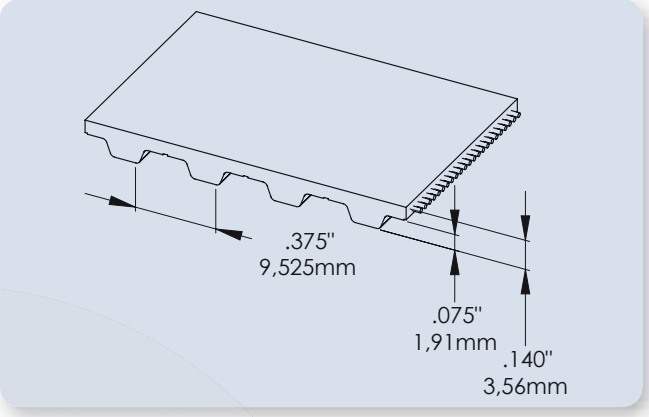
Standard Widths **XL** **Linear Belts**								
	025	031	037	050	075	100	200	400
Ultimate Tensile Strength F_{break} (average value)								
Steel	750 N	875 N	1.125 N	1.625 N	2.500 N	3.375 N	6.875 N	13.875 N
Aramid	1.860 N	2.170 N	2.790 N	4.030 N	6.200 N	8.370 N	17.050 N	34.410 N
Allowable Belt Force F_{1all} Open Ended								
Steel	190 N	221 N	284 N	411 N	632 N	853 N	1.738 N	3.509 N
Aramid	207 N	241 N	310 N	448 N	689 N	930 N	1.895 N	3.824 N
Allowable Belt Force F_{1all} Endless Welded								
Steel	95 N	111 N	142 N	205 N	316 N	427 N	869 N	1.754 N
Aramid	155 N	181 N	233 N	336 N	517 N	698 N	1.421 N	2.868 N
Allowable Effective Force F_{eall}								
	200 N	248 N	300 N	400 N	600 N	800 N	1.600 N	3.200 N
Specific Belt Weight m_{sp}								
Steel	0,0021 kg / m / mm							
Aramid	0,0019 kg / m / mm							
Specific Belt Stiffness C_{sp}								
Steel	47.413 N	55.316 N	71.120 N	102.729 N	158.044 N	213.360 N	434.622 N	877.147 N
Aramid	51.675 N	60.287 N	77.512 N	111.962 N	172.250 N	232.537 N	473.686 N	955.985 N

Pitch 0,375“ / 9,525 mm

Standard Widths 3/8“ to 4“
9,525 mm to 101,6 mm

Width Tolerance
up to 2“ width ± 0,020“ / 0,51 mm
2“ to 4“ width ± 0,030“ / 0,76 mm

Slitting Lanes
Standard 0,25“ / 6,35 mm
Optional 0,50“ / 12,7 mm



Minimum Welded Belt Length 19,125“ / 485,78 mm

Minimum Back Bend Diameter
2,375“ / 60,3 mm

Standard Roll Length (± 1 %) 200 feet / 61 m

FDA Approval
Yes / Only available with Aramid Cord

Standard Color White

Minimum Number of Pulley Teeth z_{min} 10

Minimum Pulley Diameter 1,19“ / 30,25 mm

Technical Data

Standard Widths **L** **Linear Belts**							
	037	050	075	100	150	200	400
Ultimate Tensile Strength F_{break} (average value)							
Steel	2.280 N	3.135 N	4.845 N	6.555	9.975 N	13.395 N	27.075 N
Aramid	2.672 N	3.674 N	5.678 N	7.682 N	11.690 N	15.698 N	31.730 N
Allowable Belt Force F_{1all} Open Ended							
Steel	574 N	790 N	1.221 N	1.652 N	2.513 N	3.375 N	6.821 N
Aramid	428 N	588 N	909 N	1.229 N	1.871 N	2.512 N	5.078 N
Allowable Belt Force F_{1all} Endless Welded							
Steel	287 N	395 N	610 N	826 N	1.257 N	1.687 N	3.411 N
Aramid	321 N	441 N	681 N	922 N	1.403 N	1.884 N	3.808 N
Allowable Effective Force F_{eall}							
	600 N	800 N	1.200 N	1.600 N	2.400 N	3.200 N	6.400 N
Specific Belt Weight m_{sp}							
Steel	0,0035 kg / m / mm						
Aramid	0,0030 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	143.609 N	197.463 N	305.170 N	412.877 N	628.291 N	843.705 N	1.705.362 N
Aramid	106.901 N	146.989 N	227.164 N	307.340 N	467.691 N	628.043 N	1.269.448 N

Imperial Pitch Belts — H (HB - Heavy Back Option available)

Pitch 0,500“ / 12,7 mm

Standard Widths 1/2“ to 6“
12,7 mm to 152,4 mm

Width Tolerance
up to 2“ width ± 0,020“ / 0,51 mm
2“ to 6“ width ± 0,030“ / 0,76 mm

Slitting Lanes
Standard 1“ / 25,4 mm
Optional 0,75“ / 19,05 mm

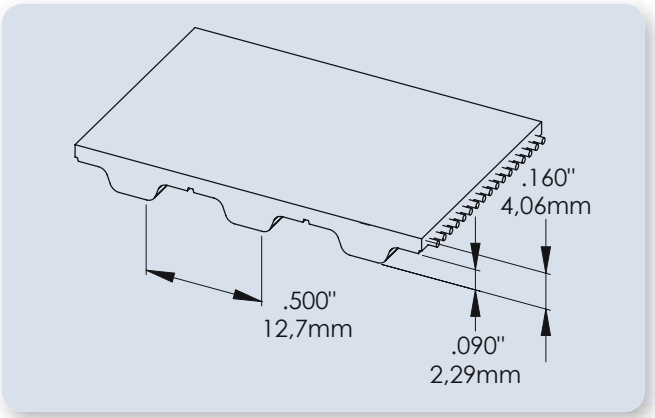
Minimum Welded Belt Length
up to 4“ width 19“ / 482,6 mm
4“ to 6“ width 38“ / 965,2 mm

Standard Roll Length (± 1 %) 200 feet / 61 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 2,23“ / 56,65 mm



Minimum Back Bend Diameter
3,125“ / 79,4 mm

FDA Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **H** **Linear Belts**								
	050	075	100	150	200	300	400	600
Ultimate Tensile Strength F_{break} (average value)								
Steel	3.360 N	5.040 N	7.140 N	10.920 N	14.700 N	22.260 N	29.820 N	44.940 N
Aramid	3.773 N	5.929 N	8.085 N	12.397 N	16.709 N	25.333 N	33.957 N	51.205 N
Allowable Belt Force F_{1all} Open Ended								
Steel	912 N	1.369 N	1.939 N	2.966 N	3.992 N	6.045 N	8.098 N	12.205 N
Aramid	504 N	792 N	1.081 N	1.657 N	2.233 N	3.386 N	4.538 N	6.843 N
Allowable Belt Force F_{1all} Endless Welded								
Steel	456 N	684 N	970 N	1.483 N	1.996 N	3.023 N	4.049 N	6.102 N
Aramid	378 N	594 N	810 N	1.243 N	1.675 N	2.539 N	3.404 N	5.132 N
Allowable Effective Force F_{eall}								
	980 N	1.470 N	1.960 N	2.940 N	3.920 N	5.880 N	7.840 N	11.760 N
Specific Belt Weight m_{sp}								
Steel	0,0039 kg / m / mm							
Aramid	0,0032 kg / m / mm							
Specific Belt Stiffness C_{sp}								
Steel	228.122 N	342.183 N	484.759 N	741.396 N	998.033 N	1.511.307 N	2.024.582 N	3.051.130 N
Aramid	126.060 N	198.095 N	270.129 N	414.198 N	558.267 N	846.404 N	1.134.542 N	1.710.817 N

Imperial Pitch Belts — H-HF (HB - Heavy Back Option available)

Pitch 0,500“ / 12,7 mm

Standard Widths 1/2“ to 6“
12,7 mm to 152,4 mm

Width Tolerance
up to 2“ width ± 0,020“ / 0,51 mm
2“ to 6“ width ± 0,030“ / 0,76 mm

Slitting Lanes
Standard 1“ / 25,4 mm
Optional 0,75“ / 19,05 mm

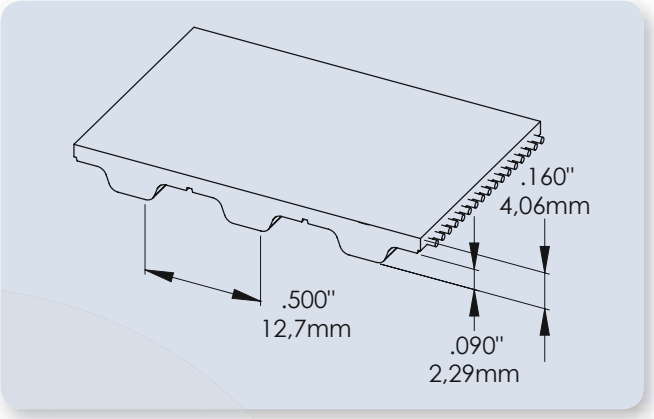
Minimum Welded Belt Length
up to 4“ width 19“ / 482,6 mm
4“ to 6“ width 38“ / 965,2 mm

Standard Roll Length (± 1 %) 200 feet / 61 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 12

Minimum Pulley Diameter 1,91“ / 48,5 mm



Minimum Back Bend Diameter
2,375“ / 60,3 mm

FDA Approval
No

Technical Data

Standard Widths **H-HF Linear Belts**								
	050	075	100	150	200	300	400	600
Ultimate Tensile Strength F_{break} (average value)								
Steel	4.960 N	7.440 N	10.540 N	16.120 N	21.700 N	32.860 N	44.020 N	66.340 N
Allowable Belt Force F_{1all} Open Ended								
Steel	1.119 N	1.678 N	2.377 N	3.636 N	4.895 N	7.412 N	9.929 N	14.964 N
Allowable Belt Force F_{1all} Endless Welded								
Steel	559 N	839 N	1.189 N	1.818 N	2.447 N	3.706 N	4.965 N	7.482 N
Allowable Effective Force F_{eall}								
	980 N	1.470 N	1.960 N	2.940 N	3.920 N	5.880 N	7.840 N	11.760 N
Specific Belt Weight m_{sp}								
Steel	0,0042 kg / m / mm							
Specific Belt Stiffness C_{sp}								
Steel	279.699 N	419.548 N	594.360 N	909.021 N	1.223.682 N	1.853.005 N	2.482.327 N	3.740.972 N

Imperial Pitch Belts – XH

Pitch 0,875“ / 22,225 mm

Standard Widths 1“ to 6“
25,4 mm to 152,4 mm

Width Tolerance
up to 6“ width ± 0,040“ / 1,02 mm

Slitting Lanes
Standard 1“ / 25,4 mm
Optional N/A

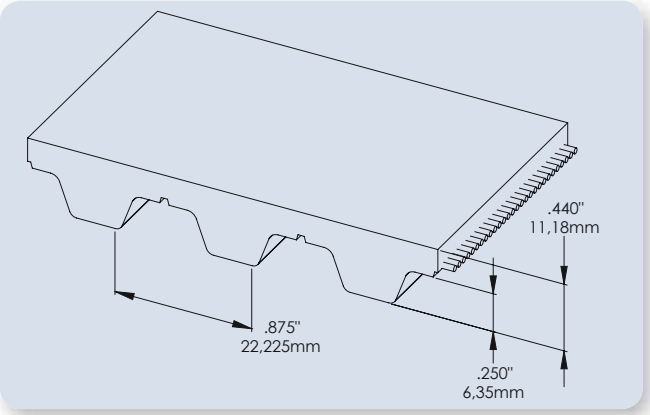
Minimum Welded Belt Length
up to 4“ width 39,4“ / 1.000,76 mm
4“ to 6“ width N/A

Standard Roll Length (± 1 %) 200 feet / 61 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 18

Minimum Pulley Diameter 5,01“ / 127,75 mm



Minimum Back Bend Diameter
5,875“ / 149,2 mm

FDA Approval
No

Technical Data

Standard Widths **XH Linear Belts**						
	100	150	200	300	400	600
Ultimate Tensile Strength F_{break} (average value)						
Steel	14.250 N	19.950 N	29.450 N	44.650 N	59.850 N	90.250 N
Aramid	16.185 N	22.659 N	33.449 N	50.713 N	67.977 N	102.505 N
Allowable Belt Force F_{1all} Open Ended						
Steel	3.801 N	5.321 N	7.855 N	11.909 N	15.964 N	24.072 N
Aramid	1.778 N	2.489 N	3.675 N	5.571 N	7.468 N	11.261 N
Allowable Belt Force F_{1all} Endless Welded						
Steel	1.900 N	2.661 N	3.928 N	5.955 N	7.982 N	12.036 N
Aramid	1.334 N	1.867 N	2.756 N	4.178 N	5.601 N	8.446 N
Allowable Effective Force F_{eall}						
	3.910 N	5.865 N	7.820 N	11.730 N	15.640 N	23.460 N
Specific Belt Weight m_{sp}						
Steel	0,0105 kg / m / mm					
Aramid	0,0091 kg / m / mm					
Specific Belt Stiffness C_{sp}						
Steel	950.214 N	1.330.300 N	1.963.776 N	2.977.337 N	3.990.899 N	6.018.022 N
Aramid	444.500 N	622.300 N	918.633 N	1.392.767 N	1.866.900 N	2.815.167 N

Pitch 5 mm

Standard Widths 10 mm to 100 mm

Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 100 mm width ± 0,75 mm

Slitting Lanes
Standard 25 mm
Optional 10 mm / 16 mm

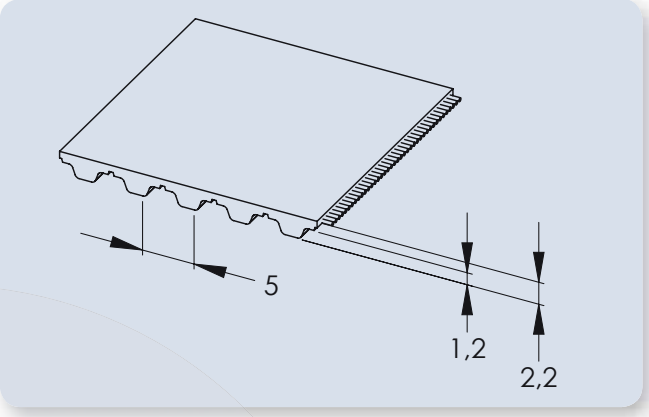
Minimum Welded Belt Length
up to 100 mm width 480 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 10

Minimum Pulley Diameter 15,91 mm



Minimum Back Bend Diameter
30 mm

FDA Approval
Yes / Only available with Aramid Cord

EU-Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **T5 Linear Belts**							
mm	10	16	25	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)							
Steel	1.250 N	2.000 N	3.375 N	4.250 N	6.875 N	10.375 N	13.875 N
Aramid	3.100 N	4.960 N	8.370 N	10.540 N	17.050 N	25.730 N	34.410 N
Allowable Belt Force F_{1all} Open Ended							
Steel	311 N	498 N	840 N	1.058 N	1.711 N	2.582 N	3.453 N
Aramid	339 N	543 N	916 N	1.153 N	1.865 N	2.814 N	3.764 N
Allowable Belt Force F_{1all} Endless Welded							
Steel	156 N	249 N	420 N	529 N	856 N	1.291 N	1.727 N
Aramid	254 N	407 N	687 N	865 N	1.399 N	2.111 N	2.823 N
Allowable Effective Force F_{eall}							
	356 N	570 N	890 N	1.139 N	1.780 N	2.670 N	3.560 N
Specific Belt Weight m_{sp}							
Steel	0,0022 kg / m / mm						
Aramid	0,0020 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	77.778 N	124.444 N	210.000 N	264.444 N	427.778 N	645.556 N	863.333 N
Aramid	84.769 N	135.630 N	228.875 N	288.213 N	466.227 N	703.579 N	940.931 N

T Pitch Belts — T10 (HB - Heavy Back Option available)

Pitch 10 mm

Standard Widths 12 mm to 150 mm

Width Tolerance
up to 100 mm width ± 0,5 mm
100 mm to 150 mm width ± 0,75 mm

Slitting Lanes
Standard 25 mm
Optional 10 mm / 16 mm

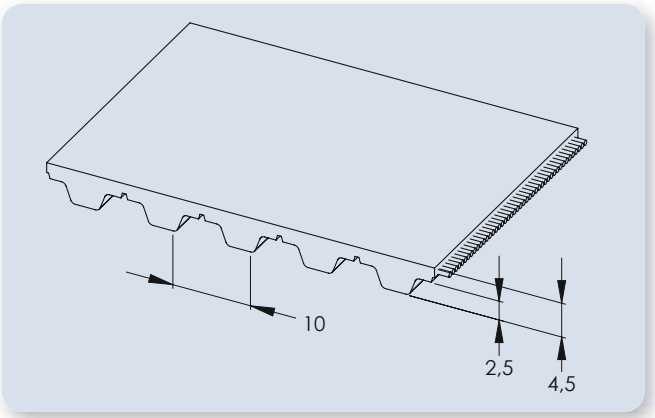
Minimum Welded Belt Length
up to 50 mm width 480 mm
50 mm to 150 mm width 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 44,56 mm



Minimum Back Bend Diameter
80 mm

FDA Approval
Yes / Only available with Aramid Cord

EU-Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **T10 Linear Belts**									
mm	12	16	25	32	40	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)									
Steel	2.940 N	4.200 N	7.140 N	9.240 N	11.340 N	14.700 N	22.260 N	29.820 N	44.940 N
Aramid	3.234 N	4.851 N	8.085 N	10.241 N	12.936 N	16.709 N	25.333 N	33.957 N	51.205 N
Allowable Belt Force F_{1all} Open Ended									
Steel	786 N	1.123 N	1.909 N	2.470 N	3.031 N	3.929 N	5.950 N	7.971 N	12.012 N
Aramid	425 N	638 N	1.064 N	1.347 N	1.702 N	2.198 N	3.332 N	4.467 N	6.736 N
Allowable Belt Force F_{1all} Endless Welded									
Steel	393 N	561 N	954 N	1.235 N	1.516 N	1.965 N	2.975 N	3.985 N	6.006 N
Aramid	319 N	479 N	798 N	1.010 N	1.276 N	1.648 N	2.499 N	3.350 N	5.052 N
Allowable Effective Force F_{eall}									
	811 N	1.082 N	1.690 N	2.163 N	2.704 N	3.380 N	5.070 N	6.760 N	10.140 N
Specific Belt Weight m_{sp}									
Steel	0,0043 kg / m / mm								
Aramid	0,0036 kg / m / mm								
Specific Belt Stiffness C_{sp}									
Steel	196.463 N	280.662 N	477.125 N	617.456 N	757.787 N	982.316 N	1.487.507 N	1.992.699 N	3.003.081 N
Aramid	106.350 N	159.525 N	265.875 N	336.775 N	425.400 N	549.475 N	833.075 N	1.116. 675 N	1.683.875 N

Pitch 10 mm

Standard Widths 12 mm to 150 mm

Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 150 mm width ± 0,75 mm

Slitting Lanes
Standard 25 mm
Optional 10 mm / 16 mm

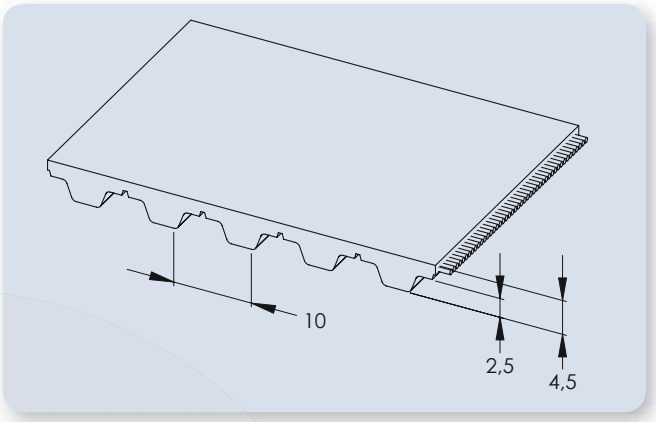
Minimum Welded Belt Length
up to 100 mm width 480 mm
100 mm to 150 mm width 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 12

Minimum Pulley Diameter 38,20 mm



Minimum Back Bend Diameter
60 mm

FDA Approval
No

Technical Data

Standard Widths **T10-HF Linear Belts**									
mm	12	16	25	32	40	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)									
Steel	4.340 N	6.200 N	10.540 N	13.640 N	16.740 N	21.700 N	32.860 N	44.020 N	66.340 N
Allowable Belt Force F_{1all} Open Ended									
Steel	964 N	1.376 N	2.340 N	3.028 N	3.716 N	4.818 N	7.295 N	9.773 N	14.728 N
Allowable Belt Force F_{1all} Endless Welded									
Steel	482 N	688 N	1.170 N	1.514 N	1.858 N	2.409 N	3.648 N	4.886 N	7.364 N
Allowable Effective Force F_{eall}									
	811 N	1.082 N	1.690 N	2.163 N	2.704 N	3.380 N	5.070 N	6.760 N	10.140 N
Specific Belt Weight m_{sp}									
Steel	0,0046 kg / m / mm								
Specific Belt Stiffness C_{sp}									
Steel	240.882 N	344.118 N	585.000 N	757.059 N	929.118 N	1.204.412 N	1.823.824 N	2.443.235 N	3.682.059 N

T Pitch Belts – T20

Pitch 20 mm

Standard Widths 25 mm to 150 mm

Width Tolerance
up to 150 mm width ± 1,0 mm

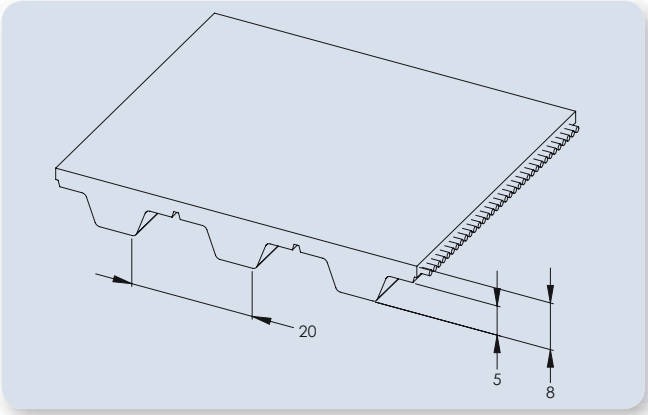
Slitting Lanes
Standard 25 mm
Optional 16 mm

Minimum Welded Belt Length
up to 150 mm width 1.000 mm

Standard Roll Length (± 1 %) 50 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 15 (Steel / Aramid) / 20 (NIRO)



Minimum Pulley Diameter
95.50 mm (Steel / Aramid) / 127,4 mm (NIRO)

Minimum Back Bend Diameter
120 mm (Steel / Aramid) / 160 mm (NIRO)

FDA Approval
No

Technical Data

Standard Widths **T20 Linear Belts**						
mm	25	32	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)						
Steel	14.250 N	18.050 N	29.450 N	44.650 N	59.850 N	90.250 N
Aramid	16.185 N	20.501 N	33.449 N	50.713 N	67.977 N	102.505 N
NIRO	10.688 N	13.538 N	22.088 N	35.488 N	44.888 N	67.688 N
Allowable Belt Force F_{1all} Open Ended						
Steel	3.741 N	4.739 N	7.731 N	11.722 N	15.712 N	23.693 N
Aramid	1.750 N	2.217 N	3.617 N	5.483 N	7.350 N	11.083 N
NIRO	2.806 N	3.554 N	5.799 N	8.791 N	11.784 N	17.770 N
Allowable Belt Force F_{1all} Endless Welded						
Steel	1.871 N	2.369 N	3.866 N	5.861 N	7.856 N	11.847 N
Aramid	1.313 N	1.663 N	2.713 N	4.113 N	5.513 N	8.313 N
NIRO	1.403 N	1.777 N	2.899 N	4.396 N	5.892 N	8.885 N
Allowable Effective Force F_{eall}						
	3.160 N	4.045 N	6.320 N	9.480 N	12.640 N	18.960 N
Specific Belt Weight m_{sp}						
Steel	0,0073 kg / m / mm					
Aramid	0,0059 kg / m / mm					
NIRO	0,0073 kg / m / mm					
Specific Belt Stiffness C_{sp}						
Steel	935.250 N	1.184.650 N	1.932.850 N	2.930.450 N	3.928.050 N	5.923.250 N
Aramid	437.500 N	554.167 N	904.167 N	1.370.833 N	1.837.500 N	2.770.833 N
NIRO	701.438 N	888.488 N	1.449.638 N	2.197.838 N	2.946.038 N	4.442.438 N

Pitch 5 mm

Standard Widths 10 mm to 100 mm

Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 100 mm width ± 0,75 mm

Slitting Lanes
Standard 25 mm
Optional 10 mm / 16 mm

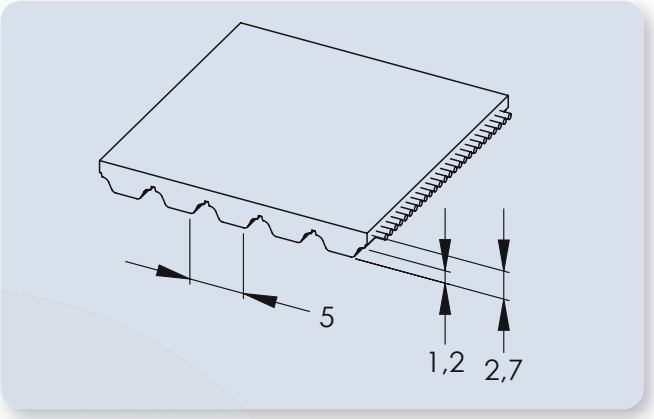
Minimum Welded Belt Length 480 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 23,87 mm



Minimum Back Bend Diameter
60 mm

FDA Approval
No

Technical Data

Standard Widths **AT5 Linear Belts**							
mm	10	16	25	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)							
Steel	2.565 N	4.275 N	7.125 N	9.120 N	14.535 N	21.945 N	29.355 N
Aramid	3.006 N	5.010 N	8.350 N	10.688 N	17.034 N	25.718 N	34.402 N
Allowable Belt Force F_{1all} Open Ended							
Steel	634 N	1.056 N	1.761 N	2.253 N	3.591 N	5.422 N	7.253 N
Aramid	436 N	726 N	1.210 N	1.549 N	2.468 N	3.727 N	4.985 N
Allowable Belt Force F_{1all} Endless Welded							
Steel	317 N	528 N	880 N	1.127 N	1.796 N	2.711 N	3.627 N
Aramid	327 N	545 N	908 N	1.162 N	1.851 N	2.795 N	3.739 N
Allowable Effective Force F_{eall}							
	516 N	826 N	1.290 N	1.651 N	2.580 N	3.870 N	5.160 N
Specific Belt Weight m_{sp}							
Steel	0,0032 kg / m / mm						
Aramid	0,0027 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	158.445 N	264.075 N	440.125 N	563.360 N	897.855 N	1.355.585 N	1.813.315 N
Aramid	108.900 N	181.500 N	302.500 N	387.200 N	617.100 N	931.700 N	1.246.300 N

AT Pitch Belts — ATL5

Pitch 5 mm

Standard Widths 10 mm to 100 mm

Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 100 mm width ± 0,75 mm

Slitting Lanes
Standard 25 mm
Optional 10 mm / 16 mm

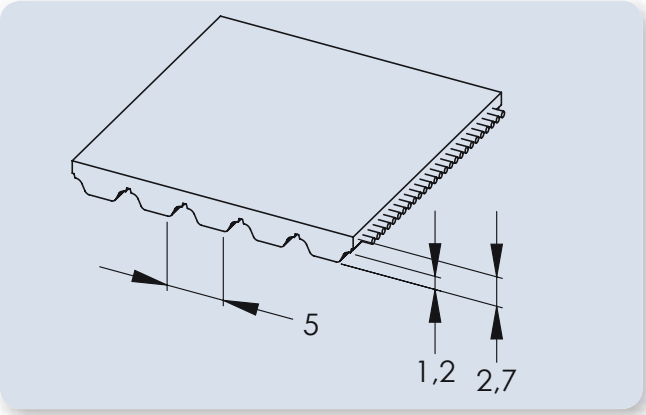
Minimum Welded Belt Length N/A

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 23,87 mm



Minimum Back Bend Diameter
60 mm

FDA Approval
No

Technical Data

Standard Widths **ATL5 Linear Belts**							
mm	10	16	25	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)							
Steel	3.720 N	6.200 N	10.540 N	13.640 N	21.700 N	32.860 N	44.020 N
Allowable Belt Force F_{1all} Open Ended							
Steel	826 N	1.376 N	2.340 N	3.028 N	4.818 N	7.295 N	9.773 N
Allowable Effective Force F_{eall}							
	516 N	826 N	1.290 N	1.651 N	2.580 N	3.870 N	5.160 N
Specific Belt Weight m_{sp}							
Steel	0,0036 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	206.471 N	344.118 N	585.000 N	757.059 N	1.204.412 N	1.823.824 N	2.443.235 N

Pitch 10 mm

Standard Widths 16 mm to 150 mm

Width Tolerance
up to 50 mm width ± 0,75 mm
50 mm to 150 mm width ± 1,0 mm

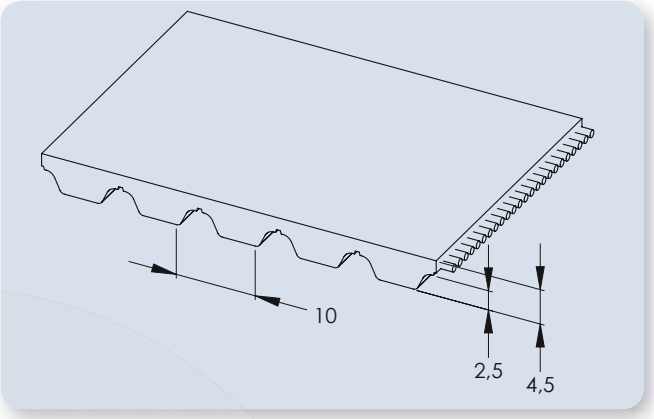
Slitting Lanes
Standard 25 mm
Optional 16 mm

Minimum Welded Belt Length
up to 100 mm width 480 mm
100 mm to 150 mm width 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 15 (Steel / Aramid) / 20 (NIRO)



Minimum Pulley Diameter
47.75 mm (Steel / Aramid) / 63,7 mm (NIRO)

Minimum Back Bend Diameter
120 mm (Steel / Aramid) / 160 mm (NIRO)

FDA Approval
Yes / Only available with Aramid Cord

EU-Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **AT10 Linear Belts**							
mm	16	25	32	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)							
Steel	8.550 N	14.250 N	18.050 N	29.450 N	44.650 N	59.850 N	90.250 N
Aramid	9.711 N	16.185 N	20.501 N	33.449 N	50.713 N	67.977 N	102.505 N
NIRO	6.413 N	10.688 N	13.538 N	22.088 N	33.488 N	44.888 N	67.668 N
Allowable Belt Force F_{1all} Open Ended							
Steel	2.245 N	3.741 N	4.739 N	7.731 N	11.722 N	15.712 N	23.693 N
Aramid	1.050 N	1.750 N	2.217 N	3.617 N	5.483 N	7.350 N	11.083 N
NIRO	1.796 N	2.806 N	3.554 N	5.799 N	8.791 N	11.784 N	17.770 N
Allowable Belt Force F_{1all} Endless Welded							
Steel	1.122 N	1.871 N	2.369 N	3.866 N	5.861 N	7.856 N	11.847 N
Aramid	788 N	1.313 N	1.663 N	2.713 N	4.113 N	5.513 N	8.313 N
NIRO	898 N	1.403 N	1.777 N	2.899 N	4.396 N	5.892 N	8.885 N
Allowable Effective Force F_{eall}							
	1.651 N	2.580 N	3.302 N	5.160 N	7.740 N	10.320 N	15.480 N
Specific Belt Weight m_{sp}							
Steel	0,0056 kg / m / mm						
Aramid	0,0042 kg / m / mm						
NIRO	0,0056 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	561.150 N	935.250 N	1.184.650 N	1.932.850 N	2.930.450 N	3.928.050 N	5.923.250 N
Aramid	262.500 N	437.500 N	554.167 N	904.167 N	1.370.833 N	1.837.500 N	2.770.833 N
NIRO	448.920 N	701.438 N	888.488 N	1.449.638 N	2.197.838 N	2.946.038 N	4.442.438 N

AT Pitch Belts — ATL10

Pitch 10 mm

Standard Widths 16 mm to 150 mm

Width Tolerance
up to 50 mm width ± 1,0 mm
50 mm to 150 mm width ± 1,5 mm

Slitting Lanes
Standard N/A
Optional 25 mm / 32 mm / 50 mm

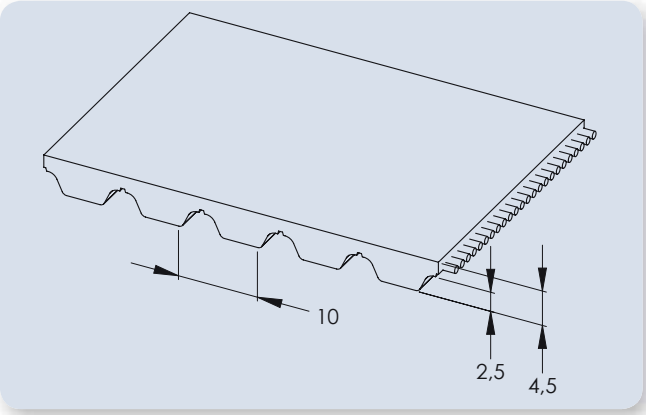
Minimum Welded Belt Length N/A

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 25

Minimum Pulley Diameter 79,60 mm



Minimum Back Bend Diameter
150 mm

FDA Approval
No

Technical Data

Standard Widths **ATL10 Linear Belts**							
mm	16	25	32	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)							
Steel	13.840 N	24.220 N	31.140 N	50.170 N	76.120 N	102.070 N	153.970 N
Allowable Belt Force F_{1all} Open Ended							
Steel	3.349 N	5.860 N	7.534 N	12.139 N	18.417 N	24.696 N	37.253 N
Allowable Effective Force F_{eall}							
	1.651 N	2.580 N	3.302 N	5.160 N	7.740 N	10.320 N	15.480 N
Specific Belt Weight m_{sp}							
Steel	0,0067 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	837.143 N	1.465.000 N	1.883.571 N	3.034.643 N	4.604.286 N	6.173.929 N	9.313.214 N

Pitch 10 mm

Standard Widths 16 mm to 150 mm

Width Tolerance
up to 50 mm width ± 1,0 mm
50 mm to 150 mm width ± 1,5 mm

Slitting Lanes
Standard N/A
Optional 25 mm / 32 mm / 50 mm

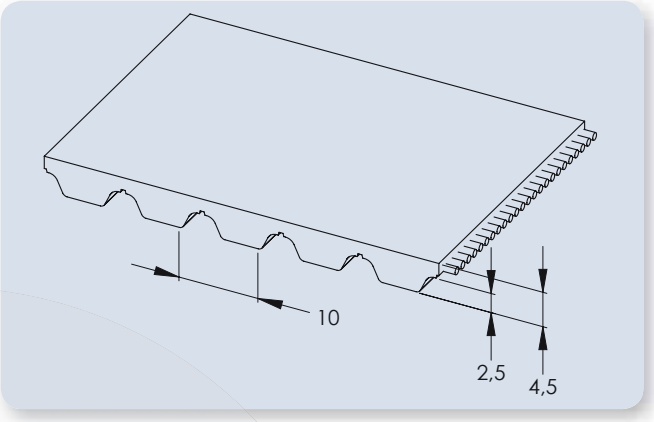
Minimum Welded Belt Length N/A

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 20

Minimum Pulley Diameter 63,66 mm



Minimum Back Bend Diameter
130 mm

FDA Approval
No

Technical Data

Standard Widths **ATL10-HF Linear Belts**							
mm	16	25	32	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)							
Steel	15.400 N	26.950 N	34.650 N	55.825 N	84.700 N	113.575 N	171.325 N
Allowable Belt Force F_{1all} Open Ended							
Steel	2.902 N	5.079 N	6.530 N	10.521 N	15.963 N	21.404 N	32.288 N
Allowable Effective Force F_{eall}							
	1.651 N	2.580 N	3.302 N	5.160 N	7.740 N	10.320 N	15.480 N
Specific Belt Weight m_{sp}							
Steel	0,0069 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	725.571 N	1.269.750 N	1.632.536 N	2.630.196 N	3.990.643 N	5.351.089 N	8.071.982 N

AT Pitch Belts — AT20

Pitch 20 mm

Standard Widths 25 mm to 150 mm

Width Tolerance
up to 50 mm width ± 1,0 mm
50 mm to 150 mm width ± 1,5 mm

Slitting Lanes
Standard N/A
Optional 25 mm / 32 mm

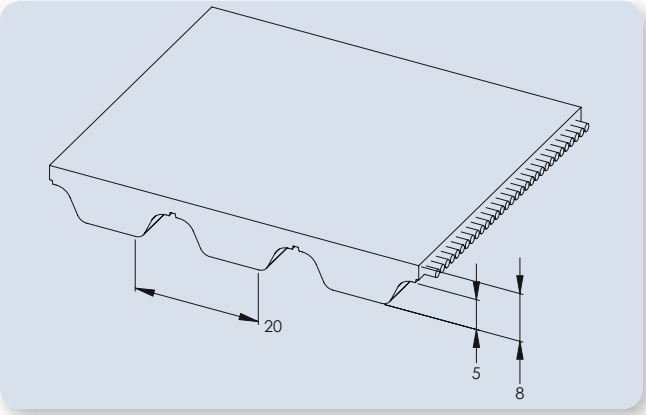
Minimum Welded Belt Length 1.200 mm

Standard Roll Length (± 1 %) 50 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 18

Minimum Pulley Diameter 115,6 mm



Minimum Back Bend Diameter
180 mm

FDA Approval
No

Technical Data

Standard Widths **AT20 Linear Belts**						
mm	25	32	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)						
Steel	24.220 N	31.140 N	50.170 N	76.120 N	102.070 N	153.970 N
Aramid	21.798 N	28.026 N	45.153 N	68.508 N	91.863 N	138.573 N
Allowable Belt Force F_{1all} Open Ended						
Steel	5.860 N	7.534 N	12.139 N	18.417 N	24.696 N	37.253 N
Aramid	1.750 N	2.250 N	3.625 N	5.500 N	7.375 N	11.125 N
Allowable Belt Force F_{1all} Endless Welded						
Steel	2.930 N	3.767 N	6.069 N	9.209 N	12.348 N	18.626 N
Aramid	1.313 N	1.688 N	2.719 N	4.125 N	5.531 N	8.344 N
Allowable Effective Force F_{eall}						
	5.430 N	6.950 N	10.860 N	16.290 N	21.720 N	32.580 N
Specific Belt Weight m_{sp}						
Steel	0,0099 kg / m / mm					
Aramid	0,0073 kg / m / mm					
Specific Belt Stiffness C_{sp}						
Steel	1.465.000 N	1.883.571 N	3.034.643 N	4.604.286 N	6.173.929 N	9.313.214 N
Aramid	437.500 N	562.500 N	906.250 N	1.375.000 N	1.843.750 N	2.781.250 N

Pitch 20 mm

Standard Widths 32 mm to 150 mm

Width Tolerance
up to 150 mm width ± 2,0 mm

Slitting Lanes
Standard N/A
Optional 50 mm

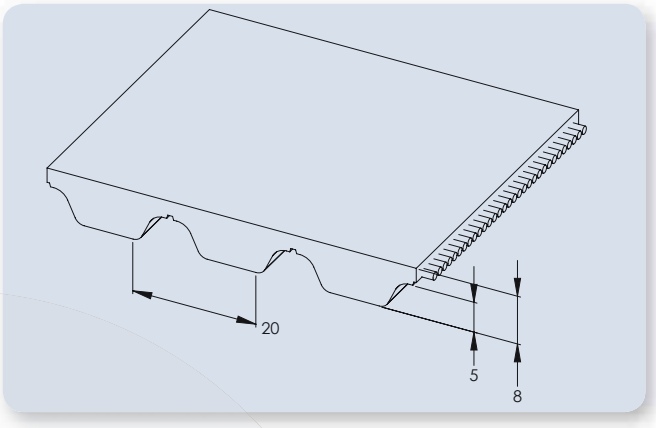
Minimum Welded Belt Length N/A

Standard Roll Length (± 1 %) 50 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 30

Minimum Pulley Diameter 190,98 mm



Minimum Back Bend Diameter
250 mm

FDA Approval
No

Technical Data

Standard Widths **ATL20 Linear Belts**					
mm	32	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)					
Steel	41.600 N	70.400 N	105.600 N	144.000 N	217.600 N
Allowable Belt Force F_{1all} Open Ended					
Steel	9.106 N	15.410 N	23.115 N	31.520 N	47.631 N
Allowable Effective Force F_{eall}					
	6.950 N	10.860 N	16.290 N	21.720 N	32.580 N
Specific Belt Weight m_{sp}					
Steel	0,0108 kg / m / mm				
Specific Belt Stiffness C_{sp}					
Steel	2.276.477 N	3.852.500 N	5.778.750 N	7.880.114 N	11.907.727 N

HTD® Pitch Belts — HTD®5

Pitch 5 mm

Standard Widths 10 mm to 150 mm

Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 150 mm width ± 0,75 mm

Slitting Lanes
Standard 25 mm
Optional N/A

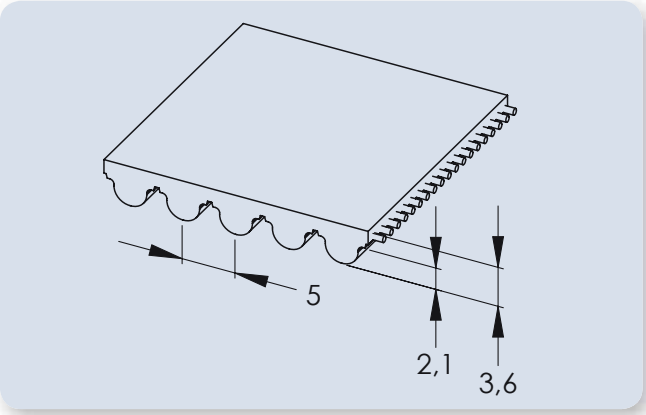
Minimum Welded Belt Length
up to 100 mm width 480 mm
100 mm to 150 mm width 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 22,28 mm



Minimum Back Bend Diameter
60 mm

FDA Approval
No

Technical Data

Standard Widths **HTD®5 Linear Belts**							
mm	10	15	20	25	50	100	150
Ultimate Tensile Strength F_{break} (average value)							
Steel	3.720 N	5.580 N	8.060 N	10.540 N	21.700 N	44.020 N	66.340 N
Aramid	2.695 N	4.312 N	5.929 N	8.085 N	16.709 N	33.957 N	51.205 N
Allowable Belt Force F_{1all} Open Ended							
Steel	826 N	1.239 N	1.789 N	2.340 N	4.818 N	9.773 N	14.728 N
Aramid	355 N	567 N	780 N	1.064 N	2.198 N	4.467 N	6.736 N
Allowable Belt Force F_{1all} Endless Welded							
Steel	413 N	619 N	895 N	1.170 N	2.409 N	4.886 N	7.364 N
Aramid	266 N	425 N	585 N	798 N	1.648 N	3.350 N	5.052 N
Allowable Effective Force F_{eall}							
	408 N	612 N	816 N	1.020 N	2.040 N	4.080 N	6.120 N
Specific Belt Weight m_{sp}							
Steel	0,0041 kg / m / mm						
Aramid	0,0029 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	206.471 N	309.706 N	447.353 N	585.000 N	1.204.412 N	2.443.235 N	3.682.059 N
Aramid	88.625 N	141.800 N	194.975 N	265.875 N	549.475 N	1.116.675 N	1.683.875 N

Pitch 8 mm

Standard Widths 10 mm to 150 mm

Width Tolerance
up to 50 mm width ± 0,75 mm
50 mm to 150 mm width ± 1,0 mm

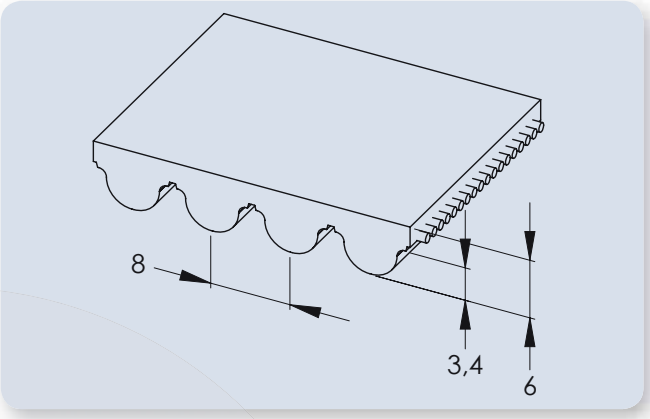
Slitting Lanes
Standard 25 mm
Optional 10 mm / 16 mm

Minimum Welded Belt Length
up to 100 mm width 480 mm
100 mm to 150 mm width 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 20 (Steel / Aramid) / 25 (NIRO)



Minimum Pulley Diameter
50,93 mm (Steel /Aramid) / 63,7 mm (NIRO)

Minimum Back Bend Diameter
120 mm (Steel / Aramid) / 150 mm (NIRO)

FDA Approval
No

Technical Data

Standard Widths **HTD®8 Linear Belts**									
mm	10	15	20	25	30	50	85	100	150
Ultimate Tensile Strength F_{break} (average value)									
Steel	4.750 N	7.600 N	10.450 N	14.250 N	17.100 N	29.450 N	50.350 N	59.850 N	90.250 N
Aramid	5.395 N	8.632 N	11.869 N	16.185 N	19.422 N	33.449 N	57.187 N	67.977 N	102.505 N
NIRO	3.563 N	5.700 N	7.838 N	10.688 N	12.825 N	22.088 N	37.763 N	44.888 N	67.688 N
Allowable Belt Force F_{1all} Open Ended									
Steel	1.247 N	1.995 N	2.743 N	3.741 N	4.489 N	7.731 N	13.218 N	15.712 N	23.693 N
Aramid	583 N	933 N	1.283 N	1.750 N	2.100 N	3.617 N	6.183 N	7.350 N	11.083 N
NIRO	935 N	1.496 N	2.058 N	2.806 N	3.367 N	5.799 N	9.914 N	11.784 N	17.770 N
Allowable Belt Force F_{1all} Endless Welded									
Steel	624 N	998 N	1.372 N	1.871 N	2.245 N	3.866 N	6.609 N	7.856 N	11.847 N
Aramid	438 N	700 N	963 N	1.313 N	1.575 N	2.713 N	4.638 N	5.513 N	8.313 N
NIRO	468 N	748 N	1.029 N	1.403 N	1.683 N	2.899 N	4.957 N	5.892 N	8.885 N
Allowable Effective Force F_{eall}									
	748 N	1.122 N	1.496 N	1.870 N	2.244 N	3.740 N	6.358 N	7.480 N	11.220 N
Specific Belt Weight m_{sp}									
Steel	0,0059 kg / m / mm								
Aramid	0,0047 kg / m / mm								
NIRO	0,0059 kg / m / mm								
Specific Belt Stiffness C_{sp}									
Steel	311.750 N	498.800 N	685.850 N	935.250 N	1.122.300 N	1.932.850 N	3.304.550 N	3.928.050 N	5.923.250 N
Aramid	145.833 N	233.333 N	320.833 N	437.500 N	525.000 N	904.167 N	1.545.833 N	1.837.500 N	2.770.833 N
NIRO	233.813 N	374.100 N	514.388 N	701.438 N	841.725 N	1.449.638 N	2.478.413 N	2.946.038 N	4.442.438 N

HTD® Pitch Belts — HTD®14

Pitch 14 mm

Standard Widths 25 mm to 170 mm

Width Tolerance
up to 50 mm width ± 1,0 mm
50 mm to 100 mm width ± 1,5 mm
100 mm to 170 mm width ± 2,0 mm

Slitting Lanes
Standard 55 mm
Optional 85 mm

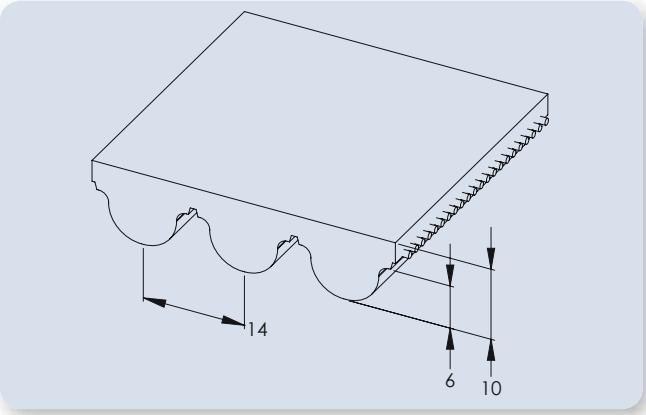
Minimum Welded Belt Length 1.200 mm

Standard Roll Length (± 1 %) 50 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 28

Minimum Pulley Diameter 124,78 mm



Minimum Back Bend Diameter
200 mm

FDA Approval
No

Technical Data

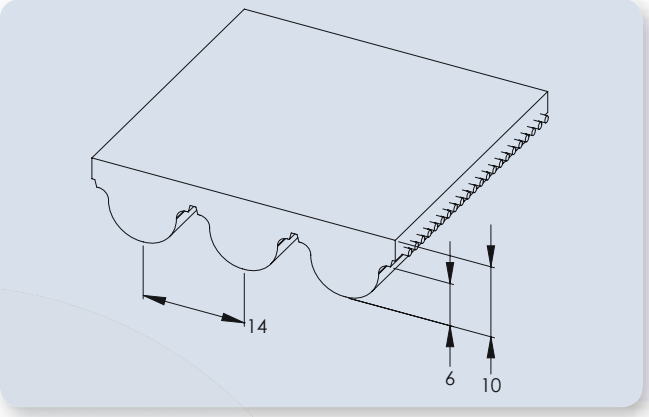
Standard Widths **HTD®14 Linear Belts**						
mm	25	40	55	85	115	170
Ultimate Tensile Strength F_{break} (average value)						
Steel	20.760 N	34.600 N	48.440 N	74.390 N	102.070 N	152.240 N
Aramid	18.684 N	31.140 N	43.596 N	66.951 N	91.863 N	137.016 N
Allowable Belt Force F_{1all} Open Ended						
Steel	5.156 N	8.593 N	12.031 N	18.476 N	25.350 N	37.811 N
Aramid	1.515 N	2.525 N	3.535 N	5.429 N	7.449 N	11.110 N
Allowable Belt Force F_{1all} Endless Welded						
Steel	2.578 N	4.297 N	6.015 N	9.238 N	12.675 N	18.905 N
Aramid	1.136 N	1.894 N	2.651 N	4.072 N	5.587 N	8.333 N
Allowable Effective Force F_{eall}						
	3.430 N	5.488 N	7.546 N	11.662 N	15.778 N	23.324 N
Specific Belt Weight m_{sp}						
Steel	0,0107 kg / m / mm					
Aramid	0,0084 kg / m / mm					
Specific Belt Stiffness C_{sp}						
Steel	1.289.000 N	2.148.333 N	3.007.667 N	4.618.917 N	6.337.583 N	9.452.667 N
Aramid	387.750 N	631.250 N	883.750 N	1.357.188 N	1.862.188 N	2.777.500 N

Pitch 14 mm

Standard Widths 55 mm to 170 mm

Width Tolerance
up to 50 mm width ± 1,0 mm
50 mm to 100 mm width ± 1,5 mm
100 mm to 170 mm width ± 2,0 mm

Slitting Lanes
Standard 55 mm
Optional 85 mm / 115 mm



Minimum Welded Belt Length N/A

Minimum Back Bend Diameter
250 mm

Standard Roll Length (± 1 %) 50 m

FDA Approval
No

Standard Color White

Minimum Number of Pulley Teeth z_{min} 43

Minimum Pulley Diameter 191,62 mm

Technical Data

Standard Widths **HTDL®14 Linear Belts**				
mm	55	85	115	170
Ultimate Tensile Strength F_{break} (average value)				
Steel	76.800 N	121.600 N	163.200 N	246.400 N
Allowable Belt Force F_{1all} Open Ended				
Steel	16.811 N	26.617 N	35.723 N	53.935 N
Allowable Effective Force F_{eall}				
	7.546 N	11.662 N	15.778 N	23.324 N
Specific Belt Weight m_{sp}				
Steel	0,0123 kg / m / mm			
Specific Belt Stiffness C_{sp}				
Steel	4.202.727 N	6.654.318 N	8.930.795 N	13.483.750 N

HPL® Pitch Belts — HPL®14

Pitch 14 mm

Standard Widths 55 mm to 170 mm

Width Tolerance
up to 50 mm width ± 1,0 mm
50 mm to 100 mm width ± 1,5 mm
100 mm to 170 mm width ± 2,0 mm

Slitting Lanes
Standard 85 mm
Optional 55 mm / 115 mm

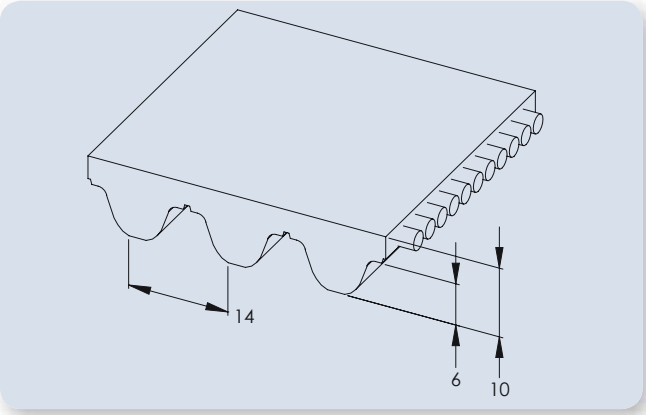
Minimum Welded Belt Length N/A

Standard Roll Length (± 1 %) 50 m

Standard Color Black

Minimum Number of Pulley Teeth z_{min} 44

Minimum Pulley Diameter 196,08 mm



Minimum Back Bend Diameter
250 mm

FDA Approval
No

Technical Data

Standard Widths **HPL®14 Linear Belts**				
mm	55	85	115	170
Ultimate Tensile Strength F_{break} (average value)				
Steel	83.200 N	134.400 N	185.600 N	268.800 N
Allowable Belt Force F_{1all} Open Ended				
Steel	21.914 N	35.400 N	48.886 N	70.800 N
Allowable Effective Force F_{eall} *				
	8.305 N	12.835 N	17.365 N	25.670 N
Specific Belt Weight m_{sp}				
Steel	0,0123 kg / m / mm			
Specific Belt Stiffness C_{sp}				
Steel	5.478.571 N	8.850.000 N	12.221.428 N	17.700.000 N

** When using PolyChain® pulleys.*

Pitch 5 mm

Standard Widths 10 mm to 50 mm

Width Tolerance
up to 50 mm width ± 0,5 mm

Slitting Lanes
Standard 25 mm
Optional 10 mm

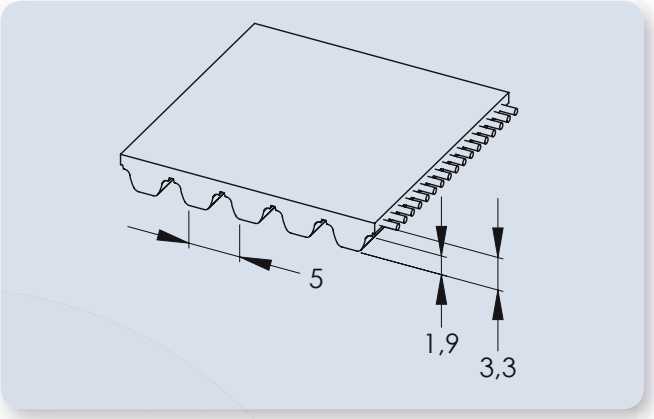
Minimum Welded Belt Length 480 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 22,28 mm



Minimum Back Bend Diameter
60 mm

FDA Approval
No

Technical Data

Standard Widths **STD5 Linear Belts**						
mm	10	15	20	25	30	50
Ultimate Tensile Strength F_{break} (average value)						
Steel	3.720 N	5.580 N	8.060 N	10.540 N	12.400 N	21.700 N
Aramid	2.695 N	4.312 N	5.929 N	8.085 N	9.702 N	16.709 N
Allowable Belt Force F_{1all} Open Ended						
Steel	826 N	1.239 N	1.789 N	2.340 N	2.753 N	4.818 N
Aramid	355 N	567 N	780 N	1.064 N	1.276 N	2.198 N
Allowable Belt Force F_{1all} Endless Welded						
Steel	413 N	619 N	895 N	1.170 N	1.376 N	2.409 N
Aramid	266 N	425 N	585 N	798 N	957 N	1.648 N
Allowable Effective Force F_{eall}						
	392 N	588 N	784 N	980 N	1.176 N	1.960 N
Specific Belt Weight m_{sp}						
Steel	0,0039 kg / m / mm					
Aramid	0,0029 kg / m / mm					
Specific Belt Stiffness C_{sp}						
Steel	206.471 N	309.706 N	447.353 N	585.000 N	688.235 N	1.204.412 N
Aramid	88.625 N	141.800	194.975 N	265.875 N	319.050 N	549.475 N

STD Pitch Belts — STD8

Pitch 8 mm

Standard Widths 10 mm to 100 mm

Width Tolerance
up to 50 mm width ± 0,75 mm
50 mm to 100 mm width ± 1,0 mm

Slitting Lanes
Standard 20 / 30 mm
Optional 25 mm

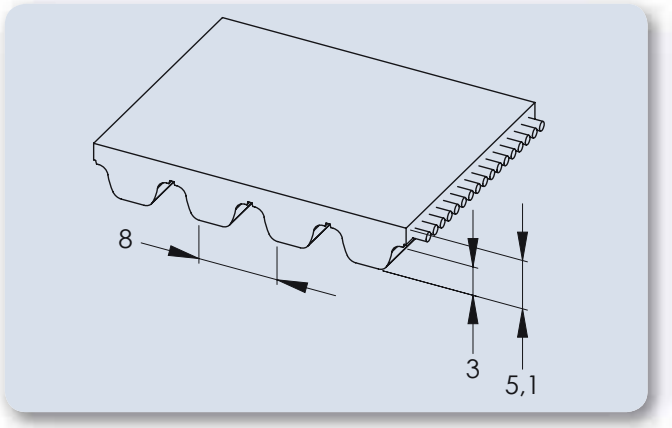
Minimum Welded Belt Length 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 20

Minimum Pulley Diameter 50,93 mm



Minimum Back Bend Diameter
120 mm

FDA Approval
No

Technical Data

Standard Widths **STD8 Linear Belts**								
mm	10	15	20	25	30	50	85	100
Ultimate Tensile Strength F_{break} (average value)								
Steel	4.750 N	7.600 N	10.450 N	14.250 N	17.100 N	29.450 N	50.350 N	59.850 N
Aramid	5.395 N	8.632 N	11.869 N	16.185 N	19.422 N	33.449 N	57.187 N	67.977 N
Allowable Belt Force F_{1all} Open Ended								
Steel	1.247 N	1.995 N	2.743 N	3.741 N	4.489 N	7.731 N	13.218 N	15.712 N
Aramid	583 N	933 N	1.283 N	1.750 N	2.100 N	3.617 N	6.183 N	7.350 N
Allowable Belt Force F_{1all} Endless Welded								
Steel	624 N	998 N	1.372 N	1.871 N	2.245 N	3.866 N	6.609 N	7.856 N
Aramid	438 N	700 N	963 N	1.313 N	1.575 N	2.713 N	4.638 N	5.513 N
Allowable Effective Force F_{eall}								
	728 N	1.092 N	1.456 N	1.820 N	2.184 N	3.640 N	6.188 N	7.280 N
Specific Belt Weight m_{sp}								
Steel	0,0051 kg / m / mm							
Aramid	0,0043 kg / m / mm							
Specific Belt Stiffness C_{sp}								
Steel	311.750 N	498.800 N	685.850 N	935.250 N	1.122.300 N	1.923.850 N	3.304.550 N	3.928.050 N
Aramid	145.833 N	233.333 N	320.833 N	437.500 N	525.000 N	904.167 N	1.545.833 N	1.837.500 N

Linear Belts	Polyurethane						Belt Type			
Pitch	R1	R2	FDA	R4	EUF85	EUF92	R	G	P	E
XL	X	X	X				X	X	X	X
L	X	X	X				X	X	X	X
H	X	X	X				X	X	X	X
H-HF	X	X					X	X	X	X
XH	X	X					X	X	X	X
T5	X	X	X	X	X	X	X	X	X	X
T10	X	X	X	X	X	X	X	X	X	X
T10-HF	X	X					X	X	X	X
T20	X	X					X	X	X	X
AT5	X	X		X			X	X	X	X
ATL5	X	X					X	X		
AT10	X	X	X	X	X	X	X	X	X	X
ATL10	X	X					X	X		
ATL10-HF	X	X					X	X		
AT20	X	X					X	X	X	X
ATL20	X	X					X	X		
HTD®5	X	X					X	X	X	X
HTD®8	X	X					X	X	X	X
HTD®14	X	X					X	X	X	X
HTDL®14	X	X					X	X		
HPL®14	X	X					X	X		
STD5	X	X					X	X	X	X
STD8	X	X					X	X	X	X

Specifications subject to change without prior notice.

Please contact our Applications Engineering for specific "minus" and length tolerances.

For further configurations please contact our Application Consulting.

Standard Configurations — Linear Timing Belts

Linear Belts	Steel Cord					Aramid Cord				Stainless Steel Cord			
Pitch	STAND	NB	NT	NTB	ECO	STAND	NB	NT	NTB	NIRO	NB	NT	NTB
XL	X	X	X	X									
L	X	X	X	X		X	X	X	X				
H	X	X	X	X		X	X	X	X				
H-HF	X	X	X	X									
XH	X	X	X	X		X	X	X	X				
T5	X	X	X	X	X	X	X	X	X				
T10	X	X	X	X	X	X	X	X	X				
T10-HF	X	X	X	X									
T20	X	X	X	X		X	X	X	X	X	X	X	X
AT5	X	X	X	X	X	X	X	X	X				
ATL5	X	X	X	X									
AT10	X	X	X	X	X	X	X	X	X	X	X	X	X
ATL10	X	X	X	X									
ATL10-HF	X	X	X	X									
AT20	X	X	X	X		X		X					
ATL20	X	X	X	X									
HTD®5	X	X	X	X		X	X	X	X				
HTD®8	X	X	X	X		X	X	X	X	X	X	X	X
HTD®14	X	X	X	X		X	X	X	X				
HTDL®14	X	X	X	X									
HPL®14	X		X	X									
STD5	X	X	X	X		X	X	X	X				
STD8	X	X	X	X		X	X	X	X				

Please find used abbreviations on page 133.

Overview — Self Tracking Belts

Self Tracking Belts are a composite construction of Gates Mectrol's standard polyurethane belts and specifically developed polyurethane V-guides which provide highest flexibility and small pulley diameters.

Self Tracking Belts can be manufactured in two different production processes:

- **Fabricated V-Guides** can be combined with any belt type and belt width.

- **Integral V-Guides** are integrally molded during the production process to provide higher strength and consistency.

Attributes

- Synchronous operations
- Operation without flanged pulleys possible
- Reliable tracking which is not affected by lateral forces
- Reduction of lateral movement

Applications

- Long Length Conveying
- Industrial Handling
- General Conveying
- Linear / Rotary Positioning

Processing Options

- Backings ***Further information on page 60***
- Profiles ***Further information on page 74***
- Special processing ***Further information on page 82***

Accessories

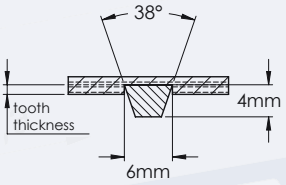
- Welding machine
- Steel Rule Dies
- Welding Plates
- Sonic Tension Meter 507 C
- Hand Slitter ***Further information on page 116***

Fabricated V-Guides can be added to nearly every belt type and dimension eliminating the need for flanged pulleys.

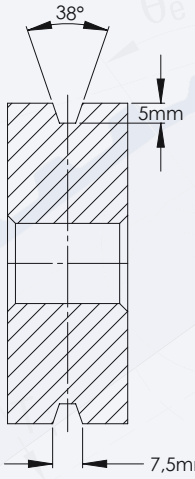
For Metric Tooth Pitch Belts

K6-Section

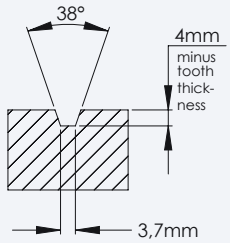
Belt Dimensions



Pulley Dimensions

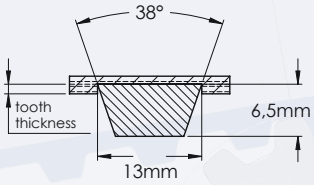


Slider Bed Dimensions

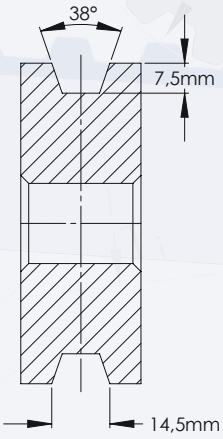


K13-Section

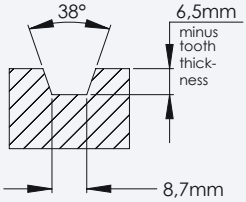
Belt Dimensions



Pulley Dimensions



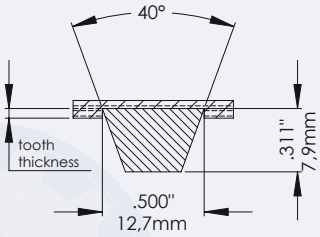
Slider Bed Dimensions



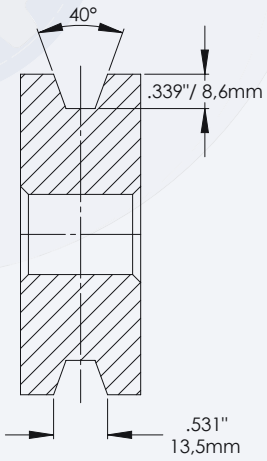
For Imperial Tooth Pitch Belts

A-Section

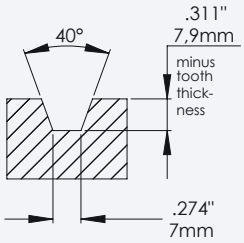
Belt Dimensions



Pulley Dimensions

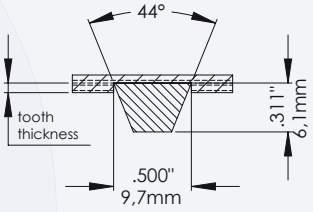


Slider Bed Dimensions

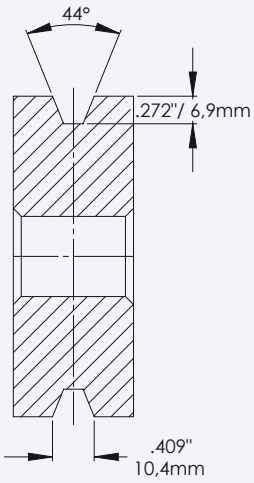


O-Section

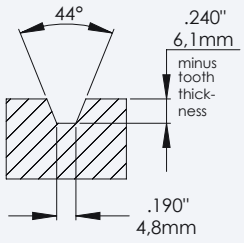
Belt Dimensions



Pulley Dimensions



Slider Bed Dimensions



Self Tracking Belts with integral V-Guide — T5V

Pitch 5 mm

Integral V-Guide K6

Standard Widths 25 mm to 100 mm

Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 100 mm width ± 0,75 mm

Slitting Lanes
Standard 25 mm
Optional N/A

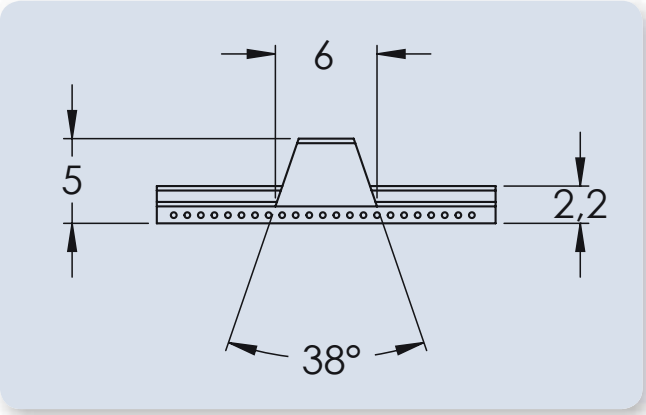
Minimum Welded Belt Length
up to 100 mm width 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 10

Minimum Pulley Diameter 15,91 mm



Minimum Back Bend Diameter
30 mm

FDA Approval
No

Technical Data

Standard Widths **T5V Self Tracking Belts**				
mm	25	32	50	100
Ultimate Tensile Strength F_{break} (average value)				
Steel	3.375 N	4.250 N	6.875 N	13.875 N
Aramid	8.370 N	10.540 N	17.050 N	34.410 N
Allowable Belt Force F_{1all} Open Ended				
Steel	840 N	1.058 N	1.711 N	3.453 N
Aramid	916 N	1.153 N	1.865 N	3.764 N
Allowable Belt Force F_{1all} Endless Welded				
Steel	420 N	529 N	856 N	1.727 N
Aramid	687 N	865 N	1.399 N	2.823 N
Allowable Effective Force F_{eall}				
	676 N	926 N	1.566 N	3.346 N
Specific Belt Weight m_{sp}				
Steel	0,08 kg / m	0,09 kg / m	0,13 kg / m	0,24 kg / m
Aramid	0,07 kg / m	0,08 kg / m	0,12 kg / m	0,22 kg / m
Specific Belt Stiffness C_{sp}				
Steel	210.000 N	264.444 N	427.778 N	863.333 N
Aramid	228.875 N	288.213 N	466.227 N	940.931 N

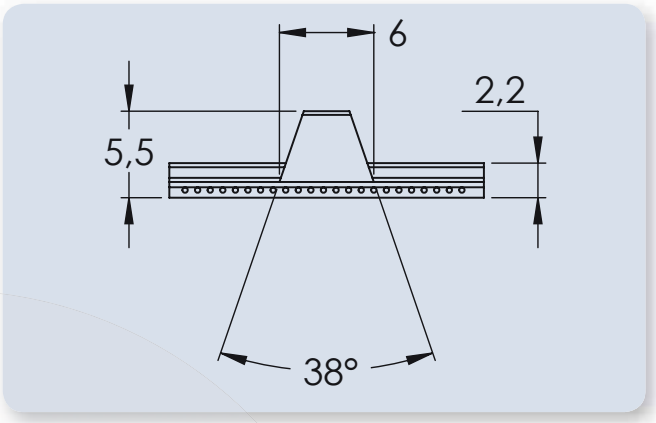
Pitch 5 mm

Integral V-Guide K6

Standard Widths 25 mm to 50 mm

Width Tolerance
up to 50 mm width ± 0,5 mm

Slitting Lanes
Standard 25 mm
Optional N/A



Minimum Welded Belt Length 960 mm

Minimum Back Bend Diameter
60 mm

Standard Roll Length (± 1 %) 100 m

FDA Approval
No

Standard Color White

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 23,87 mm

Technical Data

Standard Widths **AT5V Self Tracking Belts**		
mm	25	50
Ultimate Tensile Strength F_{break} (average value)		
Steel	7.125 N	14.535 N
Aramid	8.350 N	17.034 N
Allowable Belt Force F_{1all} Open Ended		
Steel	1.761 N	3.591 N
Aramid	1.210 N	2.468 N
Allowable Belt Force F_{1all} Endless Welded		
Steel	880 N	1.796 N
Aramid	908 N	1.851 N
Allowable Effective Force F_{eall}		
	980 N	2.270 N
Specific Belt Weight m_{sp}		
Steel	0,10 kg / m	0,18 kg / m
Aramid	0,09 kg / m	0,16 kg / m
Specific Belt Stiffness C_{sp}		
Steel	440.125 N	897.855 N
Aramid	302.500 N	617.100 N

Self Tracking Belts with integral V-Guide — ATL5V

Pitch 5 mm

Integral V-Guide K6

Standard Widths 25 mm to 50 mm

Width Tolerance
up to 50 mm width ± 0,5 mm

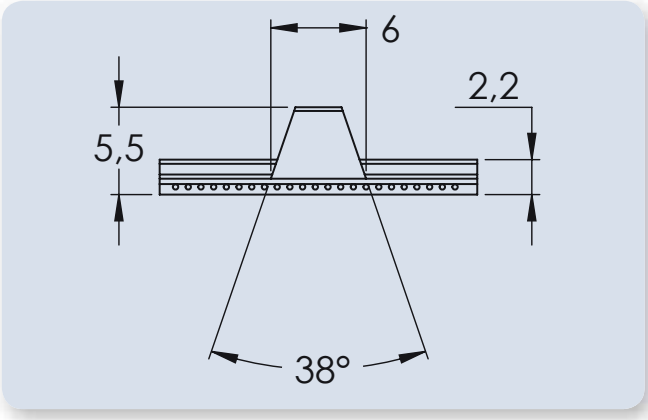
Slitting Lanes
Standard 25 mm
Optional N/A

Minimum Welded Belt Length N/A

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 15



Minimum Pulley Diameter
23,87 mm

Minimum Back Bend Diameter
60 mm

FDA Approval
No

Technical Data

Standard Widths **ATL5V Self Tracking Belts**		
mm	25	50
Ultimate Tensile Strength F_{break} (average value)		
Steel	10.540 N	21.700 N
Allowable Belt Force F_{1all} Open Ended		
Steel	2.340 N	4.818 N
Allowable Belt Force F_{1all} Endless Welded		
Steel	1.170 N	2.409 N
Allowable Effective Force F_{eall}		
	980 N	2.270 N
Specific Belt Weight m_{sp}		
Steel	0,11 kg / m	0,20 kg / m
Specific Belt Stiffness C_{sp}		
Steel	585.000 N	1.204.412 N

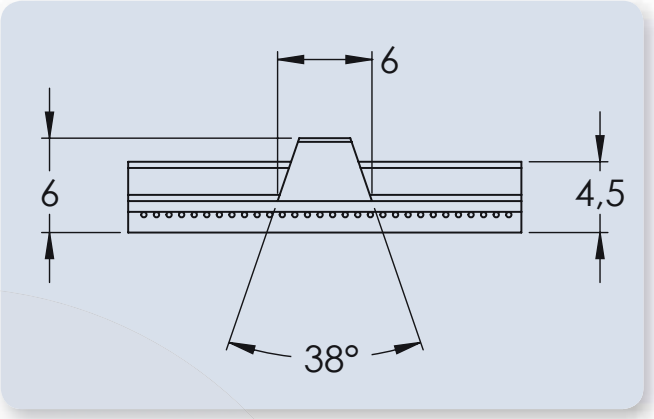
Pitch 10 mm

Integral V-Guide K6

Standard Widths 25 mm to 50 mm

Width Tolerance
up to 50 mm width ± 0.5 mm

Slitting Lanes
Standard 25 mm
Optional N/A



Minimum Welded Belt Length 960 mm

Minimum Back Bend Diameter
80 mm

Standard Roll Length (± 1 %) 100 m

FDA Approval
No

Standard Color White

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 44,56 mm

Technical Data

Standard Widths **T10VS Self Tracking Belts**			
mm	25	32	50
Ultimate Tensile Strength F_{break} (average value)			
Steel	7.140 N	9.240 N	14.700 N
Aramid	9.163 N	11.858 N	18.865 N
Allowable Belt Force F_{1all} Open Ended			
Steel	1.909 N	2.470 N	3.929 N
Aramid	1.064 N	1.376 N	2.190 N
Allowable Belt Force F_{1all} Endless Welded			
Steel	954 N	1.235 N	1.965 N
Aramid	798 N	1.032 N	1.642 N
Allowable Effective Force F_{eall}			
	1.284 N	1.758 N	2.974 N
Specific Belt Weight m_{sp}			
Steel	0,14 kg / m	0,17 kg / m	0,26 kg / m
Aramid	0,11 kg / m	0,14 kg / m	0,20 kg / m
Specific Belt Stiffness C_{sp}			
Steel	477.125 N	617.456 N	982.316 N
Aramid	265.875 N	344.074 N	547.390 N

Self Tracking Belts with integral V-Guide — T10V

Pitch 10 mm

Integral V-Guide K13

Standard Widths 25 mm to 150 mm

Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 150 mm width ± 0,75 mm

Slitting Lanes
Standard 25 mm
Optional N/A

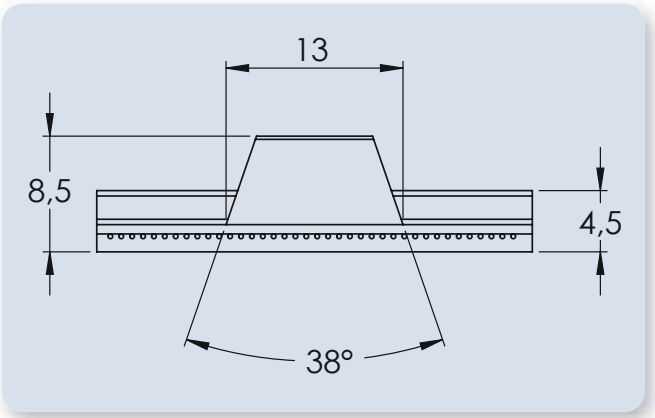
Minimum Welded Belt Length 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 44,56 mm



Minimum Back Bend Diameter
80 mm

FDA Approval
No

Technical Data

Standard Widths **T10V Self Tracking Belts**						
mm	25	32	50	75	100	150
Ultimate Tensile Strength F_{break} (average value)						
Steel	7.140 N	9.240 N	14.700 N	22.260 N	29.820 N	44.940 N
Aramid	9.163 N	11.858 N	18.865 N	28.567 N	38.269 N	57.673 N
Allowable Belt Force F_{1all} Open Ended						
Steel	1.909 N	2.470 N	3.929 N	5.950 N	7.971 N	12.012 N
Aramid	1.064 N	1.376 N	2.190 N	3.316 N	4.442 N	6.694 N
Allowable Belt Force F_{1all} Endless Welded						
Steel	954 N	1.235 N	1.965 N	2.975 N	3.985 N	6.006 N
Aramid	789 N	1.032 N	1.642 N	2.487 N	3.331 N	5.020 N
Allowable Effective Force F_{eall}						
	811 N	1.284 N	2.501 N	4.191 N	5.881 N	9.261 N
Specific Belt Weight m_{sp}						
Steel	0,17 kg / m	0,20 kg / m	0,29 kg / m	0,41 kg / m	0,53 kg / m	0,77 kg / m
Aramid	0,14 kg / m	0,17 kg / m	0,23 kg / m	0,32 kg / m	0,41 kg / m	0,59 kg / m
Specific Belt Stiffness C_{sp}						
Steel	477.125 N	617.456 N	982.316 N	1.487.507 N	1.992.699 N	3.003.081 N
Aramid	265.875 N	344.074 N	547.390 N	828.904 N	1.110.419 N	1.673.449 N

Pitch 10 mm

Integral V-Guide K13

Standard Widths 25 mm to 75 mm

Width Tolerance
up to 50 mm width ± 0,75 mm
50 mm to 75 mm width ± 1,0 mm

Slitting Lanes
Standard 25 mm
Optional N/A

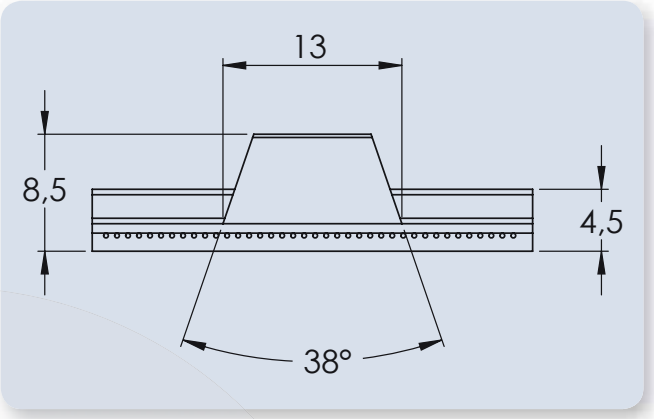
Minimum Welded Belt Length 960 mm

Standard Roll Length (± 1 %) 100 m

Standard Color White

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 47,75 mm



Minimum Back Bend Diameter
120 mm

FDA Approval
No

Technical Data

Standard Widths **AT10V Self Tracking Belts**				
mm	25	32	50	75
Ultimate Tensile Strength F_{break} (average value)				
Steel	14.250 N	18.050 N	29.450 N	44.650 N
Aramid	16.185 N	20.501 N	33.449 N	50.173 N
Allowable Belt Force F_{1all} Open Ended				
Steel	3.741 N	4.739 N	7.731 N	11.722 N
Aramid	1.750 N	2.217 N	3.617 N	5.483 N
Allowable Belt Force F_{1all} Endless Welded				
Steel	1.871 N	2.369 N	3.866 N	5.861 N
Aramid	1.313 N	1.663 N	2.713 N	4.113 N
Allowable Effective Force F_{eall}				
	1.238 N	1.961 N	3.818 N	6.398 N
Specific Belt Weight m_{sp}				
Steel	0,19 kg / m	0,23 kg / m	0,33 kg / m	0,47 kg / m
Aramid	0,16 kg / m	0,18 kg / m	0,26 kg / m	0,37 kg / m
Specific Belt Stiffness C_{sp}				
Steel	935.250 N	1.184.650 N	1.932.850 N	2.930.450 N
Aramid	437.500 N	554.167 N	904.167 N	1.370.833 N

Self Tracking Belts with integral V-Guide — HV

Pitch 0,500“ / 12,7 mm

Integral V-Guide A-Section

Standard Widths 2“ to 6“
50,8 mm to 152,4 mm

Width Tolerance
up to 2“ width ± 0,020“ / 0,51 mm
2“ to 6“ width ± 0,030" / 0,76 mm

Slitting Lanes
Standard 1“ / 25,4 mm
Optional N/A

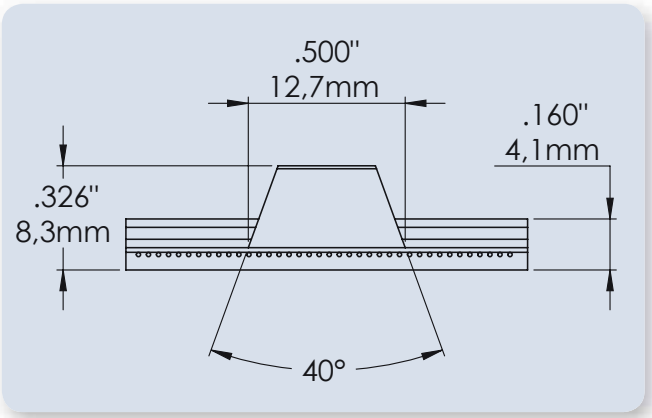
Minimum Welded Belt Length 36“ / 914,4 mm

Standard Roll Length (± 1 %) 200 feet / 61 mm

Standard Color White

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 2,23“ / 56,65 mm



Minimum Back Bend Diameter
3,125“ / 79,4 mm

FDA Approval
No

Technical Data

Standard Widths **HV Self Tracking Belts**				
	200	300	400	600
Ultimate Tensile Strength F_{break} (average value)				
Steel	14.700 N	22.260 N	29.820 N	44.940 N
Aramid	18.865 N	28.567 N	38.269 N	57.673 N
Allowable Belt Force F_{1all} Open Ended				
Steel	3.929 N	5.950 N	7.971 N	12.012 N
Aramid	2.127 N	3.221 N	4.315 N	6.503 N
Allowable Belt Force F_{1all} Endless Welded				
Steel	1.965 N	2.975 N	3.985 N	6.006 N
Aramid	1.595 N	2.416 N	3.236 N	4.877 N
Allowable Effective Force F_{eall}				
	2.955 N	4.915 N	6.875 N	10.795 N
Specific Belt Weight m_{sp}				
Steel	0,15 kg / m	0,17 kg / m	0,25 kg / m	0,34 kg / m
Aramid	0,13 kg / m	0,15 kg / m	0,21 kg / m	0,29 kg / m
Specific Belt Stiffness C_{sp}				
Steel	982.316 N	1.487.507 N	1.992.699 N	3.003.081 N
Aramid	531.750 N	805.221 N	1.078.693 N	1.625.636 N

Standard Configurations – Self Tracking Belts with integral V-Guide

Self Tracking Belts	Polyurethane						Belt Type			
Pitch	R1	R2	FDA	R4	EUF85	EUF92	R	G	P	E
T5V	X	X					X	X	X	X
AT5V	X	X					X	X	X	X
ATL5V	X	X					X	X		
T10V	X	X					X	X	X	X
T10VS	X	X					X	X	X	X
AT10V	X	X					X	X	X	X
HV	X	X					X	X	X	X

Self Tracking Belts	Steel Cord				Aramid Cord			
Pitch	STAND	NB	NT	NTB	STAND	NB	NT	NTB
T5V	X	X	X	X	X	X	X	X
AT5V	X	X			X	X		
ATL5V	X	X						
T10V	X	X			X	X		
T10VS	X	X			X	X		
AT10V	X	X	X	X	X	X	X	X
HV	X	X			X	X		

Specifications subject to change without prior notice.

Please contact our Applications Engineering for specific „minus“ and length tolerances.

For further configurations please contact our Application Consulting.

Please find used abbreviations on page 133.

Overview — Flat Belts

Gates Mectrol Flat Belts are extruded belts made of high strength Polyurethane. These belts are commonly used in lifting and conveying applications. Gates Mectrol Flat Belts are typically sold as open ended belts in combination with Clamping Plates often used in motion control applications in where one belt end is anchored.

Attributes

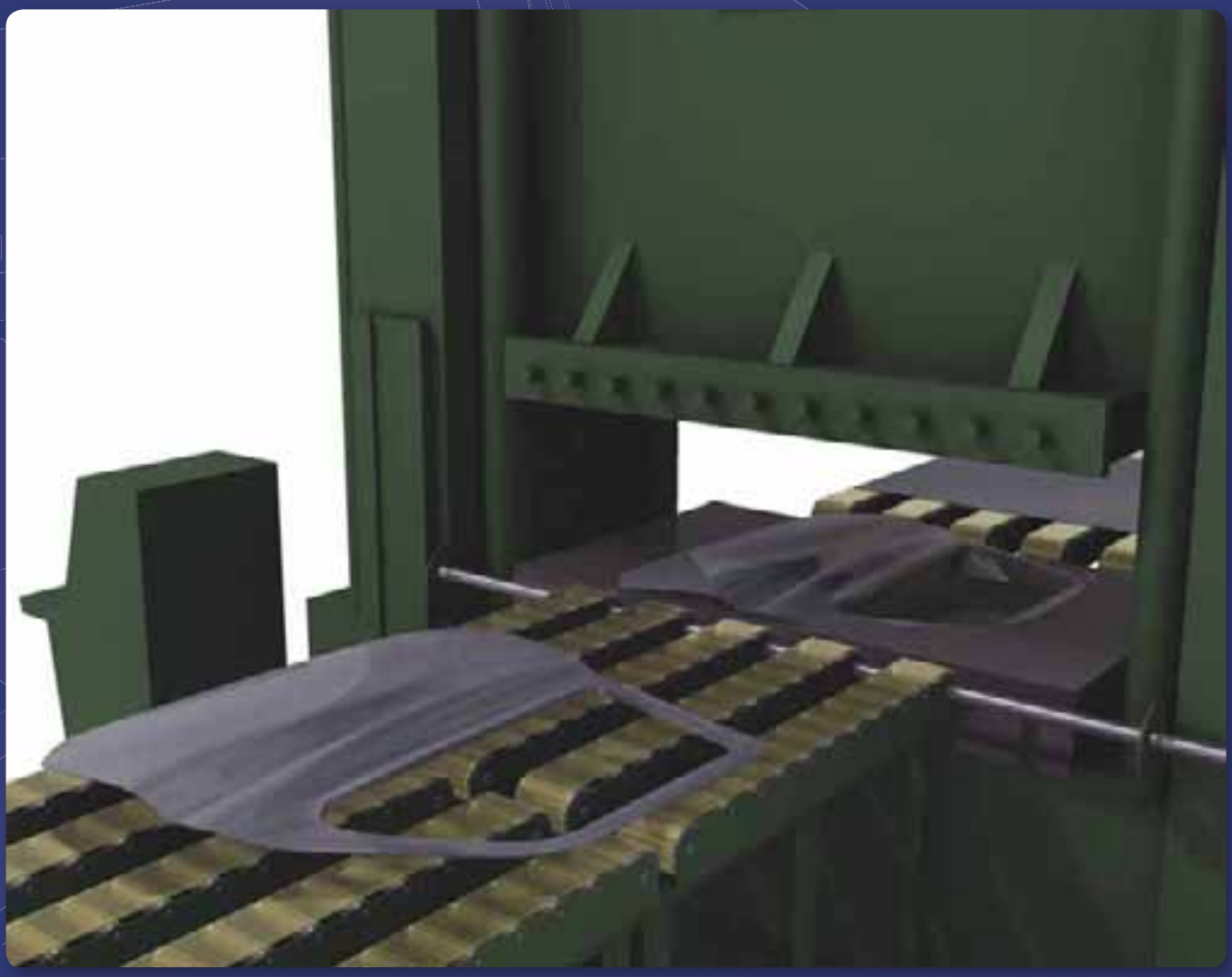
- Smooth, vibration free operation
- High strength combined with low stretch
- Sealed belt edges therefore no cord fraying
- Easy belt guide with flanged pulleys or guiding rails
- No re-tensioning required
- FDA Approval for F8 and F12 pitch

Applications

- Heavy load lifting or lowering
- Exercise machines
- Conveying applications
- Applications with small bending radius

Processing Options

- Backings ***Further information on page 60***
- Special processing ***Further information on page 82***



Flat Belts — F8

Belt Thickness 0,080“ / 2,0 mm

Standard Widths 1“ to 6“
25,4 mm to 152,4 mm

Width Tolerance
up to 2“ width ± 0,020" / ± 0,51 mm
2“ to 6“ width ± 0,030" / ± 0,76 mm

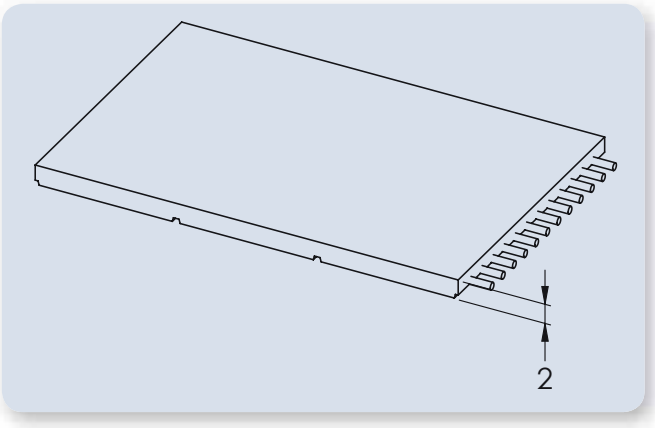
Slitting Lanes
Standard 1“ / 25,4 mm
Optional N/A

Minimum Welded Belt Length
up to 4“ width 34,6“ / 880 mm
4“ to 6“ width N/A

Standard Roll Length (± 1 %) 328 feet / 100 m

Standard Color Black / Clear

Minimum Pulley Diameter 2,0“ / 50,8 mm



Minimum Back Bend Diameter
3,0“ / 76,2 mm

FDA Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **F8 Flat Belts**					
	100	200	300	400	600
Ultimate Tensile Strength F_{break} (average value)					
Steel	7.140 N	14.700 N	22.260 N	29.820 N	44.940 N
Aramid	8.085 N	18.326 N	25.333 N	33.957 N	51.205 N
Allowable Belt Force F_{1all} Open Ended					
Steel	1.939 N	3.992 N	6.045 N	8.098 N	12.205 N
Aramid	1.081 N	2.449 N	3.386 N	4.538 N	6.843 N
Allowable Belt Force F_{1all} Endless Welded					
Steel	970 N	1.996 N	3.023 N	4.049 N	6.102 N
Aramid	540 N	1.225 N	1.693 N	2.269 N	3.422 N
Specific Belt Weight m_{sp}					
Steel	0,0033 kg / m / mm				
Aramid	0,0026 kg / m / mm				
Specific Belt Stiffness C_{sp}					
Steel	484.759 N	998.033 N	1.511.307 N	2.024.582 N	3.051.130 N
Aramid	270.129 N	612.292 N	846.404 N	1.134.542 N	1.710.817 N

Belt Thickness 0,080“ / 2,0 mm

Standard Widths 1“ to 6“
25,4 mm to 152,4 mm

Width Tolerance
up to 2“ width ± 0,75 mm
2“ to 6“ width ± 1,0 mm

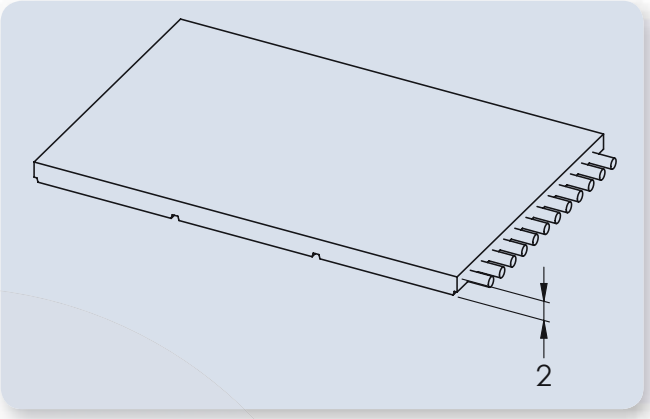
Slitting Lanes
Standard 1“ / 25,4 mm
Optional N/A

Minimum Welded Belt Length N/A

Standard Roll Length (± 1 %) 328 feet / 100 m

Standard Color Black / Clear

Minimum Pulley Diameter 2,0“ / 50,8 mm



Minimum Back Bend Diameter
4,75“ / 120,65 mm

FDA Approval
No

Technical Data

Standard Widths **FL8 Flat Belts**					
	100	200	300	400	600
Ultimate Tensile Strength F_{break} (average value)					
Steel	14.250 N	29.450 N	44.650 N	59.850 N	90.250 N
Allowable Belt Force F_{1all} Open Ended					
Steel	3.801 N	7.855 N	11.909 N	15.964 N	24.072 N
Specific Belt Weight m_{sp}					
Steel	0,0043 kg / m / mm				
Specific Belt Stiffness C_{sp}					
Steel	950.214 N	1.963.776 N	2.977.337 N	3.990.899 N	6.018.022 N

Flat Belts — F12

Belt Thickness 0,125“ / 3,2 mm

Standard Widths 1“ to 6“
25,4 mm to 152,4 mm

Width Tolerance
up to 2“ width ± 0,020" / ± 0,51 mm
2“ to 6“ width ± 0,030" / ± 0,76 mm

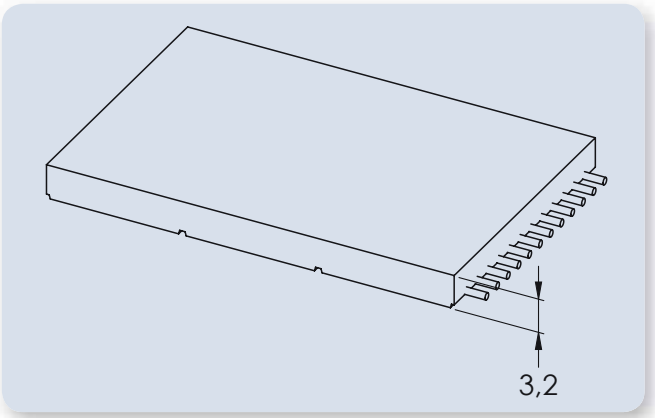
Slitting Lanes
Standard 1“ / 25,4 mm
Optional N/A

Minimum Welded Belt Length
up to 4“ width 34,6“ / 880 mm
4“ to 6“ width N/A

Standard Roll Length (± 1 %) 328 feet / 100 m

Standard Color Black / Clear

Minimum Pulley Diameter 2,0“ / 50,8 mm



Minimum Back Bend Diameter
3,0“ / 76,2 mm

FDA Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **F12 Flat Belts**					
	100	200	300	400	600
Ultimate Tensile Strength F_{break} (average value)					
Steel	7.140 N	14.700 N	22.260 N	29.820 N	44.940 N
Aramid	8.085 N	18.326 N	25.333 N	33.957 N	51.205 N
Allowable Belt Force F_{1all} Open Ended					
Steel	1.939 N	3.992 N	6.045 N	8.098 N	12.205 N
Aramid	1.081 N	2.449 N	3.386 N	4.538 N	6.843 N
Allowable Belt Force F_{1all} Endless Welded					
Steel	970 N	1.996 N	3.023 N	4.049 N	6.102 N
Aramid	540 N	1.225 N	1.693 N	2.269 N	3.422 N
Specific Belt Weight m_{sp}					
Steel	0,0046 kg / m / mm				
Aramid	0,0039 kg / m / mm				
Specific Belt Stiffness C_{sp}					
Steel	484.759 N	998.033 N	1.511.307 N	2.024.582 N	3.051.130 N
Aramid	270.129 N	612.292 N	846.404 N	1.134.542 N	1.710.817 N

Belt Thickness 0,125“ / 3,2 mm

Standard Widths 1“ to 6“
25,4 mm to 152,4 mm

Width Tolerance
up to 2“ width ± 1,0 mm
2“ to 6“ width ± 1,5 mm

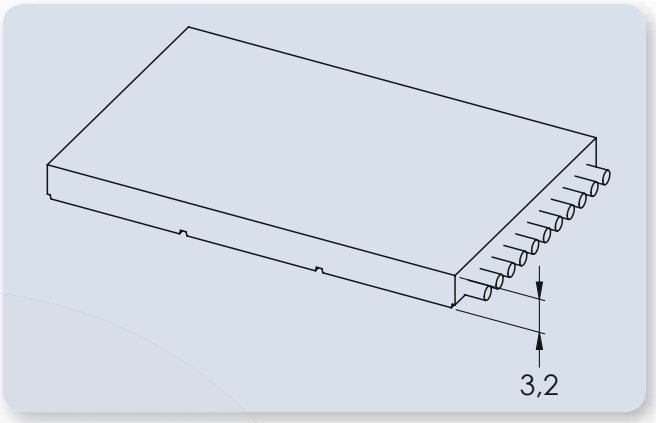
Slitting Lanes
Standard 1“ / 25,4 mm
Optional N/A

Minimum Welded Belt Length N/A

Standard Roll Length (± 1 %) 328 feet / 100 m

Standard Color Black / Clear

Minimum Pulley Diameter 3,0“ / 76,2 mm



Minimum Back Bend Diameter
6“ / 152,4 mm

FDA Approval
No

Technical Data

Standard Widths **FL12 Flat Belts**					
	100	200	300	400	600
Ultimate Tensile Strength F_{break} (average value)					
Steel	24.220 N	50.170 N	76.120 N	102.070 N	153.970 N
Allowable Belt Force F_{1all} Open Ended					
Steel	5.954 N	12.333 N	18.712 N	25.091 N	37.849 N
Specific Belt Weight m_{sp}					
Steel	0,0066 kg / m / mm				
Specific Belt Stiffness C_{sp}					
Steel	1.488.440 N	3.083.197 N	4.677.954 N	6.272.711 N	9.462.226 N

Standard Configuration — Flat Belts

Flat Belts	Polyurethane						Belt Type			
Pitch	R1	R2	FDA	R4	EUF85	EUF92	R	G	P	E
F8	X	X	X				X	X	X	X
FL8	X	X					X	X		
F12	X	X	X				X	X	X	X
FL12	X	X					X	X		

Flat Belts	Steel Cord				Aramid Cord			
Pitch	STAND	NB	NT	NTB	STAND	NB	NT	NTB
F8	X		X	X	X		X	X
FL8	X		X	X				
F12	X		X	X	X		X	X
FL12	X		X	X				

Specifications subject to change without prior notice.

For further configurations please contact our Application Consulting.

Please find used abbreviations on page 133.

Overview — Wide Belts

Gates Mectrol Wide Belts are commonly used in applications which require exact product positioning.
Parallel, high strength cord construction provide even tension and smooth running characteristics.
The high strength polyurethane belt construction is cut resistant and is non-marking.
Easy cleaning and smooth belt drive defines this belt as an ideal replacement to plastic modular belts and conveyor belts.

Attributes

- Easy to clean
- Cut resistant
- Widths up to 450 mm available
- Suitable for synchronous conveying applications
- No cord exposure at the edges of the belt
- Low- noise, smooth operation
- FDA Approval for WT10 / WH and GMT3™ pitch
- EU Food Approval for GMT3™ pitch

Applications

- Synchronous conveying applications
- Bulk conveying
- Food and confectionary conveying
- Clean room or wash down environments
- Hygienic applications

Processing Options

- Backings ***Further information on page 60***
- Profiles ***Further information on page 76***
- Special processing ***Further information on page 82***

Wide Belts — WH

Pitch 0,500“ / 12,7 mm

Standard Widths 6“ to 18“
152,4 mm to 457,2 mm

Width Tolerance + 1 mm / - 2 mm

Slitting Lanes
Standard 2“ / 50,8 mm
Optional N/A

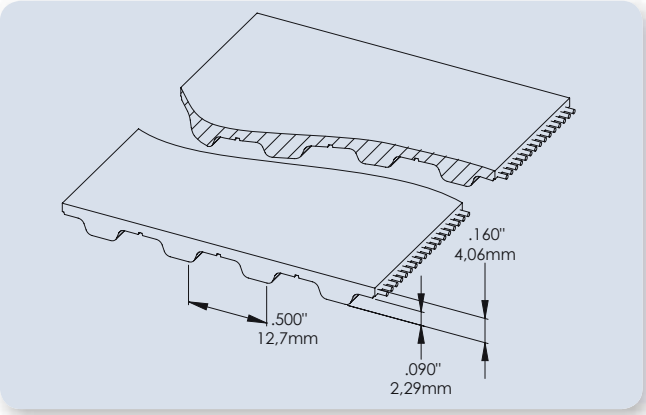
Minimum Welded Belt Length 43,5“ / 1.104,9 mm

Standard Roll Length (± 1 %) 200 feet / 61 m

Standard Color Clear

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 2,23“ / 56,64 mm



Minimum Back Bend Diameter
3,12“ / 79,24 mm

FDA Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **WH Wide Belts**						
	600	800	1000	1200	1300	1800
Ultimate Tensile Strength F_{break} (average value)						
Aramid	21.021 N	28.028 N	35.574 N	42.581 N	46.354 N	64.141 N
Allowable Belt Force F_{1all} Open Ended						
Aramid	2.520 N	3.360 N	4.200 N	5.040 N	5.460 N	7.560 N
Allowable Belt Force F_{1all} Endless Welded						
Aramid	1.890 N	2.520 N	3.150 N	3.780 N	4.095 N	5.670 N
Allowable Effective Force F_{eall}						
	8.820 N	11.760 N	14.700 N	17.640 N	19.110 N	26.460 N
Specific Belt Weight m_{sp}						
Aramid	0,0033 kg / m / mm					
Specific Belt Stiffness C_{sp}						
Aramid	630.000 N	840.000 N	1.050.000 N	1.260.000 N	1.365.000 N	1.890.000 N

Pitch 10 mm

Standard Widths 150 mm to 450 mm

Width Tolerance + 1 mm / - 2 mm

Slitting Lanes
Standard 64 mm
Optional N/A

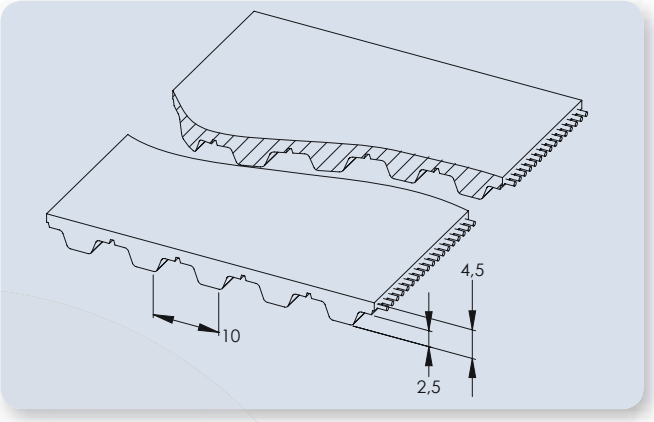
Minimum Welded Belt Length
450 mm width 1.100 mm

Standard Roll Length (± 1 %) 60 m

Standard Color Clear

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 44,56 mm



Minimum Back Bend Diameter
80 mm

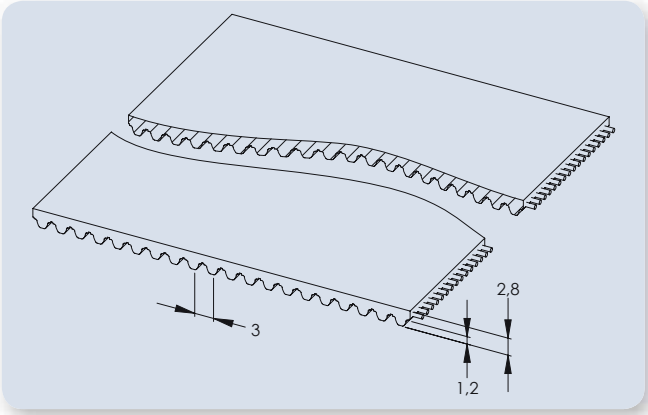
FDA Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **WT10 Wide Belts**						
mm	150	200	250	300	325	450
Ultimate Tensile Strength F_{break} (average value)						
Aramid	21.021 N	28.028 N	35.574 N	42.581 N	46.354 N	64.141 N
Allowable Belt Force F_{1all} Open Ended						
Aramid	2.520 N	3.360 N	4.200 N	5.040 N	5.460 N	7.560 N
Allowable Belt Force F_{1all} Endless Welded						
Aramid	1.890 N	2.520 N	3.150 N	3.780 N	4.095 N	5.670 N
Allowable Effective Force F_{eall}						
	7.500 N	10.000 N	12.500 N	15.000 N	16.250 N	22.500 N
Specific Belt Weight m_{sp}						
Aramid	0,0039 kg / m / mm					
Specific Belt Stiffness C_{sp}						
Aramid	630.000 N	840.000 N	1.050.000 N	1.260.000 N	1.365.000 N	1.890.000 N

Wide Belts — GMT3™

Pitch	3 mm
Standard Widths	50 mm to 450 mm
Width Tolerance	+ 1 mm / - 2 mm
Slitting Lanes	
Standard	N/A
Optional	N/A
Minimum Welded Belt Length	1.200 mm
Standard Roll Length (± 1 %)	60 m
Standard Color	Blue
Minimum Number of Pulley Teeth z_{min}	19
Minimum Pulley Diameter	19 mm



Minimum Back Bend Diameter
30 mm

FDA Approval
Yes / Only available with Aramid Cord

EU-Approval
Yes / Only available with Aramid Cord

Technical Data

Standard Widths **GMT3™ Wide Belts**							
mm	50	100	150	200	250	300	450
Ultimate Tensile Strength F_{break} (average value)							
Aramid	3.861 N	7.847 N	11.833 N	15.819 N	19.804 N	24.039 N	35.747 N
Allowable Belt Force F_{1all} Open Ended							
Aramid	587 N	1.174 N	1.761 N	2.348 N	2.935 N	3.522 N	5.283 N
Allowable Belt Force F_{1all} Endless Welded							
Aramid	440 N	881 N	1.321 N	1.761 N	2.201 N	2.642 N	3.962 N
Allowable Effective Force F_{eall}							
	700 N	1.400 N	2.100 N	2.800 N	3.500 N	4.200 N	6.300 N
Specific Belt Weight m_{sp}							
Aramid	0,0020 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Aramid	146.750 N	293.500 N	440.2250 N	587.000 N	733.750 N	880.500 N	1.320.750 N

Wide Belts	Polyurethane						Belt Type				Aramid Cord			
Pitch	R1	R2	FDA	R4	EUF85	EUF92	R	G	P	E	STAND	NB	NT	NTB
WT10	X	X	X				X	X	X	X	X	X	X	X
WH	X	X	X				X	X	X	X	X	X	X	X
GMT3™			X		X		X	X	X	X	X			

Specifications subject to change without prior notice.

Please contact our Applications Engineering for specific "minus" and length tolerances.

For further configurations please contact our Application Consulting.

Please find used abbreviations on page 133.

Overview – Covered Belts

Most belt types can be modified with a coating to achieve a desired coefficient of friction, abrasion resistance or thickness. Gates Mectrol offers more than 20 backings in categories such as Polyurethane, Rubber, Foam, PVC and special backings to meet your requirements.
All backings can be modified mechanically on request – customizing the belt according to your requirements.

Processing Options

- Grinding
- Milling
- Sandwich Belts
- Grooves
- Holes

Further information on page 82

Attributes

- Low vibration and quiet operation
- Reduced noise characteristics
- Adaption of friction

Applications

- Metal Stamping Industry
- Feeding and Pulling applications
- Paper Handling
- Glass Conveying
- Food Industry
- Cardboard Conveying

Production Capabilities

Minimum Width	10 mm
Maximum Width	200 mm
Minimum Length	500 mm
Maximum Length / Welding Process	No Limitation
Maximum Length / Gluing Process	up to 12.000 mm

Further information regarding backings, thicknesses or special dimensions is available on request.




Covered Belts — Polyurethane (PU) Backings

Polyurethane is the most abrasion-proof, resilient and durable backing.
Polyurethane is available in different thicknesses and hardnesses.
Polyurethane Backings are applied to the belt in a welding process.

Attributes

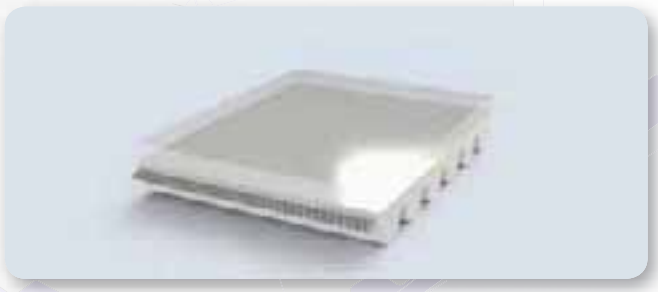
- Excellent friction
- Good abrasion resistance
- Good durability vs. chemicals
- Excellent durability vs. oil and fat
- Available with FDA / EU Food Approval

Applications

- Stone Processing Industry
- Wood Processing Industry
- Glass Processing Industry
- Card Sheet Processing Industry
- Cardboard Transport
- Packaging Industry
- Feeding and Pulling applications
- Ascending Conveyor

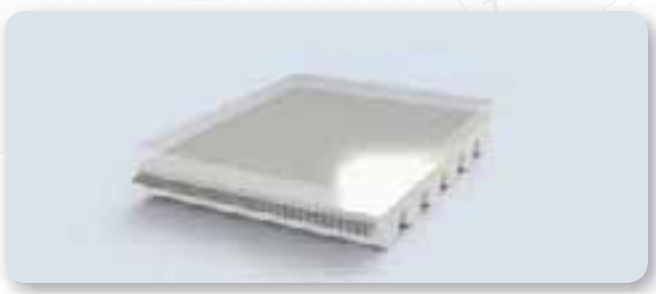
75 Shore A Polyurethane Clear

Material	Polyurethane
Color	Clear
Hardness	75 Shore A
Material Thickness	2 mm / 3 mm *
Diameter Factor	x 30



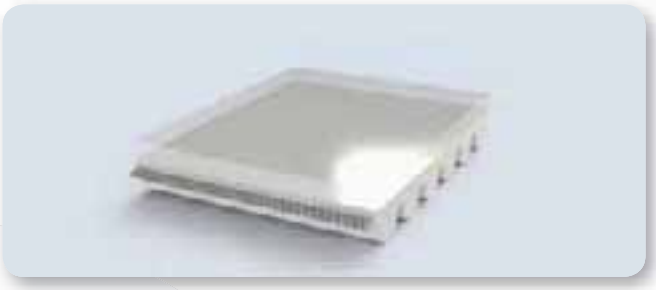
85 Shore A Polyurethane Clear

Material	Polyurethane
Color	Clear
Hardness	85 Shore A
Material Thickness	2 mm / 3 mm *
Diameter Factor	x 30
Attributes	FDA Approval EU Food Approval



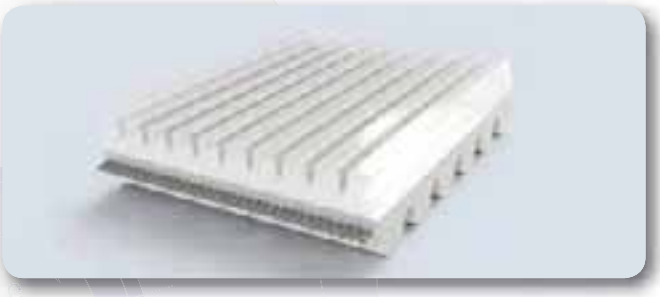
92 Shore A Polyurethane Clear

Material	Polyurethane
Color	Clear
Hardness	92 Shore A
Material Thickness	2 mm *
Diameter Factor	x 30



Glass Backing

Material	Polyurethane
Color	Clear
Hardness	75 Shore A
Material Thickness	5 mm
Diameter	Ø 120 mm

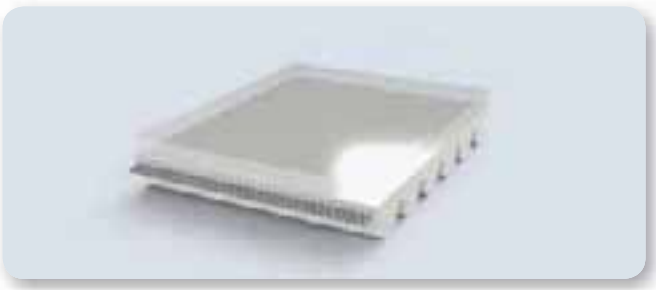


Ridge Top

Material	Polyurethane
Color	Clear
Hardness	85 Shore A
Material Thickness	3 mm
Diameter	Ø 90 mm

HV Foil

Material	Polyurethane
Color	Clear
Hardness	85 Shore A
Material Thickness	1 mm / 2 mm *
Diameter Factor	x 30



Fine Glass Backing

Material	Polyurethane
Color	Clear
Hardness	85 Shore A 92 Shore A
Material Thickness	2,7 mm
Diameter	Ø 75 mm

** Several layers can be welded together or grinded for other thicknesses.*

Covered Belts — Rubber Backings

Rubber Backings are commonly used in industries such as wood processing, glass processing and ceramics industry based on their high coefficient of friction and temperature resistance as well as good abrasion resistance.
Rubber Backings are applied to the belt in a gluing process.

Attributes

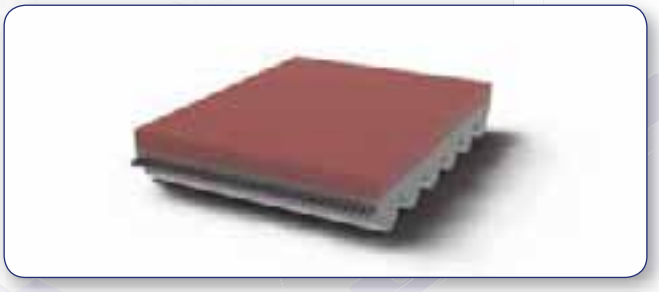
- Excellent friction
- Good abrasion resistance
- Good durability vs. temperature and resistance to atmospheric conditions
- Flexibility at low temperatures
- Available with FDA Approval

Applications

- Wood Processing Industry
- Metal Stamping Industry
- Paper Processing Industry
- Textile Processing Industry
- Packaging Industry
- Feeding and Pulling applications
- Pharmaceutical / Cosmetic Industry

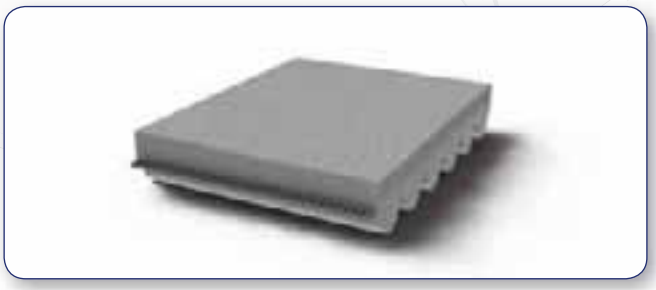
Linatex®

Material	Natural Rubber
Color	Red
Hardness	38 Shore A
Material Thickness	1,6 mm up to 10,0 mm *
Diameter Factor	x 20



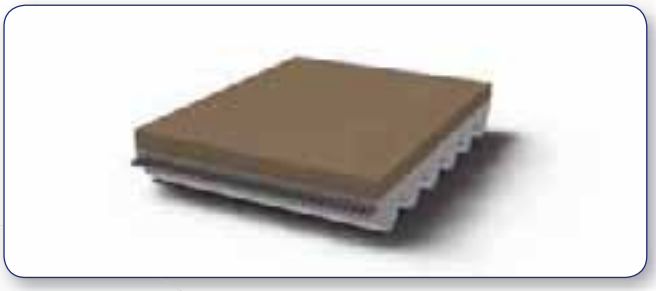
Linaplus FG™

Material	Natural Rubber
Color	White
Hardness	38 Shore A
Material Thickness	3 mm / 5 mm / 8 mm *
Diameter Factor	x 20
Attributes	FDA Approval



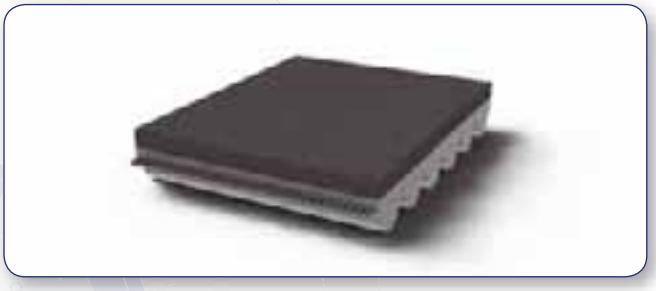
Tan Natural Rubber

Material	Natural Rubber
Color	Beige
Hardness	40 Shore A
Material Thickness	3 mm / 6 mm *
Diameter Factor	x 20



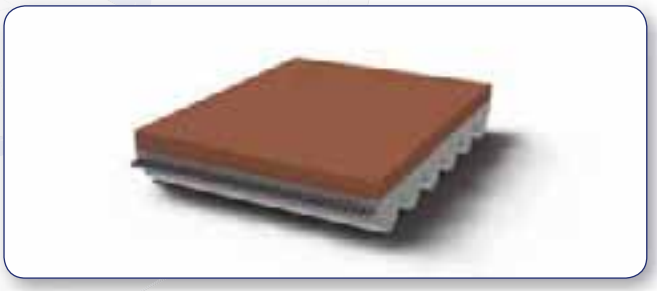
Nitrile Rubber

Material	Natural Rubber
Color	Black
Hardness	65 Shore A
Material Thickness	3 mm / 5 mm / 6 mm *
Diameter Factor	x 25



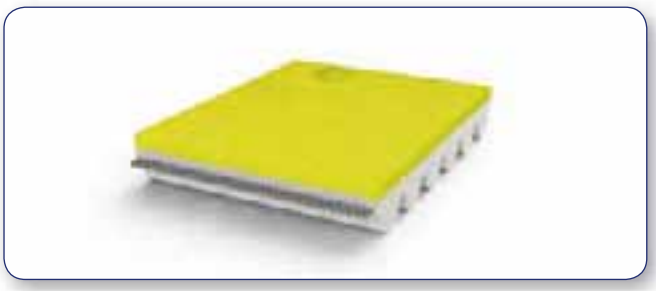
Linatrile®

Material	Natural Rubber
Color	Orange
Hardness	55 Shore A
Material Thickness	3 mm / 8 mm *
Diameter Factor	x 20



RP400

Material	Natural Rubber
Color	Yellow
Hardness	38 Shore A
Material Thickness	2 mm / 4 mm *
Diameter Factor	x 20



** Several layers can be welded together or grinded for other thicknesses.*

Covered Belts — Foam Backings

Foam Backings are commonly used in glass, paper, textile and wood processing industries due to their flexibility.
Foam backings are applied on the belt in a gluing process.

Attributes

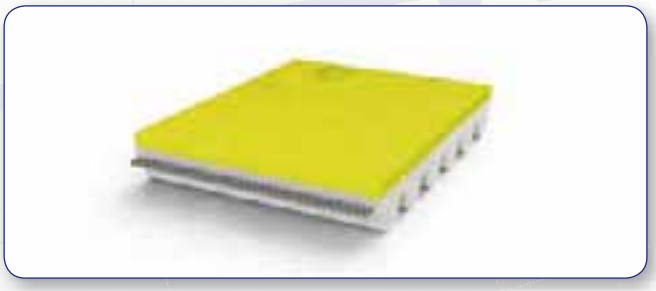
- Excellent compressibility
- Good abrasion resistance
- Excellent coefficient of friction
- Good durability vs. chemicals
- Good durability vs. oil and fat

Applications

- Paper processing industry
- Foil processing industry
- Wood processing industry
- Glass processing industry
- Labeling machines
- Feeding and Pulling applications
- Vacuum applications
- Cleaning / Bottling applications

HD Yellow

Material	Polyurethane
Color	Yellow
Hardness	55 Shore A
Material Thickness	2 mm up to 8 mm *
Diameter Factor	x 30

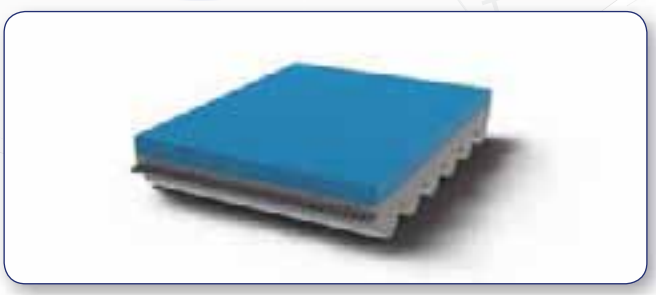


Sylomer® Yellow

Material	Foamed Polyurethane
Color	Yellow
Hardness	160 kg / m³
Material Thickness	12 mm *
Diameter Factor	x 15

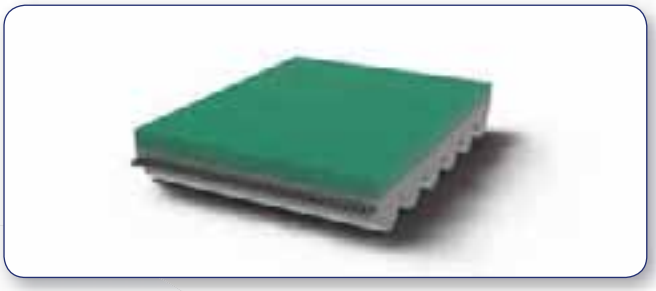
Sylomer® Blue

Material	Foamed Polyurethane
Color	Blue
Hardness	220 kg / m³
Material Thickness	12 mm / 25 mm *
Diameter Factor	x 15



Sylomer® Green

Material	Foamed Polyurethane
Color	Green
Hardness	20 Shore A
	300 kg / m³
Material Thickness	6 mm up to 25 mm *
Diameter Factor	x 15



Sylomer® Brown

Material	Foamed Polyurethane
Color	Brown
Hardness	30 Shore A
	400 kg / m³
Material Thickness	6 mm / 12 mm / 25 mm *
Diameter Factor	x 15

Sylomer® Red

Material	Foamed Polyurethane
Color	Red
Hardness	40 Shore A
	500 kg / m³
Material Thickness	6 mm / 12 mm / 25 mm *
Diameter Factor	x 15

Neoprene

Material	Cellular Rubber
Color	Black
Hardness	150-200 kg / m³
Material Thickness	3 mm / 5 mm / 10 mm *
Diameter Factor	x 15

Natural

Material	Natural Polyurethane Foam
Color	Beige / Yellow
Hardness	400 kg / m³
Material Thickness	3 mm to 8 mm *
Diameter Factor	x 15
Attributes	Highly Flexible

** Several layers can be welded together or grinded for other thicknesses.*

Covered Belts — PVC Backings

Due to various backing characteristics, PVC backings are commonly used in glass processing, wood processing, ceramic and packaging industries. Various FDA/EU approvals for different PVC backings allow applications in sectors such as food and where good hygiene is required. **PVC Backings are applied on the belt in a gluing process.**

Attributes

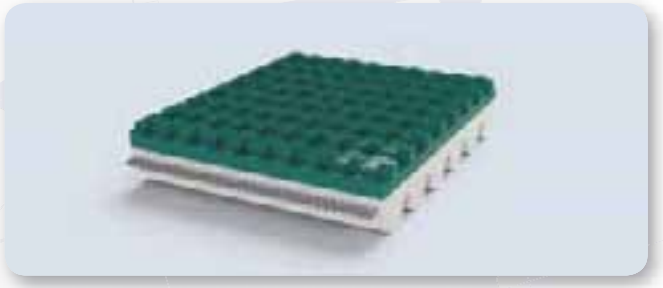
- Good durability vs. acids and chemicals
- Good resistance to atmospheric conditions
- Very adhesive
- Available with FDA / EU approval
- Available with various surface textures such as Rough Top and Saw tooth

Applications

- Wood Processing Industry
- Glass Processing Industry
- Stone Processing Industry
- Paper Processing Industry
- Labeling Industry
- Packaging Industry
- Pharmaceutical / Cosmetic Industry

Rough Top

Material	PVC
Color	Green
Hardness	46 Shore A
Material Thickness	4,8 mm
Diameter	Ø 90 mm



Small Pebble Structure

Material	PVC
Color	White
Hardness	65 Shore A
Material Thickness	1,2 mm
Diameter	Ø 25 mm
Attributes	Structured surface FDA Approval EU Approval

Large Pebble Structure

Material	PVC
Color	White
Hardness	35 Shore A
Material Thickness	6 mm
Diameter	Ø 40 mm
Attributes	Structured surface FDA Approval EU Approval

PVC Herringbone

Material	PVC
Color	White
Hardness	70 Shore A
Material Thickness	4,5 mm
Diameter	Ø 90 mm
Attributes	FDA Approval

PVC Saw Tooth

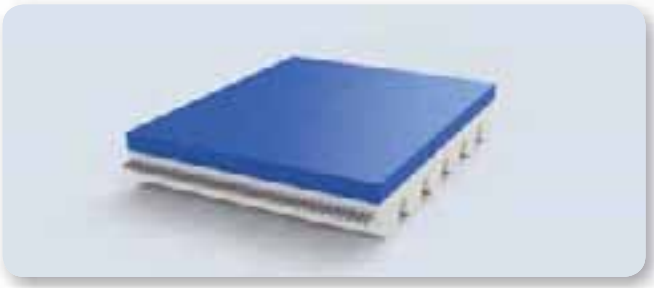
Material	PVC
Color	White
Hardness	40 Shore A
Material Thickness	2,5 mm
Diameter	Ø 90 mm
Attributes	FDA Approval EU Approval

PVC Waffle Structure

Material	PVC
Color	White
Hardness	65 Shore A
Material Thickness	0,7 mm
Diameter	Ø 50 mm
Attributes	FDA Approval

PVC Blue

Material	PVC
Color	Blue
Hardness	60 Shore A
Material Thickness	1 mm / 2 mm
Diameter	Ø 40 mm



PVC White

Material	PVC
Color	White
Hardness	65 Shore A
Material Thickness	2 mm
Diameter	Ø 40 mm
Attributes	FDA Approval EU Approval

Covered Belts – Special Backings

In addition to our Standard backing types please find special backings below.
Please contact our Applications Engineering for other special backings.
Novo fleece and Chrome Leather are applied on the belt with a gluing process.

Novo Fleece

Material	Polyester
Color	Anthracite
Hardness	N/A
Material Thickness	1,2 mm
Diameter	Ø 25 mm
Attributes	Suited for high temperature ranges
	Good durability vs. oil and fat
Applications	General conveying applications
	Glass processing

Chrome Leather

Material	Leather
Color	Grey
Hardness	65 Shore A
Material Thickness	2 mm / 3 mm
Diameter	Ø 90 mm
Attributes	Excellent coefficient of friction
	Good abrasion resistance
	Excellent oil resistance
Applications	General conveying applications

Further backings, thicknesses and special dimensions are available on request.

Covered Belts – Polyamide Fabric

Polyamide Fabric on Tooth and / or Back reduces the coefficient of friction and provides smooth and enhanced operation characteristics for custom designed applications.
Polyamide Fabric is added to the belt during the extrusion process.

Attributes

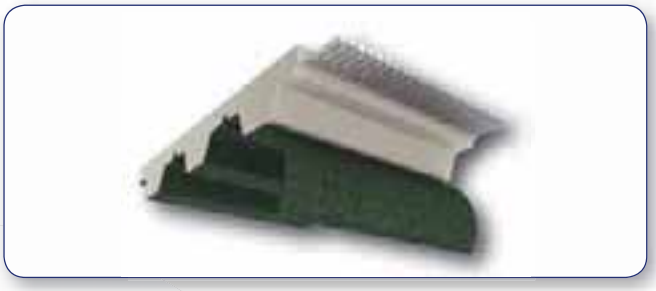
- Low coefficient of friction
- High wear resistance
- Good sliding attributes
- Low noise operation
- Good durability vs. oil and fat

Applications

- Accumulating Conveyor
- Sliding applications

Polyamide Fabric on Tooth side

Code NT / Nylon® Teeth
Color Green
Hardness 1,1 g / cm³

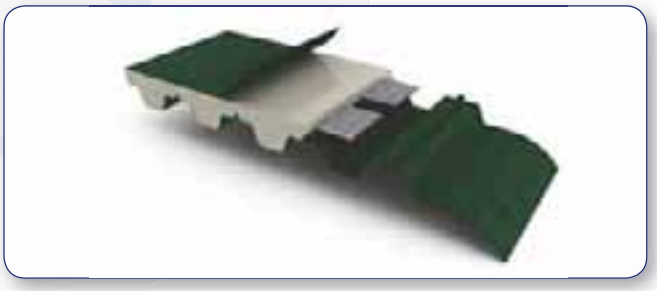


Polyamide Fabric on Back

Code NB / Nylon® Back
Color Green
Hardness 1,1 g / cm³

Polyamide Fabric on Tooth and Back

Code NTB / Nylon® Tooth and Back
Color Green
Hardness 1,1 g / cm³



Special Fabric

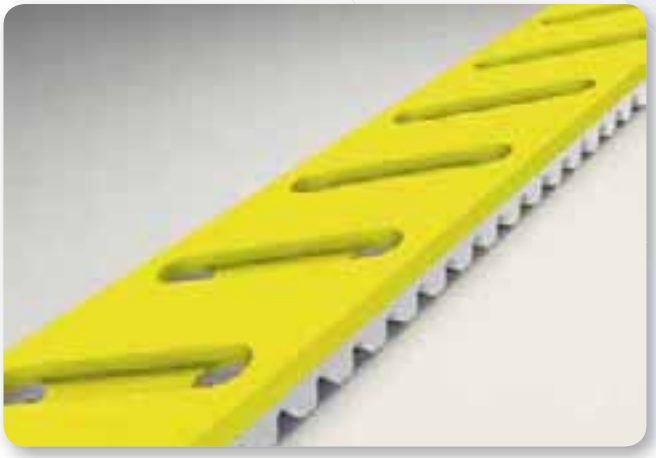
ECO Fabric offers both, antistatic features as well as an extremely low coefficient of friction. Depending on its application area ECO also provides an extended service life in comparison to the standard Polyamide fabric. The special antistatic fabric is available for standard pitches such as T5 / T10 / AT5 / AT10.

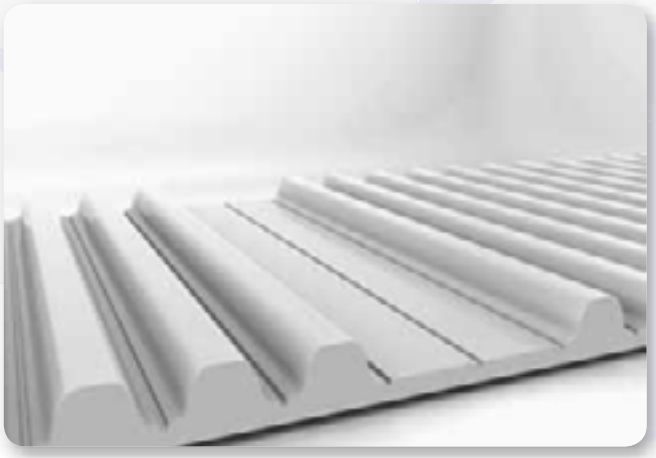
ECO Fabric on Tooth and Back

Color Anthracite
Hardness 160 g / m²

Covered Belts — Technical Data

	Code	Hardness (Shore A) Density (kg /m³)	Material Thickness (mm)	Abrasion Resistance	Oil Resistance	Attributes
Polyurethane (PU)						
Polyurethane 75 Shore A	U32 / U33	75	2 / 3	1	1	
Polyurethane 85 Shore A	U22 / U23	85	2/ 3	1	1	FDA / EU
Polyurethane 92 Shore A	U12	92	2	1	1	
Glass Backing	G32	75	5	1	1	
Ridge Top	G21	85	3	1	1	
HV Foil	U41 / U42	85	1 / 2	1	1	
Fine Glass Backing 85 Shore A	G53	85	2,7	1	1	
Fine Glass Backing 92 Shore A	G52	92	2,7	1	1	
Rubber						
Linatex®	L	38	1,6 up to 10,0	2	4	
Linaplus FG™	LP	38	3 / 5 / 8	2	4	FDA
Tan Natural Rubber	LT	40	3 / 6	2	4	
Nitrile Rubber	LB	65	3 / 5 / 6	2	1	
Linatrile®	NL	55	3 / 8	2	2	
RP400 / Racloprema	RP2 / RP4	38	2 / 4	1	2	
Foam						
HD Yellow	FUY	55	2 up to 8	3	1	
Sylomer® Yellow	FY	160 kg / m³	12	4	1	
Sylomer® Blue	FB	220 kg / m³	12 / 25	4	1	
Sylomer® Green	FG	300 kg / m³	6 / 12 / 25	3	1	
Sylomer® Brown	FN	400 kg / m³	6 / 12 / 25	3	1	
Sylomer® Red	FR	500 kg / m³	6 / 12 / 25	3	1	
Neoprene	NF	150 - 200 kg / m³	3 / 5 / 10	4	3	
Natural	FC	400 kg / m³	3 up to 8	3	1	

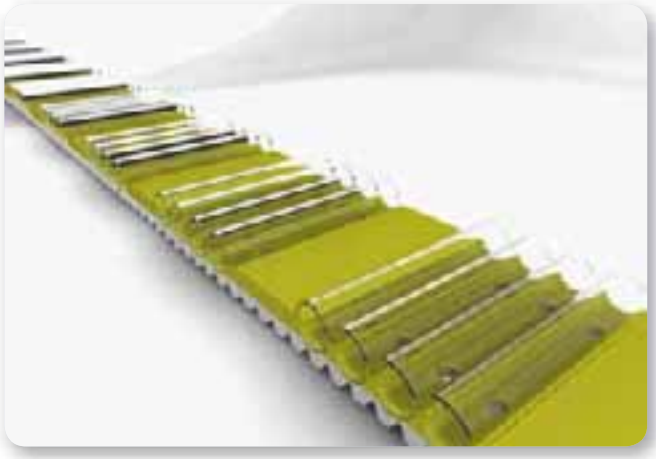




	Code	Hardness (Shore A) Density (kg /m³)	Material Thickness (mm)	Abrasion Resistance	Oil Resistance	Attributes
PVC						
Rough Top	RT	46	4,8	3	4	
Small Pebble	SPT	65	1,2	3	4	FDA / EU
Large Pebble	LPT	35	6	3	4	FDA / EU
PVC Herringbone	PH	70	4,5	3	4	FDA
PVC Saw Tooth	ST	40	2,5	2	3	FDA / EU
PVC Waffle Structure	PTW	65	0,7	2	3	FDA
PVC Blue	PB	60	1 / 2	3	4	
PVC White	PW	65	2	3	4	FDA / EU
Special Backings						
Novo	NV	N/A	1,2	3	2	
Chrome Leather	N/A	65	2 / 3	2	1	
Polyamide Fabric						
Polyamide Fabric Tooth Side	NT	1,1 g / cm³	N/A	2	3	
Polyamid Fabric Back	NB	1,1 g / cm³	N/A	2	3	
Polyamid Fabric Tooth Side and Back	NTB	1,1 g / cm³	N/A	2	3	
ECO Fabric Tooth Side and Back	ECO	160 g / m²	N/A	1	3	Antistatic

Stave for abrasion resistance / oil resistance:

1 – Very Good 2 – Good 3 – Satisfactory 4 – Adequate 5 – Poor 6 - Inadequate



Overview — Profiled Belts

Gates Mectrol Timing Belts can be customized with welded profiles to meet specific application requirements. The molded profiles are made of tough polyurethane and become an integral part of the belt through thermal bonding Profiles can be manufactured in nearly any shape and construction.

Our timing belts with welded profiles are optimal for applications in packaging, general conveying and other automation equipment applications.

Choose from over 2.000 existing profiles available from Gates Mectrol's extensive mold inventory.

Attributes

- Available for all standard pitches
- Non-marking, durable design
- Over 2.000 existing shapes and constructions
- Widths up to 18" / 450 mm available
- Thermal bonding process fuses belt and profile together

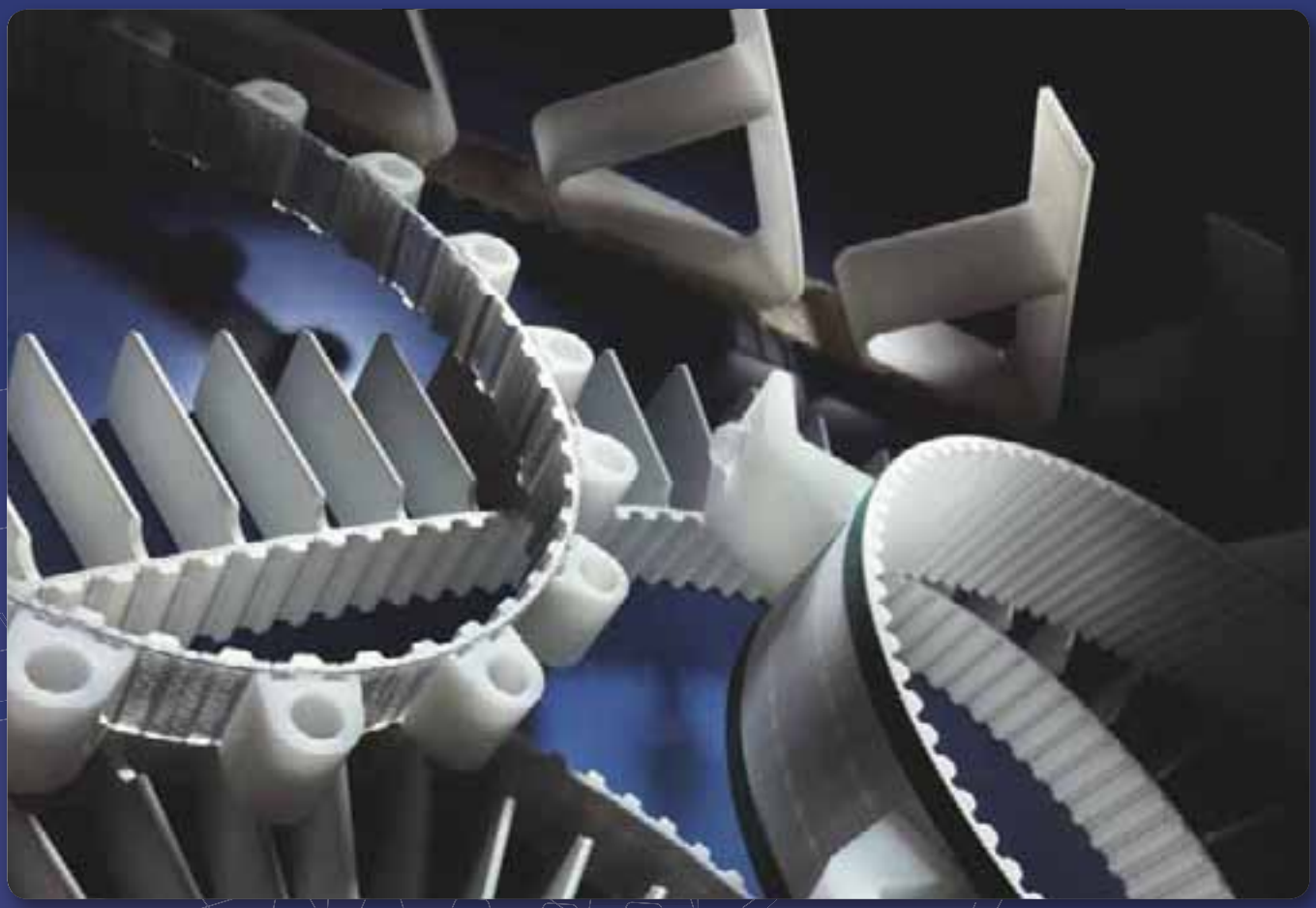
Applications

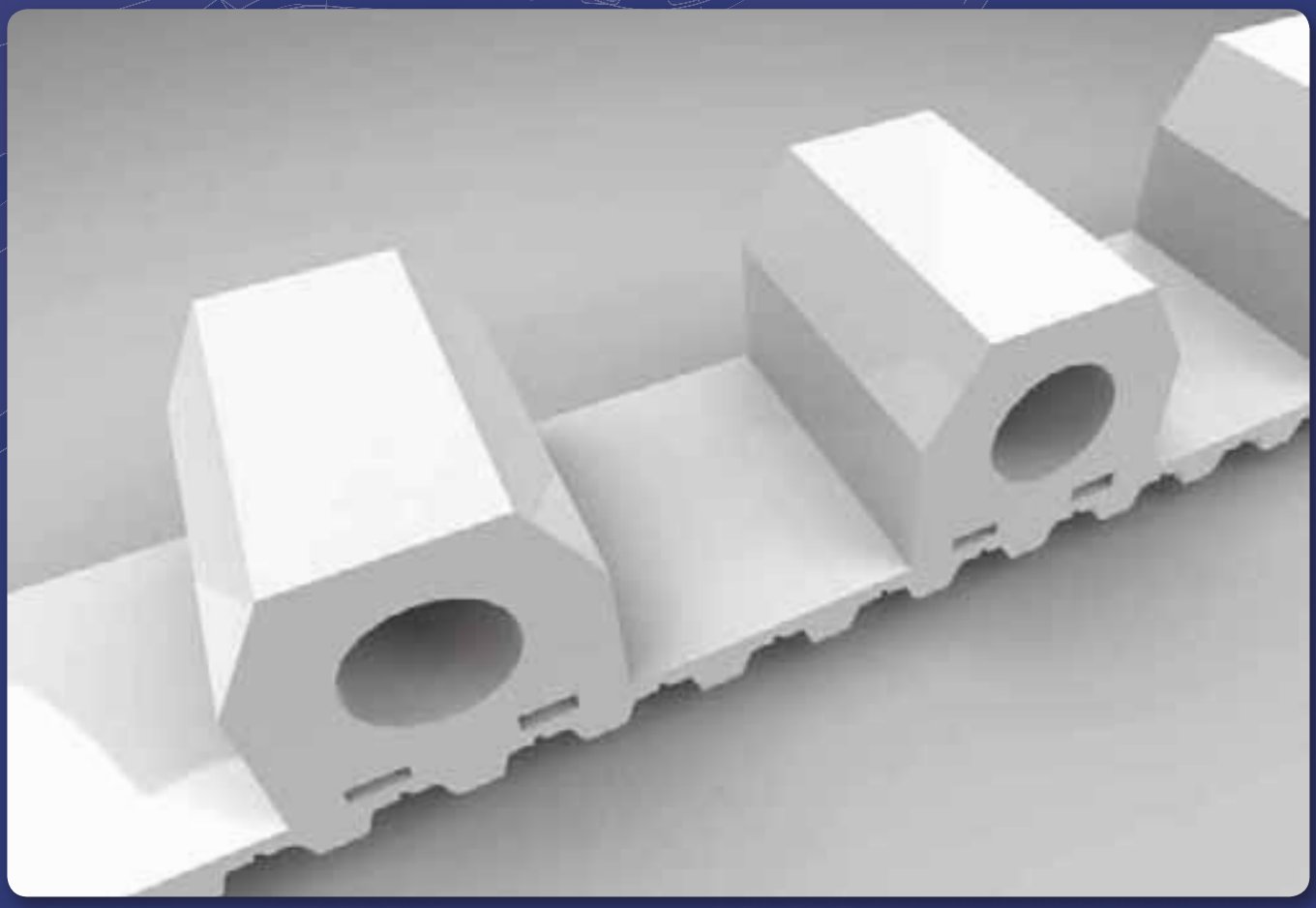
- Pushing applications
- General Conveying applications
- Glass Conveying
- Food Conveying
- Hygienic Industry
- Textile Industry
- Wood Processing Industry
- Synchronous Conveying applications

Fabrication Capabilities

Minimum Length	500 mm
Maximum Length	30.000 mm
Maximum Width	up to 450 mm / 18"
Minimum Welding Foot Distance	20 mm

Special dimensions and separate tolerances available on request.





Profiled Belts – Design Recommendations

Over 2.000 profile designs are already available from Gates Mectrol's extensive mold inventory.
Our application engineers will help you to design new, custom built profiles which will fit your application.

Ultimate performance can be achieved by following the design guidelines outlined below:

1. Profile Spacing

It is recommended that the profile spacing "A" correspond with the pitch of the belt. This allows the best spacing tolerances, and minimizes the effects of the belt's overall length tolerance on the profile spacing. Profiles can be spaced on non-pitch increments. However, if non-pitch spacing is used, the cumulative tolerance of the belt length must be considered.

Please add the Profile Spacing Tolerance of **± 0,2 mm** to calculate the profile spacing „A" as follows:

Example
Profile Spacing Tolerance for pitch type T10: ± 0,54 mm
Profile Spacing "A" (notional value): 1.000 mm

Resultant positional tolerance: **1.000 mm ± 0.74 mm** for pitch type T10

Tighter tolerances for profile spacing are available. Please contact Gates Mectrol applications engineer for detailed information.

Pitch Tolerance for all Belt Types

T / HTD® / STD / Imperial Pitches	± 0,54 mm per m
AT-Pitches	+ 0,27 mm / - 0,54 mm per m

2. Profile Dimensions

The most important considerations while dimensioning a profile are the size of the base of the profile ("foot" of the profile) and the position of the profile on the belt. The profile thickness can affect the flexibility of the belt, and can determine the minimum allowable pulley diameter. The flexibility of the belt can be maximized, however, by positioning the profile directly over the tooth of the belt. As the thickness of the foot of the profile increases, the minimum pulley diameter in the system must be increased according to the table below:

Tolerances	
Profile Width Profile Length	± 0,25 mm / ± 0,01" ± 0,25 mm / ± 0,01"
The height tolerance of a profile in consequence of the fusion of the profile and belt at the welding area	+ 0,25 mm / - 0,5 mm + 0,01" / - 0,02"

Minimum Number of Pulley Teeth for Profiles located over tooth

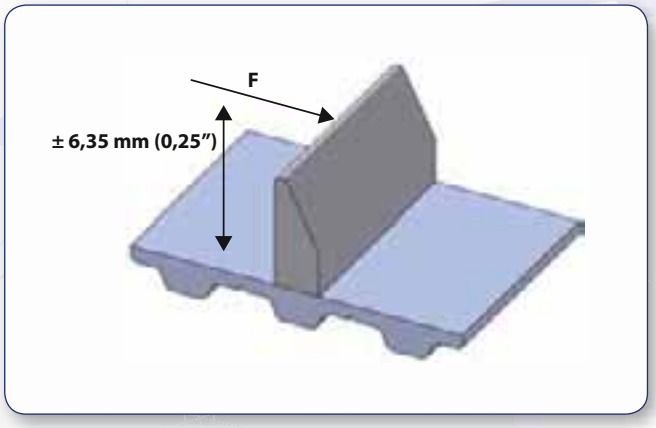
Profile Foot Thickness (Inch)	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Profile Foot Thickness (mm)	1,60	3	5	6	8	10,00	11	13	16	19
XL	10	10	18	25	40	50	60	100	N/A	N/A
L	12	12	12	18	30	40	50	60	100	N/A
H / H-HF	14	14	14	14	18	25	35	45	80	100
XH	18	18	18	18	18	18	18	20	35	50
T5	12	12	18	25	40	50	60	100	N/A	N/A
AT5 / ATL5	15	15	18	25	40	50	60	100	N/A	N/A
T10 / T10-HF	14	14	16	16	18	25	35	45	80	100
AT10	15	15	18	18	22	25	35	45	80	100
ATL10 / ATL10-HF	25	25	25	25	25	25	35	45	80	100
T20 / AT20	18	18	18	18	18	18	18	20	35	50
ATL20	30	30	30	30	30	30	30	30	35	50
HTD®5 / STD5	14	14	16	25	40	50	60	100	N/A	N/A
HTD®8 / STD8	20	20	20	24	30	40	50	60	100	N/A
HTD®14	28	28	28	28	28	28	30	30	50	72
HTDL®14	43	43	43	43	43	43	43	43	50	72

Minimum Number of Pulley Teeth for Profiles which are not located over tooth

Profile Foot Thickness (Inch)	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4
Profile Foot Thickness (mm)	1,60	3	5	6	8	10,00	11	13	16	19
XL	12	30	45	50	60	100	N/A	N/A	N/A	N/A
L	12	20	40	45	55	60	70	80	100	N/A
H / H-HF	14	14	25	30	45	50	55	65	80	100
XH	18	18	20	30	40	45	50	54	58	60
T5	12	30	45	50	60	100	N/A	N/A	N/A	N/A
AT5 / ATL5	15	30	45	50	60	100	N/A	N/A	N/A	N/A
T10 / T10-HF / AT10	18	20	30	40	45	50	55	65	80	100
ATL10 / ATL10-HF	25	25	30	40	45	50	55	65	80	100
T20 / AT20	18	18	20	30	40	45	50	54	58	60
ATL20	30	30	30	30	40	45	50	54	58	60
HTD®5 / STD5	18	30	45	50	60	100	N/A	N/A	N/a	N/A
HTD®8 / STD8	20	20	40	45	55	60	70	80	100	N/A
HTD®14	28	28	30	42	58	64	72	78	82	86
HTDL®14	43	43	43	43	58	64	72	78	82	86

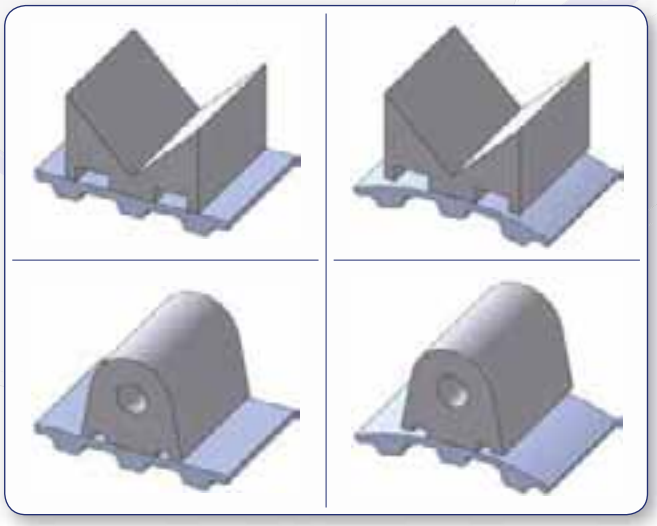
3. Profile Strength

The strength, and therefore the capacity of the profile, depends primarily on the size of the welded profile foot.
The strength of the profile is affected by the type and direction of the force applied to it. Under high loads, the failure mode will normally be either bending or distortion of the profile and belt, or in some cases, the polyurethane may actually tear. The strength of the profile is approximately 6 N/mm² according to the drawing opposite.



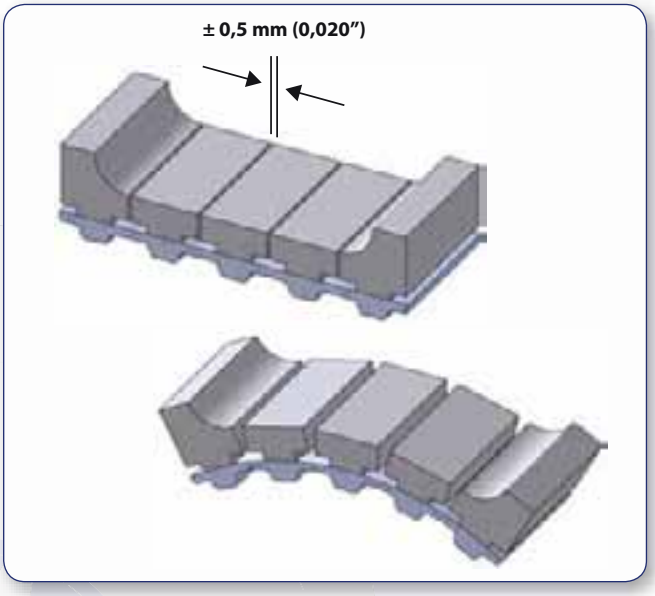
4. Wide Base Profiles and Profiles with Relief

For profiles requiring a wide base, such as pushers, one foot should be left unwelded. This allows for flexing around the pulley yet it remains rigid when loaded.



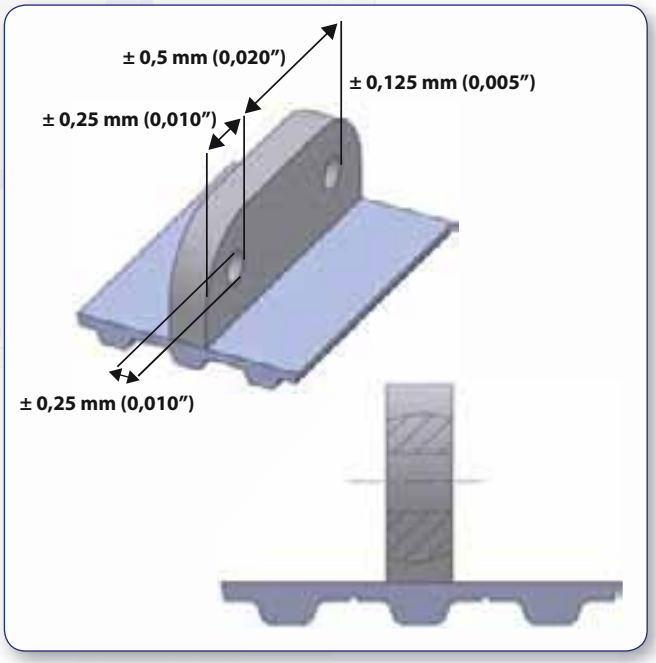
5. Segmented Profiles

When large profiles are required as carriers, they must be either segmented or slotted. This is necessary to allow flexing around the pulley.



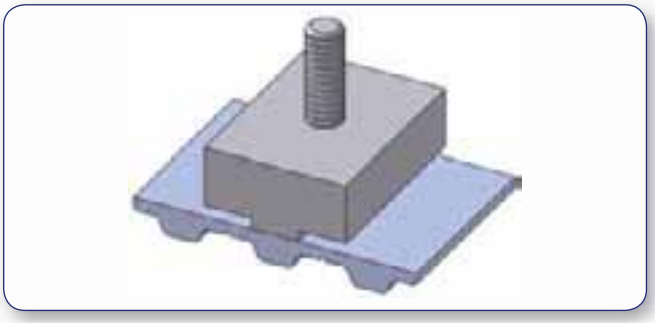
6. Profiles with Holes

Profiles with holes for securing paddles or other attachments can be produced. Holes are either drilled before bonding, or are molded into the profile depending upon the volume and requirements of the application.
Tolerances of the hole placement depends upon whether the holes are drilled or molded.
The tolerance of the hole from the belt surface is subject to the bonding process of the profile foot and the belt surface.
Generally, tolerances are as shown on the right-hand side.



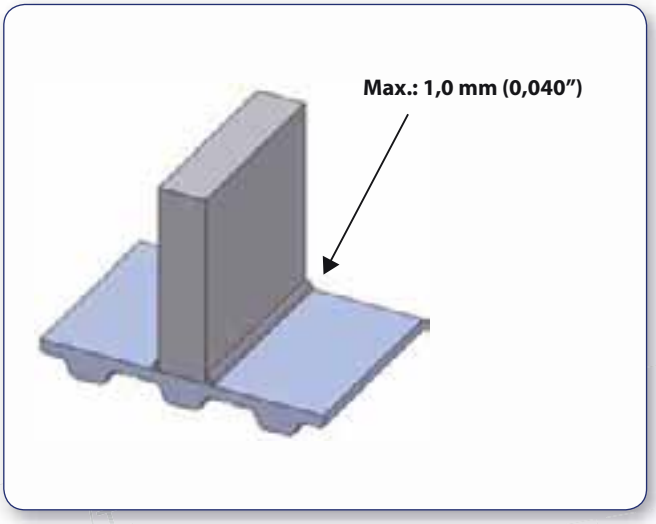
7. Profiles with Inserts

Profiles can be molded with metallic inserts. These are particularly useful in some applications to replace roller chains with attachments.
The actual inserts can either be manufactured by Gates Mectrol or provided by the customer.



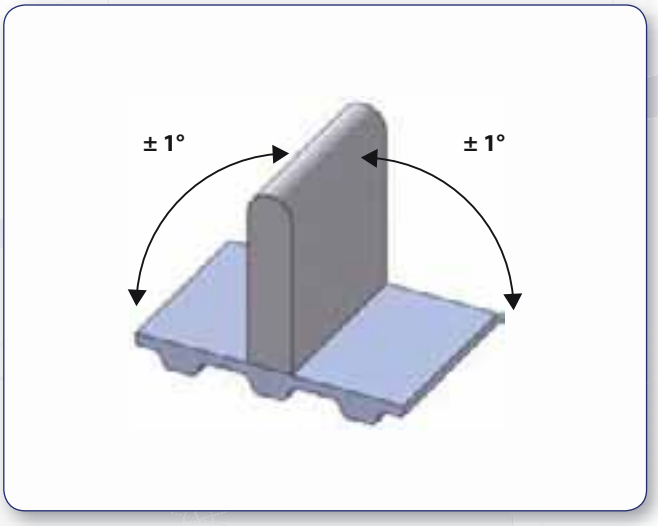
8. Flash Bead

During the welding process, a bead of polyurethane develops at the meeting point of the profile and belt. Flash Bead can be removed on customer request.



9. Perpendicularity

All profiles are perpendicular to ±1°.



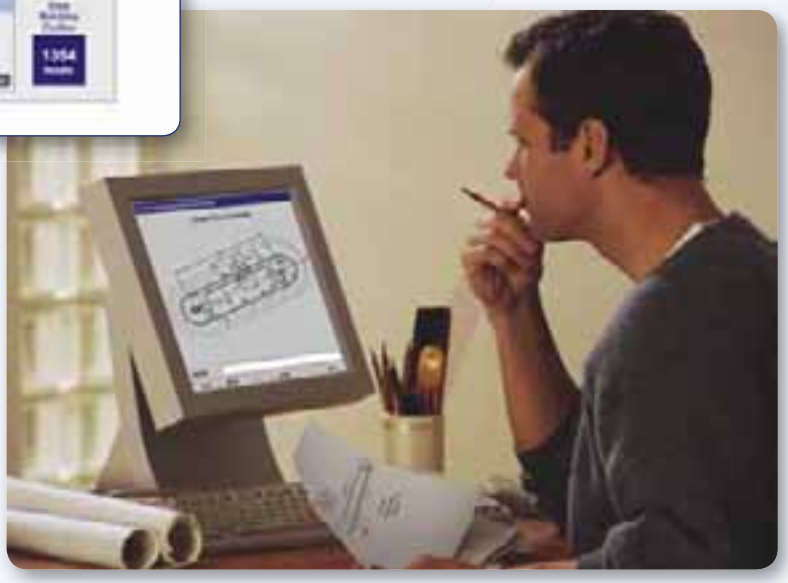
10. Ordering

When ordering a profiled belt, it is advisable to submit a drawing of the profiled belt. For your convenience, standard drawing forms are available from our Applications Engineering Department. Once a design is finalized, Gates Mectrol will submit the drawing to the customer for approval. This custom belt drawing number should be used for future ordering.

Our Online Profile Selector Tool allows you to:

- Find the right profile for your application
- Download of drawings for each selection
- Review minimum pulley recommendations

- Log on to **www.gatesmectrol.com**
- Choose the subitem **Tool Set** on the right hand side
- Choose our **Profile Selector 2** calculation tool



Please contact our Applications Engineering group for special profile shapes, dimensions or tolerances.

Overview — Fabricated Belts

Gates Mectrol offers further fabrication of belts to achieve various application requirements. From grinded edges or surfaces to tight tolerances, punching or machining holes and slots to CNC machining of three dimensional contours - Gates Mectrol can provide complete solutions.

- **Milling**

Minimum Length	500 mm
Maximum Length	30.000 mm
Minimum Width	10 mm
Maximum Width	450 mm

- **Punching**

Minimum Length	500 mm
Maximum Length	30.000 mm
Minimum Width	10 mm
Maximum Width	450 mm
Minimum Hole Diameter	1,0 mm
Maximum Hole Diameter	10 mm

- **Grinding**

Minimum Length	500 mm
Maximum Length	No Limitation
Minimum Width	10 mm
Maximum Width	170 mm

- **Removing individual teeth**
  For precise positioning of cleats
- **Slotting**
  The flexibility can be increased by cross grooving thick coatings

Our Applications Engineering Department will help you with your custom requirements.

Attributes

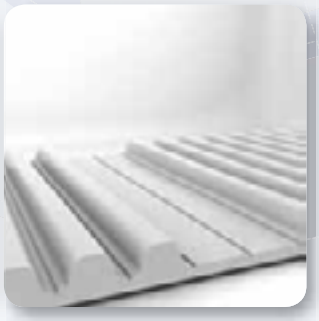
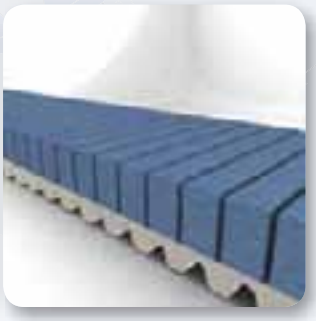
- Unlimited adaptability for nearly all dimensions, contours and configurations
- Combination of flexible base belt manufacturing and additional fabrication

Applications

- Vacuum conveying belts for pulling applications
- Positioning Applications
- General Conveying applications

Further tolerances are available on request.



Fabricated Belts — Paint and Varnish Compatible Belts

Paint and varnish compatible belts are specifically designed for use in automotive industries.
Based on the unique cleaning process product contamination is excluded.

Attributes

- Smooth, vibration free operation
- High strength / low stretch
- No product contamination
- No re-tensioning required

Applications

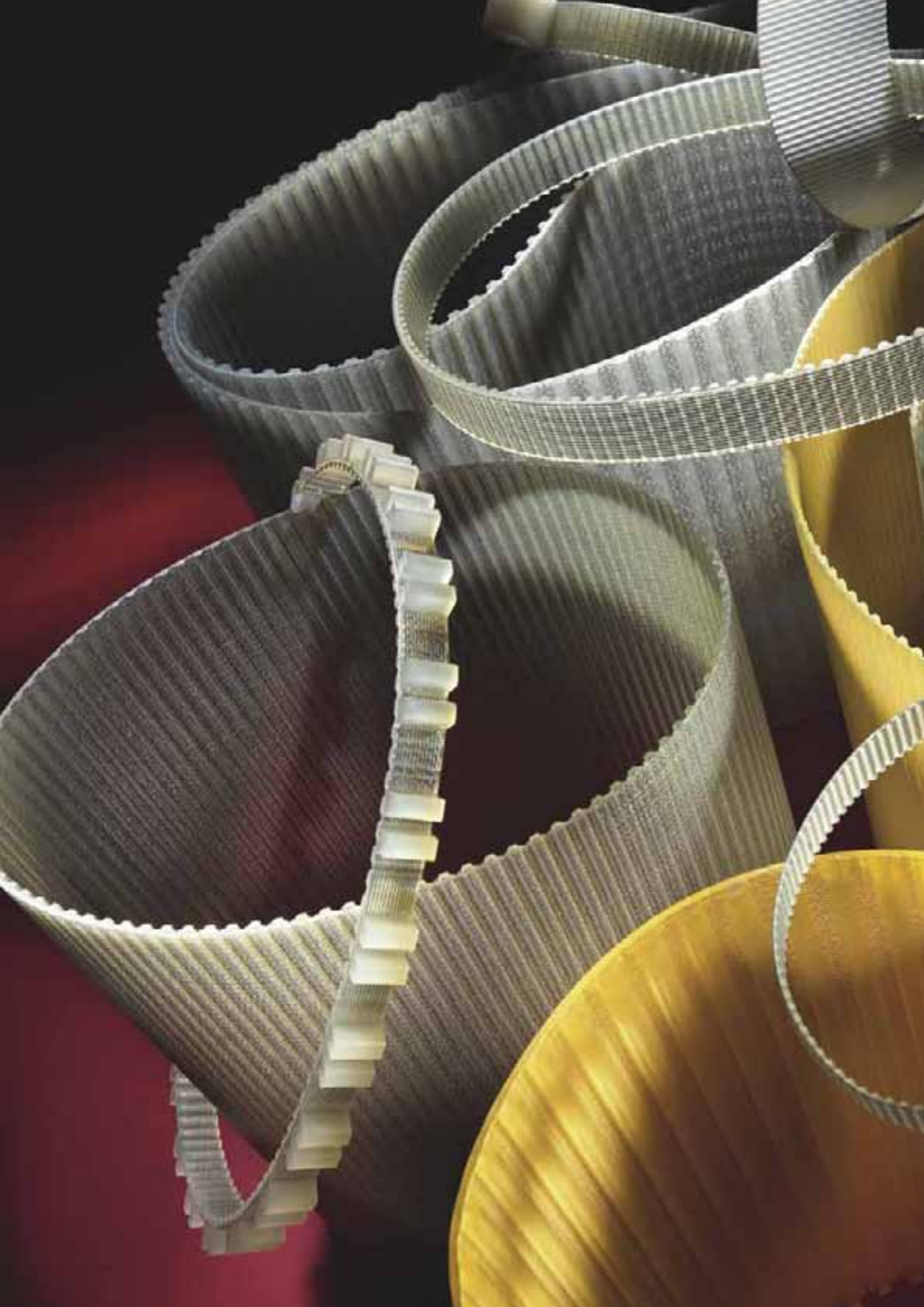
- Automotive Industry
- White Goods Industry

Processing Options

- Backings — ***Further information on page 62***
  Only available with Polyurethane Backings
- Special Processing — ***Further information on page 82***

Production Capabilities

- Available for all standard pitches
- Available as roll stock (R), open ended (G), endless welded (E) or truly endless version (F)
- Available with steel cord only
- Not available with Polyamide Fabric
- Special processing (longitudinal / diagonally grooves) available



Overview — Gates Synchro-Power® Truly Endless (Cast) Belts

Certain power transmission and high performance positioning applications require more strength and stiffness than a welded belt can provide. Gates Mectrol offers two types of truly endless belts to meet these demands.

Gates Synchro-Power® Cast Belts are cast on fixed molds and have continuously wounded steel cords. They are manufactured in various exact sizes, constructions and pitches to fulfill customer requirements.

Cast Belts offer premium capacity for power transmissions and linear applications while fitting a broad range of loads, speeds and applications.

Attributes

- Molded, thermo-set polyurethane construction
- Full load and power transmission based on endless cords
- Excellent abrasion resistance
- Smooth, low noise, non marking operation
- High tooth strength reduces deforming under load
- Excellent resistance to chemicals

Applications

- Paper Processing Industry
- Wood Processing Industry
- Glass Processing Industry
- Textile Industry
- Packaging Machines
- Exercise Equipment

Fabrication Options

- Backings ***Further information on page 60***
- Special processing ***Further information on page 82***

Fabrication Capabilities

Pitches	T2,5 / T5 / T10 DT5 / DT10 AT5 / AT10
Widths	4 mm to 380 mm
Lengths	120 mm to 2.250 mm
Polyurethane	88 Shore A (Standard)
Tension Members	Steel cord (Standard) *Aramid cord available on request*
Polyamide Fabric	N/A

Other constructions are available on request.

Gates Synchro-Power® Truly Endless (Cast) Belts — T2,5

Pitch 2,5 mm

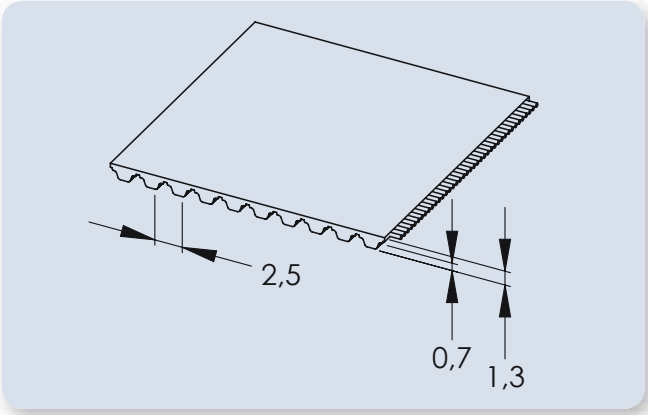
Standard Widths 4 / 6 / 8 / 10 / 12 / 16 / 20 / 25 / 32 / 50 mm

Width Tolerance
cut to width ± 0,3 mm
200 mm / 380 mm width + 1 mm / - 1 mm

Standard Color Blue

Minimum Number of Pulley Teeth z_{min} 12

Minimum Pulley Diameter 10 mm



Minimum Back Bend Diameter
20 mm

FDA Approval
No

Technical Data

Standard Widths **T2,5 Truly Endless Belts**									
mm	4	6	10	12	16	20	25	32	50
Ultimate Tensile Strength F_{break} (average value)									
Steel	330 N	535 N	990 N	1.195 N	1.670 N	2.085 N	2.670 N	3.390 N	5.395 N
Allowable Belt Force F_{1all}									
Steel	83 N	134 N	248 N	299 N	418 N	521 N	668 N	848 N	1.349 N
Allowable Effective Force F_{eall}									
	43 N	65 N	108 N	130 N	173 N	216 N	270 N	346 N	540 N

Gates Synchro-Power® Truly Endless (Cast) Belts — T2,5

Length	Width	No. Of Teeth
120 mm	200 mm	48
145 mm	200 mm	59
160 mm	200 mm	64
177,5 mm	200 mm	71
180 mm	200 mm	72
200 mm	200 mm	80
210 mm	200 mm	84
230 mm	200 mm	92
245 mm	200 mm	98
265 mm	200 mm	106
277,5 mm	200 mm	111
285 mm	200 mm	114
290 mm	200 mm	116
305 mm	200 mm	122

Length	Width	No. Of Teeth
317,5 mm	200 mm	127
330 mm	380 mm	132
342,5 mm	200 mm	137
380 mm	380 mm	152
420 mm	380 mm	168
480 mm	380 mm	192
500 mm	380 mm	200
540 mm	380 mm	216
600 mm	380 mm	240
620 mm	380 mm	248
650 mm	380 mm	260
780 mm	380 mm	312
915 mm	380 mm	366
950 mm	380 mm	380

Gates Synchro-Power® Truly Endless (Cast) Belts — T5

Pitch 5 mm

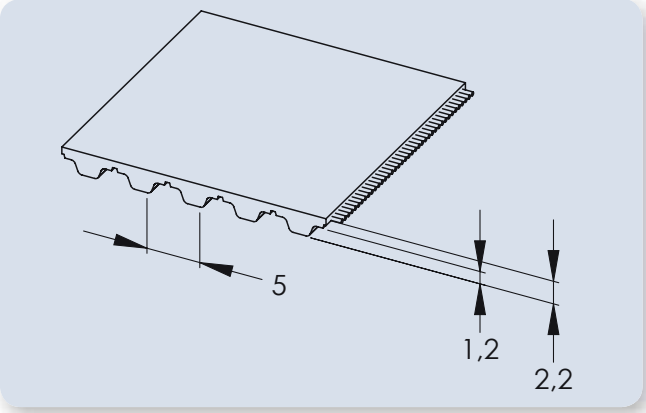
Standard Widths 4 / 6 / 8 / 10 / 12 / 16 / 20 / 25 / 32 / 50 / 75 mm

Width Tolerance
cut to width ± 0,5 mm
200 mm / 380 mm width + 1 mm / - 1 mm

Standard Color Blue

Minimum Number of Pulley Teeth z_{min} 10

Minimum Pulley Diameter 16 mm



Minimum Back Bend Diameter
30 mm

FDA Approval
No

Technical Data

Standard Widths **T5** **Truly Endless Belts**									
mm	6	10	12	16	20	25	32	50	75
Ultimate Tensile Strength F_{break} (average value)									
Steel	870 N	1.495 N	1.870 N	2.640 N	3.350 N	4.240 N	5.500 N	8.590 N	13.180 N
Allowable Belt Force F_{1all}									
Steel	202 N	336 N	403 N	538 N	672 N	840 N	1.075 N	1.680 N	2.520 N
Allowable Effective Force F_{eall}									
	214 N	356 N	427 N	570 N	712 N	890 N	1.139 N	1.780 N	2.670 N
Specific Belt Stiffness C_{sp}									
Steel	50.400 N	84.000 N	100.800 N	134.400 N	168.000 N	210.000 N	268.800 N	420.000 N	630.000 N

Gates Synchro-Power® Truly Endless (Cast) Belts — T5

Length	Width	No. Of Teeth
165 mm	200 mm	33
185 mm	200 mm	37
200 mm	200 mm	40
215 mm	200 mm	43
220 mm	200 mm	44
225 mm	200 mm	45
245 mm	200 mm	49
250 mm	200 mm	50
255 mm	200 mm	51
260 mm	200 mm	52
270 mm	200 mm	54
275 mm	200 mm	55
280 mm	200 mm	56
295 mm	200 mm	59
300 mm	200 mm	60
305 mm	200 mm	61
320 mm	200 mm	64
325 mm	380 mm	65
330 mm	380 mm	66
340 mm	380 mm	68
350 mm	380 mm	70
355 mm	380 mm	71
365 mm	380 mm	73
375 mm	380 mm	75
390 mm	380 mm	78

Length	Width	No. Of Teeth
400 mm	380 mm	80
410 mm	380 mm	82
420 mm	380 mm	84
425 mm	380 mm	85
430 mm	380 mm	86
440 mm	380 mm	88
445 mm	380 mm	89
450 mm	380 mm	90
455 mm	380 mm	91
460 mm	380 mm	92
475 mm	380 mm	95
480 mm	380 mm	96
500 mm	380 mm	100
510 mm	380 mm	102
525 mm	380 mm	105
545 mm	380 mm	109
550 mm	380 mm	110
560 mm	380 mm	112
575 mm	380 mm	115
590 mm	380 mm	118
600 mm	380 mm	120
610 mm	380 mm	122
620 mm	380 mm	124
625 mm	380 mm	125
630 mm	380 mm	126

Length	Width	No. Of Teeth
640 mm	380 mm	128
650 mm	380 mm	130
660 mm	380 mm	132
675 mm	380 mm	135
690 mm	380 mm	138
700 mm	380 mm	140
720 mm	380 mm	144
725 mm	380 mm	145
750 mm	380 mm	150
780 mm	380 mm	156
800 mm	380 mm	160
815 mm	380 mm	163
840 mm	380 mm	168
850 mm	380 mm	170
900 mm	380 mm	180
940 mm	380 mm	188
990 mm	380 mm	198
1.000 mm	380 mm	200
1.075 mm	380 mm	215
1.100 mm	380 mm	220
1.215 mm	380 mm	243
1.315 mm	380 mm	263
1.350 mm	380 mm	270
1.380 mm	380 mm	276
1.440 mm	380 mm	288

Gates Synchro-Power® Truly Endless (Cast) Belts — DT5

Pitch 5 mm

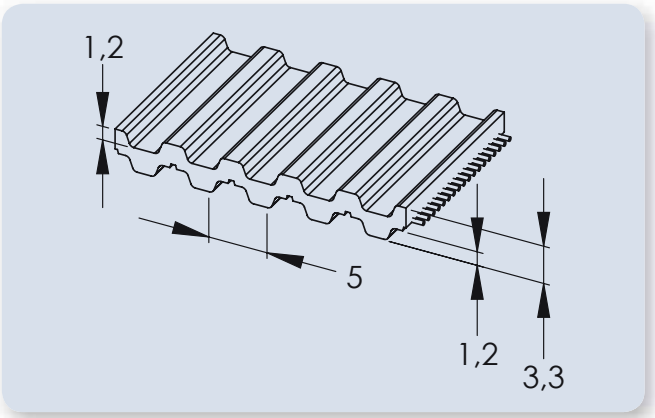
Standard Widths 6 / 8 / 10 / 12 / 16 / 20 / 25 / 32 / 50 / 75 mm

Width Tolerance
cut to width ± 0,5 mm
200 mm / 380 mm width + 1 mm / - 1 mm

Standard Color Blue

Minimum Number of Pulley Teeth z_{min} 10

Minimum Pulley Diameter 16 mm



Minimum Back Bend Diameter
16 mm

FDA Approval
No

Technical Data

Standard Widths **DT5 Truly Endless Belts**									
mm	6	10	12	16	20	25	32	50	75
Ultimate Tensile Strength F_{break} (average value)									
Steel	870 N	1.495 N	1.870 N	2.640 N	3.350 N	4.240 N	5.500 N	8.590 N	13.180 N
Allowable Belt Force F_{1all}									
Steel	202 N	336 N	403 N	538 N	672 N	840 N	1.075 N	1.680 N	2.520 N
Allowable Effective Force F_{eall}									
	214 N	356 N	427 N	570 N	712 N	890 N	1.139 N	1.780 N	2.670 N
Specific Belt Stiffness C_{sp}									
Steel	50.400 N	84.000 N	100.800 N	134.400 N	168.000 N	210.000 N	268.800 N	420.000 N	630.000 N

Length	Width	No. Of Teeth
300 mm	200 mm	60
400 mm	200 mm	80
410 mm	380 mm	82
450 mm	200 mm	90
460 mm	380 mm	92
480 mm	380 mm	96
500 mm	200 mm	100
515 mm	380 mm	103
550 mm	200 mm	110
590 mm	380 mm	118
600 mm	200 mm	120
620 mm	380 mm	124
650 mm	200 mm	130
700 mm	200 mm	140
750 mm	380 mm	150
815 mm	380 mm	163
900 mm	200 mm	180
940 mm	380 mm	188
1.100 mm	380 mm	220

Gates Synchro-Power® Truly Endless (Cast) Belts — AT5

Pitch 5 mm

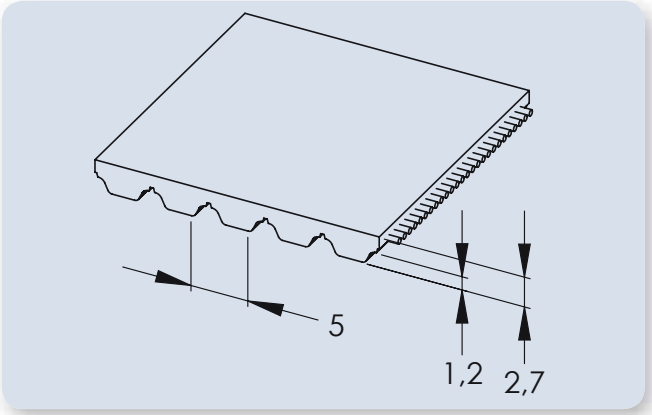
Standard Widths 4 / 6 / 8 / 10 / 12 / 16 / 20 / 25 / 32 / 50 / 75 mm

Width Tolerance
cut to width ± 0,5 mm
200 mm / 380 mm width + 1 mm / - 1 mm

Standard Color Blue

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 24 mm



Minimum Back Bend Diameter
60 mm

FDA Approval
No

Technical Data

Standard Widths **AT5** **Truly Endless Belts**									
mm	6	10	12	16	20	25	32	50	75
Ultimate Tensile Strength F_{break} (average value)									
Steel	1.410 N	2.865 N	3.720 N	5.110 N	6.560 N	8.300 N	10.785 N	17.090 N	26.200 N
Allowable Belt Force F_{1all}									
Steel	423 N	704 N	845 N	1.127 N	1.408 N	1.761 N	2.253 N	3.521 N	5.282 N
Allowable Effective Force F_{eall}									
	310 N	516 N	619 N	826 N	1.032 N	1.290 N	1.651 N	2.580 N	3.870 N
Specific Belt Stiffness C_{sp}									
Steel	105.630 N	176.050 N	211.260 N	281.680 N	352.100 N	440.125 N	563.360 N	880.250 N	1.320.375 N

Length	Width	No. Of Teeth
225 mm	200 mm	45
280 mm	200 mm	56
300 mm	200 mm	60
340 mm	380 mm	68
375 mm	380 mm	75
390 mm	380 mm	78
420 mm	380 mm	84
450 mm	200 mm	90
455 mm	380 mm	91
500 mm	380 mm	100
545 mm	380 mm	109
600 mm	380 mm	120
610 mm	380 mm	122
660 mm	380 mm	132
710 mm	200 mm	142
720 mm	380 mm	144
750 mm	380 mm	150
780 mm	380 mm	156
825 mm	380 mm	165
860 mm	200 mm	172
975 mm	380 mm	195
1.050 mm	380 mm	210
1.500 mm	380 mm	300

Gates Synchro-Power® Truly Endless (Cast) Belts — T10

Pitch 10 mm

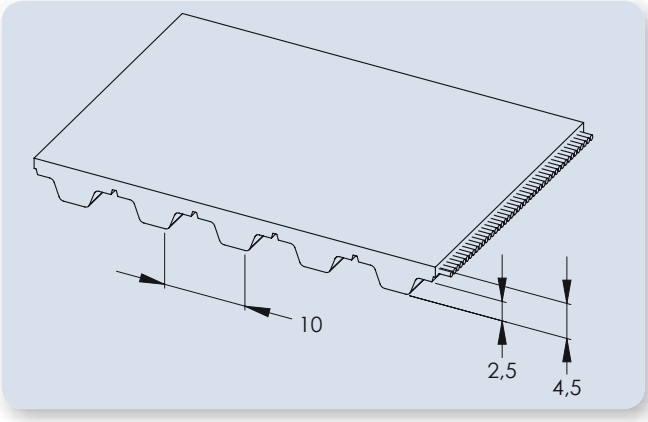
Standard Widths 10 / 12 / 16 / 20 / 25 / 32 / 50 / 75 mm

Width Tolerance
cut to width ± 0,5 mm
200 mm / 380 mm width + 1 mm / - 1 mm

Standard Color Blue

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 44,56 mm



Minimum Back Bend Diameter
80 mm

FDA Approval
No

Technical Data

Standard Widths **T10** **Truly Endless Belts**								
mm	10	12	16	20	25	32	50	75
Ultimate Tensile Strength F_{break} (average value)								
Steel	3.350 N	4.195 N	5.910 N	7.585 N	9.700 N	12.580 N	20.190 N	30.710 N
Allowable Belt Force F_{1all}								
Steel	763 N	916 N	1.221 N	1.527 N	1.909 N	2.443 N	3.817 N	5.726 N
Allowable Effective Force F_{eall}								
	676 N	811 N	1.082 N	1.352 N	1.690 N	2.163 N	3.380 N	5.070 N
Specific Belt Stiffness C_{sp}								
Steel	190.850 N	229.020 N	305.360 N	381.700 N	477.125 N	610.720 N	954.250 N	1.431.375 N

Gates Synchro-Power® Truly Endless (Cast) Belts — T10

Length	Width	No. Of Teeth
260 mm	200 mm	26
320 mm	200 mm	32
370 mm	380 mm	37
400 mm	380 mm	40
410 mm	380 mm	41
440 mm	380 mm	44
450 mm	380 mm	45
500 mm	380 mm	50
530 mm	380 mm	53
550 mm	200 mm	55
560 mm	380 mm	56
600 mm	380 mm	60
610 mm	380 mm	61
630 mm	380 mm	63
650 mm	200 mm	65
660 mm	380 mm	66
690 mm	380 mm	69
700 mm	380 mm	70
720 mm	380 mm	72
750 mm	380 mm	75
780 mm	380 mm	78
800 mm	380 mm	80

Length	Width	No. Of Teeth
810 mm	380 mm	81
840 mm	380 mm	84
850 mm	380 mm	85
880 mm	380 mm	88
890 mm	380 mm	89
900 mm	380 mm	90
910 mm	380 mm	91
920 mm	380 mm	92
950 mm	380 mm	95
960 mm	380 mm	96
970 mm	380 mm	97
980 mm	380 mm	98
1.000 mm	380 mm	100
1.010 mm	380 mm	101
1.050 mm	200 mm	105
1.080 mm	380 mm	108
1.100 mm	380 mm	110
1.140 mm	380 mm	114
1.150 mm	380 mm	115
1.200 mm	200 mm	120
1.210 mm	380 mm	121
1.240 mm	380 mm	124

Length	Width	No. Of Teeth
1.250 mm	380 mm	125
1.300 mm	380 mm	130
1.320 mm	380 mm	132
1.350 mm	380 mm	135
1.390 mm	380 mm	139
1.400 mm	380 mm	140
1.420 mm	380 mm	142
1.440 mm	380 mm	144
1.450 mm	380 mm	145
1.460 mm	380 mm	146
1.500 mm	380 mm	150
1.560 mm	380 mm	156
1.600 mm	200 mm	160
1.610 mm	200 mm	161
1.700 mm	200 mm	170
1.750 mm	200 mm	175
1.780 mm	200 mm	178
1.800 mm	200 mm	180
1.880 mm	200 mm	188
1.960 mm	200 mm	196
2.250 mm	200 mm	225

Gates Synchro-Power® Truly Endless (Cast) Belts — DT10

Pitch 10 mm

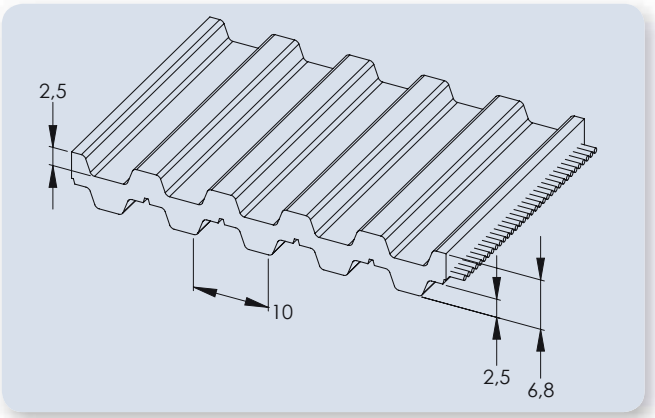
Standard Widths 10 / 12 / 16 / 20 / 25 / 32 / 50 mm

Width Tolerance
cut to width ± 0,5 mm
200 mm / 380 mm width + 1 mm / - 1 mm

Standard Color Blue

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 44,56 mm



Minimum Back Bend Diameter
44,56 mm

FDA Approval
No

Technical Data

Standard Widths **DT10 Truly Endless Belts**							
mm	10	12	16	20	25	32	50
Ultimate Tensile Strength F_{break} (average value)							
Steel	3.350 N	4.195 N	5.910 N	7.585 N	9.700 N	12.580 N	20.190 N
Allowable Belt Force F_{1all}							
Steel	763 N	916 N	1.221 N	1.527 N	1.909 N	2.443 N	3.817 N
Allowable Effective Force F_{eall}							
	676 N	811 N	1.082 N	1.352 N	1.690 N	2.163 N	3.380 N
Specific Belt Stiffness C_{sp}							
Steel	190.850 N	229.020 N	305.360 N	381.700 N	477.125 N	610.720 N	954.250 N

Gates Synchro-Power® Truly Endless (Cast) Belts — DT10

Length	Width	No. Of Teeth
600 mm	380 mm	60
630 mm	200 mm	63
660 mm	200 mm	66
700 mm	380 mm	70
750 mm	380 mm	75
800 mm	380 mm	80
840 mm	200 mm	84
900 mm	380 mm	90
980 mm	200 mm	98
1.000 mm	380 mm	100
1.100 mm	380 mm	110
1.200 mm	380 mm	120
1.210 mm	200 mm	121
1.300 mm	380 mm	130
1.320 mm	200 mm	132
1.420 mm	200 mm	142
1.600 mm	380 mm	160
1.610 mm	200 mm	161
1.700 mm	380 mm	170
1.880 mm	200 mm	188

Gates Synchro-Power® Truly Endless (Cast) Belts — AT10

Pitch 10 mm

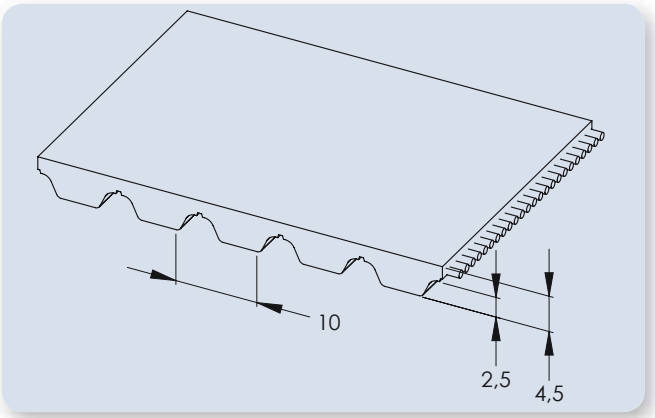
Standard Widths 10 / 12 / 16 / 20 / 25 / 32 / 50 / 75 mm

Width Tolerance
cut to width ± 0,75 mm
200 mm / 380 mm width + 1 mm / - 1 mm

Standard Color Blue

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 48 mm



Minimum Back Bend Diameter
120 mm

FDA Approval
No

Technical Data

Standard Widths **AT10** **Truly Endless Belts**								
mm	10	12	16	20	25	32	50	75
Ultimate Tensile Strength F_{break} (average value)								
Steel	4.750 N	5.700 N	8.565 N	10.485 N	14.305 N	18.100 N	29.485 N	45.575 N
Allowable Belt Force F_{1all}								
Steel	1.496 N	1.796 N	2.394 N	2.993 N	3.741 N	4.788 N	7.482 N	11.223 N
Allowable Effective Force F_{eall}								
	1.032 N	1.238 N	1.651 N	2.064 N	2.580 N	3.302 N	5.160 N	7.740 N
Specific Belt Stiffness C_{sp}								
Steel	374.100 N	448.920 N	598.560 N	748.200 N	935.250 N	1.197.120 N	1.870.500 N	2.805.750 N

Gates Synchro-Power® Truly Endless (Cast) Belts — AT10

Length	Width	No. Of Teeth
500 mm	380 mm	50
560 mm	380 mm	56
610 mm	380 mm	61
660 mm	380 mm	66
700 mm	380 mm	70
730 mm	380 mm	73
780 mm	380 mm	78
800 mm	380 mm	80
840 mm	380 mm	84
890 mm	380 mm	89
920 mm	380 mm	92
960 mm	380 mm	96
980 mm	380 mm	98
1.010 mm	380 mm	101
1.050 mm	380 mm	105
1.080 mm	380 mm	108
1.100 mm	200 mm	110

Length	Width	No. Of Teeth
1.150 mm	380 mm	115
1.200 mm	380 mm	120
1.210 mm	380 mm	121
1.250 mm	380 mm	125
1.280 mm	200 mm	128
1.320 mm	380 mm	132
1.350 mm	200 mm	135
1.360 mm	200 mm	136
1.400 mm	380 mm	140
1.420 mm	200 mm	142
1.480 mm	200 mm	148
1.500 mm	380 mm	150
1.600 mm	200 mm	160
1.700 mm	200 mm	170
1.800 mm	200 mm	180
1.860 mm	200 mm	186
1.940 mm	200 mm	194

Overview — Truly Endless Flex Belts

Flex Belts are manufactured truly endless via extruded technology with helically wound steel cords in different sizes, constructions and pitches.

Attributes

- Extruded, thermoplastic polyurethane construction
- High performance and power transmission based on truly endless cords
- Synchronous tracking

Applications

- Wood Processing Industry
- Textile Industry
- Conveying Machines
- Foiling Machine
- Power Transmission
- Highly Stressed Conveying Applications

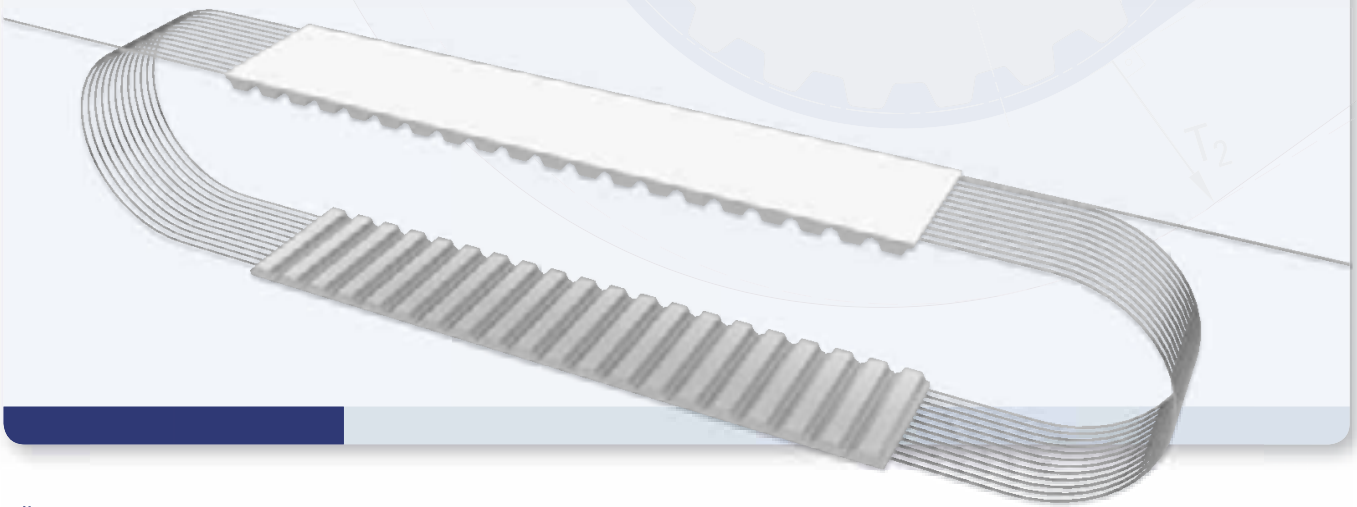
Fabrication Options

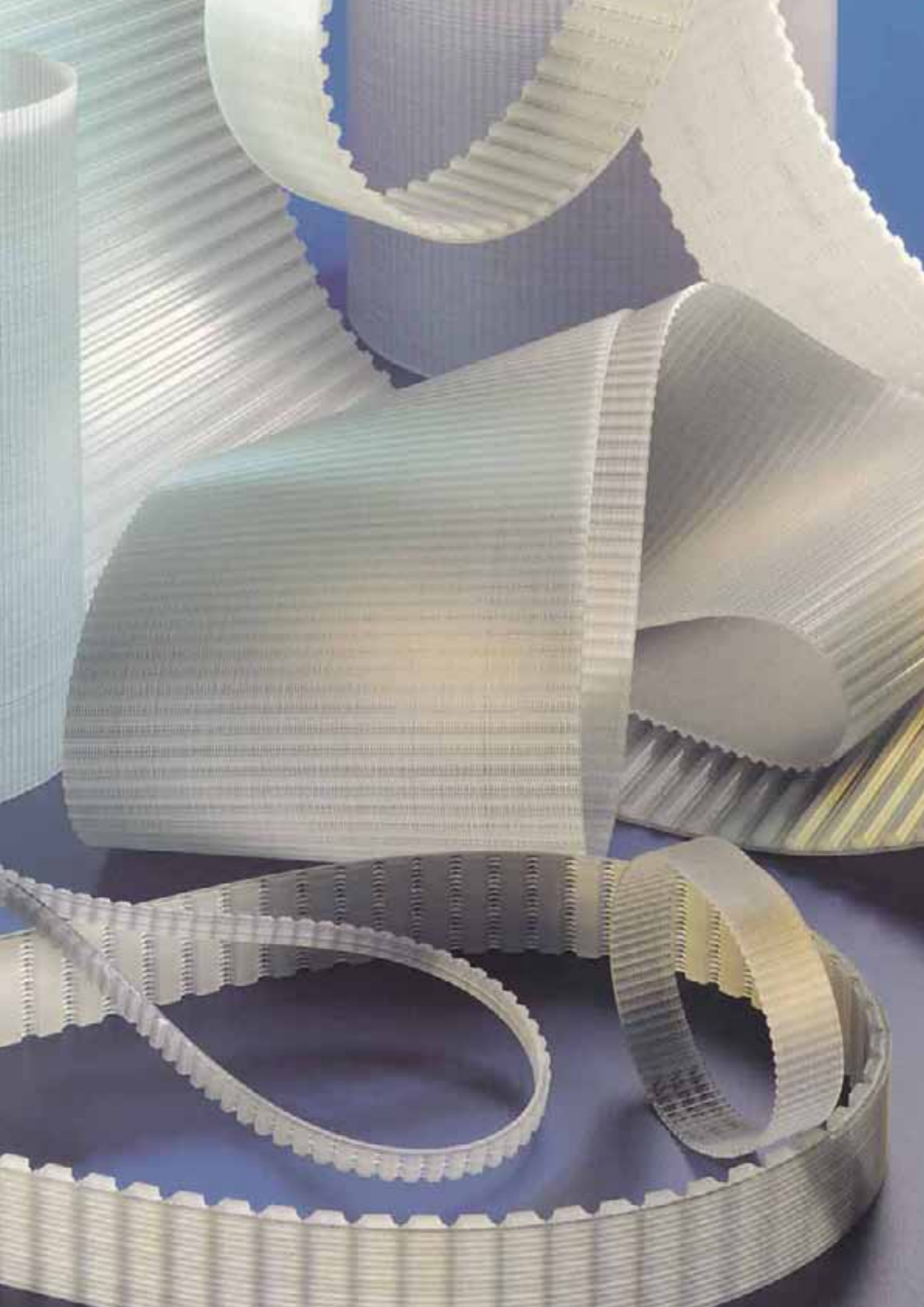
- Backings ***Further information on page 60***
- Special processing ***Further information on page 82***

Fabrication Capabilities

Pitches	H T5 / T10 / T20 AT5 / AT10 / AT20 ATL10 / ATL20 HTD®5 / HTD®8 / HTD®14
Widths	10 mm up to 100 mm
Lengths	1.550 mm up to 23.500 mm
Polyurethane	92 Shore A (Standard)
Tension Members	Steel cord (Standard)
Polyamide Fabric	Polyamide Fabric on Tooth Side (NT)

Other constructions are available on request.





Truly Endless Flex Belts — H

Pitch
0,500“
12,7 mm

Standard Widths
1/2“ to 4“
12,7 mm to 101,6 mm

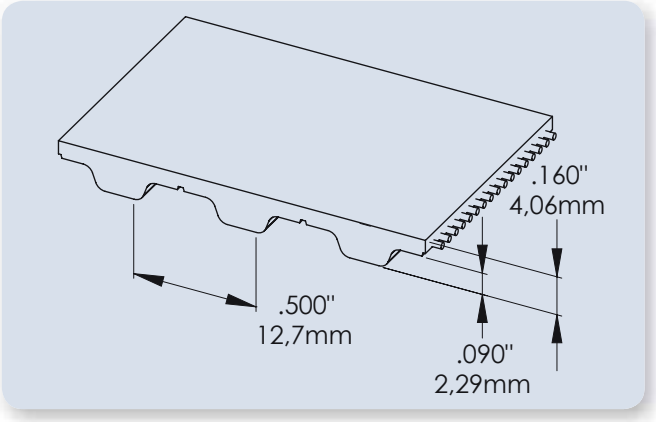
Width Tolerance
up to 2“ width ± 0,020" / 0,51 mm
2“ to 4“ width ± 0,030" / 0,76 mm

Standard Color
White

Standard Lengths
1.562,1 mm to 23.495 mm

Minimum Number of Pulley Teeth z_{min}
14

Minimum Pulley Diameter
2,23“ / 56,64 mm



Minimum Back Bend Diameter
3,125“ / 79,4 mm

Technical Data

Standard Widths **H** **Truly Endless Flex Belts**							
	050	075	100	150	200	300	400
Ultimate Tensile Strength F_{break} (average value)							
Steel	3.360 N	5.040 N	7.140 N	10.920 N	14.700 N	22.260 N	29.820 N
Allowable Belt Force F_{1all}							
Steel	898 N	1.347 N	1.909 N	2.919 N	3.929 N	5.950 N	7.971 N
Allowable Effective Force F_{eall}							
	980 N	1.470 N	1.960 N	2.940 N	3.920 N	5.880 N	7.840 N
Specific Belt Weight m_{sp}							
Steel	0,0039 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	224.529 N	336.794 N	477.125 N	729.721 N	982.316 N	1.487.507 N	1.992.699 N

Pitch 5 mm

Standard Widths 10 mm to 100 mm

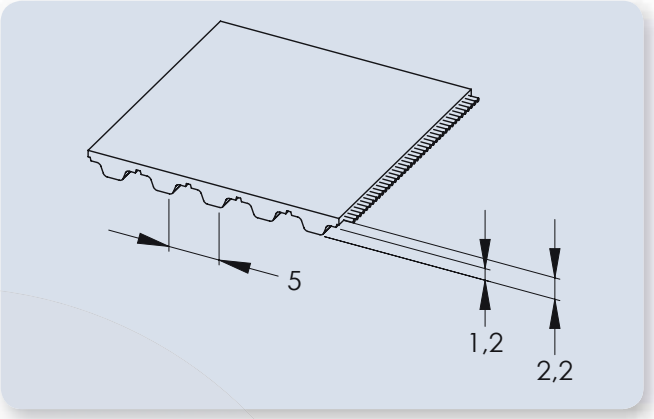
Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 100 mm width ± 0,75 mm

Standard Color White

Standard Lengths 1.550 mm to 15.000 mm

Minimum Number of Pulley Teeth z_{min} 10

Minimum Pitch Diameter 16 mm



Minimum Back Bend Diameter
30 mm

Technical Data

Standard Widths **T5** **Truly Endless Flex Belts**							
mm	10	16	25	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)							
Steel	1.250 N	2.000 N	3.375 N	4.250 N	6.875 N	10.375 N	13.875 N
Allowable Belt Force F_{1all}							
Steel	311 N	498 N	840 N	1.058 N	1.711 N	2.582 N	3.453 N
Allowable Effective Force F_{eall}							
	356 N	570 N	890 N	1.139 N	1.780 N	2.670 N	3.560 N
Specific Belt Weight m_{sp}							
Steel	0,0022 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	77.778 N	124.444 N	210.000 N	264.444 N	427.778 N	645.556 N	863.333 N

Truly Endless Flex Belts — T10

Pitch 10 mm

Standard Widths 16 mm to 100 mm

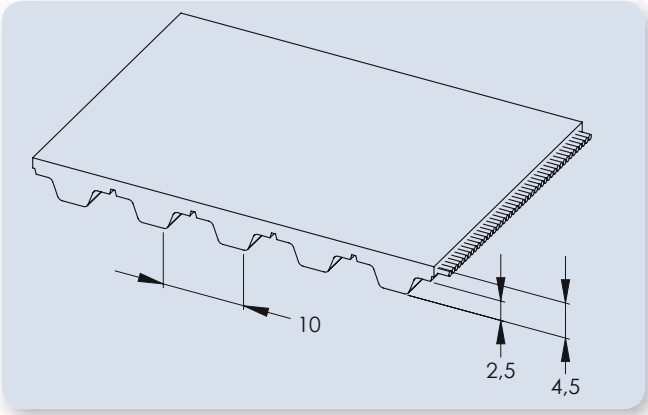
Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 100 mm width ± 0,75 mm

Standard Color White

Standard Lengths 1.550 mm to 23.500 mm

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 44,56 mm



Minimum Back Bend Diameter
80 mm

Technical Data

Standard Widths **T10** **Truly Endless Flex Belts**						
mm	16	25	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)						
Steel	4.200 N	7.140 N	9.240 N	14.700 N	22.260 N	29.820 N
Allowable Belt Force F_{1all}						
Steel	1.123 N	1.909 N	2.470 N	3.929 N	5.950 N	7.971 N
Allowable Effective Force F_{eall}						
	1.082 N	1.690 N	2.163 N	3.380 N	5.070 N	6.760 N
Specific Belt Weight m_{sp}						
Steel	0,0043 kg / m / mm					
Specific Belt Stiffness C_{sp}						
Steel	280.662 N	477.125 N	617.456 N	982.316 N	1.487.507 N	1.992.699 N

Pitch 20 mm

Standard Widths 32 mm to 100 mm

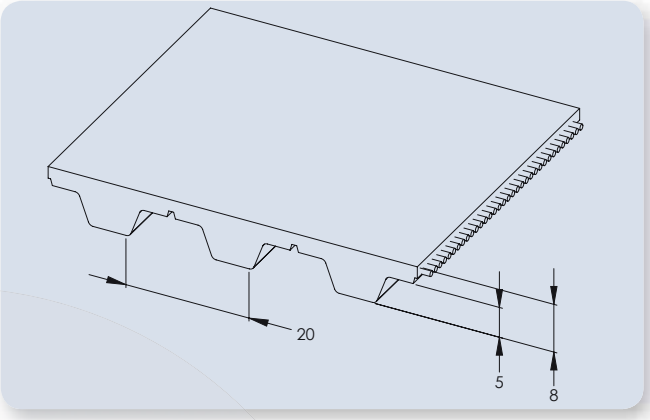
Width Tolerance
up to 100 mm width ± 1,0 mm

Standard Color White

Standard Lengths 1.550 mm to 23.500 mm

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 96 mm



Minimum Back Bend Diameter
120 mm

Technical Data

Standard Widths **T20** **Truly Endless Flex Belts**				
mm	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)				
Steel	18.050 N	29.450 N	44.650 N	59.850 N
Allowable Belt Force F_{1all}				
Steel	4.739 N	7.731 N	11.722 N	15.712 N
Allowable Effective Force F_{eall}				
	4.045 N	6.320 N	9.480 N	12.640 N
Specific Belt Weight m_{sp}				
Steel	0,0073 kg / m / mm			
Specific Belt Stiffness C_{sp}				
Steel	1.184.650 N	1.932.850 N	2.930.450 N	3.928.050 N

Truly Endless Flex Belts — AT5

Pitch 5 mm

Standard Widths 10 mm to 100 mm

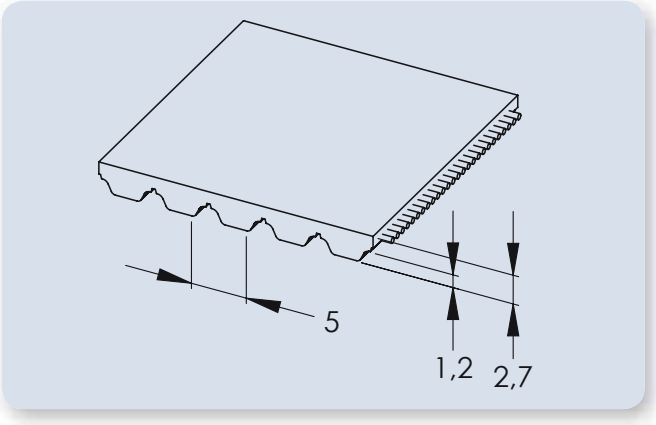
Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 100 mm width ± 0,75 mm

Standard Color White

Standard Lengths 1.550 mm to 14.900 mm

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 24 mm



Minimum Back Bend Diameter
60 mm

Technical Data

Standard Widths **AT5 Truly Endless Flex Belts**							
mm	10	16	25	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)							
Steel	2.565 N	4.275 N	7.125 N	9.120 N	14.535 N	21.945 N	29.355 N
Allowable Belt Force F_{1all}							
Steel	634 N	1.056 N	1.761 N	2.253 N	3.591 N	5.422 N	7.253 N
Allowable Effective Force F_{eall}							
	516 N	826 N	1.290 N	1.651 N	2.580 N	3.870 N	5.160 N
Specific Belt Weight m_{sp}							
Steel	0,0032 kg / m / mm						
Specific Belt Stiffness C_{sp}							
Steel	158.445 N	264.075 N	440.125 N	563.360 N	897.855 N	1.355.585 N	1.813.315 N

Pitch 10 mm

Standard Widths 25 mm to 100 mm

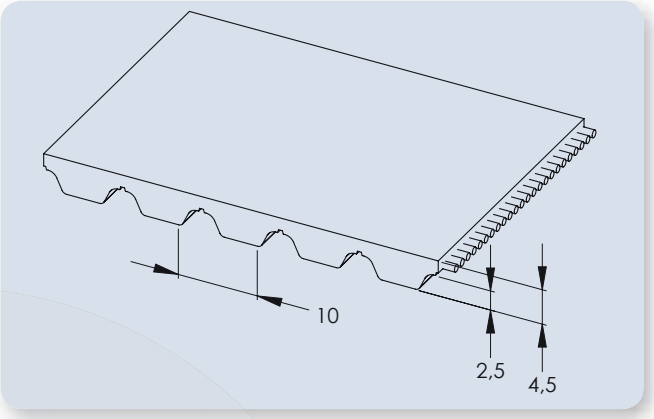
Width Tolerance
up to 50 mm width ± 0,75 mm
50 mm to 100 mm width ± 1,0 mm

Standard Color White

Standard Lengths 1.550 mm to 23.500 mm

Minimum Number of Pulley Teeth z_{min} 15

Minimum Pulley Diameter 47,75 mm



Minimum Back Bend Diameter
120 mm

Technical Data

Standard Widths **AT10** **Truly Endless Flex Belts**					
mm	25	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)					
Steel	14.250 N	18.050 N	29.450 N	44.650 N	59.850 N
Allowable Belt Force F_{1all}					
Steel	3.741 N	4.739 N	7.731 N	11.722 N	15.712 N
Allowable Effective Force F_{eall}					
	2.580 N	3.302 N	5.160 N	7.740 N	10.320 N
Specific Belt Weight m_{sp}					
Steel	0,0056 kg / m / mm				
Specific Belt Stiffness C_{sp}					
Steel	935.250 N	1.184.650 N	1.932.850 N	2.930.450 N	3.928.050 N

Truly Endless Flex Belts — ATL10

Pitch 10 mm

Standard Widths 25 mm to 100 mm

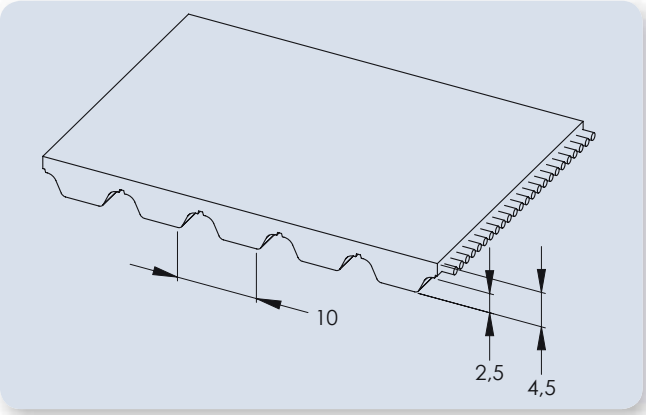
Width Tolerance
up to 50 mm width ± 1,0 mm
50 mm to 100 mm width ± 1,5 mm

Standard Color White

Standard Lengths 1.550 mm to 23.500 mm

Minimum Number of Pulley Teeth z_{min} 25

Minimum Pulley Diameter 79,60 mm



Minimum Back Bend Diameter
150 mm

Technical Data

Standard Widths **ATL10 Truly Endless Flex Belts**					
mm	25	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)					
Steel	24.220 N	31.140 N	50.170 N	76.120 N	102.070 N
Allowable Belt Force F_{1all}					
Steel	5.860 N	7.534 N	12.139 N	18.417 N	24.696 N
Allowable Effective Force F_{eall}					
	2.580 N	3.302 N	5.160 N	7.740 N	10.320 N
Specific Belt Weight m_{sp}					
Steel	0,0067 kg / m / mm				
Specific Belt Stiffness C_{sp}					
Steel	1.456.000 N	1.883.571 N	3.034.643 N	4.604.286 N	6.173.929 N

Pitch 20 mm

Standard Widths 32 mm to 100 mm

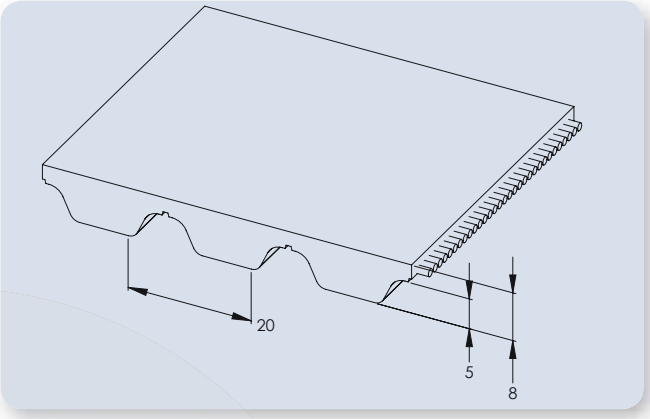
Width Tolerance
up to 50 mm width ± 1,0 mm
50 mm to 100 mm width ± 1,5 mm

Standard Color White

Standard Lengths 1.550 mm to 23.500 mm

Minimum Number of Pulley Teeth z_{min} 18

Minimum Pulley Diameter 115 mm



Minimum Back Bend Diameter
180 mm

Technical Data

Standard Widths **AT20 Truly Endless Flex Belts**				
mm	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)				
Steel	31.140 N	50.170 N	76.120 N	102.070 N
Allowable Belt Force F_{1all}				
Steel	7.534 N	12.139 N	18.417 N	24.696 N
Allowable Effective Force F_{eall}				
	6.950 N	10.860 N	16.290 N	21.720 N
Specific Belt Weight m_{sp}				
Steel	0,0099 kg / m / mm			
Specific Belt Stiffness C_{sp}				
Steel	1.883.571 N	3.034.643 N	4.604.286 N	6.173.929 N

Truly Endless Flex Belts — ATL20

Pitch 20 mm

Standard Widths 32 mm to 100 mm

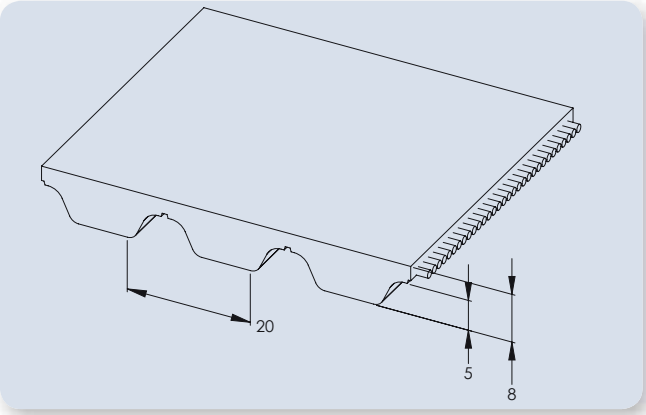
Width Tolerance
up to 100 mm width ± 2,0 mm

Standard Color White

Standard Lengths 1.550 mm to 23.500 mm

Minimum Number of Pulley Teeth z_{min} 30

Minimum Pulley Diameter 191 mm



Minimum Back Bend Diameter
250 mm

Technical Data

Standard Widths **ATL20 Truly Endless Flex Belts**				
mm	32	50	75	100
Ultimate Tensile Strength F_{break} (average value)				
Steel	41.600 N	70.400 N	105.600 N	144.000 N
Allowable Belt Force F_{1all}				
Steel	9.106 N	15.410 N	23.115 N	31.520 N
Allowable Effective Force F_{eall}				
	6.950 N	10.860 N	16.290 N	21.720 N
Specific Belt Weight m_{sp}				
Steel	0,0108 kg / m / mm			
Specific Belt Stiffness C_{sp}				
Steel	2.276.477 N	3.852.500 N	5.778.750 N	7.880.114 N

Pitch 5 mm

Standard Widths 25 mm to 100 mm

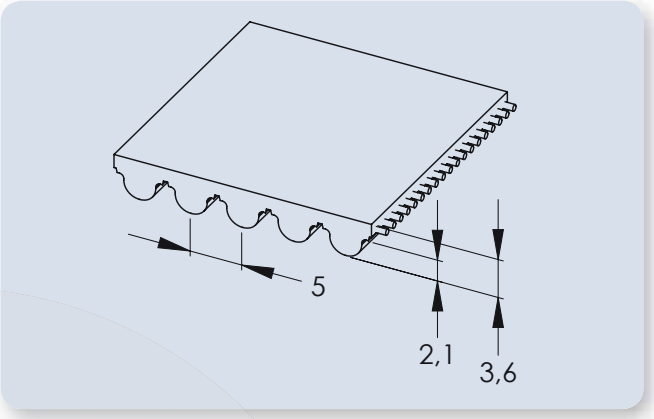
Width Tolerance
up to 50 mm width ± 0,5 mm
50 mm to 100 mm width ± 0,75 mm

Standard Color White

Standard Lengths 1.550 mm to 14.900 mm

Minimum Number of Pulley Teeth z_{min} 14

Minimum Pulley Diameter 22,28 mm



Minimum Back Bend Diameter
60 mm

Technical Data

Standard Widths **HTD®5 Truly Endless Flex Belts**			
mm	25	50	100
Ultimate Tensile Strength F_{break} (average value)			
Steel	7.125 N	14.535 N	29.355 N
Allowable Belt Force F_{1all}			
Steel	1.761 N	3.591 N	7.253 N
Allowable Effective Force F_{eall}			
	1.020 N	2.040 N	4.080 N
Specific Belt Weight m_{sp}			
Steel	0,0041 kg / m / mm		
Specific Belt Stiffness C_{sp}			
Steel	440.125 N	897.855 N	1.813.315 N

Truly Endless Flex Belts — HTD®8

Pitch 8 mm

Standard Widths 25 mm to 100 mm

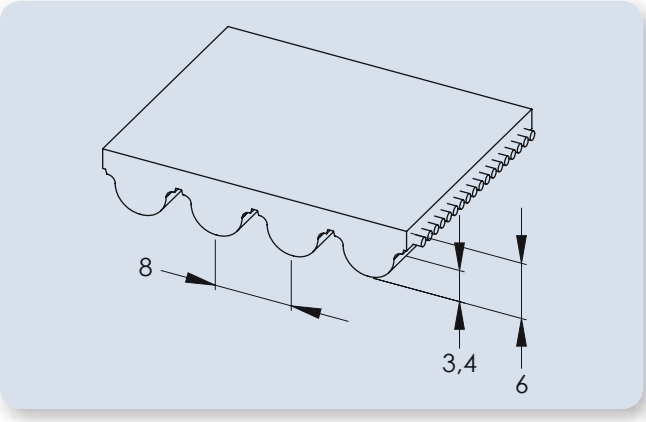
Width Tolerance
up to 50 mm width ± 0,75 mm
50 mm to 100 mm width ± 1,0 mm

Standard Color White

Standard Lengths 1.552 mm to 23.496 mm

Minimum Number of Pulley Teeth z_{min} 20

Minimum Pulley Diameter 50,93 mm



Minimum Back Bend Diameter
120 mm

Technical Data

Standard Widths **HTD®8 Truly Endless Flex Belts**				
mm	25	30	50	100
Ultimate Tensile Strength F_{break} (average value)				
Steel	14.250 N	17.100 N	29.450 N	59.850 N
Allowable Belt Force F_{1all}				
Steel	3.741 N	4.489 N	7.731 N	15.712 N
Allowable Effective Force F_{eall}				
	1.870 N	2.244 N	3.740 N	7.480 N
Specific Belt Weight m_{sp}				
Steel	0,0059 kg / m / mm			
Specific Belt Stiffness C_{sp}				
Steel	935.250 N	1.122.300 N	1.932.850 N	3.928.050 N

Pitch 14 mm

Standard Widths 25 mm to 100 mm

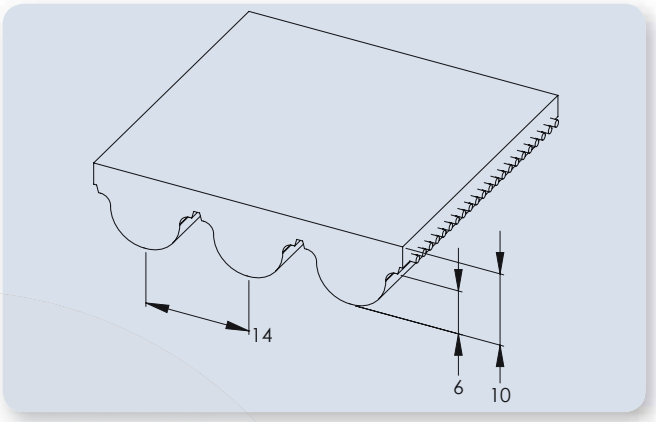
Width Tolerance
up to 50 mm width ± 0,75 mm
50 mm to 100 mm width ± 1,0 mm

Standard Color White

Standard Lengths 1.554 mm to 23.492 mm

Minimum Number of Pulley Teeth z_{min} 28

Minimum Pulley Diameter 124,78 mm



Minimum Back Bend Diameter
200 mm

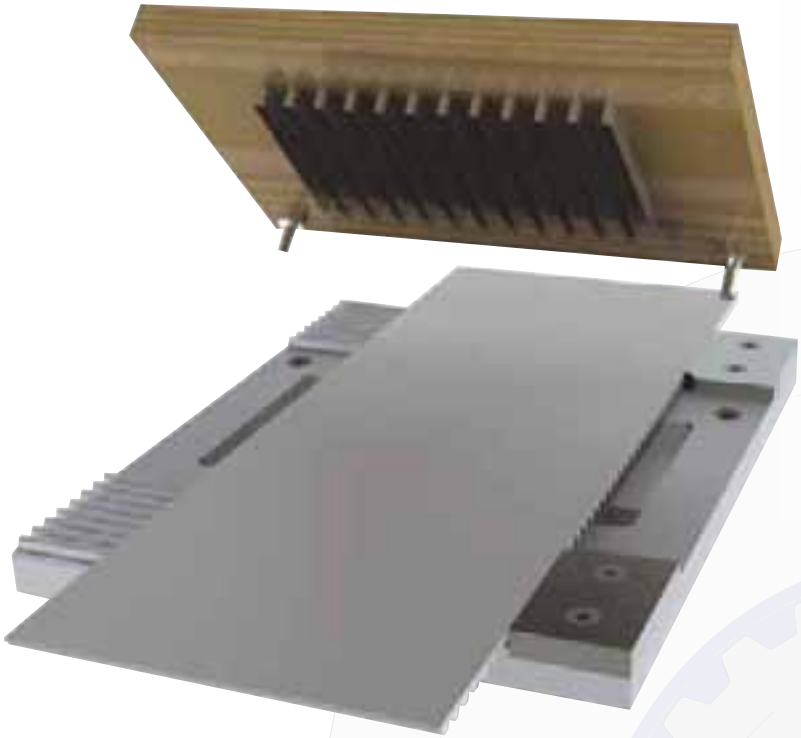
Technical Data

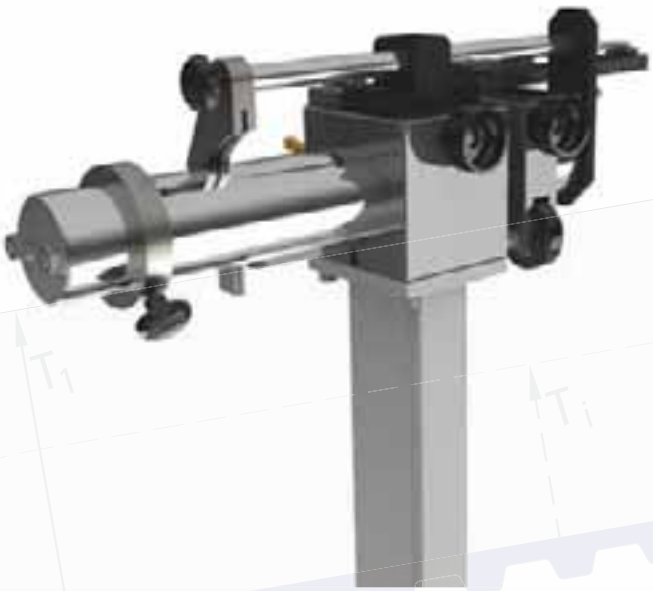
Standard Widths **HTD®14 Truly Endless Flex Belts**					
mm	25	40	55	85	100
Ultimate Tensile Strength F_{break} (average value)					
Steel	20.760 N	34.600 N	48.440 N	74.390 N	88.230 N
Allowable Belt Force F_{1all}					
Steel	5.156 N	8.593 N	12.031 N	18.476 N	21.913 N
Allowable Effective Force F_{eall}					
	3.430 N	5.488 N	7.546 N	11.662 N	13.720 N
Specific Belt Weight m_{sp}					
Steel	0,0107 kg / m / mm				
Specific Belt Stiffness C_{sp}					
Steel	1.289.000 N	2.148.333 N	3.007.667 N	4.618.917 N	5.478.250 N

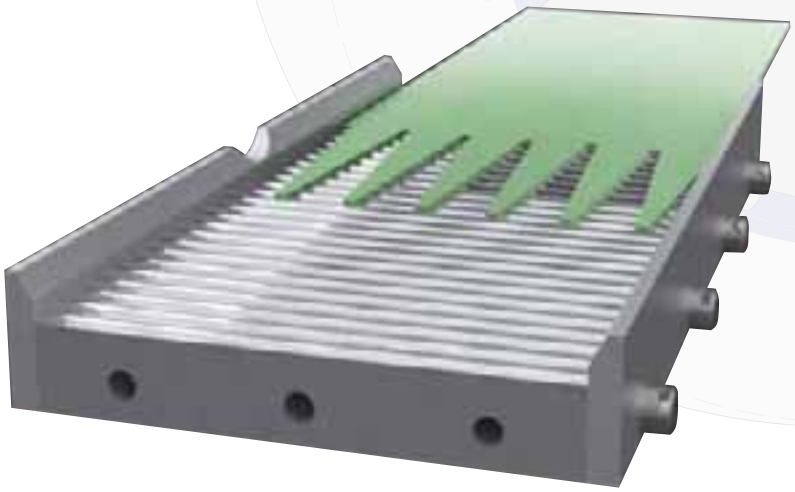
Accessories — Linear Timing Belts

The following pages highlight our various, high quality timing belt accessories including welding machines, steel rule dies and welding plates.

Feel free to contact us for detailed information concerning technical data and attributes.







Accessories – Welding Machine

Gates Mectrol's Welding Machine is designed to join TPU roll stock material to endless welded belts.

The machine with its PLC controlled heaters in combination with the pneumatic cylinder is designed to give excellent quality of welds in widths up to 170 mm and lengths from 960 mm. It welds all Gates Mectrol Timing Belt types and sizes. Up to 64 protocols can be stored with all relevant data. The most frequent used protocols are pre- installed.

Attributes

- Available for standard pitch types
- Short Cycle time of approx. 6-8 minutes – thereby short non-operation periods
- Simple mechanical handling
- CE-compliance certification

Technical Data

• Maximum Welding Width	170 mm
• Minimum Welding Length	960 mm
• Maximum Welding Length	No Limitation
• Cycle Time	6-8 minutes
• Operational Voltage	3 ~ 400 V / 50 Hz / 16 A or 3 ~ 200 V / 50 or 60 Hz / 20 A
• Pressurized Air	1/2" NTP connection / 8 bar / 0.25 m3 / min.

Accessories

- Steel Rule Dies for Finger Punching
- Welding Plates for Standard pitch types
- Hand Slitter

Gates Mectrol article number	WZ-000024

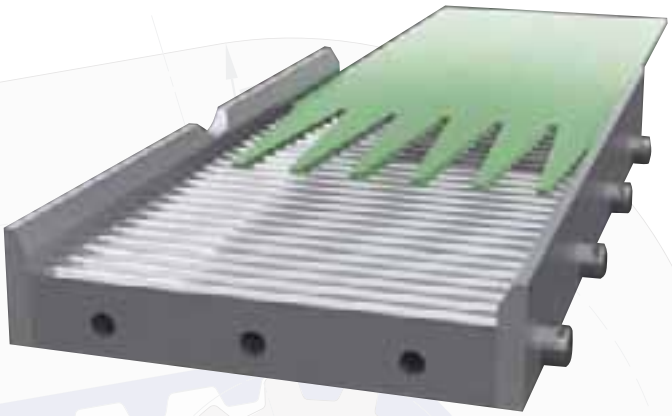
Accessories — Steel Rule Dies for Finger Punching

Gates Mectrol's steel rule dies for finger punching are available for most pitch types and widths up to 150 mm. They are a beneficial aide in preparing Gates Mectrol TPU timing belts for endless welding.

Attributes

- Base Aluminum Plate with 2 sections of tooth profiles and 4 centering holes
- Locator blocks to align the belt in lateral direction
- Steel rule cutting die with 4 spring loaded centering pins.
  Average endurance between 50 punches (AT10) and 200 punches (T5)
- Sacrificial cutting pad (Nylon) which is embedded in the base plate.
  Bilateral usable – endurance 50-200 punches

Pitch Type Width	Complete Set Part #	Base Plate Part #	Locator Block Part #	Steel Rule Die Part #	Cutting Pad Part #
T5 / 100 mm	WZ-001302	WZ-001306	WZ-001185	WZ-001303	WZ-001307
T10 / 150 mm	WZ-001291	WZ-001294	WZ-001185	WZ-001292	WZ-001295
AT5 / 100 mm	WZ-001308	WZ-001311	WZ-001185	WZ-001309	WZ-001307
AT10 / 150 mm	WZ-001296	WZ-001297	WZ-001185	WZ-001292	WZ-001295
HTD®5 / 100 mm	WZ-001312	WZ-001315	WZ-001185	WZ-001313	WZ-001307
HTD®8 / 100 mm	WZ-001316	WZ-001319	WZ-001185	WZ-001317	WZ-001307
XL / 2"	WZ-001326	WZ-001330	WZ-001185	WZ-001327	WZ-001331
L / 4"	WZ-001320	WZ-001323	WZ-001185	WZ-001321	WZ-001307
H / 6"	WZ-001298	WZ-001301	WZ-001185	WZ-001300	WZ-001295



Gates Mectrol's Welding Plates are available for all standard pitches.
All surfaces that are in contact to the belts are PTFE coated.

The panel heaters are embedded in 25 mm thick, pressure resistant insulation plates.
For each standard plate width, one set of panel heaters with insulation plates is required.

Welding Plates	T5	T10	T20	AT5	AT10	AT20
50 mm / 2"	WZ-000938			WZ-000941		
100 mm / 4"	WZ-000738	WZ-000656		WZ-000743	WZ-001016	
150 mm / 6"		WZ-000741	WZ-001151		WZ-000744	WZ-000945

Welding Plates	HTD®5	HTD®8	XL	L	H
50 mm / 2"	WZ-000756		WZ-000754		
100 mm / 4"		WZ-001195		WZ-000750	WZ-001206
150 mm / 6"		WZ-000745			WZ-000748

Accessories — Accessories for Welding Plates

Welding Plates Sets consisting of two welding plates (Bottom and Top Plate) and two Side Plates for standard widths 50 mm (2“), 100 mm (4“), 150 mm (6“) and for HTD®14 / AT20 pitches.

Accessories for Welding Plates	50 mm / 2”	100 mm / 4”	150 mm / 6”	HTD14® / AT20
Welding Plate Set • 1 x Bottom Plate • 2 x Side Plate • 1 x Top Plate	X	X	X	X
Set of Insulation Plates • Top • Bottom	Use 100 mm width	WZ-000758	WZ-000652	WZ-000536
Panel Heaters per Piece • Top • Bottom	Use 100 mm width	ML7741	ML7739	GM03071

Accessories — Hand Slitter

Gates Mectrol‘s innovative Hand Slitter is designed to cut endless welded TPU timing belts.

Attributes

- Designed with a digital caliper which enables the operator to read the set slit width
- Equipped with an adjustable safety guard which covers he knife from the top side

Gates Mectrol article number	WZ-000607

Proper belt installation is essential for optimum performance of V- and synchronous belt drives. Gates' 507C Sonic Tension Meter allows a simple and accurate tension measurement by analyzing sound waves (natural frequencies) from the belt through the sensor.

Gates' Sonic Tension Meter is user- friendly and handy. This meter is compact and stores data for measuring belt tension accurately time after time. It processes the input signals and gives an accurate digital display of tension. Gates' sonic tension meter is supplied with a instruction manual.

Attributes

- Stores weight, width and span constants for up to 20 different systems
- New auto gain adjustment function cancels out background noise automatically
- Automatic Shut Off after ten minutes of inactivity to safe battery life

Technical Data

• Dimensions	H 160 mm x D 59 mm x W 26 mm
• Measurement Range	10 Hz up to 5.000 Hz
• Measured accuracy	± 1 %
• Double Display	Newton and / or Hz

Gates Mectrol article number	TSM-507C

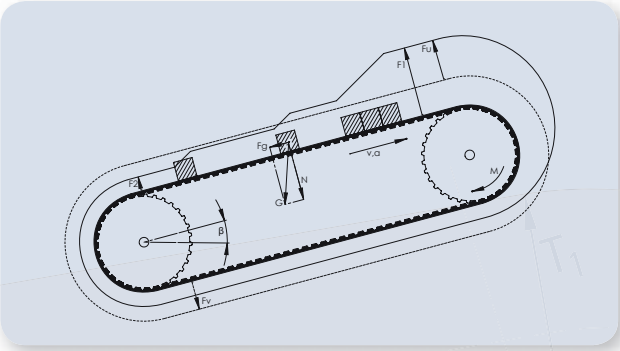
1.) Abbreviations

Please consider the following abbreviations and symbols for calculation basis:

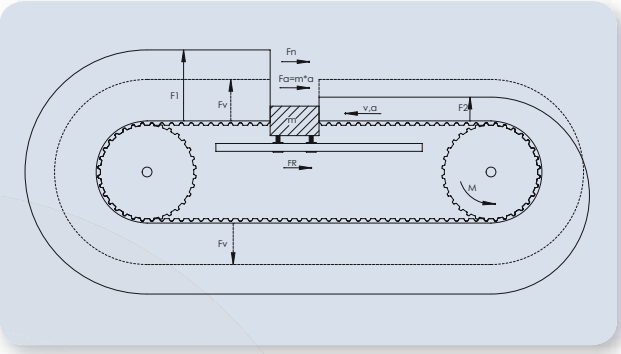
a	Acceleration [m/sec²]		
C_{sp}	Belt Stiffness [N]	c_R	Overall Stiffness [N]
A_V	Vacuum Surface [m²]		
F_a	Acceleration Force [N]	F_{Stress}	Load Factor
F_{Break}	Ultimate Tensile Strength [N]	F_G	Gravitational Force [N]
F_F	Friction Force [N]	F_{Fa}	Friction Force during accumulation [N]
F_{FV}	Friction Force due to Vacuum [N]	F_e	Effective Force [N]
F_{eall}	Allowable Effective Force [N]	$F_{eallapp}$	Maximum Allowable Effective Force Application [N]
F_{pre}	Force for Pre-tensioning [N]	F_1	Tight Side Belt Force [N]
F_{1max}	Maximum occurring Belt Force [N]	F_{1all}	Allowable Belt Force [N]
F_{2opt}	Optimal Slack Side Force [N]	f	Frequency [Hz]
g	Gravitational Acceleration [m/sec²]		
L	Timing Belt Length [mm]	L1	Tight Side Length [mm]
L2	Slack Side Length [mm]	l	Gauge Length during Frequency Measurement [mm]
m	Weight [kg]	m_F	Weight of Transported Goods [kg]
m_a	Weight of Accumulated Good [Kg]	m_e	Weight of Counter Weight [kg]
p	Vacuum [N/m²]	P_{Motor}	Motor Power on Output Shaft [kW]
r_{pulley}	Radius of Driver Pulley [mm]	n	Revolutions per minute [1/min]
SF_{Fe}	Safety Factor on Allowable Effective Force	SF_1	Safety Factor on allowable Belt Force
SF_{Break}	Safety Factor on Breaking Force		
t_m	Tooth in Mesh Factor	t_v	Speed Factor
T_{Motor}	Torque of Output Shaft [Nm]		
β	Angle of Inclination [°]		
μ	Coefficient of Friction between Timing Belt and Support	z_m	Teeth in Mesh
$μ_a$	Coefficient of Friction between Timing Belt and Transported Material		
Δx	Elongation [mm]	$Δx_{Pos}$	Positioning Error [mm]

2.) Forces / Forces for Timing Belt Drives

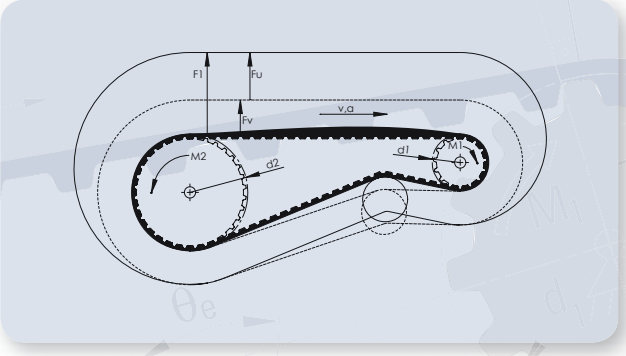
a. Conveying Applications



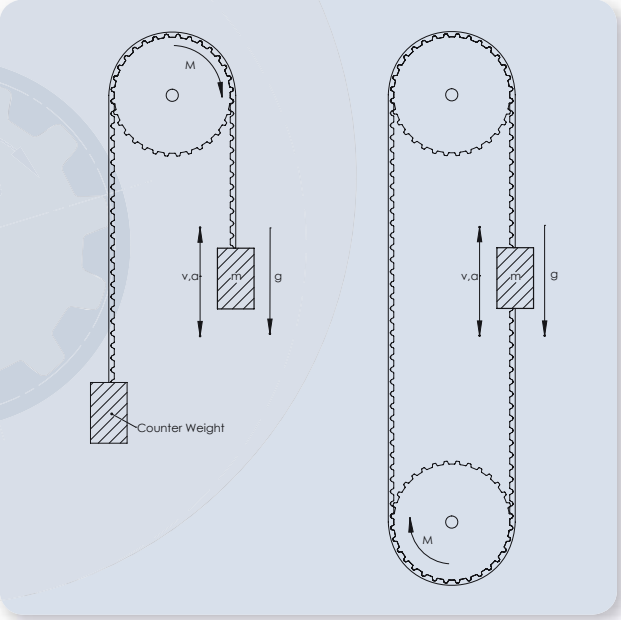
b. Linear Positioning



c. Closed Power Transmission Drives



d. Lifting Applications



3.) Basics

a. Load Factor F_{Stress}

If no real-life testing results are available for the design of timing belt applications we recommend a load factor for calculating the Effective Force F_e, associated Forces for Pre-tensioning F_{pre} and Tight Side Belt Force F_1.

Negative effects on the timing belt service life such as shocks are avoided through the Load Factor.
The following list is provided as a guide for establishing a suitable factor:

Load	Load Factor	Examples
Uniform	1,2 … 1,5	Conveyor for Light Goods, Vial Filling Systems , Medical Devices, Gauges, Light Wood Processing Machines, Light Bearing Technology, Linear Motion Slides
Weak Impact Load	1,5 … 1,8	Wood Processing Machines, Bearing Technology, Rack Feeders, Lathes, Washing Machines, Mixing Machines, Vibration Testing Machines
Average Impact Load	1,8 … 2,2	Hoisting Devices, Textile Machines, Extruders, Paper Handling
Heavy Impact Load	2,2 … 2,5	Brickworks, Molding Press, Coining Machines, Hammer Mills

b. Tooth in Mesh Factor t_m / Speed Factor t_v

The factors listed below are required to correct the Allowable Effective Force:

Tooth in Mesh Factor t_m

No. of Teeth in Mesh z_m	Tooth in Mesh Factor t_m
3	0.39
4	0.5
5	0.59
6	0.67
7	0.74
8	0.8
9	0.85
10	0.89
11	0.92
12	0.95
13	0.97
14	0.99
15	1

Chart 1

Speed Factor t_v

Speed m/s	Factor t_v
0	1
1	0.99
2	0.98
3	0.97
4	0.95
5	0.93
6	0.9
7	0.87
8	0.84
9	0.81
10	0.77

Chart 2

c. Braking / Emergency Shutdown

For the following calculations the review of the peripheral forces occur due to normal braking maneuvers and especially emergency operations are of highest interest.

If the forces during operation are bigger than the tangential forces based on lateral movement, further calculation of the Force for Pre-tensioning and the Allowable Belt Force are needed on the basis of higher loads.

4.) Calculation of Conveying Applications

a. Calculation of Effective Force F_e

The Effective Force F_e at the driver pulley is derived from the sum of all individual forces resisting the belt motion. The individual loads contributing to the effective force must be identified and calculated based on the loading conditions and drive configurations. To determine the Effective Force please use the method for conveying as follows:

$$F_e = \Sigma F_{resistance} \times F_{Stress}$$

i. Friction Force F_F
The Friction Force between the timing belt and the slider bed due to weight of the conveyed good vertically to the direction of conveyance.

$$F_F = \mu \times g \times m_F \times \cos\beta$$

ii. Friction Force during accumulation F_{Fa}
The Friction Force between the timing belt, slider bed and the conveyed material due to the mass component of the accumulated material vertically to the direction of conveyance.

$$F_{Fa} = (\mu + \mu_a) \times g \times m_a \times \cos\beta$$

iii. Friction Force due to Vacuum F_{FV}
The Friction Force between the timing belt and the slider bed due to the vacuum for fixation of conveyed goods.

$$F_{FV} = \mu \times p \times A_V$$

iv. Gravitational Force F_G
Force due to the mass component of the conveyed good parallel to the direction of conveyance.

$$F_G = m_F \times g \times \sin\beta$$

v. Acceleration Force F_a
Force to accelerate the mass of the conveyed good.

$$F_a = m_F \times a$$

vi. Further Forces
Motion resistance on the basis of belt mass, idler or similar are normally insignificant, but may have a decisive influence on the total value of the Effective Force and therewith on the belt load as well. The importance of mentioned influences has to be estimated throughout the calculations – in extreme cases the component forces must be calculated and considered.

b. Calculation of Force for Pre-tensioning F_{pre}

i. Real calculated Pre-tension

For failure-free operation, it is necessary that the slack side does not fall below a certain tension. The pre-tension prevents jumping of the pulley teeth during belt operation. In order to collect the pre-tension, the optimal Slack Side Force has to be ascertained as follows:

$$F_{2opt} = (0{,}1 \ldots 0{,}3) \times F_e$$

Higher values are recommended for longer belt lengths.
Assuming an Optimal Slack Side Force the Force for Pre-tensioning is calculated considering the Tight Side Length and the total Timing Belt Length as follows:

$$F_{pre} = F_{2opt} + F_e \times \frac{L1}{L}$$

ii. Minimum Factor for Pre-tensioning
In most cases the selection of the belt type and its width is not carried out by existing applied loads, but on the geometry of the transported material. In most cases the result of this choice is an oversized belt drive which required pre-tension can hardly be determined based on calculation bases. For proper operation the Factor for Pre-tensioning should be set as follows:

$$F_{pre} = 0{,}3 \times F_{1all}$$

c. Calculation of Tight Side Belt Force F_1

In the worst case the Tight Side Belt Force results as follows (Conveyor moving at full load):

$$F_1 = F_e + F_{pre}$$

d. Belt Selection

To select the matching application for the belt type and width by using the values determined above (F_e and F_1) have to be compared with the valid data from our catalog. After the first selection, the resulting pulley teeth have to be detected. The determined number of teeth and the angle of contact are the basis for the number of teeth which are constantly engaged to the pulley and which can be used for Power Transmissions. The Allowable Effective Force F_{eall} for the number of teeth smaller than 15 has to be rectified with the help of a Tooth in Mesh Factor t_m which can be taken from chart 1. The same method is allowed for conveying velocity. The needed Speed Factor t_v for speed can be taken from chart 2. The outcome is a maximum allowable effective Force Application as follows:

$$F_{eallapp} = F_{eall} \times t_m \times t_v$$

$F_{eallapp}$ and F_{1all} should be larger than the actual prevailing forces in the application.

$$F_{eallapp} > F_e$$

$$F_{1all} > F_1$$

e. Calculation of Safety Factor SF

i. Safety Factor on Allowable Effective Force SF_{Fe}
$SF_{Fe} = F_{eallapp} / F_e$

ii. Safety Factor on Allowable Belt Force SF_1
$SF_1 = F_{1all} / F_1$

iii. Safety Factor on Ultimate Tensile Strength SF_{Break}
$SF_{Break} = F_{Break} / F_1$

5. Calculation of Linear Applications

a. Calculation of Effective Force F_e

The Effective Force F_e at the driver pulley is derived from the sum of all individual forces resisting the belt motion. The individual loads contributing to the effective force must be identified and calculated based on the loading conditions and drive configurations. To determine the Effective Force please use the method for conveying as follows:

$$F_e = \Sigma F_{resistance} \times F_{Stress}$$

i. Friction Force F_F
The Friction force between the conveyed material and the storing vertically to the direction of conveyance.

$$F_F = \mu \times g \times m \times \cos\beta$$

ii. Gravitational Load F_G
Force due to mass component parallel to the direction of conveyance.

$$F_G = m \times g \times \sin\beta$$

iii. Acceleration Force F_a
Force to accelerate the mass of the moved goods.

$$F_a = m \times a$$

iv. Further Forces
Motion resistance due to belt mass, idler or similar are normally insignificant, but may have a decisive influence on the total value of the Effective Force F_e and therewith on the belt load as well. The importance of mentioned influences has to be estimated throughout the calculations – in extreme cases the component forces must be calculated and considered.

b. Calculation of Force for Pre-tensioning F_{pre}

For failure-free operation, it is necessary that the slack side does not fall below a certain tension. The pre-tension prevents jumping of the pulley teeth during belt operation. In order to collect the pre-tension, the Optimal Slack Side Force has to be ascertained as follows:

$F_{2opt} = (0{,}1 \ldots 0{,}3) \times F_e$

Higher values are recommended for longer belt lengths.
Assuming an Optimal Slack Side Force, the Force for Pre-tensioning is calculated considering the Tight Side Length and the total Timing Belt Length as follows:

$$F_{pre} = F_{2opt} + F_e \times \frac{L1}{L}$$

c. Calculation of Tight Side Belt Force F_1

In the worst case the Tight Side Belt Force results as follows (Application moving at full load):

$F_1 = F_e + F_{pre}$

d. Belt Selection

To select the matching application for the belt type and width by using the values determined above (F_e and F_1) have to be compared with the valid data from our catalog. After the first selection, the resulting pulley teeth have to be detected. The determined number of teeth and the angle of contact are the basis for the number of teeth which are constantly engaged to the pulley and which can be used for Power Transmissions. The Allowable Effective Force F_{eall} for the number of teeth smaller than 15 has to be rectified with the help of a Tooth in Mesh Factor t_m which can be taken from chart 1. The same method is allowed for conveying velocity. The needed Speed Factor t_v for speed can be taken from chart 2. The outcome is a maximum allowable effective Force Application as follows:

$F_{eallap} = F_{eall} \times t_m \times t_v$

F_{eallap} and F_1 should be larger than the actual prevailing forces in the application.

$F_{eallap} > F_e$

$F_{1all} > F_1$

e. Calculation of Safety Factor SF

i. Safety Factor on Allowable Effective Force SF_{Fe}
$SF_{Fe} = F_{eallapp} / F_e$

ii. Safety Factor on Allowable Belt Force SF_1
$SF_1 = F_{1all} / F_1$

iii. Safety Factor on Ultimate Tensile Strength SF_{Break}
$SF_{Break} = F_{Break} / F_1$

f. Clamp Plates

The clamp plates should be accomplished that at last 8 teeth per belt end can be clamped. During the assembling process please consider to equally clamp the belt – the belt height has to be reduced by at least 0,2 – 0,3 mm.

6. Calculation of Closed Power Transmission Drives

Closed Power Transmission Drives should be always realized as truly endless Cast or Flex belts. The use of endless welded timing belts is not recommended.

a. Calculation of Effective Force F_e

The Effective Force F_e can be calculated with the existing movement resistance as follows:

$F_e = \sum F_{resistance} \times F_{Stress}$ Quod vide → Conveying Applications

Furthermore the effective force can also be calculated with the existing driving power as follows:

$F_e = (T_{Motor} \times 1000) / r_{pulley}$

or

$F_e = (19100 \times P_{Motor} \times 500) / n \times r_{pulley}$

b. Calculation of Force for Pre-tensioning F_{pre}

For failure-free operation, it is necessary that the slack side does not fall below a certain tension. The pre-tension prevents jumping of the pulley teeth during belt operation. In order to collect the pre-tension, the Optimal Slack Side Force has to be ascertained as follows:

$F_{2opt} = (0{,}1 \ldots 0{,}3) \times F_e$

Higher values are recommended for longer belt lengths.
Assuming an Optimal Slack Side Force, the Force for Pre-tensioning is calculated considering the Tight Side Length and the total Timing Belt Length as follows:

$$F_{pre} = F_{2opt} + F_e \times \frac{L1}{L}$$

c. Calculation of Tight Side Belt Force F_1

In the worst case the Tight Side Belt Force F_1 results as follows (Application moving at full load):

$F_1 = F_e + F_{pre}$

d. Belt Selection

To select the matching application for the belt type and width by using the values determined above (F_e and F_1) have to be compared with the valid data from our catalog. After the first selection, the resulting pulley teeth have to be detected. The determined number of teeth and the angle of contact are the basis for the number of teeth which are constantly engaged to the pulley and which can be used for Power Transmissions. The Allowable Effective Force F_{eall} for the number of teeth smaller than 15 has to be rectified with the help of a Tooth in Mesh Factor t_m which can be taken from chart 1. The same method is allowed for conveying velocity. The needed Speed Factor t_v for speed can be taken from chart 2. The outcome is a maximum allowable effective Force Application as follows:

$F_{eallapp} = F_{eall} \times t_m \times t_v$

$F_{eallapp}$ and F_{1all} should be larger than the actual prevailing forces in the application.

$F_{eallapp} > F_e$

$F_{1all} > F_1$

e. Calculation of Safety Factor SF

i. Safety Factor on Allowable Effective Force SF_{Fe}
$SF_{Fe} = F_{eallapp} / F_e$

ii. Safety Factor on Allowable Belt Force SF_1
$SF_1 = F_{1all} / F_1$

iii. Safety Factor on Ultimate Tensile Strength SF_{Break}
$SF_{Break} = F_{Break} / F_1$

7. Calculation of Lifting Applications without counter weight, two shafts

a. Calculation of Effective Force F_e

The Effective Force at the driver pulley is derived from the sum of all individual forces resisting the belt motion. The individual loads contributing to the effective force must be identified and calculated based on the loading conditions and drive configurations. To determine the Effective Force F_e please use the method for conveying as follows:

$F_e = \sum F_{resistance} \times F_{Stress}$

i. Friction Force F_F
The Friction force between the moved mass and its bearings.

$F_F = \mu \times g \times m \times \cos$

ii. Gravitational Load F_G
Force due to mass component parallel to the direction of conveyance.

$F_G = m \times g \times \sin$

iii. Acceleration force F_a
Force to accelerate the mass.

$F_a = m \times a$

iv. Further Forces
Motion resistance due to belt mass, idler or similar are normally insignificant, but may have a decisive influence on the total value of the Effective Force F_e and therewith on the belt load as well. The importance of mentioned influences has to be estimated throughout the calculations – in extreme cases the component forces must be calculated and considered.

b. Calculation of Factor for Pre-tensioning F_{pre}

For failure-free operation, it is necessary that the slack side does not fall below a certain tension. The pre-tension prevents jumping of the pulley teeth during belt operation. In order to collect the pre-tension, the Optimal Slack Side Force has to be ascertained as follows:

$F_{2opt} = (0{,}1 \ldots 0{,}3) \times F_e$

Higher values are recommended for longer belt lengths.
Assuming an Optimal Slack Side Force, the Force for Pre-tensioning is calculated considering the Tight Side Length and the total Timing Belt Length as follows:

$$F_{pre} = F_{2opt} + F_e \times \frac{L1}{L}$$

c. Calculation of Tight Side Belt Force F_1

In the worst case the Tight Side Belt Force results as follows (Conveyor moving at full load):

$F_1 = F_e + F_{pre}$

d. Belt Selection

To select the matching application for the belt type and width by using the values determined above (F_e and F_1) have to be compared with the valid data from our catalog. After the first selection, the resulting pulley teeth have to be detected. The determined number of teeth and the angle of contact are the basis for the number of teeth which are constantly engaged to the pulley and which can be used for Power Transmissions. The Allowable Effective Force F_{eall} for the number of teeth smaller than 15 has to be rectified with the help of a Tooth in Mesh Factor t_m which can be taken from chart 1. The same method is allowed for conveying velocity. The needed Speed Factor t_v for speed can be taken from chart 2. The outcome is a maximum allowable effective Force Application as follows:

$F_{eallapp} = F_{eall} \times t_m \times t_v$

$F_{eallapp}$ and F_{1all} should be larger than the actual prevailing forces in the application.

$F_{eallapp} > F_e$

$F_{1all} > F_1$

e. Calculation of Safety Factor SF

i. Safety Factor on Allowable Effective Force SF_{Fe}
$SF_{Fe} = F_{eallapp} / F_e$

ii. Safety Factor on Allowable Belt Force SF_1
$SF_1 = F_{1all} / F_1$

iii. Safety Factor on Ultimate Tensile Strength SF_{Break}
$SF_{Break} = F_{Break} / F_1$

8. Calculation of Lifting Applications, with counter weight, 1 shaft

a. Calculation of Effective Force F_e

The Effective Force F_e at the driver pulley is derived from the sum of all individual forces resisting the belt motion. The individual loads contributing to the effective force must be identified and calculated based on the loading conditions and drive configurations. To determine the Effective Force please use the method for conveying as follows:

i. $F_e = m \times (g+a) - m_e \times (g-a)$

ii. Further Forces
Motion resistance due to belt mass, idler or similar are normally insignificant, but may have a decisive influence on the total value of the Effective Force F_e and therewith on the belt load as well. The importance of mentioned influences has to be estimated throughout the calculations – in extreme cases the component forces must be calculated and considered.

b. Calculation of Factor for Pre-tensioning F_{pre}

Not available for lifting applications with counter weight and one pulley.

c. Calculation of Tight Side Belt Force F_1

In the worst chase the Tight Side Belt Force results as follows (Conveyor moving at full load):

$F_{1max} = m_{max} \times (a + g)$

d. Belt Selection

To select the matching application for the belt type and width by using the values determined above (F_e and F_1) have to be compared with the valid data from our catalog. After the first selection, the resulting pulley teeth have to be detected. The determined number of teeth and the angle of contact are the basis for the number of teeth which are constantly engaged to the pulley and which can be used for Power Transmissions. The Allowable Effective Force F_{eall} for the number of teeth smaller than 15 has to be rectified with the help of a Tooth in Mesh Factor t_m which can be taken from chart 1. The same method is allowed for conveying velocity. The needed Speed Factor t_v for speed can be taken from chart 2. The outcome is a maximum allowable effective Force Application as follows:

$$F_{eallapp} = F_{eall} \times t_m \times t_v$$

$F_{eallapp}$ and F_{1all} should be larger than the actual prevailing forces in the application.

$$F_{eallapp} > F_e$$

$$F_{1all} > F_1$$

e. Calculation of Safety Factor SF

i. Safety Factor on Allowable Effective Force SF_{Fe}
$SF_{Fe} = F_{eallapp} / F_e$

ii. Safety Factor on Allowable Belt Force SF_1
$SF_1 = F_{1all} / F_1$

iii. Safety Factor on Ultimate Tensile Strength SF_{Break}
$SF_{Break} = F_{Break} / F_1$

9. Elongation / Positioning Error in Timing Belt Drives

a. Elongation Δx

The static elongation based on an applied force such as the pre-tension results as follows:

$$\Delta x = \frac{F \times L}{c_{Sp}}$$

b. Positioning Error Δx_{Pos}

The positioning error mainly depends on the total stiffness c_R of the slack and tight side.

$$c_R = c_{sp} \times \frac{L}{L1 \times L2}$$

Note that c_R is at its minimum when the tight and slack sides are equal.
Determine the positioning error Δx_{Pos} due to belt elongation caused by e.g. the effective force F_e:

$$\Delta x_{Pos} = \frac{F}{c_R}$$

10. Timing Belt Construction

a. Pre-tensioning F_{pre}

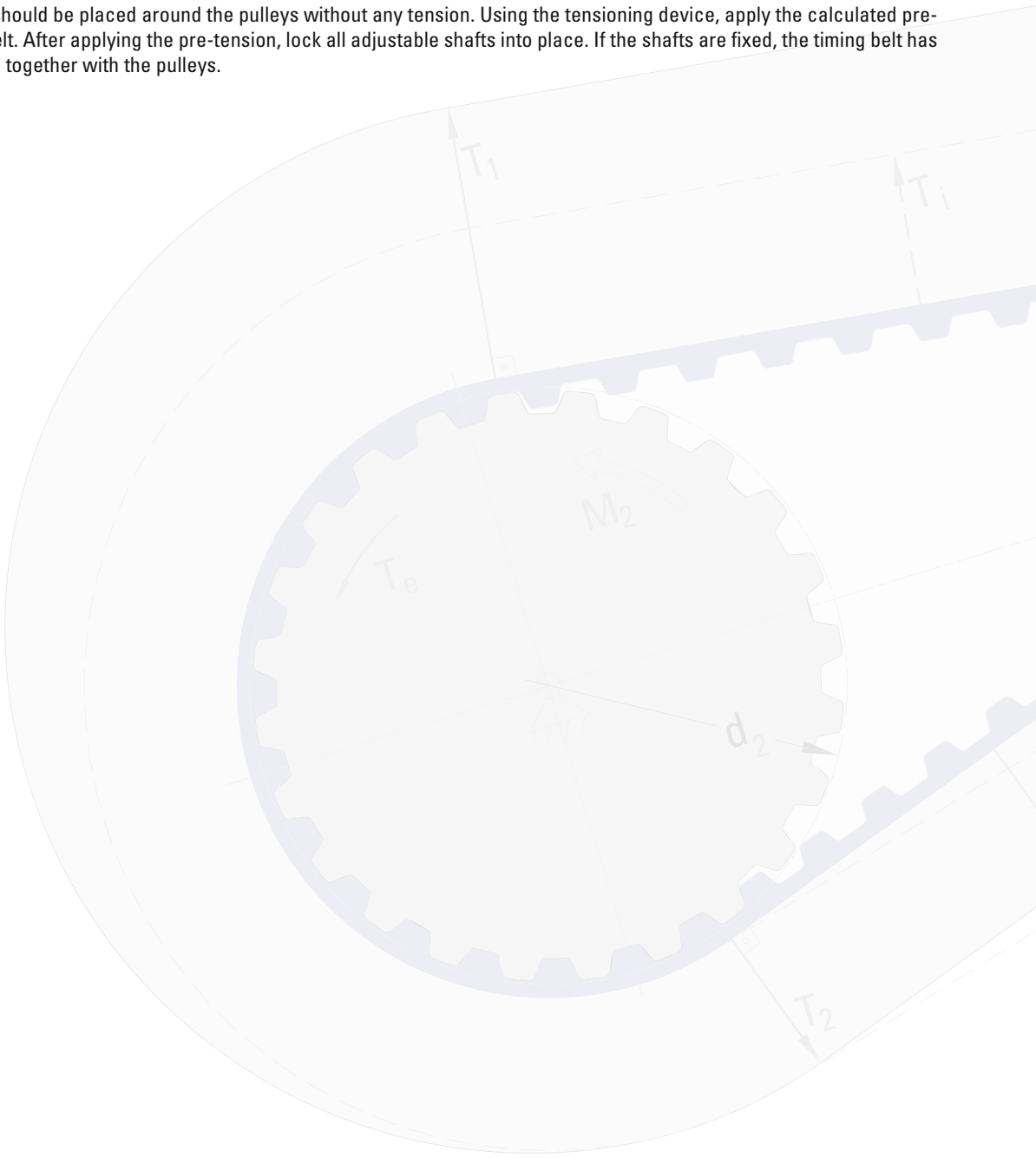
For proper adjustment of Pre-tensioning F_{pre} Gates Mectrol recommends the Sonic Tension Meter 507 C which directly specifies the pre-tension in Newton.

When using prior tension meters the conversion of the pre-tension is required. The conversion results as follows:

$$f = \sqrt{\frac{F_{pre}}{4 \times m \times l^2}}$$

b. Assembling Instructions

The timing belt should be placed around the pulleys without any tension. Using the tensioning device, apply the calculated pre-tension to the belt. After applying the pre-tension, lock all adjustable shafts into place. If the shafts are fixed, the timing belt has to be assembled together with the pulleys.



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The specifications listed are based on Gates Mectrol's experience. However, our specifications and data do NOT cover all possible belt drive conditions. It is the responsibility of the belt drive system designer to ensure Gates Mectrol's belts are appropriate for a given system and application. The provided data is representative of our in-house experience and does not necessarily match product performance in industrial use. Gates Mectrol cannot assume any liability concerning the suitability and process ability of our products. We also cannot assume liability for process results, damages or consequential damages associated with the use of our products.

Do not use Gates Mectrol belts in applications that depend solely upon the belt to raise/lower, support or sustain a mass without an independent safety backup system.

All information contained are subject to change without notice.

Abbreviations

Polyurethane

R1	92 Shore A
R2	85 Shore A
FDA	85 Shore A / FDA approval
R3	88 Shore A / STAND Cast Belts
R4	94 Shore A / Antistatic features
EUF85	85 Shore A / Suitable for food use
EUF92	92 Shore A / Suitable for food use

Belt Types

R	Roll Stock
G	Open Ended
P	Punched Only Belts
E	Endless Welded Belts
S	Gates Synchro Power® (Cast) Belts
F	Truly Endless Flex Belts

Pitches and Cord Types

STAND	Standard
SL	Steel Cord
TL	Reinforced Steel Cord
HF	High Flexible Steel Cord
NIRO	Stainless Steel Cord
KV	Aramide Cord
DT	Double Sided Cast Belts

Polyamide and Special Fabrics

NB	Polyamide Fabric on Back
NT	Polyamide Fabric on Tooth Side
NTB	Polyamide Fabric on Tooth and Back
ECO	Antistatic Fabric

Approvals

FDA	Approval by the U.S. Food and Drug Administration according to regulation no. 177.2600 - Rubber Articles for repeated use
EU	EU Approval for Materials made of Polyurethane which are used for Food Applications according to the following EU regulations and guidlines: VO (EG) No. 1935 / 2004 § 4, EG Regulation 2002 / 72 / EG - completion 2007 / 19 / EG, Regulation 82 / 711 / EWG and Regulation 85 / 572 / EWG

Backings and Fabrications

HB	High Back Backing / Backing Hardness depends on on Belt Hardness
Min. Pulley Diameter in mm	Pulley Diameter Factor x Material Thickness

Miscellaneous

N/A	Not available

Notes

MIX
Paper from responsible sources
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www.fsc.org

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GERMANY
Gates Mectrol GmbH
Werner-von-Siemens Straße 2
D- 64319 Pfungstadt
Germany
Tel: + 49 (0) 6157-9727-0
Fax: + 49 (0) 6157-9727-272
Email: info@gatesmectrol.de
Website: www.gatesmectrol.de

AUSTRALIA
Gates Australia Pty Ltd.
1-15 Hydrive Close
South Dandenong, Victoria 3175
Australia
Tel: + 61 (3) 9797-9666
Fax: + 61 (3) 9797-9600
Email: southpacsales@gates.com
Website: www.gatesaustralia.com.au

BELGIUM
Gates Power Transmission Europe bvba
European Headquarter
Dr. Carlierlaan 30
B-9320 Erembodegem
Belgium
Tel: + 32 (53) 762-711
Fax: + 32 (53) 762-713
Email: ptindustrial@gates.com
Website: www.gates.com/europe

PEOPLE'S REPUBLIC OF CHINA
Gates Unitta Power Transmission Ltd.
No. 15, Hai Tang Street
China- Singapore Suzhou Industrial Park
215021 Suzhou
People's Republic of China
Tel: + 86 (512) 6761-9633
Fax: + 86 (512) 6761-7184
Email: guptmarketing@gates.com
Website: www.gatesunitta.com

BRAZIL
Gates Do Brazil Ind. Com. Ltda
Av. Santa Maria, 600
Jacarei, SP 12328-320
Brazil
Tel: + 55 (11) 3848-8122
Fax: + 55 (11) 3848-8170
Email: gatesmkt@gatesbrasil.com.br
Website: www.gatesbrasil.com.br

JAPAN
Gates Unitta Asia Company
172, Ikezawa-cho, Yamatokoriyama-City,
Nara 639-1085
Japan
Tel: + 81 (743) 56-1361
Fax: + 81 (743) 56-1389
Website: www.gatesunitta.com

UNITED STATES OF AMERICA
Gates Mectrol Inc.
9 Northwestern Drive
Salem, NH 03079
United States of America
Tel: + 1 (603) 890-1515
Fax: + 1 (603) 890-1616
Email: contact@gatesmectrol.com
Website: www.gatesmectrol.com

Gates Corporation
300 College St. Road
Elizabethtown, KY 42701
United States of America
Tel: + 1 (270) 735 ext. 1005 / 3000
Fax: + 1 (270) 737-0409
Email: ppike@gates.com
Website: www.gates.com

- Production & Sales
- PU Fabrication Center
- Headquarter
- Sales

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