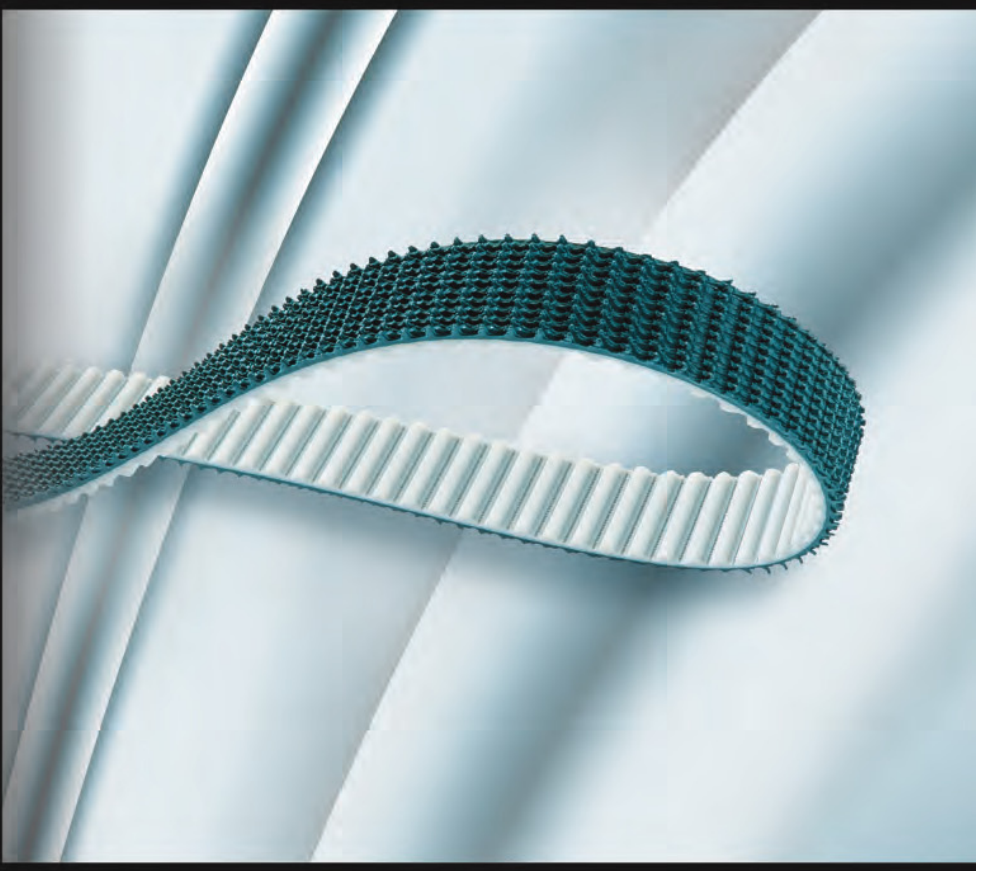
ELATECH® **Conveying Applications**



Elatech

Technology in Motion.

Polyurethane belts for conveying applications:

Backings

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

Minimum pulley diameter

The minimum pulley diameter can be calculated by means of the "pulley multiplier" shown for each type of backing.

Minimum pulley diameter= backing thickness x pulley multiplier C_D

As a general rule, we may say that the smaller the pulley, the thinner the backing has to be.
The diameters obtained are valid for application with speed up to 1 m/s and a temperature of 20° C.
If smaller pulley diameters are needed, please contact Elatech's technical dept.

Drive with reverse bending

ELATECH® polyurethane timing belts are suitable for drives with reverse bending. Tension should be adjusted, depending on backing hardness.

Temperature range

The choice of the correct backing may allow the conveying of hot items. However, the toothed structure of the belt must not be exposed to temperatures over 80° C.
The minimum contact temperature should be -10° C for all backing materials, however, special material compounds may be available for lower temperatures. In such cases, please check with Elatech's technical department.

Coefficient of friction

The values shown in the table refer to the approximate static coefficient of friction against steel.
In order to reduce the pulley's diameter, it is possible to splice the backing allowing a better flexibility. Pulley diameter, should never be smaller than the minimum diameter recommended for the standard belt.
Please ask ELATECH's technical dept. for further details on coefficient of friction with other materials.

Colours

Standard colours shown in the table may change without notice. Special/personalized colours are available on request.

Chemical resistance

The values given in the table for the resistance to oils and fat of each backing material are purely indicative and may vary depending on the concentration and the temperature of chemical agents. When in doubt, please check with Elatech's technical department.

General remarks

ELATECH's wide range of different backings can be grouped into four main categories: cellular, PVC & PU, rubber, and special. Each different category provides special features and top quality performance and endurance making the various backings especially suitable for specific applications. These features include different degrees of hardness, cellular, fabric, felt or solid material compounds, different levels of grip, FDA-compliant materials, antistatic materials, different resistance to oils and fats, and different resistance to abrasion, tear and wear.
Such variety, combined with top quality mechanical and technical properties and state of the art manufacturing systems and techniques including the application of different flights and cleats, the combination of different backing materials, the slitting and grinding of the final product to match exact dimensions and shapes without any burrs or any other imperfections left on the surface, as well as water jet cutting for extremely precise perforations, make ELATECH®'s coated belts the best and the most reliable solution for specific applications in the most diversified fields of industry.

Polyamide fabric backings

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

Polyamide fabrics with antistatic properties are available.

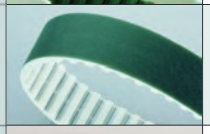
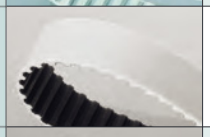
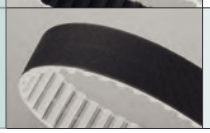
PAZ: Polyamide backing on tooth side.
Reduces coefficient of friction and allows a smoother tooth engagement.

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

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

Coefficient of friction

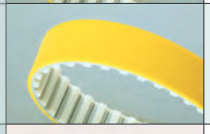
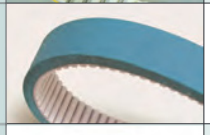
- Polyurethane on steel μ = 0,7
- Polyamide on steel μ = 0,35

Elatech Code	Description		
TZ11	PAZ Standard		Nylon fabric on teeth
TZ21	PAR Standard		Nylon fabric on back
TZ15	PAZ Antistatic		Antistatic nylon fabric on teeth
TZ25	PAR Antistatic		Antistatic nylon fabric on back

CELLULAR

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

Pulley diameter: C_D • Backing Thickness

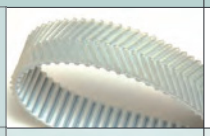
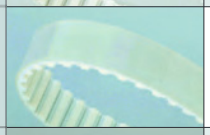
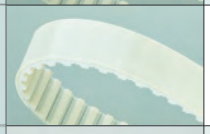
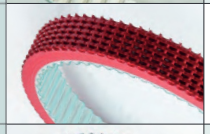
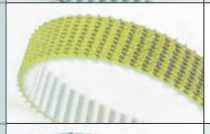
Elatech Code	Description		Material	Color	Hardness [°Sh A]	Standard thickness [mm]	Max contact temperature	Oil and fat resistance	coeff. of friction on steel	FDA food grade	Pulley multiplier C_D
CFX	CELLOFLEX		Microcellular elastomeric polyurethane	brown / yellow	-	3 - 10	+80°C	medium	0,3	No	16
POR	POROL		cellular rubber	black	ca 15	3, 5, 8,10,15	+70°C	medium	1,0	No	6
PY50	PU YELLOW 50		polyurethane	yellow	50	2, 3, 4, 5 6 ,8,10	+70°C	high	0,4	No	20
PY70	PU YELLOW 70		polyurethane	yellow	70	2, 3, 4, 5, 6, 8,10	+80°C	high	0,3	No	18
SYL-B	SYLOMER BLU		Elastomeric PUR	blu	-	6, 12, 25	+70°C	medium	0,5	No	12
SYL-V	SYLOMER GREEN		Elastomeric PUR	green	-	6, 12, 25	+70°C	medium	0,5	No	14
SYL-M	SYLOMER BROWN		Elastomeric PUR	brown	-	6, 12, 25	+70°C	medium	0,5	No	15

PVC and PU

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

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

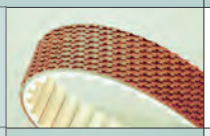
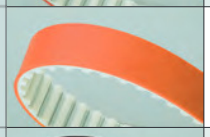
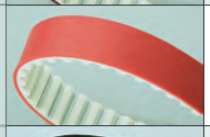
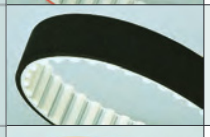
Pulley diameter: C_D • Backing Thickness

Elatech Code	Description		Material	Color	Hardness [°Sh A]	Standard thickness [mm]	Max contact temperature	Oil and fat resistance	coeff. of friction on steel	FDA food grade	Pulley multiplier C_D
FBPU	FISHBONE PU		PU	transparent	70 / 85	4	+70°C	medium	0,7	No	18
FBPVC	FISHBONE PVC		PVC	white	65	4	+80°C	high	0,7	Yes	18
PUR70	PUR70		PU	transparent	70	2 - 5	+70°C	high	0,7	No	25
PUR85	PUR85		PU	transparent	85	2 - 5	+70°C	high	0,6	No	30
PVCW	PVC BIANCO		PVC	white	ca 60	2,3	+90°C	medium	1,0	Yes	35
PVCG	PVC GREEN		PVC	green	ca 40	1	+90°C	high	0,9	No	40
SG50R	SUPERGRIP 50 R		Thermoplastic compound	red	55	4,5 - 12	+80°C	medium	0,9	No	12
SG60	SUPERGRIP 60 GL		PVC	green	ca 40	4,5	+90°C	medium	0,9	No	12
SG70	SUPERGRIP 70 Y		PU	yellow	70	4,5	+80°C	high	0,8	No	12
MG	MINIGRIP PVC		PVC	green	ca 65	1,5	+100°C	medium	0,7	No	40

RUBBER

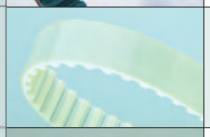
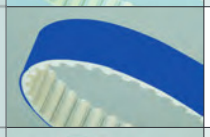
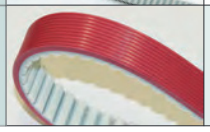
Many different rubber backings in both synthetic and natural rubber are available. Due to rubber's high friction coefficient and high temperature resistance, ELATECH® polyurethane belt with rubber backing is used in many different conveying application: paper industry, ceramic industry, wood processing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

Pulley diameter: C_D • Backing Thickness

Elatech Code	Description		Material	Color	Hardness [°Sh A]	Standard thickness [mm]	Max contact temperature	Oil and fat resistance	coeff. of friction on steel	FDA food grade	Pulley multiplier C_D
SG50T	SUPERGRIP 50 RT		natural rubber	red	50	4,5	+80°C	low	1,0	No	15
LTX	LINATEX		natural rubber	red	ca 40	2,4 - 3,2 - 4,8 6,4 - 8,0 - 9,6	+70°C	low	1,1	No	15
LTR	LINATRILE		nitrile rubber	orange	ca 55	3 - 6	+110°C	medium	1,0	No	20
NBR	NITRILE		nitrile rubber	black	65	-	+110°C	high	0,7	No	18
TNX	TENAX / ISOGUM		rubber	red	40	2 - 15	+60°C	low	0,75	No	15
VTN	VITON		FKM Fluoroelastomer	black	ca 75	2/4	+275°C	high	0,7	No	30
RP400	YELLOW RUBBER		natural rubber	yellow	ca 35	3 - 4 - 5 - 6 - 8 10 - 12 - 15 20 - 25 - 30	+65°C	low	1,2	No	13
CRX	CORREX		para rubber	brown	ca 40	6 - 10	+60°C	low	0,6	No	15

Special backings are available in quite a different range of materials to cover even the most demanding design requirements.

Pulley diameter: C_D • Backing Thickness

Elatech Code	Description		Material	Color	Hardness [°Sh A]	Standard thickness [mm]	Max contact temperature	Oil and fat resistance	coeff. of friction on steel	FDA food grade	Pulley multiplier C_D
APL	APL		Thermoplastic compound	red-purple	55	3,5	+60°c	high	0,7	No	25
SLC	SILICONE		Silicone rubber	transparent	30	3 - 10	+200°C	high	1,0	No	20
SLCF	SILICONE FDA		Silicone rubber	blu	30	3 - 10	+220°C	high	1,1	Yes	20
TG50	TECNOGUM 50		Thermoplastic rubber compound	red	ca 50	1 - 6	+80°C	high	0,7	No	25
TG70	TECNOGUM 70		Thermoplastic rubber compound	red	ca 70	1 - 6	+80°C	high	0,6	No	30
CHRL	CHROME LEATHER		Chrome leather	grey / blue	-	3	+80°C	high	0,8	No	30
TZ26	TZ PAR		Teflon	red	-	0,3	+80°C	high	0,18	No	-
APLM	MULTIRIB		Thermoplastic compound	red	60	3,5	+80°C	medium	-	No	-

ELATECH® EMF - Mechanical Fastening System

(patent pending)

ELATECH® EMF - Mechanical Fastening System allows in many conveying applications cost savings associated with being able to design equipment around the installation principle of EMF.

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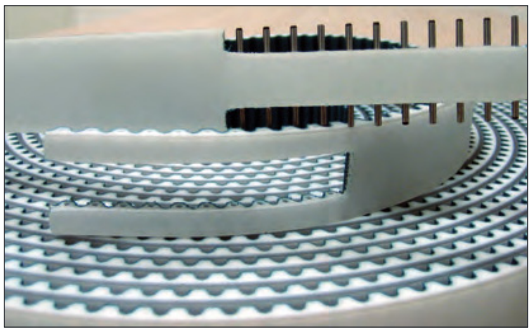


Features

• EMF has no exposed metal parts, therefore no metal contact is made with pulleys, so it runs very quietly. Since there are no exposed metal parts, EMF will not damage conveyed products like competing metal based mechanical fastening alternatives.

• EMF maintains the same minimum pulley requirements as the belt and can operate with back bend idlers.

• It is excellent for belt applications with special backings such as Linatex, Supergrip, PVC, Fishbone, etc. EMF fits snug, which eliminates gaps otherwise seen in competing designs.

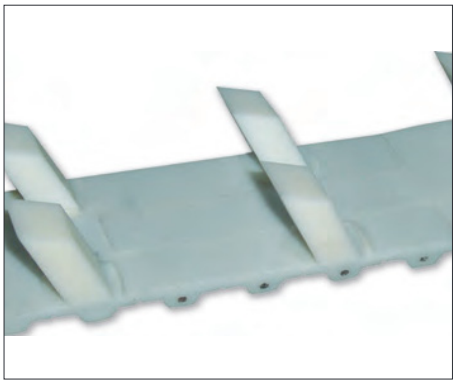
• It is suitable for belts with profiles for quick installation, saving time and money.

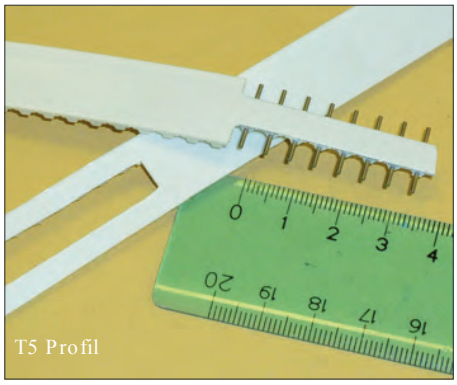
• EMF installs in seconds, making it the fastest timing belt installation for product conveyance.
There is no need for time-consuming field welding.

• It is simple to install and requires no cumbersome or expensive field welding equipment.

• It can be custom designed according to the application strength needed. EMF can reach the same strength as the traditional welding.

• It is available on all pitches, making it a "must have" for all of your customer's conveying applications.





Profile	Width [mm]	Number of pins	Max working tension [N]
T 5	10	5	96
	16	5	144
		8	224
	20	5	176
		8	232
	25	5	176
		8	256
	32	5	304
		8	450
	50	5	360
		8	480
T 10	16	4	216
		12	640
	20	4	240
	25	4	304
		8	504
		11	680
	32	4	400
		8	576
		12	880
	50	4	624
		8	1120
		11	1480
	75	4	800
		8	1600
		11	1760
	100	4	1040
		8	2000
		11	2280
T 20	25	4	536
		11	1600
	32	4	784
		6	1200
	50	4	960
		11	3040
	75	4	1600
		11	3560
AT 5	10	5	144
	16	5	168
		8	240
	20	5	280
		8	320
	25	5	208
		8	288
	32	5	320
	50	5	440
		8	600
AT 10	16	4	256
		12	960
	20	4	344
	25	4	384
		8	624
		11	904
	32	4	640
		8	800
		12	1200
	50	4	880
		8	1680
		11	2160
	75	4	1040
		8	2320
		11	2640
	100	4	1440
		8	2720
		11	3440

Profile	Width [mm]	Number of pins	Max working tension [N]
AT 20	25	4	800
		11	1760
	32	4	1200
		6	1520
	50	4	1600
		11	4400
	75	4	1920
		11	6080
HT 5	10	5	120
	16	5	168
		8	240
	20	5	224
		8	296
	25	5	280
		8	376
	32	5	320
	50	5	480
		8	640
	75	4	728
		8	1096
	100	5	800
		8	1520
HT 8	15	5	256
	20	5	360
	25	5	376
		10	784
		14	960
	30	5	400
		11	960
	50	5	800
		10	1440
		14	2080
	75	5	1320
		10	2400
		14	2880
	85	9	2320
	100	5	1760
		10	3200
		14	3600
HT 14	40	5	1120
	55	5	1600
		16	-
	85	5	2400

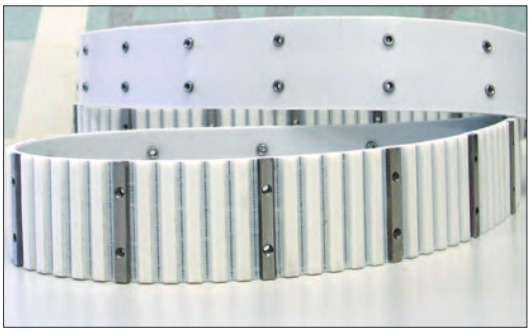
Profile	Width [mm]	Number of pins	Max working tension [N]
RP 5	10	5	120
	16	5	168
		8	240
	20	5	224
		8	296
	25	5	280
		8	376
	32	5	320
	50	5	480
		8	640
	75	4	728
		8	1096
	100	5	800
		8	1520
RP 8	15	5	256
	20	5	360
	25	5	376
		10	784
		14	960
	30	5	400
		11	960
	50	5	800
		10	1440
		14	2080
	75	5	1320
		10	2400
		14	2880
	85	9	2320
	100	5	1760
		10	3200
		14	3600
RP 14	40	5	1120
	55	5	1600
		16	-
	85	5	2400

Profile	Width [mm]	Number of pins	Max working tension [N]
ST 5	10	5	120
	16	5	168
		8	240
	20	5	224
		8	296
	25	5	280
		8	376
	32	5	320
	50	5	480
		8	640
	75	4	728
		8	1096
	100	5	800
		8	1520
ST 8	15	5	256
	20	5	360
	25	5	376
		10	784
		14	960
	30	5	400
		11	960
	50	5	800
		10	1440
		14	2080
	75	5	1320
		10	2400
		14	2880
	85	9	2320
	100	5	1760
		10	3200
		14	3600
ST 14	40	5	1120
	55	5	1600
		16	-
	85	5	2400
L	12,7	4	144
	19,05	5	256
	25,4	5	288
	38,1	5	480
	50,8	5	560
	76,2	5	1000
	101,6	5	1200
H	12,7	3	120
	19,05	4	240
	25,4	4	304
	38,1	4	520
	50,8	4	640
	76,2	4	880
	101,6	4	1120

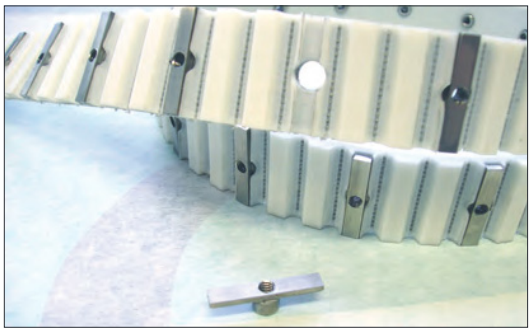
ELATECH® EFT - False Tooth System

EFT is ELATECH's mechanical profile application system specially designed for fastening cleats that cannot be welded onto polyurethane timing belts.
Zinc-coated or stainless steel teeth are available, either with our embedded tooth or total tooth design. With the total tooth design, the EFT replaces the entire tooth of the belt and is safely secured by means of two threaded holes. The embedded tooth design prevents any metal-to-metal contact, ensuring more silent operation.

Total tooth design



Embedded tooth design



Many are the advantages offered by ELATECH® EFT:

• EFT allows to apply cleats that cannot be welded onto polyurethane timing belts because of their overall dimension and/or material (such as steel, stainless steel, plastic, urethane, wood etc.)

• EFT is in stock in stainless suitable for food and pharmaceutical industry and humid environments

• EFT design has a self-centering effect on profile positioning, which makes it more precise than welded profiles

• EFT can handle much higher loads than welded profiles, making it a strong solution

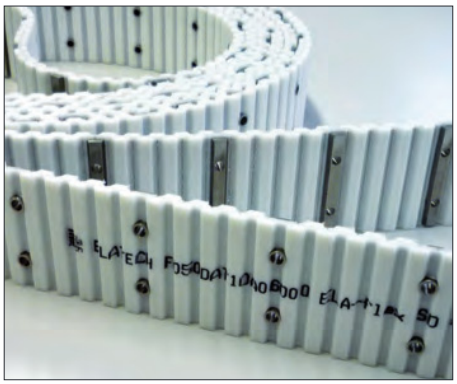
• EFT is the precise solution eliminating any welded profile positioning tolerances. The profile positioning tolerance for EFT mirrors the ELATECH® timing belt tooth pitch tolerance

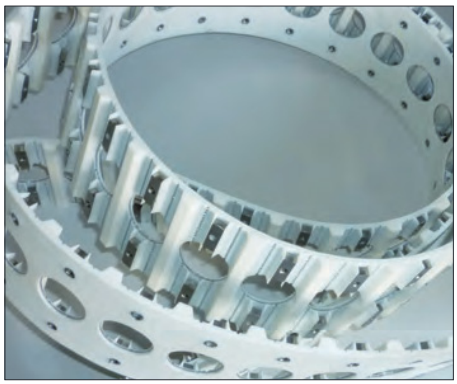
• EFT is flexible, allowing customers to reposition cleats for regularly scheduled application changes

• EFT is economical because customers can replace worn profiles without having to replace the entire belt.

• EFT is available in any of the following pitches:
AT10, AT20, H, XH with or without self-tracking guide.

• EFT allows to use basic belts in all their possible executions: Flex, welded, with PAZ or PAR, FDA PU, steel, aramid or stainless steel cord.

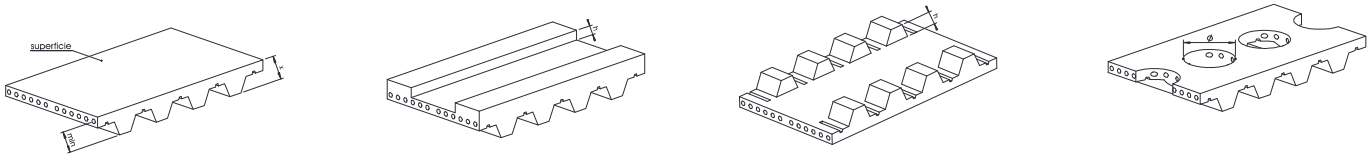




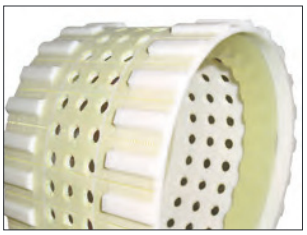
Mechanical processing

Thanks to top-quality, state-of-the-art machinery and techniques such as water jet cutting, ELATECH® timing belts can be mechanically processed to perform special and complex tasks. The extremely precise machining and finishing operations guarantee the respect of the strictest tolerance requirements and the maximum reliability of ELATECH® timing belts in all the most complex and demanding industrial applications.

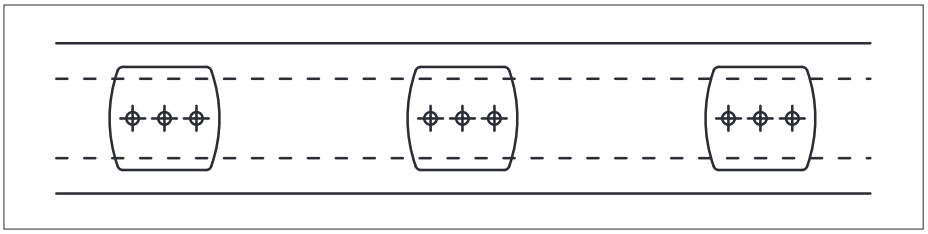
Depending on the application requirements, mechanical processing may include longitudinal milling of the teeth and/or of the back, back and side grinding, teeth removal, belt surface perforation and/or engraving, as well as surface preparation for the application of special profiles.



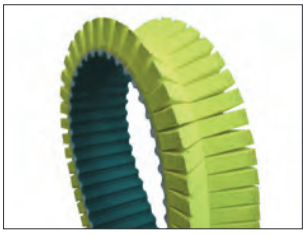
The great precision and the versatility of water jet cutting technology allow the creation of bores of any dimensions and shapes, from the smallest to the largest, from perfectly circular to oval or square.



Special backings can also be machined to optimize the performance of the belts in special applications. A typical example is the hollow milling of the backing to create a "vacuum cup effect" and maximize the suction provided by water jet cut bores. In this case, perfect suction is also granted by the absence of any tension members within the vacuum areas.

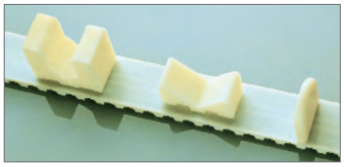


In another application, the thick V-shaped yellow PU backing on a belt used for transporting aluminium bars is slitted transversely to enhance the flexibility of the belt itself and to improve its revolution around smaller pulleys.



ELATECH® polyurethane belts with profiles

It is possible to attach profiles on all ELATECH®, ELA-flex SD® and iSync® polyurethane belts for conveying, handling and positioning applications. The cleats are produced in the same material of the belts in order to guarantee the maximum strength. The belts with profiles allow a syncronised translation of the products at very high speeds and low noise.
A very wide range of profiles is available. If the required profile is not shown in the following pages, please contact our technical office.



Pitch

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

Position

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

Fig. 1

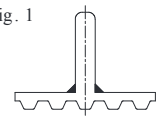
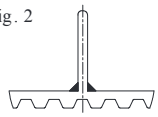
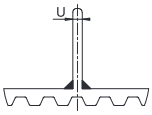


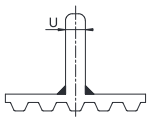
Fig. 2



Arc of contact

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





Tolerances

The tolerance of position of the profiles is +/- 0,5 mm. If required it is possible to reduce the tolerance down to +/- 0,2 mm with an extra machining. During the welding process a bead of polyurethane of about 0,5-1 mm develops at the meeting point between the profile and the belt. Should it be necessary for the application, it is possible to remove the bead with mechanical machining.

Belt type	Profile thickness "U" [mm]																							
	2		3		5		6		8		10		12		14		16		20		25		30	
	Recommended minimum pulley number of teeth z																							
T5	14	20	14	30	20	45	25	50	40	60	60	100	80	-	100	-	-	-	-	-	-	-	-	-
T10	16	20	16	20	16	30	16	40	20	50	25	50	35	60	50	70	80	80	100	100	120	120	-	-
T20	20	20	18	20	18	25	18	40	18	50	20	50	25	50	30	60	40	60	50	60	70	80	-	-
AT5	12	20	12	30	20	45	25	50	40	60	60	100	-	-	100	-	-	-	-	-	-	-	-	-
AT10	18	20	18	20	18	30	18	40	20	50	25	50	35	60	50	70	80	80	100	100	120	120	-	-
AT20	20	20	20	20	20	25	20	40	20	50	20	50	25	50	40	40	50	50	50	60	70	80	100	100
XL	10	20	10	30	20	45	25	50	40	60	50	100	60	100	-	-	-	-	-	-	-	-	-	-
L	12	16	12	20	12	40	20	50	30	60	40	60	50	70	60	80	100	100	-	-	-	-	-	-
H	14	16	14	16	14	25	14	30	20	50	25	50	40	60	50	70	80	80	100	100	120	120	-	-
XH	18	18	18	20	18	20	18	30	18	40	20	50	20	50	25	55	35	60	50	60	70	80	-	-
HTD5M	12	20	12	30	20	45	25	50	40	60	60	100	80	-	100	-	-	-	-	-	-	-	-	-
HTD8M	18	18	18	18	18	24	18	32	18	40	20	40	28	48	40	56	64	64	80	80	100	100	-	-
HTD14M	28	28	28	28	28	28	28	40	28	50	28	50	28	50	30	60	40	50	50	60	100	100	110	110
STD5M	12	20	12	30	20	45	25	50	40	60	60	100	80	-	100	-	-	-	-	-	-	-	-	-
STD8M	18	18	18	18	18	24	18	32	18	40	20	40	28	48	40	56	64	64	80	80	100	100	-	-

Minimum number of teeth when the profile is welded on tooth gap (fig. 2)
Minimum number of teeth when the profile is welded on tooth (fig. 1)

Ordering

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

ElaCleats

download in CAD or PDF format the most suitable cleat

ELATECH® offers a wide variety of custom-made and standard cleats specially designed for different applications in many industries.
ElaCleats is a web-based tool for quickly selecting among ELATECH® standard cleats by shape, size and features.
2D and 3D drawings can be easily downloaded for the selected cleats.

Elatech online cleat selection support at:
www.elatech.com

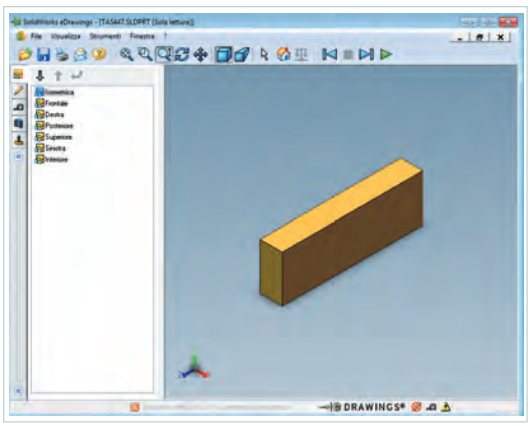
ELACleats

Always up to date
ElaCleats online version is always up to date with new types and sizes.

RELIABLE SOLUTIONS!

Fast and easy
ElaCleats offers an intelligent search for a quick selection of most suitable cleat with an easy to follow menu for fastest navigation.

SAVE YOUR TIME!

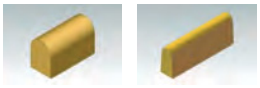


Comprehensive range
ElaCleats offers widest range of cleats to optimize your conveying application.

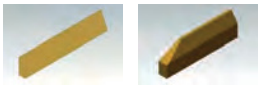
IMPROVE EFFICIENCY!

Hundreds of cleats available for all applications!

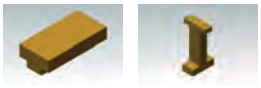
ST = Square Top: flat faces at right angles to each other



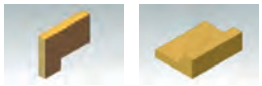
RT = Round Top: the upper part of the cleat has a rounded shape



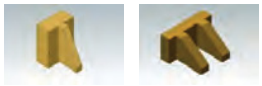
TR = Triangular or Trapezoidal: flat faces, some of which are not at right angles to other faces; cross-sections can be triangular, trapezoidal, pentagonal, etc.



TT = "T" Shaped: a portion of the cleat (usually the upper one) is wider than the rest, so that a cross-section resembles the shape of a capital “T”

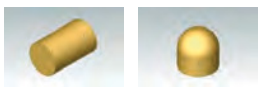


AN = Angular Shape: two portions of the cleat are set at an angle to each other



GB = Gusset Back: having a fin on one side that is not attached to the belt but rests on it and increases rigidity when the cleat is pushed in one direction

CR = Cradle Shape: “U” or “V” shaped so that an object can rest in the seat created by the sides of the cleat



CY = Cylindrical Shape: a cylinder with vertical or horizontal axis

SP = Special Shape: any other shape, usually a structure especially designed for a specific use