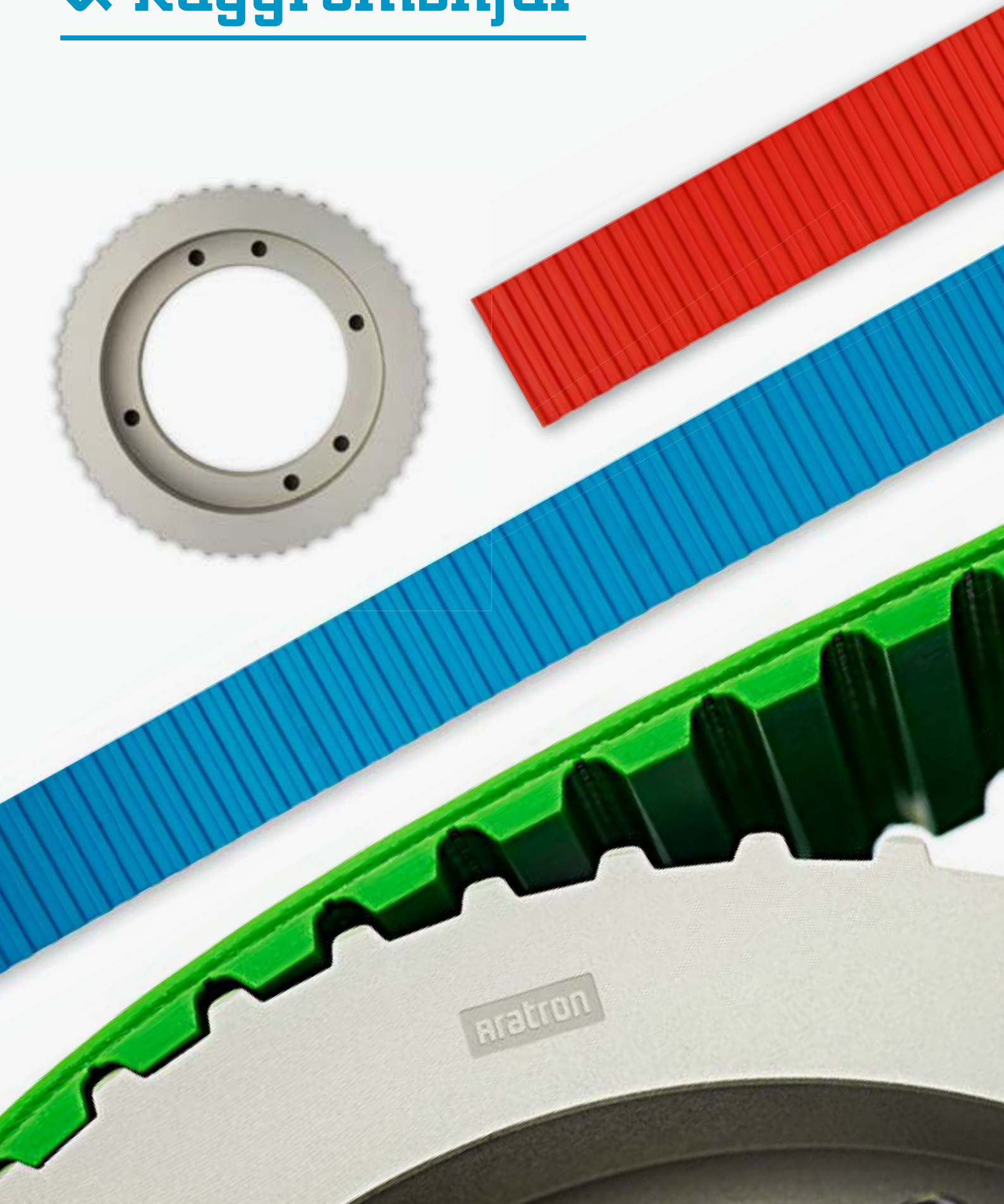
Kuggremmar & kuggremshjul

Aratron

MULCO®
Member of the Mulco Group



OUR GROUP

Since 1971 Aratron has been a key player in the field of transmission belts in Sweden.

In a strong position thanks to the support of BRECO® and CONTITECH®, leaders in Europe and inventors of polyurethane belts reinforced with steel tension members, we offer all branches of industry - in particular the medical and food processing industries and manufacturers of packing machines - solutions based on toothed timing belts and corresponding pulleys.

As member of MULCO, the most powerful European group in the field of transmissions, we help our customers to benefit from the advancements made by our European partners in research and development.

Our commercial engineers, help you to find the solution to your needs. You benefit from our technical expertise:

- for selecting standard belts, from our extensive product range,
- for determining your transmissions, however complex they may be.

To serve you on a daily basis we have developed our production facility in Solna. It is equipped with the means to manufacture, in fast turnaround times, pulleys and belts based on drawings in short production runs for prototyping or repairs.

CONTACT US

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GENERAL TECHNICAL INFORMATION

INNOVATIONS


Attuned at all times to our customers' needs, we are innovation leaders dedicated to meeting the demands and quality requirements of modern, high-performance industrial applications.

LINEAR APPLICATIONS

Belts "by the meter" in rolls

- Open length BRECO® belt
- Open length SYNCHRODRIVE® belt

These belts are extruded endlessly in rolls of 50 or 100 m in widths of 100 to 150 mm. All belt types in stock can be cut to standard widths and are supplied in open-length design. These belts are used in linear technologies.

Belts "Made-to-measure" by welding

- Welded BRECO® belt
- Welded SYNCHRODRIVE® belt

These belts, cut to the length desired by the user, can be spliced by welding at our production facility or by gluing at the installation site. The newly developed quick connection system facilitates splicing directly on the machine and simplifies maintenance by avoiding often tiresome removal work.

FLAT AND TRAPEZOIDAL BELTS

- Welded BRECO® belt
- BRECOFLEX® or SYNCHROFLEX® belts

Coated belts

The qualities of strength, suppleness and adherence or sliding of our coatings are adapted to your applications

Machined belts

Perforation, grooving, milling and other forms of machining to produce specific functions.

Weld-on profils belts

Shapes and dimensions on request or to be chosen from our library to meet your conveying and indexing needs.

POWER APPLICATIONS

Belts with endless tension members, produced by extrusion

- BRECOFLEX® timing Belt

This process produces belts of the desired length up to 22 m.

with endless tension members, produced by moulding

- SYNCHROFLEX® Timing Belt
- SYNCHROCHAIN® Timing Belt
- SYNCHROFORCE® Timing Belt
- SYNCHROTWIN® Timing Belt

These belts are produced from a sleeve which is moulded or vulcanised in one piece.

These different types of belts are complementary.
The belts can be cut to width to suit demand.

ACCESSOIRES

TIMING BELTS

Thanks to its reliability and low cost a belt used to transmit motion is an essential element in the design of mechanisms.
Timing belts are made of high-strength polymers and tension members which lend them mechanical properties that enable them to be adapted to all industrial applications.

Main mechanical properties:
- Synchronous drive
- Constant length, no elongation
- Low noise level (use of a polyamide coating on the tooth side, PAZ)
- Wear-resistant
- Maintenance-free
- Extremely flexible (enhanced by the use of high-flexibility tension members)
- Maximum speed up to 80 m/s
- Precise angular position
- Little space required
- Favourable power-to-weight ratio
- Low pre-tension, low bearing load compared with other technologies
- Permits large centre distances
- Permits large transmission ratios
- High degree of efficiency up to 98%

Several factors play a role in the choice of belt, such as tooth profile, tension members, material, and field of application. These elements are described in this chapter.

1 / Force transmittable by the teeth

Load distribution	Strain distribution	
ATP		The force transmittable by the teeth depends on the rotational speed and on the maximum load value that each tooth can transmit in continuous operation. These values are shown in the diagrams for each timing belt type on the pages for each belt. A timing belt is correctly dimensioned if the force transmittable by the teeth is not exceeded. It is generally not necessary to add a safety factor, see section "Safety factor".
AT		
T		

The working load can be distributed better by more teeth in mesh in the toothed pulley. The following maximum numbers of teeth must be used for the calculations:
- CONTI® SYNCHROCHAIN, CONTI® SYNCHROFORCE, CONTI® SYNCHROTWIN and BRECO® joined belts (V): maximum 6 teeth
- CONTI® SYNCHRODRIVE, SYNCHROFLEX® and BRECOFLEX® belts: maximum 12 teeth
- SYNCHROFLEX® GEN III belts: maximum 16 teeth

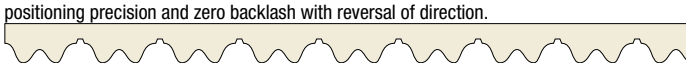
2 / Tooth profiles

Different types of profiles are available based on the belt selected:

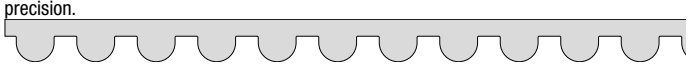
T profile: older-generation profile which is no longer adapted to power transmission. It is still used to transport and convey light loads thanks to small wrap diameters.

AT profile: standard profile adapted to power transmission and transmission of heavy loads. If has superior synchronisation and positioning precision.

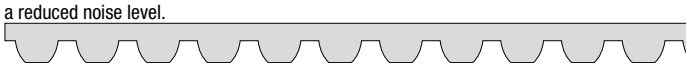
ATP profile: new-generation profile adapted to transmission of heavy loads. It can combine positioning precision and zero backlash with reversal of direction.



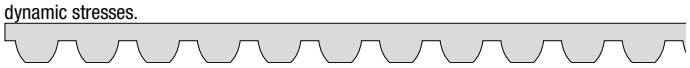
HTD profile: primarily adapted to basic power transmission not requiring positioning precision.



STD profile: further development of the HTD profile which provides improved meshing and a reduced noise level.



CTD profile: the CTD profile is adapted to very high power transmissions and to extreme dynamic stresses.



3 / Teeth safety factor

The formula for determining the width does not take account a safety factor. Basically, if the width calculation has been made with perfectly known peak torques, there is no reason to provide for it. A verification of the tension member resistance must also be performed.
In case of doubt it is advisable to take account of the peak torque or an "accidental" overtorque which the belt can be induced to transmit.

Other parameters such as braking torque, dynamic irregularities and inertias are necessary for determination purposes:
- Braking can possibly exceed the load resulting from nominal utilisation or starting conditions.
- Oscillations and concentrated overloads can be added to the nominal load applied to the tensioned span.
- Centrifugal masses or rotating masses generally influence the regularity of the drive. These elements must be taken into consideration if the centrifugal masses apply a supplementary load to the belt.

4 / Force transmittable by the tension members F_N

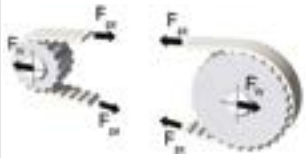
The timing belt is correctly dimensioned if the maximum allowable value of the tension member tension is not exceeded. The values shown in the tables for F_N correspond to a constant load limit on the tension members.

5 / Wrap stress

Drive configuration WITHOUT CONTRAFLEXURE	Drive configuration WITH CONTRAFLEXURE
	

To guarantee correct operation, we recommend a minimum number of teeth and a minimum wrap diameter to suit the belt type.
Note:
The configuration of timing belts "with contraflexure" (for example by tension roller) generally imposes a larger minimum number of teeth and a larger minimum diameter.

6 / Pre-tension force



The purpose of the pre-tension force F_{pt} is to guarantee a minimum tension during operation on the slack side in order to ensure that the teeth mesh correctly on the pulleys. The pre-tension force to be applied to the run depends on the maximum tangential force F_N, the belt length L_B (number of teeth Z_B) and the drive configuration. The bearings must be dimensioned to support F_w.

Consequences of incorrectly set pre-tension:
Insufficient pre-tension:
- The teeth on the slack side run up on the teeth on the driven pulley and cause teeth to jump,
- Wear on the faces caused by friction during meshing,
- Breakage caused by excessive elongation following a complete "run-up" on the teeth or the flanges,

Excessive pre-tension:
- Overloading of the bearings,
- Reduced transmittable power,
- Excessive noise,
- Possible axial misalignment,
- Premature tooth wear.

Solution: measurement with the SM5 tension meter
It is essential to apply adequate pre-tension to the belt so that it does not deteriorate prematurely. The SM5 tension meter enables the user to measure the natural frequency of a resonant belt run when stopped. See *page 124*.

7 / Polymers

7.1 Qualities of standard polymers

Belt brand	Designation	Hardness (Sh A)	Temperatures	Colour	Material
Linear applications					
BRECO® Linear - BRECO® Welded	TPUST1	92	0 to 80°C	White	Thermoplastic polyurethane (TPUAU1 - Specially adapted to aggressive environments and conforms to FDA according to Regulation 21 CFR)
BRECO® Linear - BRECO® Welded	TPUAU1	92	0 to 80°C	Transparent	
BRECO*basic*®	TPUBAS	92	0 to 80°C	Grey	
CONTI® Synchrodrive		92	0 to 80°C	Black	
Transmission applications					
BRECOFLEX® ≥ 720 mm	TPUST1	92	0 to 80°C	White	Thermoplastic polyurethane
BRECOFLEX® < 720 mm	TPUST3	92	0 to 80°C	Transparent	
BRECOFLEX® ATP	TPUSM1	92	0 to 80°C	Transparent	
SYNCHROFLEX®	DEDU 8600	88	-20 to 80°C	Grey	Duroplastic polyurethane
SYNCHROFLEX® GEN III	DNHU 9333	93	-20 to 100°C	Red	
CONTI® Synchrochain	DNSU 9590	95	-35 to 100°C	Black	Duroplastic polyurethane
CONTI® Synchrobelt			-20 to 100°C	Black	Synthetic rubber
CONTI® Synchrotwin					Synthetic rubber

7.2 Design of special polyurethane belts

For BRECO® linear (M), BRECO® welded (V) and BRECOFLEX® belts .

Desired characteristics	Designation	Hardness (Sh A)	Temperatures	Colour	Comments
Improvement of friction coefficient	TPUST2	85	5 to 50°C	Transparent	Increased resistance to hydrolysis
Resistance to aggressive environments	TPUAU2	92	0 to + 50°C		For dry foods - Resistance to cleaning agents - Conforms to FDA according to Regulation 21 CFR - Very good resistance to hydrolysis and to microbes
	TPUAU3	86	0 to 50°C		Very good resistance to cleaning agents
Food applications	TPUFD1	92	0 to 80°C		For dry or wet foods - Conforms to FDA according Regulation 21 CFR - Moderate resistance to cleaning agents - Good resistance to oils and greases
	TPUFD2	85	5 to 50°C		
Resistance to temperature	TPUKF1	85	-25 to 5°C		Limited dynamic stress
	TPUKF2	82	-30 to -10°C		
	TPUWB1	94	20 to 110°C	White	Limited dynamic stress
			110 to 130°C		Limited dynamic stress - Maximum 50% of nominal values - $Z_e \geq 6$ - No joined BRECO® belt - Unique connection with rapid attachment
Antistatic	TPUAS1	92	0 to 80°C	Translucent Grey	Surface resistance acc. to ISO 9563 = $10^8 \ldots 10^9 \Omega$ (on new product)
	TPUAS2	83	5 to 50°C	Black	Surface resistance acc. to IEC93 = $10^4 \ldots 10^6 \Omega$ (on new product) - Often supplied in BRECO® linear (M) or BRECO® welded (V) with a PAZ and a PAR (dark grey antistatic) with $10^4 \Omega$ approx.
	TPUAS3	85	5 to 50°C	Translucent grey	Surface resistance acc. to ISO 9563 = $10^8 \ldots 10^9 \Omega$ (on new product)
Eco-friendly	TPUEC1	91	0 to 80°C	Green	Good mechanical resistance and resistance to oils

These polyurethanes cannot be used for all the belt types (contact us for further details).

For SYNCHROFLEX® belts

Desired characteristics	Designation	Hardness (Sh A)	Temperatures	Colour	Comments
Resistance to temperature	DNHU 8580	83	-35 to 80°C	Dark brown	High friction coefficient
	DNHU 9080	90	-35 to 80°C		
Antistatic	DNHU 9090EL	90	0° to 50°C	Black	Surface resistance acc. to DIN 53482/53596 on new product

7.3 Design of polypropylene belts

Desired characteristics	Designation	Hardness (Sh D)	Temperatures	Colour	Comments
Resistance to very aggressive environments	PP1	30	0° to 50°C	Milky white	Very good resistance to alkaline and acidic agents - Limited dynamic stress

7.4 BRECO*green*®

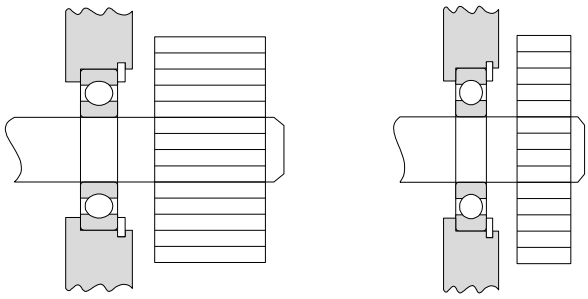
This belt is partly made of eco-friendly polyurethane that comes from original renewable materials.

- Mechanical polyurethane characteristics identical to the standard
- Can be made in all the versions:
  - BRECOFLEX®
  - BRECO® linear (M)
  - BRECO® welded (V)
    - With profiles
    - With coatings
- Can be joined by glueing or welding

8 / Influence on pulleys

The choice of a high-performance belt from Aratron magnetic is the right solution for:
- reducing inertia
- reducing the space required, and hence the cost
- reducing the bending moment (better axial parallelism)
- improving efficiency.

Standard solution	High-performance solution



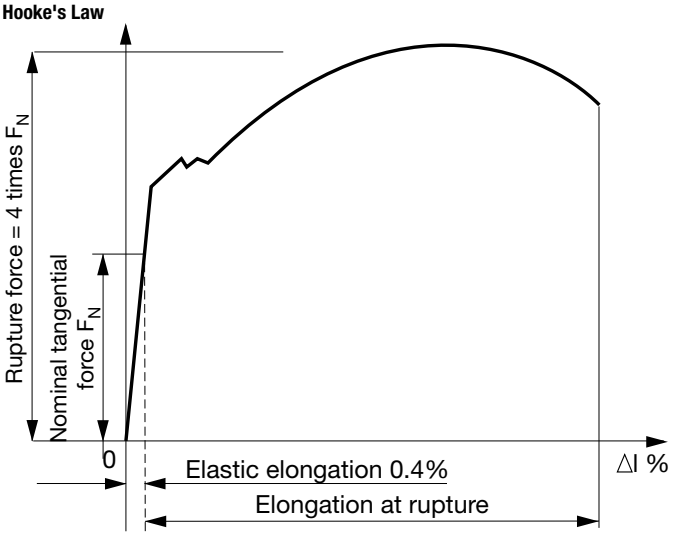
9 / Tension members of belts

Each type of belt has tension members which give its well defined mechanical characteristics. Thanks to this the belts maintain an elasticity without elongation.
A tension member is comparable to a spring subjected to strain deformation. The tension member is deformed proportionally in the elasticity phase under stress in accordance with Hooke's Law.

9.1 Tension members of polyurethane (PU) belts

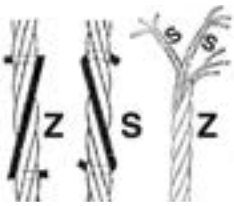
Standard PU belts are reinforced by galvanised steel tension members. These tension members enable the belts to maintain their longitudinal stability. However, like all metals, steel is deformed under load according to Hooke's Law. This law describes deformations under load in the elasticity phase. The value of the force F_N (maximum permissible nominal force) is specified for each pitch on the profile pages. Elongation of the belt is proportional to the force applied to the wire.

Hooke's Law



Bifilar design Z + S

This is achieved by an opposed-twist arrangement which enables it to limit the belt pressure on the flanges, resulting in improved efficiency and reduced wear on the faces.



Tension members of SYNCHROFLEX® and BRECOFLEX® belts

These belts, produced by extrusion or "endless" moulding, are fitted with continuous tension members. Two options:
- Monofilar (one tension member per belt): this is the case with standard SYNCHROFLEX® and BRECOFLEX® belts up to 710 mm.
- Bifilar Z + S opposed twist (two tension members per belt): this improvement is already effective on the majority of BRECOFLEX® belts starting from 710 mm in length and on all SYNCHROFLEX® GEN III belts. It has been possible to increase the number of tension members on the latter belts. As a result the transmittable tangential force (F_t) is increased by 45% for SYNCHROFLEX® GEN III belts.

Tension members of BRECO® linear (M) and BRECO® welded (V) belts

These belts, produced by linear extrusion, are fitted with parallel tension members.

9.2 Special tension members

- High-flexibility galvanised steel tension member (E).

Standard tension member (ST) High-flexibility tension member (E)

For E high-flexibility tension members the section is distributed to a much higher number of finer wires, reducing the bending stresses accordingly. The advantage offered by the E tension member is better bending strength.
Timing belts with E tension members must preferably be used for multiple-pulley drives or where the contraflexures are more frequent.
- Reinforced steel tension member
- Stainless steel tension member: this tension member transmits a little less force than the normal steel tension member but has good resistance to chemical attacks.
- Aramide fibre tension member: this tension member has good resistance to certain chemical agents but this fibre has the drawback of creeping over time. It is not suited to dynamic stress.

The use of these last three special tension members lends belts different mechanical and elastic characteristics. We can advise you on choosing a specific variant.

9.3 Tension members of CONTI® SYNCHROBELT and CONTI® SYNCHROCHAIN belt

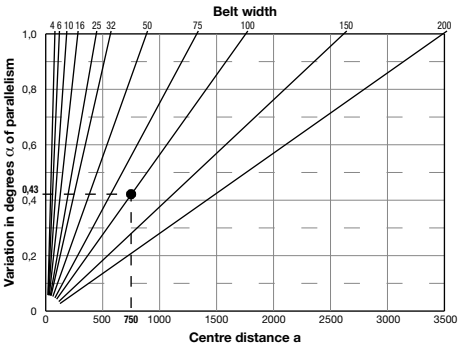
CONTI® SYNCHROFORCE belts and CXP belts are reinforced with twisted glass fibre tension members while CXA belts and CONTI® SYNCHROCHAIN belts are reinforced with an aramide fibre tension members. Carbon CONTI® SYNCHROCHAIN belts are reinforced with carbon tension members..

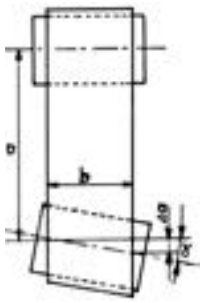
10 / Service conditions

Various service parameters must be observed in order to transmit a torque under good conditions with regard to service life, noise level, bearing load, and backlash:
- Clean surrounding area - Ambient temperature
- Good pulley quality - Observance of minimum diameters
- Good pre-tension

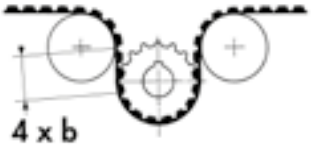
Fitting with a fixed centre distance necessitates belts with a more exacting length tolerance and with more precise machining (it is essential to consult our technical department).

11 / Axial parallelism





To avoid side forces on the guide flanges, the angular distance "a" between two shafts must be lower than the belt width "b" is large and the centre distance short (refer to the diagram above and do not exceed ±1°).



For this same reason we recommend that you observe if possible the ratio of 1 to 4 between the belt width "b" and the length of the run between two pulleys or return rollers.

An axial misalignment of the pulleys generates a force of lateral pressure by the belt on the flanges which causes wear of the belt face and an imbalance in the distribution of loads.

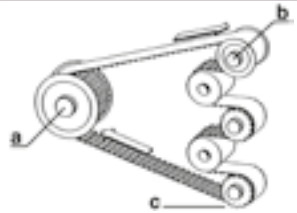
12 / Noise level of a transmission

The noise level of a transmission depends on a number of parameters: pre-tension, speed, surface quality of the pulleys, quality of cut and hardness of the PU, etc. We have SFAT - ATP - BATK10 profiles to reduce noise (consult our technical department).

13 / Alignment of pulleys - guidance

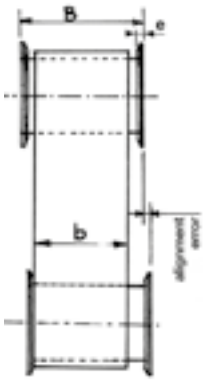
Belt guidance is a fundamental element in the correct functioning of a transmission. It is a question of obtaining minimum lateral forces and of reducing friction losses.

	Attend in particular to the alignment of the pulleys and to the length of the runs preceding the guidance of the belts. The economic aspect must be taken into account, since flanges are more cost-effective for small pulleys than for big pulleys.
	Guidance of the belts can be effected on one or more rollers. When a flanged tension roller is used it must be positioned in such a way as to obtain a belt run that is as long as possible before the guidance (the tension roller must preferably be positioned on the slack side).
	If the direction of rotation changes, the tension roller must preferably be positioned in the middle of the belt run. Avoid runs that are too short before the guidance and this to avoid a lateral load on the belt.
	For a belt width "b" a flanged pulley width "B" is assigned in order to guarantee sufficient lateral play. In certain specific cases, for example for belts of large lengths or for vertical axes, it may be necessary to provide more than two flanged pulleys.
	In general all the lengths of the belt runs must be 4 times the width of the belt. $a = 4b$



For multiple shafts, where there is one direction of rotation, it is sufficient to flange-mount two pulleys (a and b). It is recommended to use belts with bifilar tension members to limit the loads on the flanges.

Alignment



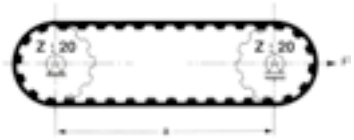
The alignment error must not be greater than the value:

$$(B-2e) - (b_{max} + 1\ mm)$$

14 / Method of checking the length tolerances of belts

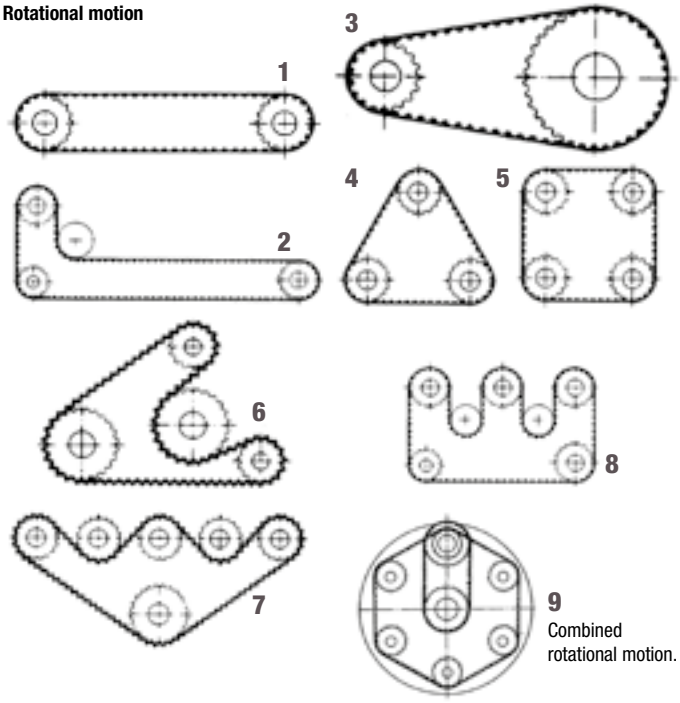
Checking method

The measurements are conducted according to DIN 7721 on a bench with two "standard" pulleys which are forced apart by a force F called the "measurement load".
Measurement process: to measure the effective length of a belt the latter must have completed at least two full rotations such that it is correctly positioned and that the "measurement load" is equally distributed between the two runs of the belt.



15 / Examples of use

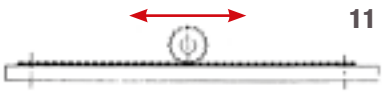
Rotational motion



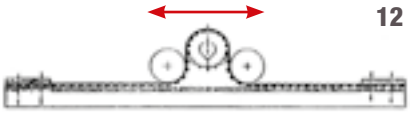
9 Combined rotational motion.

Linear motion

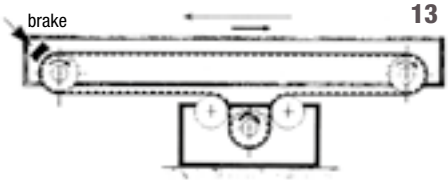
Toothed rack secured flat on a base (glueing or clamping). IMPORTANT: SPECIAL TOOTHFORM.



Pulleys with a large number of teeth engaged. Little elongation of the moving belt, which is going to engage in the glued or clamped belt.



Fixed motor and permanently rotating belt. The belt is stopped in its rotation by a brake, this induces the linear motion in one direction. The return motion is effected by an external linear force.



TOOTHED PULLEYS

The toothed pulley is just as much an essential element of a transmission as the belt. For optimum operation we recommend that you only use belts in combination with pulleys manufactured by the MULCO Group, of which we are part.
The majority of the pulleys produced by our factories are completed according to drawings and adapted to the needs of your installations.

1 / Material for pulleys

Aratron standard pulleys are made of Al AA 6026 if nothing else stated.
All the variations in material, aluminium, steel or plastic which are compatible with our transmissions are feasible.
For high-power or high-shock transmissions (high shocks or torque variations) we recommend an alloy of high-strength aluminium AlHR (7075) combined with a TL clamping hub to avoid possible deformation of the key.

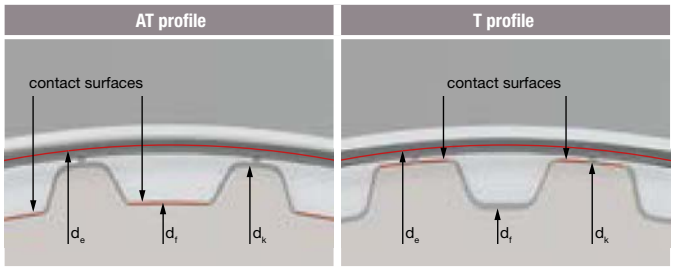
	Symbol designation SS	Numerical designation EN
ALUMINIUM	-	AA 6026
ALUMINIUM	SS 4212	EN AW 6082
ALUMINIUM	-	EN AW 7075
STEEL	SS 1914	W.NR 1.0718
STEEL	SS 2142	W.NR 1.5217
STAINLESS STEEL	SS 2346	W.NR 1.4305
STAINLESS STEEL	SS 2348	W.NR 1.4404
PLASTIC	-	POM-H

AlHR : high-strength aluminium.
Standard material used at our production facility at Aratron, Solna.

Tolerances - meshing diameters of pulleys

The functional meshing diameters are:
- d_k (diameter of outside diameter) for pulley profiles T ≥ tolerance h8
- d_f (diameter at tooth base) for AT pulley profiles

Contact surfaces



For HTD pulleys the belt touches d_k and d_f of the pulley.

For STD and CTD pulleys the contact surfaces are identical to those of the AT profile.

2.1 Tolerances of pulleys

Standard pulleys

Our standard pulleys have the following tolerances:

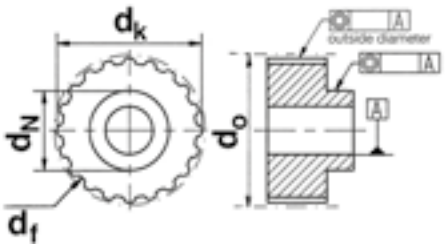
Diameter tolerances (fig. 1)	
outside diameter for T profiles	h8
outside diameter for AT profiles	+ 0.05
	- 0

Concentricity tolerances (fig. 1 and fig. 2)	
Stock pulley d_k or d_f / Hub (d_N) Pulley acc. to drawing d_k or d_f / Bore (d)	
d_k/d_f (mm)	Max. radial run-out
0 to 200	0.05 mm
Above 200	Add 0.005 mm per 10 mm of d_k

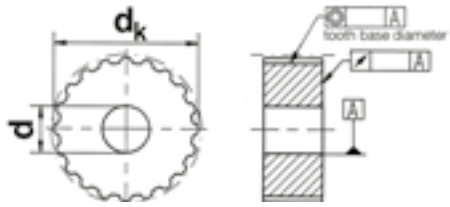
Flatness tolerances (fig. 2)	
d_k/d_f (mm)	Max. flatness defect
0 to 100	0.10 mm
From 100 to 250	0/01 mm per 10 mm of d_k
Above 250	Add 0.005 mm per 10 mm of d_k

Surface quality		
Roughness class	Ra: 3.2 (for Al)	Ra: 6.3 (for steel)

For T profile



For AT profile



- Concentricities between d_k or d_f and bore (d) or hub (d_N):

Up to 50 mm	From 50 to 200 mm	From 200 to 400 mm
0.03	0.05	0.1

- Bore diameter d = H7
- Keyway width: tolerance P9 or JS9 (except aluminium alloy where JS9 is not recommended).

3 / Pulley toothforms

The standard toothform of T or AT trapezoidal profiles have functional backlash between the pulley tooth gap and the belt tooth.
For operation with a toothed rack it is necessary to provide for a specific toothform.
Certain profiles such as SFAT or ATP notably reduce the polygonal meshing effect and thus noise and vibration.

T profile

AT profile

Value of backlash on one tooth c_m

	Standard	SE (Z ≤ 40)	"Zero" or 0
AT3	0.15	0.075	0
AT5	0.2	0.1	0
AT10	0.4	0.2	0
ATP10			0
ATN12.7	0.4	0.2	0
AT15	0.6	0.3	0
ATP15			0
AT20	0.8	0.4	0

These backlash figures do not take into account either the teeth manufacturing tolerance or the belt pitch tolerance.

To approach the actual value of these backlashes in the best way it is necessary to calculate the belt elongation over its meshing.
The elongation must be considered over the length of the wrap angle on the pulley.
The actual backlash is induced by the installation tension and by the forces linked to the torque. It must be deducted from the nominal backlash.
From a certain speed and from a number of teeth in mesh zero backlash is not recommanded – Contact us for advice.

4 / Belt guiding flanges

These serve to guide or track the belt on the pulley teeth.
The play between the belt and the flanges ranges between 2 mm and 4 mm.

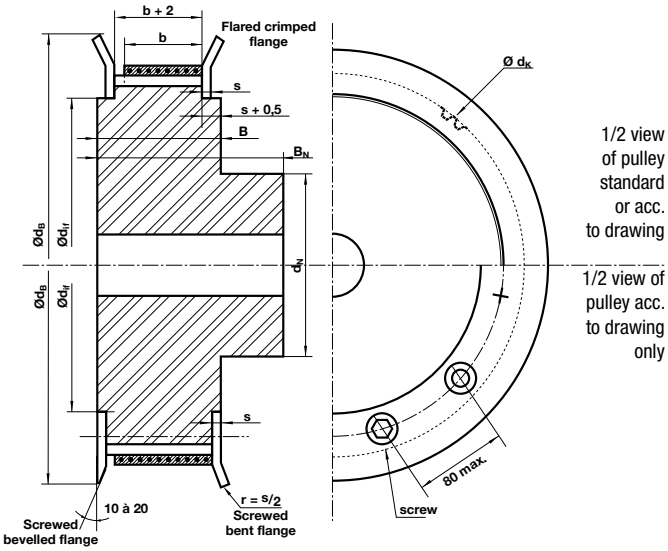
For standard belts the inside width between flanges is toleranced according to the standard DIN ISO 2768-1 to take into account belt width tolerances and possible alignment errors. All the non-toleranced dimensions also follow according to the standard DIN ISO 2768-1.

4.1 Belt flanges according to drawing

In the case of drawings that do not contain particular specifications flanges are rolled or screwed in accordance with the profiles and the width of the belts.
Flanges that require special dimensions must be carefully dimensioned according to the sample drawing below. Our technical department will be pleased to assist you.

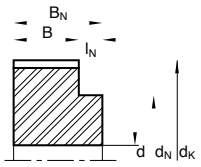
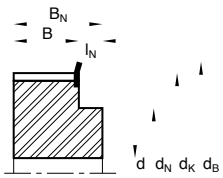
4.2 Standard belt flanges in stock (•)

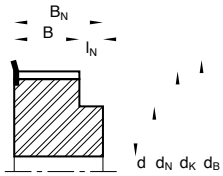
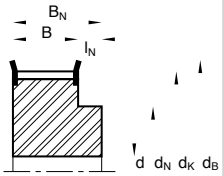
These flanges conform to the defined MULCO standards thanks to European cooperation. They are made from galvanised steel and rolled or screwed.



Tolerance of flanges
The outside diameter of the guide flange is +/-0.5 mm (rolled or screwed).

Standard flanges: a large number of flanges to be rolled and screwed are produced in accordance with the MULCO standard. For screwed flanges it is advisable to consult us regarding the diameters and number of mounting screws.

Version 0		Version 1D	
	No flange		1 flange on the hub side

Version 1G		Version 2	
	1 flange on opposite the hub side		2 flanges

5 / Self-guiding profile pulleys

The profiles below do not need guide flanges. It is however important to ensure that the pulleys are properly aligned.
Note: for long-length belts the alignment error is compensated in part by the elasticity of the belt.

SFAT: offset teeth.
Permissible alignment error < 3 mm.

BATK: curved teeth (circle arc).
Permissible alignment error < 2 mm.

TK, ATK, HK: teeth with trapezoidal groove.
Permissible alignment error < 1 mm.

6 / Common heat and surface treatments

	Excessive tickness approx.	Types of steel or alu.	Properties
Nickeling (surface treatment)	5 to 20 µm	All steels	Good anticorrosion protection
Simple anodising (surface treatment)	10 to 20 µm	6026 or 7075	Slight improvement (anticorrosion)
Hard anodising (surface treatment)	30 to 60 µm	6026 or 7075	Good anticorrosion protection Less wear due to friction
Polishing	20 to 30 µm	All stainless	Anticorrosion protection Very low friction coefficient

Other treatments can be performed – Contact us for further details.

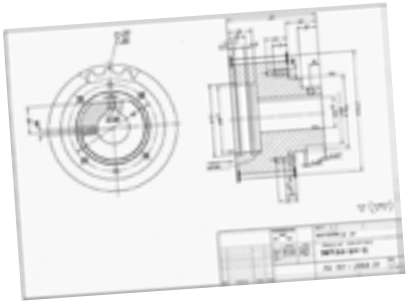
7 / Designation of belts with no drawings

Principle	Material	Width B_N	Type	No teeth	Flanges	Hub	Bore
Example 1	Al	28	AT3 /	40	2	E: 174 X 6	d: 4h7
Example 2	St	42	ATP10 /	30	2	E: 60 x 10	d: 16H7
Example 3	AlHR	65	SFAT10 /	36	0	No E	d: 25H7

Note: Specify if a keyway is to be cut into the bore.

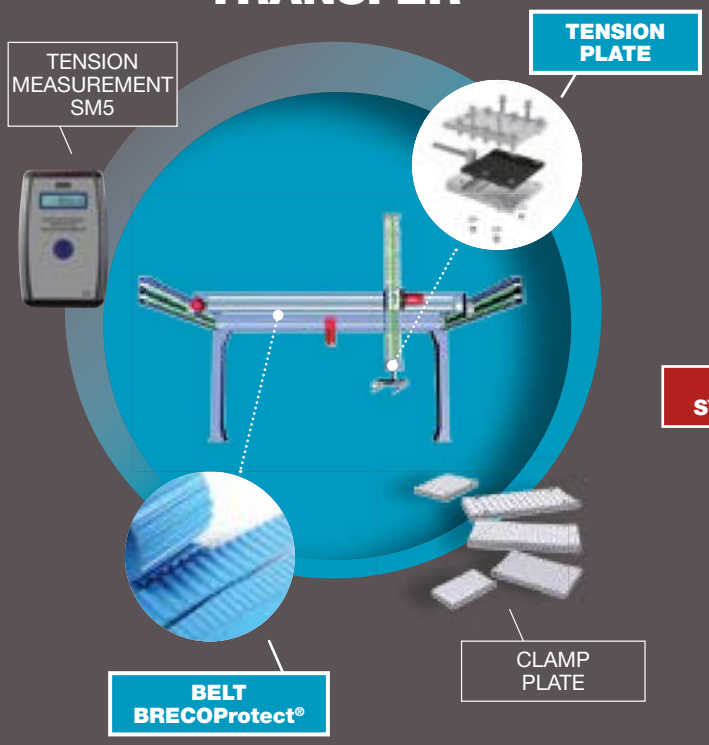
8 / Pulley according to drawing

The special pulleys that we manufacture according to our customers' drawings can contain details of specific tolerances.

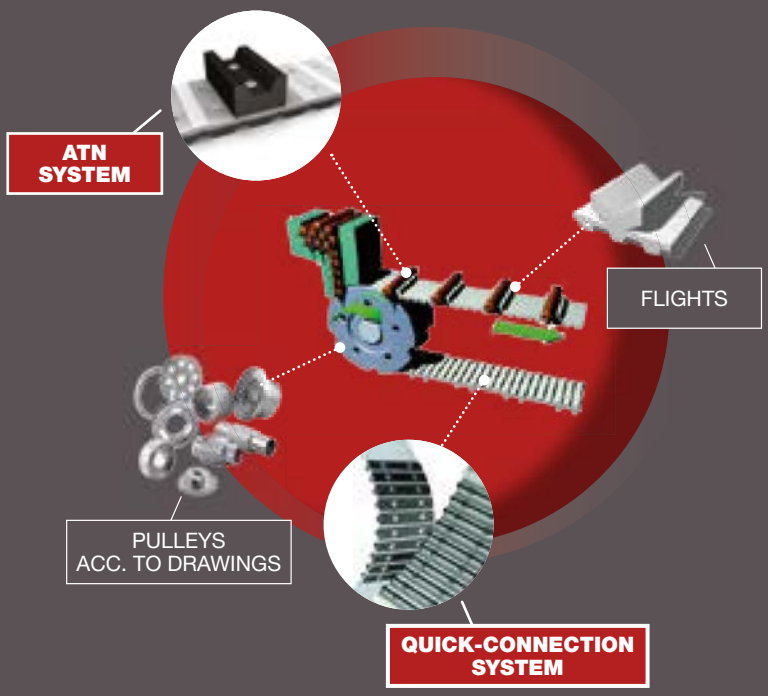


Example of customer drawing:
Be sure to highlight all dimensions or details that differ from our standard manufacturing tolerances.

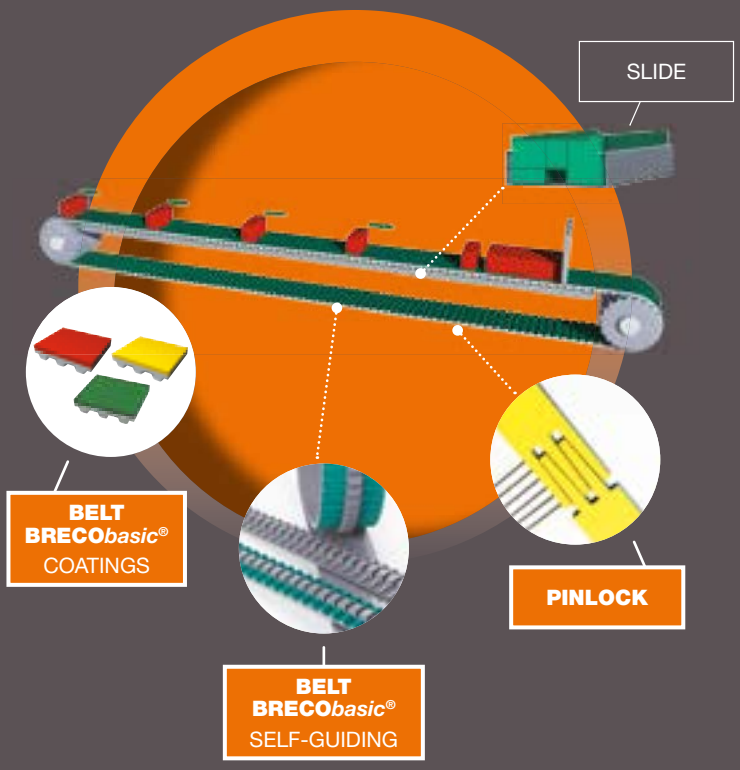
LINEAR TRANSFER



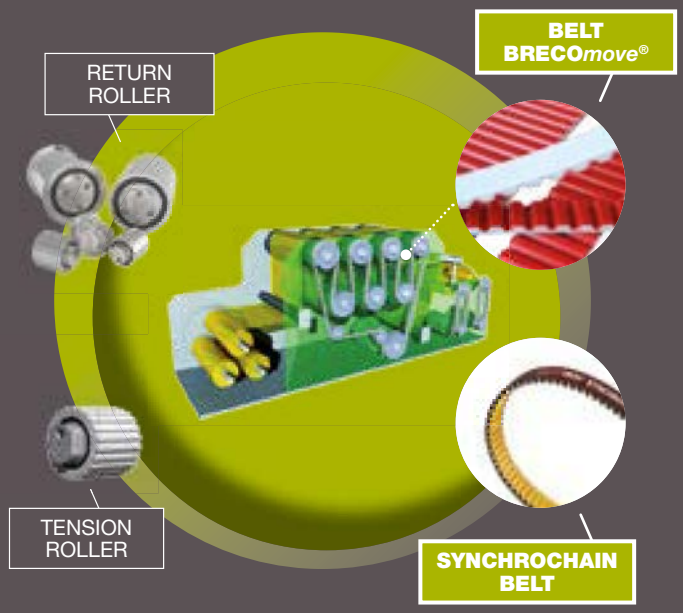
CONVEYING



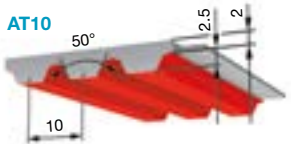
TRANSPORT



POWER

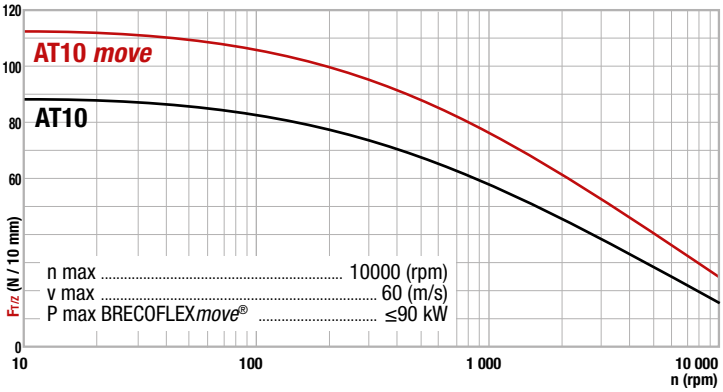


TIMING BELTS



Belt scale 1

Tangential force transmissible by toothing



Tangential force transmissible by tension member and weight

Belt widths	b (mm)	25	32	50	75	100
Belt BRECOFLEXmove®						
F_N standard tension members	(N)	7400	9475	14800	22200	29600
Weight BRECOFLEX*move*® AT10	(kg/m)	0.173	0.222	0.347	0.52	0.693

Standard lengths profile / mm	Num.of teeth	BRECOFLEX*move*® SD
AT10 / 1400	140	o
AT10 / 1500	150	o
AT10 / 1600	160	o
AT10 / 1700	170	o
AT10 / 1800	180	o
AT10 / 1900	190	o
AT10 / 2000	200	o
AT10 / 2120	212	o
AT10 / 2240	224	o
AT10 / 2360	236	o
AT10 / 2500	250	o
AT10 / 2650	265	o
AT10 / 2800	280	o
AT10 / 3000	300	o
AT10 / 3150	315	o
AT10 / 3350	335	o
AT10 / 3550	355	o
AT10 / 3750	375	o
AT10 / 4000	400	o
AT10 / 4250	425	o
AT10 / 4500	450	o
AT10 / 4750	475	o
AT10 / 5000	500	o
AT10 / 5300	530	o
AT10 / 5600	560	o
AT10 / 6000	600	o
AT10 / 6300	630	o
AT10 / 6700	670	o
AT10 / 7100	710	o
AT10 / 7500	750	o
AT10 / 8000	800	o
AT10 / 9000	900	o
AT10 / 9500	950	o
AT10 / 10,000	1000	o

SD: single-sided toothing.

Production capacity

	BRECOFLEXmove® AT10
Lengths from 1,400 to 30,500 mm	All intermediate lengths possible[1]
Polyurethanes[2]	TPU ST1
Tension member[3]	Steel
Tooth coating	red

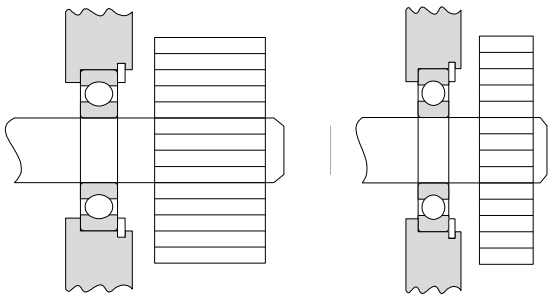
Kinematic design	Type of tension member		AT10
 **Monoflexure**	**Standard steel tension member**	**Z min**	18
		ø min (mm)	50
 **Contraflexure**	**Standard steel tension member**	**Z min**	25
		ø min (mm)	120

Specific characteristics

Belt specifically intended for high-performance transmission applications
- new generation of tension members to increase rigidity and tensile strength
- toothing optimised through calculations based on the finite element method to permit better distribution of tooth pressure and reduce friction
- special coating for the further reduction of friction

A BRECOmove high-performance belt is the right choice for:

- boosting output
- improving synchronisation
- reducing space requirements and cost
- reducing inertia

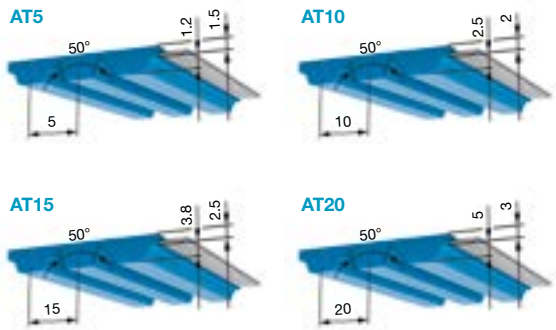


DELIVERY TIMES		
Standard belts	o	4 weeks

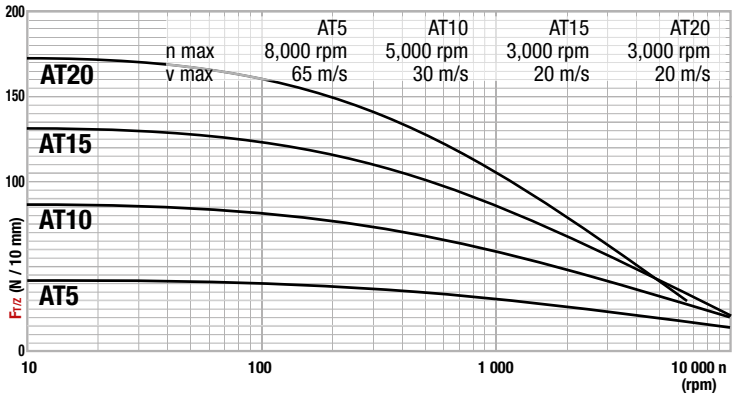
EXAMPLE BELT ORDERS			
Name	Width	Profile / Length	Type
Timing belt BRECOFLEX*move*	50	AT10 / 2650	BFX*move*

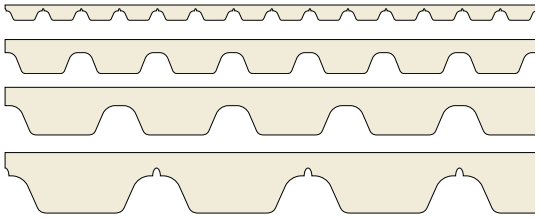
Recommended pre-tensioning. see page 124
General tolerances: see page 81
General information: see page 4

TIMING BELTS



Tangential force transmissible by toothing





Tangential force transmissible by tension member

Profile / pitch	Width of belt (mm)	Weight (kg/m)	Linear belts (M)					Welded belts (V)	
			Tension members: steel		Tension members: AISI stainless steel		Specific elasticity of tension member Cspe (N)	Admissible force at connection F_N (N) standard tension member	Admissible force at connection F_N (N) AISI stainless steel tension members
			Admissible force F_N (N)	Stock	Admissible force F_N (N)	Stock			
HIGH-PRECISION AND TRANSPORT APPLICATIONS									
AT5	25	0.082	1,750	o			0·440 106	875	
	50	0.164	3,500	o			0·875 106	1,750	
	75	0.245	5,250	o			1·310 106	2,625	
	100	0.327	7,000	o			1·750 106	3,500	
AT10 AT10 AISI	25	0.158	4,250	o	3,190	o	1·06 ¹06	2,125	1,595
	32	0.186	5,500	o	4,125	o	1·37 ¹06	2,750	2,065
	50	0.290	8,500	o	6,375	o	2·12 ¹06	4,250	3,190
	75	0.436	12,750	o	9,560	o	3·18 ¹06	6,375	4,780
	100	0.581	17,000	o	12,750	o	4·25 ¹06	8,500	6,375
HIGH-PERFORMANCE APPLICATIONS									
AT15	25	0.194	4,800	o			1·2 1⁰6	2,400	
	32	0.248	5,600	o			1·4 1⁰6	2,800	
	50	0.388	9,600	o			2·4 1⁰6	4,800	
	75	0.581	14,400	o			3·6 1⁰6	7,200	
	100	0.775	19,200	o			4·8 1⁰6	9,600	
AT20 AT20 AISI	25	0.240	5,600	o	4,480	o	1·40 ¹06	2,800	2,240
	32	0.307	7,200	o	5,760	o	1·80 ¹06	3,600	2,880
	50	0.480	11,200	o	8,960	o	2·80 ¹06	5,600	4,480
	75	0.720	16,800	o	13,440	o	4·20 ¹06	8,400	6,720
	100	0.960	22,400	o	17,920	o	5·60 ¹06	11,200	8,960

●: Stocked in our
o: Stocked in our BRECO factory

Tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Tooth thickness (mm)
AT5	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.05
AT10	+/- 0.8	+/- 0.5	- 0.1 / + 0.3	0 / - 0.10
AT15	+/- 0.1	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15
AT20	+/- 0.1	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15

Kinematic design	Type of tension member		AT5	AT10	AT15	AT20
 Monoflexure	Standard tension member	Z min	18 (15)	18	25	18
		ø min (mm)	30 (25)	60	120	120
	Stainless steel tension member	Z min		25		25
		ø min (mm)		80		200
 Contraflexure	Standard tension member	Z min	25	25	40	25
		ø min (mm)	60	120	250	180
	Stainless steel tension member	Z min		40 (30)		40
		ø min (mm)		130		380

The numbers in brackets indicate the values to be used for welded belts

Standard lengths available for delivery

Linear belts (M)
- Lengths of any number of teeth available
- In stock: rolls of 50 or 100 m
- Lengths greater than 50 m available on request

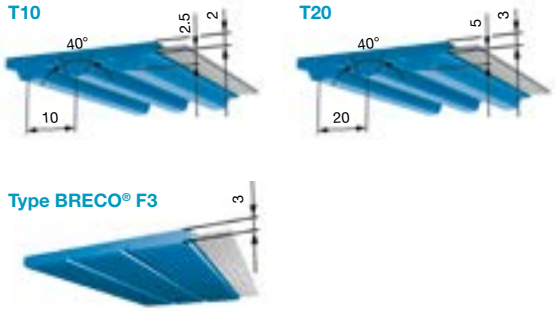
Widths
- Only those listed in the tables

Option
- With protected ends

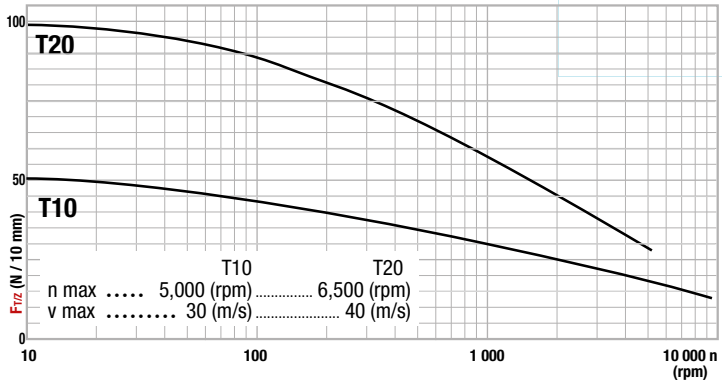
Welded belts (V)
- Minimum length: 1,000 mm
- Backings: please consult us

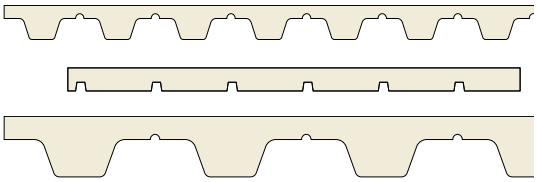
EXAMPLE BELT ORDERS				
Name	Type	Width	Profile / Length	Additional specifications
BRECO open-length linear belt	BRM	25	AT10/1600 M	Protect
BRECO welded linear belt	BRV	32	AT20/3000 V-AISI	Protect
BRECO open-length linear belt	BRM	75	AT15/15000 M	Protect

TIMING BELTS



Tangential force transmissible by toothing





Tangential force transmissible by tension member

Profile / pitch	Width of belt (mm)	Weight (kg/m)	Linear belts (M)			Welded belts (V)
			Admissible force F_N (N) steel tension members	Specific elasticity of tension member Cspe (N)	Stock / Standard	Admissible force at connection F_N (N) standard tension member
REPLACEMENT APPLICATIONS						
T10	16	0.073	1,400	3·5 10^5	o	700
	25	0.114	2,200	5·5 10^5	o	1,100
	32	0.145	2,800	7·0 10^5	o	1,400
	50	0.227	4,400	11·0 10^5	o	2,200
	75	0.341	6,600	16·5 10^5	o	3,300
	100	0.454	8,800	22·0 10^5	o	4,400
T20	25	0.184	3,500	0·87 10^6	o	1,750
	50	0.368	7,000	1·75 10^6	o	3,500
F3	25	1.500	7,350	1·85 10^6	o	29,400*
	50	3.000	14,700	3·68 10^6	o	58,800*

* Breaking strength

Characteristics

Health and safety
- Polyurethane with no absorption of humidity or liquid.
- Reduced risk of bacterial growth due to polyurethane sheath around the tension member.

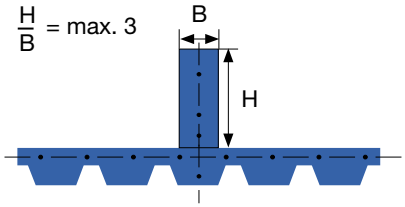
High strength
- Equipped with a steel tension member to ensure excellent mechanical strength.

Impermeability
- Hydrolysis-resistant
- Fully impermeable to solvents and chemical agents
- High resistance to detergents

Visibiliity
- Easily identified in the production line due to its blue colour.
- Non-natural blue colour which is therefore detectable in foodstuffs.

Certification
- FDA CFR § 177.1680 and (EC) 1935-2004, (EC) 10/2011 and 2023/2006.
- Compliant with directive 2002/72/EU and with European directives 90/128/EEC and 96/11/EC.

Rule to be respected for our belts with flights



End protection

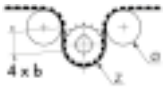
On request, linear belts can be fully sealed at the ends in order to prevent any penetration from the outside environment.

Unprotected end

Protected end

Tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Tooth thickness (mm)
T10	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1
T20	+/- 0.8	+/- 0.5	- 0.1 / + 0.3	0 / - 0.15
F3	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	+/- 0.1

Kinematic design		T10	T20	F3
 Monoflexure	Z min	15	15	
	ø min (mm)	60	120	100
 Contraflexure	Z min	20	25	
	ø min (mm)	60	120	

Standard lengths and widths available for delivery

Linear belts (M)
- Lengths of any number of teeth available
- In stock: rolls of 50 or 100 m
- Lengths greater than 50 m available on request

Widths
- Only those listed in the tables

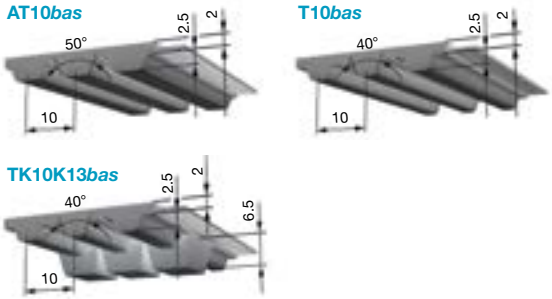
Option
- With protected ends

Welded belts (V)
- Minimum length: 1,000 mm
- Backings: please consult us

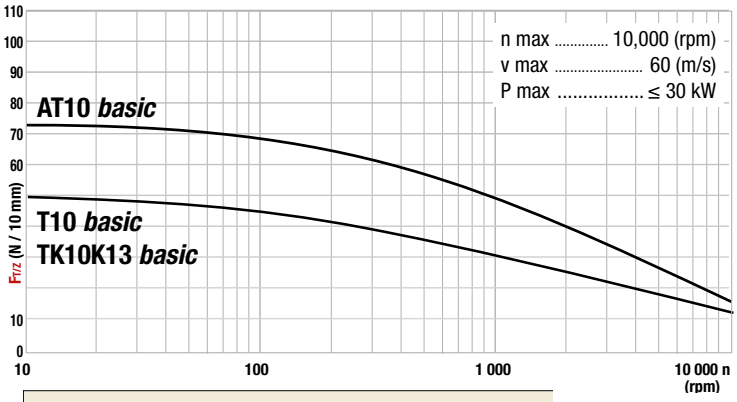
EXAMPLE BELT ORDERS			
Name	Width	Profile / Length	Additional specifications
BRECO open-length linear belt	25	T10/1600 M	Protect - With protected ends
BRECO welded linear belt	25	T20/3000 V	Protect
BRECO open-length linear belt	50	F3/15000 M	Protect

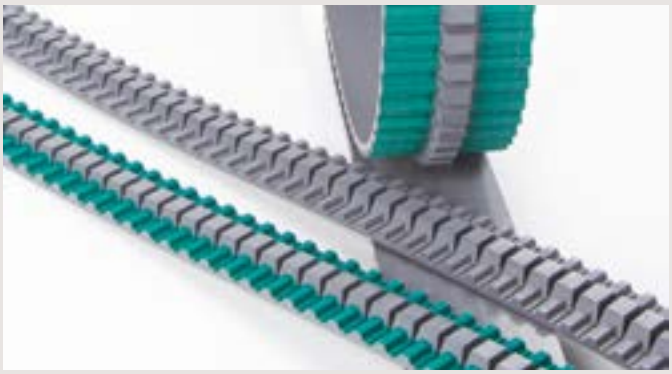
DELIVERY TIMES		
Belts in stock	●	3 days
Standard belts	o	4 weeks

TIMING BELTS



Tangential force transmissible by toothing

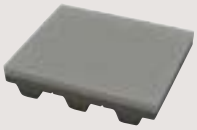


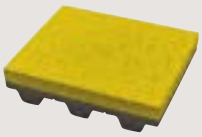


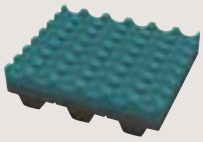
For simple product transport applications, we recommend the standard BRECO*basic*® belt or PAZ belt with or without backing[1]:
- AFT 2 mm,
- PU YELLOW 2 mm,
- SUPERGRIP BLUE,
- or grooved TR1.

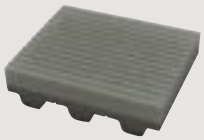
The BRECO*basic*® belt is a high-quality product designed to solve your transport problems while ensuring respect for sustainable development principles thanks to the use of 40% recycled polyurethane.

The advantages:
- welded-on backings with no adhesive
- the belts are more environmentally responsible thanks to the use of 40% recycled PU


BRECO*basic*® + AFT2


BRECO*basic*® + PU YELLOW 2 mm


BRECO*basic*® + SUPERGRIP BLUE


BRECO*basic*® + TR1

1. see *page 56*

Tangential force transmissible by tension member

Profile / pitch	Width of belt (mm)	Weight (kg/m)	Linear belts (M)				Welded belts (V)
			Tension members: standard steel - polyurethane : TPU ST1[2]				
			Admissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Admissible force at connection F_N (N) standard tension member
					Standard	PAZ[1]	
SINGLE-SIDED APPLICATIONS							
AT10 *basic*[3]	16	0.093	2,750	$0{\cdot}69\ 10^6$	●	○	1,375
	25	0.158	4,250	$1{\cdot}06\ 10^6$	●	○	2,125
	32	0.186	5,500	$1{\cdot}37\ 10^6$	●	○	2,750
	50	0.290	8,500	$2{\cdot}12\ 10^6$	●	○	4,250
	75	0.436	12,750	$3{\cdot}18\ 10^6$	○	○	6,375
	100	0.581	17,000	$4{\cdot}25\ 10^6$	○	○	8,500
SINGLE-SIDED SELF-GUIDING APPLICATIONS							
T10 *basic*[3]	16	0.073	1,400	$3{\cdot}50\ 10^5$	●	○	700
	25	0.114	2,200	$5{\cdot}50\ 10^5$	●	○	1,100
	32	0.145	2,800	$7{\cdot}00\ 10^5$	●	○	1,400
	50	0.227	4,400	$11{\cdot}00\ 10^5$	●	○	2,200
	75	0.341	6,600	$16{\cdot}50\ 10^5$	○	○	3,300
	100	0.454	8,800	$22{\cdot}00\ 10^5$	○	○	4,400
TK10K13 *basic*[3]	32	0.282	2,600	$0{\cdot}70\ 10^6$	○	○	1,300
	50	0.407	4,200	$1{\cdot}13\ 10^6$	○	○	2,100
	100	0.735	8,600	$2{\cdot}20\ 10^6$	○	○	4,300

Standard lengths and widths available for delivery

Linear belts (M)
- all lengths as of 1000 mm to the nearest tooth

Welded belts (V)
- AT10bas and T10bas: minimum length 800 mm
- TK10K13bas: minimum length 1000 mm

Tension member
- Steel
-

Options
- NO OPTIONS,
  no special tension members,
  no special polyurethane,
  no width tolerances,
  no mechanical machining,
  no coloured polyurethane

EXAMPLE BELT ORDERS			
Name	Width	Profile / Length	Additional specifications
BeltBRECO*basic*®	50	AT10/2000 BAS M	PAZ[1]

DELIVERY TIMES		
Belts in stock	●	1 to 2 weeks
Standard belts	○	4 to 6 weeks

Recommended pre-tensioning: see *page 4*
General information: see *page 4*

1 Backing (PAZ): see *page 56*
2 Polyurethanes: see characteristics *page 5*
3 Polyurethane: TPUBAS, partially recycled.

Offers a range of high-speed locking systems depending on the type of belt used:

The use of high-speed connectors has a number of advantages in the transport field:

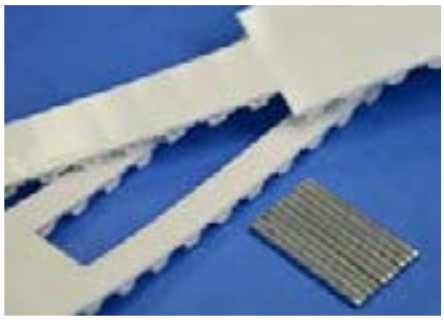
- Time savings and productivity gains.
- Ease of intervention on-site
- Simple, autonomous assembly
- No conveyor parts have to be dismounted.

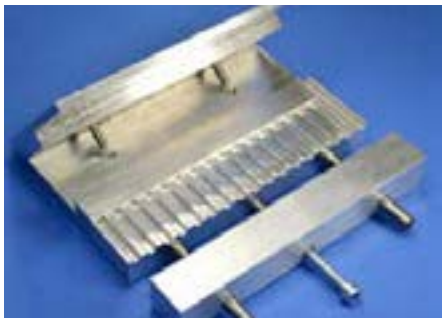
A high-speed mechanical connector

In the case of the DC variant of the ATN belts, this makes it possible to install a flight at the location of the connection (see *page 72*)

A Pin Joint high-speed connector

Assembly is performed using a special tool. This makes it possible to hold the belt in order to ensure that the pre-drilled holes are aligned and push on the metal pins to simplify the simultaneous engagement and positioning of the parts.





Nominal loads transmissible using the BRECO PinLock connector

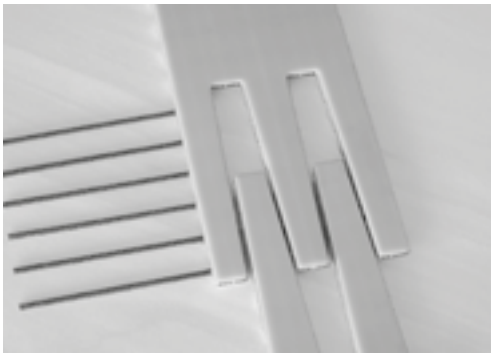
Width of belt		(mm)	25	32	50	75	96/100
T10	PinLock 6	(N)	not available				
	PinLock 10	(N)	300	400	600	900	1200
AT 10	PinLock 6	(N)	200	300	400	600	800
	PinLock 10	(N)	400	500	800	1200	1600
T20	PinLock 6	(N)	400	500	800	1200	1600
	PinLock 10	(N)	700	900	1500	2200	3000
AT 20	PinLock 6	(N)	500	600	1000	1500	2000
	PinLock 10	(N)	1000	1200	2000	3000	4000

PinLock 6: 6 pins - Pinlock 10: 10 pins
Two types of connection are possible: one with 6 pins and the other with 10 pins
It is possible to choose one or other of these solutions depending on the load to be transmitted.

EXAMPLE BELT ORDERS			
Name	Width	Profile / Length	Additional specifications
BeltBRECO*basic®*	50	AT10 / 2500 BAS	PINLOCK

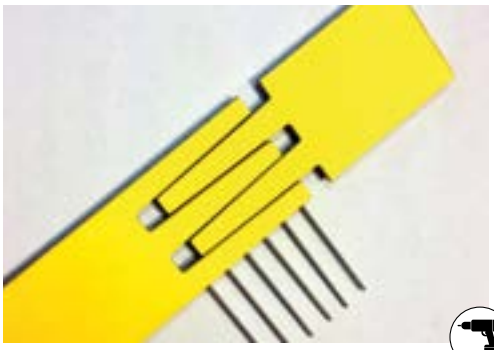
THE INNOVATIVE BRECO® PINLOCK SYSTEM

The Breco® PinLock locking system ensures fast, simple assembly without the need for any assembly equipment.

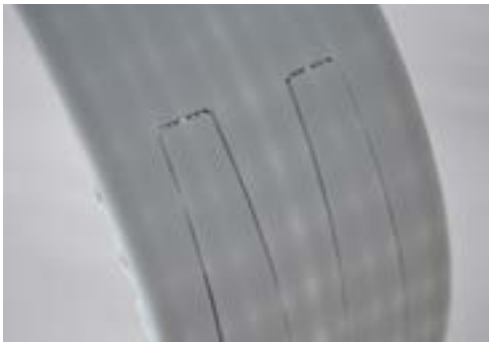


Water-jet cutting makes it possible to obtain an optimised mortise-and-tenon shape for flawless meshing and perfect synchronisation.

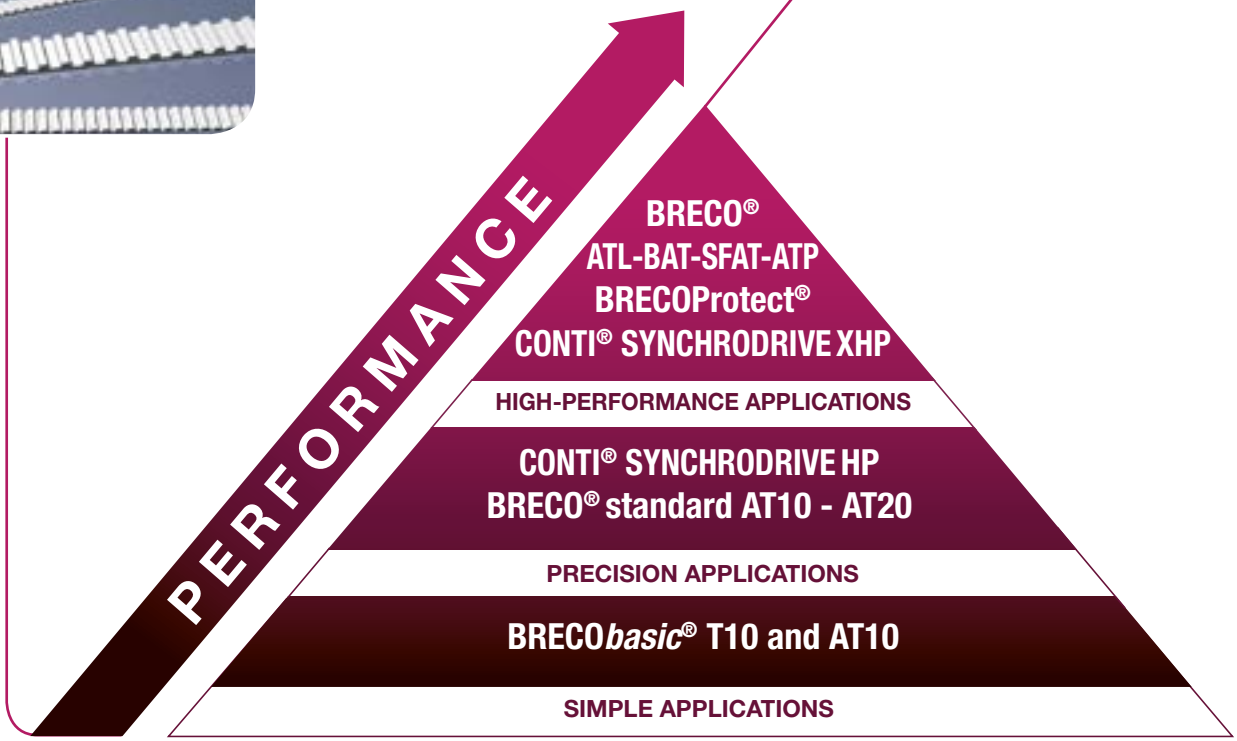
This solution is highly recommended for belts with backings since it ensures the clean cutting of the tension member and backing.



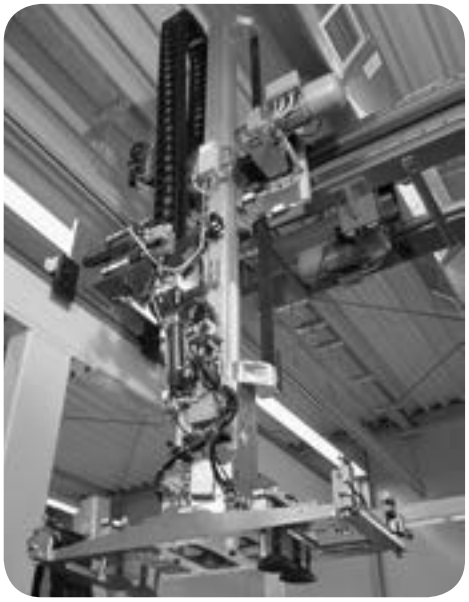
Assembly is carried out easily using threaded, screw-type pins inserted with an electric screwdriver that ensures that the strands are held in place.



The result is an optimal connection that can withstand occasional overloads of up to a quarter of the nominal transmissible force. However, the transmissible forces have been determined in a way that ensures correctly synchronised movement.


PERFORMANCE
BRECO®
ATL-BAT-SFAT-ATP
BRECOProtect®
CONTI® SYNCHRODRIVE XHP
HIGH-PERFORMANCE APPLICATIONS
CONTI® SYNCHRODRIVE HP
BRECO® standard AT10 - AT20
PRECISION APPLICATIONS
BRECO*basic*® T10 and AT10
SIMPLE APPLICATIONS

LINEAR APPLICATIONS



The term "linear application" is used to define the conversion of a rotational motion into a linear motion or the linear translational motion of an assembly (carriage, table…).

General design

- You are planning to effect simple travel without precision constraints
- Or, alternately, you are looking for precise positioning combined with high speeds, **Aratron** offers a full range of linear belts.

Our belts provide linear travel over short or/and long distances combining travel speed, positioning precision and repeatability.

In terms of design all the components of a transmission must have levels of mass and friction which are reduced as much as possible and the assembly must be designed to have optimum stiffness.
As a rule the ends of **BRECO® linear AT** and **ATL** timing belts and **CONTI® SYNCHRODRIVE HTD** timing belts are attached with clamp or tension plates (see *pages 126-127*).

The following pages set out the values of forces permissible by the teeth and the values of nominal forces transmittable by the reinforcement. Elements such as the transmittable forces and the constraints of stiffness can be different for an identical profile.

Example: AT and ATL10 belts have permissible forces for identical teeth, but the use of reinforced steel tension members in ATL belts lends the system better positioning precision, greater stiffness and better behaviour at the point of peak torque. This is also applicable to HTD belts, which can be manufactured with different tension members.

ATL belts are intended exclusively to provide linear motion, and therefore cannot be "joined".

They can be used in a variety of applications:
- robotics,
- stackers,
- linear carriages...

KINEMATICS

Linear drives are designed in accordance with three basic installations:

Linear travel
(motor at the end)

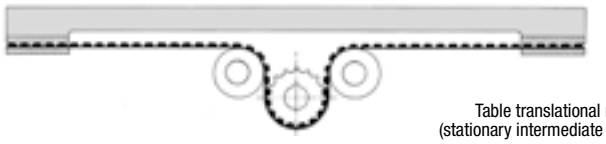
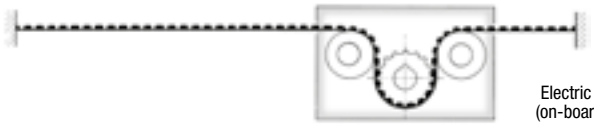


Table translational motion
(stationary intermediate motor)

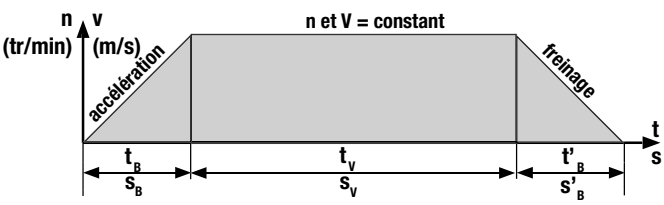


Electric carriage
(on-board motor)

SYMBOLS

Symbol	Definition	Unit
c_{spe}	Specific elasticity	N
d_k	Outside diameter	mm
d_o	Pitch circle diameter (Z.t/π)	mm
F_{fri}	Frictional force (frictional resistance)	N
F_N	Nominal force permissible by the tension members of a belt	N
F_{pt}	Pre-tension force	N
F_T	Tangential force	N
$F_{T/Z}$	Tangential force transmittable by tooth in mesh and by cm of width	N
L_B	Overall belt length	mm
L_1/L_2	Span length	mm
m	Sum of moving masses	Kg
m_L	Carriage mass	Kg
n	Rotational speed	tr/min
P	Power to be transmitted	kW
S	Carriage travel	mm
t	Belt pitch	mm
v	Linear speed	m/s
Z	Number of teeth of the driving pulley	
Z_e	Number of meshing teeth on the driving pulley	
γ	Acceleration	m/s^2
ΔL	Elongation under load	mm
Ω	Angular speed	rad/s
c_m	Tooth backlash	mm

Diagram representing one operating cycle.



DETERMINATION OF A BELT

1 / Forces in the tension members

The tension members of belts are subjected to the following stresses:

Tangential force to be transmitted F_T(N) comprising:

$$F_T = F_{fri} + F_\gamma + F_m$$

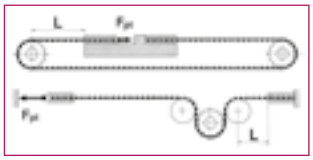
- The frictional force F_{fri}(N)
- The acceleration force F_γ(N) = Mass (kg) x Acceleration (m/s^2)
- F_m= Mass (kg) x 9,81 x β (where β angle of inclination of the belt in relation to the horizontal)

Pre-tension force F_{pt} (N) applied to the belt run during installation.

A linear drive is correctly pre-tensioned if, under the influence of the maximum tangential force F_{Tmax}, the slack span of the belt remains tensioned.
Under no circumstances should the "slack" span of the belt be slackened as this would causes teeth to jump on the driving pulley or other problems on the belt.
An optimum pre-tension force is therefore essential: see SM5 *page 124*.

$$F_{pt} > F_{fri} + F_\gamma + F_m$$

These forces are to be added up to compare them with the limit values of force permissible by the tension members.



$$\text{Total force } F_{tot}\,(N) = F_{pt} + F_{fri} + F_\gamma + F_m$$

According to the application it will be necessary to take into account an additional higher or lower safety factor (consult us).

Note: the different mounting bearings will be selected to support the following forces:

$$F = 2 \times F_{pt} + F_T$$

2 / Force transmittable by the teeth

Calculation of the belt width at nominal speed.

- Z_e (max) for the calculation = 12 - above this it is deemed that the other teeth in mesh will no longer work. The number of teeth in mesh can moreover, according to the installation, be less than 12.
- $F_{T/Z}$(N) must be determined with the diagram "Tangential force transmittable by the teeth" of the chosen pitch and profile.

$$b\,(mm) = \frac{10 \,.\, F_T(N)}{Z_e \,.\, F_{T/Z}(N)}$$

Other formulae:

$$\omega = \frac{\pi \,.\, n}{30}$$

Angular speed

$$n = \frac{19{,}1 \,.\, 10^3 \,.\, v}{d_0}$$

Rotational speed

$$v = \frac{d_0 \,.\, n}{19{,}1 \,.\, 10^3} = \sqrt{\frac{2 \,.\, s_B \,.\, \gamma}{1000}}$$

Linear speed

$$t_B = \frac{v}{\gamma} = \sqrt{\frac{2 \,.\, s_B}{\gamma \,.\, 1000}}$$

Acceleration distance (braking distance)

$$s_B = \frac{\gamma \,.\, t_B^2 \,.\, 10^3}{2} = \frac{v^2 \,.\, 10^3}{2 \,.\, \gamma}$$

Acceleration distance
(braking distance)

$$t_v = \frac{s_v}{v \,.\, 10^3}$$

Duration of travel
for v = constant

PRECISION AND POSITIONING

1 / Repeat accuracy

The repeat accuracy of a linear drive denotes its capacity to attain the same position under the same operating conditions.
This varies under the effect of the frictional force (F_{fri}) which is generated by a residual elongation when stationary.
We have:

$$\Delta_l = \frac{F_{fri}}{\left(\frac{L_B}{L_1 \cdot L_2}\right) \cdot c_{spe}}$$

When the friction of the guiding system is negligible and the tooth backlash $c_m = 0$, the repeatability is in the order of +/- 0.05 mm.

2 / Positioning precision

The positioning precision of a linear drive denotes its capacity to convert an angle of rotation of the drive pulley into a linear motion.
The actual linear translation depends on the applied forces and on the tolerances of all the subassemblies participating in the transmission motion.

2.1 Length tolerance and variation of the belt pitch

The length tolerance of the timing belt is rendered by a variation of the belt pitch. The length tolerance, in this case the pitch variation, depends on the belt extrusion tolerance and on the pre-tension force applied during installation. The belts are supplied with a length tolerance / pitch variation defined during production.

Corrective measures:
- Use BRECO® ATL timing belts, which have negative tolerances, enabling the nominal theoretical value during installation to be maintained.
- Consult our specialist technical advisers.

2.2 Circularity or concentricity of the driving pulley

These defects can cause a translation irregularity in a linear system which is rendered by a slight sinusoidal oscillation during travel.

Corrective measures:
- Verify the circularity and concentricity or if necessary reduce the tolerance range.
- Replace the key connection and use an expanding hub.

3 / Backlash on the reversal of direction

This depends in part on the functional backlash between the belt teeth and the tooth gap on the pulley, on the number of teeth in mesh and on the elongation of the belt in the wrap area.
In applications requiring a particularly high degree of transmission accuracy it is possible to use pulley tooth gaps with reduced (SE) or zero (0) backlash for certain pitches (see *page 8*).

Factors influencing meshing:
- Pre-tension
- Number of teeth in mesh (Z_e)
- Loads (speed, dynamic performance...)
- Machining tolerances (of the pulley), extrusion tolerances, fitting tolerances.

4 / Stiffness / elongation of the belt

Linear transmissions are governed by Hooke's Law relating to elastic deformation of steel.

4.1 Total elongation of the belt under pre-tension force

$$\Delta_l = \frac{F_{pt} \cdot L_B}{c_{spe}}$$

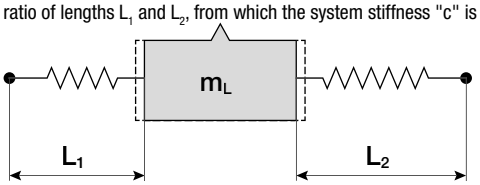
4.2 Elongation of the belt under the inertia of the displaced mass

The forces applied to a linear transmission induce variable elongations. The dynamic position deviation resulting from elongation can be calculated using the equation below; it is however necessary to take into account the stiffness of the whole drive assembly:

$$\Delta_s = \frac{F}{c}$$

c = system stiffness

Linear systems demonstrate variable elasticities. Elastic behaviour thus depends on the ratio of lengths L_1 and L_2, from which the system stiffness "c" is obtained.



$$c = \frac{L_B}{L_1 \cdot L_2} \cdot c_{spe} \qquad L_B = L_1 + L_2$$

In other words, every position of the moving body demonstrates a particular elasticity "c". This elasticity demonstrates a minimum value (c_{min}) when L_1 and L_2 are of the same length. In this case the value of c_{min} is:

$$c_{min} = \frac{4 \cdot c_{spe}}{L_B} \qquad \text{for } L_1 = L_2$$

5 / Natural frequency

Under the effect of a variation of force, a mass m_L (the carriage) connected to a spring system (the belts) enters into oscillation damped to the natural frequency of the system. The natural frequency of the system is:

$$f_e\,(Hz) = \frac{1}{2\pi}\sqrt{\frac{c \cdot 1000}{m_L}}$$

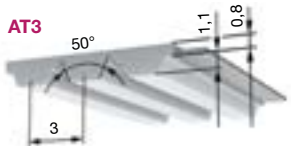
This formula does not take into account the masses of the pulleys and the belt (or others). It is also recommended to ensure that the frequency f_e does not correspond to the frequency of the peak torques or to the meshing frequency.

Oscillation
Oscillation is the "back and forth" motion of the moving body (carriage or table) around a fixed point. Several kinds of oscillations can be envisaged according to the stiffness and the damping of the system. We strongly recommend the use of belts that have reinforced tension members (types ATL and HTD HP) to reduce the amplitude.

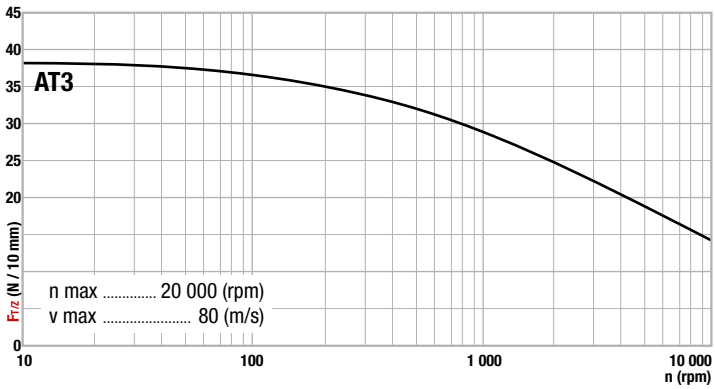
Notes on use

The suggested formula contain simplifying hypotheses. Possible variations based on the chosen geometry and context of the drive must therefore be expected.

TIMING BELTS



Tangential force transmittable by the teeth



Belt scale 1

Tangential force transmittable by the tension members

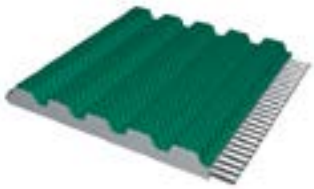
Profile/ pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
PRECISION APPLICATIONS												
AT3	6	0.013	240	0·6 . 105	●		180	0·6 . 105			120	90
	8	0.018	320	0·8 . 105	○		240	0·8 . 105			160	120
	10	0.022	400	1·0 . 105	●		300	1·0 . 105			200	150
	12	0.026	480	1·2 . 105	○		360	1·2 . 105			240	180
	16	0.035	640	1·6 . 105	●		480	1·6 . 105			320	240
	20	0.044	800	2·0 . 105	●		600	2·0 . 105			400	300
	25	0.054	1 000	2·5 . 105	○		750	2·5 . 105			500	375
	32	0.070	1 280	3·2 . 105	○		960	3·2 . 105			640	480

AT3 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
AT3	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1

Option : PAZ[1]

Polyamide on tooth side.



Standard lengths and widths available

Linear belts (M)
- Every length tooth to tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 880 mm

Options
- Stainless steel or aramide tension member, see page 6 (on request)
- Polyurethane see page 5 (on request)
- Coatings see pages 56 to 63

BELT ORDERING EXAMPLES			
Designation	Width	Profile / Length	Particuliar specifications
Open linear BRECO belt	50	AT3/1600 M	
Welded linear BRECO belt	50	AT3/1600 V	PAZ[1]

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 to 6 weeks
Special belts		consult us

Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ): see *page 56*
2. Polyurethane: see characteristics *page 5*

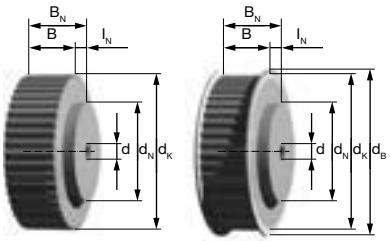
TOOTHED PULLEYS

Pulleys acc. to drawing see *page 8*

Standard pulleys

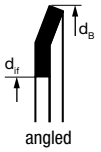
Version 2 (with flanges) :
stock up to Z = 44

Version 0 (without flanges) :
stock from de Z = 45

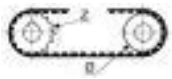
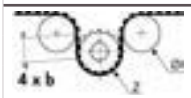


	Belt widths	b	6	8	10	12	16	20	25	32
Pulley widths	Pulley without hub	B	10	13	15	17	22	26	32	40
	Pulley with hub	B_N	16		21		28			

The pulleys in stock all have a hub. **Standard width in stock in purple.**



Flanges			
Z	Thickness	Shape	Mounting
All numbers of teeth	1	angled	rolled

Kinematics	Tension member type		BRECO®
 Monoflexure	E tension members	Z min.	15
		dia. min. (mm)	30 (20)
	Stainless steel tension members*	Z min.	20
		dia. min. (mm)	30
 Contraflexure	E tension members	Z min.	25 (20)
		dia. min. (mm)	30 (20)
	Stainless steel tension members*	Z min.	30
		dia. min. (mm)	40

The numbers in brackets indicate the values to be used for welded belts.
*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Ø d
	AL	21	AT3/20-	2	E : 14 x 6	4H7

DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in stock with remachining[1]		2 weeks
Pulleys acc. to drawing		4 weeks

1. Only with a specific bore and / or keying.

Width B_N			Z	d_K	d_N	Bore d (H7)		d_B	d_{IF}
16	21	28				min. stock	max.		Rolled flanges
●	●	●	15	13.91	10	4	4	17	11
●	●	●	16	14.87	10	4	5	18	12
			17	15.82			6	19	13
●	●	●	18	16.78	12	4	7	21	14
			19	17.73			8	23	15
●	●	●	20	18.69	14	4	9	24	16
			21	19.64			10	25	17
●	●	●	22	20.60	14	6	11	26	18
			23	21.55			12	26	18
●	●	●	24	22.51	14	6	13	28	20
●	●	●	25	23.46	16	6	14	30	21
			26	24.42			15	30	21
●	●	●	27	25.37	16	6	15	30	21
			28	26.33			16	32	22
			29	27.28			17	34	24
●	●	●	30	28.24	20	6	18	34	24
			31	29.19			19	35	25
●	●	●	32	30.15	20	6	20	36	26
			33	31.10			21	36	26
			34	32.06			22	37	27
			35	33.01			23	39	29
●	●	●	36	33.97	22	6	24	40	30
			37	34.92			25	40	30
			38	35.88			26	42	30
			39	36.83			27	42	30
●	●	●	40	37.79	26	6	28	43	31
			41	38.74			29	45	33
			42	39.70			30	45	33
			43	40.65			31	47	35
●	●	●	44	41.61	30	6	32	47	35
●	●	●	45	42.56	30	6	33	48	36
			46	43.52			34	50	38
			47	44.47			35	50	38
●	●	●	48	45.43	34	6	36	52	40
			49	46.38			36	52	40
			50	47.34			37	53	41
			51	48.29			38	53	41
			52	49.25			39	55	43
			53	50.20			40	55	43
			54	51.16			41	56	44
			55	52.11			42	58	46
			56	53.07			43	58	46
			57	54.02			44	60	48
			58	54.98			45	60	48
			59	55.93			46	61	49
●	●	●	60	56.89			47	62	50
			61	57.84			48	64	52
			62	58.80			49	64	52
			63	59.75			50	66	52
			64	60.71			51	66	52
			65	61.66			52	68	54
			66	62.62			53	68	54
			67	63.57			54	70	56
			68	64.53			55	70	56
			69	65.48			56	72	58
			70	66.43			57	72	58
			71	67.39			58	74	60
●	●	●	72	68.34			58	74	60
			73	69.30			59	74	60
			74	70.25			60	75	61
			75	71.21			61	76	62
			76	72.16			62	78	64
			77	73.12			63	78	64
			78	74.07			64	80	66
			79	75.03			65	80	66
			80	75.98			66	82	68
			81	76.94			67	82	68
			82	77.89			68	84	70
			83	78.85			69	84	70
			84	79.80			70	86	72
			85	80.76			71	86	72
			86	81.71			72	88	74
			87	82.67			73	88	74
			88	83.62			74	90	76
			89	84.58			75	90	76
			90	85.53			76	91	77
			91	86.49			77	93	79
			92	87.44			78	93	79

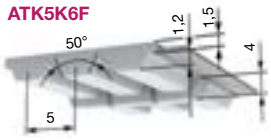
Z: number of teeth. DIF: inside diameter of flanges.

TIMING BELTS

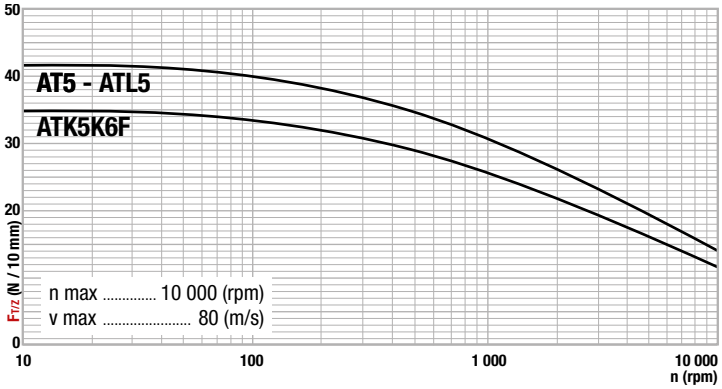
AT5

ATL5

ATK5K6F



Tangential force transmittable by the teeth



Belt scale 1

Tangential force transmittable by the tension members

Profile/ pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of binding Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of binding Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
PRECISION APPLICATIONS												
AT5	6	0.020	420	0·105 . 106	○		270	0·105 . 106			210	135
	8	0.026	560	0·140 . 106	○		360	0·140 . 106			280	180
	10	0.033	700	0·175 . 106	●		455	0·175 . 106			350	227
	12	0.039	840	0·210 . 106	○		540	0·210 . 106			420	270
	16	0.052	1 120	0·280 . 106	●		730	0·280 . 106			560	365
	20	0.065	1 400	0·350 . 106	○		900	0·350 . 106			700	450
	25	0.082	1 750	0·440 . 106	●		1 140	0·440 . 106			875	570
	32	0.105	2 240	0·560 . 106	●		1 460	0·560 . 106			1 120	730
	50	0.164	3 500	0·875 . 106	●		2 280	0·875 . 106			1 750	1 140
	64	0.209	4 480	1·120 . 106	○		2 880	1·120 . 106			2 240	1 440
	75	0.245	5 250	1·310 . 106	○		3 420	1·310 . 106			2 625	1 710
	100	0.327	7 000	1·750 . 106	○		4 500	1·750 . 106			3 500	2 250
HIGH-PERFORMANCE APPLICATIONS												
ATL5	16	0.059	1 300	0·330 . 106	●							
	20	0.075	1 680	0·420 . 106	○							
	25	0.09	2 000	0·500 . 106	●							
	32	0.119	2 800	0·650 . 106	●							
	50	0.187	4 200	1·050 . 106	○							
SELF-GUIDING PRECISION APPLICATIONS												
ATK5K6	25	0.089	1 750	0·438 . 106	●		1 140	0·438 . 106			875	570
	32	0.118	2 240	0·560 . 106			1 460	0·560 . 106			1 120	730
	50	0.177	3 500	0·875 . 106	●		2 280	0·875 . 106			1 750	1 140

AT5 tolerances

Profile	Width (mm)	Lenght (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
AT5	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.05
ATL5	+/- 0.5	- 0.1 / - 0.4	- 0.1 / + 0.3	0 / - 0.1
ATK5K6F	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1

Manufacturing method: locking system

Welded linear BRECO® belt

Standard lengths and widths available

Linear belts (M)
- Every length tooth by tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 880 mm

Options
- Stainless steel or aramide tension member, see page 6 (on request)
- Polyurethane see page 5 (on request)
- Coatings see pages 56 to 63

Self-guiding
- Intermediate widths (on request)

BELT ORDERING EXAMPLES			
Designation	Width	Profile / Length	Particuliar specifications
Welded linear BRECO belt	50	AT10K6/1600 V	
Open linear BRECO belt	50	AT10/2000 BAS M	PAZ[1]

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 to 6 weeks
Special belts		consult us

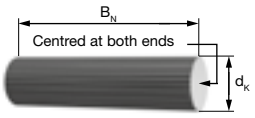
Recommended pre-tension: see *page 4*
General informations: see *page 4*

1. Backing (PAZ): see *page 56*
2. Polyurethane: see characteristics *page 5*

TOOTHED PULLEYS

Pulleys acc. to drawing see *page 8*

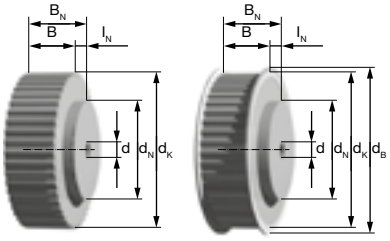
Bars



Standard pulleys

Version 2 (with flanges) :
stock up to Z = 44

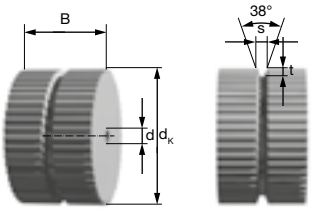
Version 0 (without flanges) :
stock from de Z = 45



Self-guiding pulleys

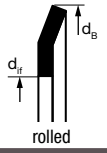
Pulleys on request
and only from Z = 20

K6	
s	t
6,5	5



	Belt widths	b	6	8	10	12	16	20	25	32	50	75	100
Pulley widths	Pulley without hub	B	12	24	16	18	22	26	32	40	60	85	105
	Pulley with hub	B_N			22		28		38	46			
	Self-guiding pulley without hub	B								37	55		

The pulleys in stock all have a hub. **Standard width in stock in purple.**



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 63	1	angled	rolled
Z > 63	1.5	angled	rolled

Kinematics	Binding type		AT5	ATL5	ATK5K6
 Simple flexure	Steel tension members	Z min.	18 (15)		25
		dia. min. (mm)	30 (25)		60
	E tension members	Z min.	15 (12)	25	25
		dia. min. (mm)	25 (18)	40	60
	Stainless steel tension members*	Z min.	22 (18)		25
		dia. min. (mm)	35 (30)		60
 Alternate flexure	Steel tension members	Z min.	25		25
		dia. min. (mm)	60		60
	E tension members	Z min.	20	25	25
		dia. min. (mm)	50	60	60
	Stainless steel tension members*	Z min.	30 (25)		30
		dia. min. (mm)	60 (50)		60

The numbers in brackets indicate the values to be used for welded belts.
*Special manufacture: minimum quantity. (stainless steel only).

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request
- Special cuts (zero or reduced backlash), see page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (ATL).

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Ø d
Aratron tooth pulley	AL	38	AT5/25-	2	E : 26 X 6	4H7

DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in stock with remachining[1]		2 weeks
Pulleys acc. to drawing		3 weeks

1. Only with a specific bore and / or keying.

Width B_N				Z	d_K	d_N	Bore d (H7)		d_B	d_{IF}
22	28	38	46				min. stock	max.		Rolled flanges
●	●	●	●	12	17.88	12	4	8	23	15
●	●	●	●	14	21.06	14	4	8	26	18
●	●	●	●	15	22.65	16	6	10	28	20
●	●	●	●	16	24.24	18	6	12	30	21
				17	25.84			14	32	22
●	●	●	●	18	27.43	20	6	16	34	24
●	●	●	●	19	29.02	22	6	16	35	25
●	●	●	●	20	30.61	24	6	18	36	26
				21	32.20			20	37	27
●	●	●	●	22	33.79	24	6	22	39	29
				23	35.39			24	40	30
●	●	●	●	24	36.98	26	8	24	42	30
●	●	●	●	25	38.57	26	8	25	43	31
				26	40.16			25	45	33
●	●	●	●	27	41.75	30	8	27	47	35
				28	43.34			29	48	36
				29	44.93			31	50	38
●	●	●	●	30	46.53	34	8	33	52	40
				31	48.12			35	53	41
●	●	●	●	32	49.71	38	8	37	55	43
				33	51.30			39	56	44
				34	52.89			39	58	46
				35	54.48			40	60	48
●	●	●	●	36	56.08	38	8	42	61	49
				37	57.67			43	62	50
				38	59.26			45	64	52
				39	60.85			45	66	52
●	●	●	●	40	62.44	40	8	47	68	54
				41	64.03			48	70	56
				42	65.63			50	72	58
				43	67.22			52	72	58
●	●	●	●	44	68.81	50	8	52	74	60
				45	70.40			54	75	61
				46	71.99			56	76	62
				47	73.58			58	78	64
●	●	●	●	48	75.17	50	8	60	80	66
				49	76.77			60	82	68
				50	78.36			60	84	70
				51	79.95			62	86	72
				52	81.54			64	86	72
				53	83.13			66	88	74
				54	84.72			66	90	76
				55	86.32			68	91	77
				56	87.91			70	93	79
				57	89.50			72	94	80
				58	91.09			74	96	82
				59	92.68			74	99	85
●	●	●	●	60	94.27	65	8	76	99	85
				61	95.86			79	100	86
				62	97.46			80	102	88
				63	99.05			82	104	90
				64	100.64			82	105	91
				65	102.23			84	107	93
				66	103.83			86	109	95
				67	105.41			88	112	98
				68	107.01			90	112	98
				69	108.60			90	115	101
				70	110.19			90	115	101
				71	111.78			92	117	103
●	●	●	●	72	113.37	80	8	94	118	104
				73	114.96			96	121	107
				74	116.55			96	121	107
				75	118.15			98	123	109
				76	119.74			100	125	111
				77	121.33			102	128	114
				78	122.92			104	128	114
				79	124.51			104	131	117
				80	126.10			106	131	117
				81	127.70			108	134	120
				82	129.29			110	134	120
				83	130.88			110	137	123
				84	132.47			112	137	123
				85	134.06			114	140	126
				86	135.65			116	142	128
				87	137.24			119	142	128
				88	138.84			119	144	130
				89	140.43			120	147	133

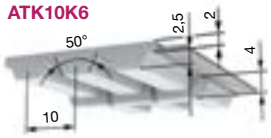
Z: number of teeth. D_{IF}: inside diameter of flanges.

TIMING BELTS

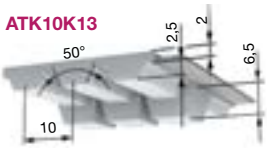
AT10 *basic* - AT10

ATL10

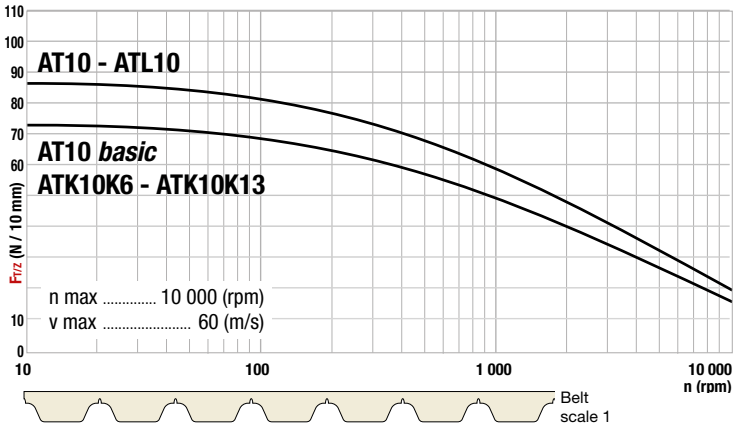
ATK10K6



ATK10K13



Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Profile/ pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
SIMPLE APPLICATIONS												
AT10 *basic*[3]	16	0.093	2 750	0·69 ˙ 106	●						1 375	
	25	0.158	4 250	1·06 ˙ 106	●						2 125	
	32	0.186	5 500	1·37 ˙ 106	●						2 750	
	50	0.290	8 500	2·12 ˙ 106	●						4 250	
	75	0.436	12 750	3·18 ˙ 106	○						6 375	
	100	0.581	17 000	4·25 ˙ 106	○						8 500	
PRECISION APPLICATIONS												
AT10	12	0.070	2 040	0·51 ˙ 106	○		1 520	0·51 ˙ 106			1 020	760
	16	0.093	2 750	0·69 ˙ 106	●		2 000	0·69 ˙ 106			1 375	840
	20	0.120	3 400	0·85 ˙ 106	●		2 560	0·85 ˙ 106			1 700	1 280
	25	0.158	4 250	1·06 ˙ 106	●		3 190	1·06 ˙ 106			2 125	1 595
	32	0.186	5 500	1·37 ˙ 106	●		4 125	1·37 ˙ 106			2 750	2 065
	50	0.290	8 500	2·12 ˙ 106	●		6 375	2·12 ˙ 106			4 250	3 190
	75	0.436	12 750	3·18 ˙ 106	●		9 560	3·18 ˙ 106			6 375	4 780
	100	0.581	17 000	4·25 ˙ 106	○		12 750	4·25 ˙ 106			8 500	6 375
	150	0.839	22 000	5·50 ˙ 106	○		19 125	5·50 ˙ 106			11 000	9 565
HIGH-PERFORMANCE APPLICATIONS												
ATL10	25	0.17	5 600	1·4 · 108	●		4 480	1·4 · 108				
	32	0.22	7 200	1·8 · 108	●		5 760	1·8 · 108				
	50	0.34	11 200	2·8 · 108	●	●	8 960	2·8 · 108				
	75	0.51	16 800	4·2 · 108	○		13 440	4·2 · 108				
	100	0.68	22 400	5·6 · 108	○		17 920	5·6 · 108				
	150	1.02	36 000	9·0 · 108	○		28 800	9·0 · 108				
SELF-GUIDING PRECISION APPLICATIONS												
ATK10K6	50	0.302	7 500	1·87 ˙ 106			5 625	1·87 ˙ 106			3 750	2 815
ATK10K13	32	0.227	4 500	1·20 ˙ 106			3 375	1·20 ˙ 106			2 250	1 690
	50	0.331	7 500	1·87 ˙ 106			5 625	1·87 ˙ 106			3 750	2 815
	75	0.465	10 500	2·80 ˙ 106			7 875	2·80 ˙ 106			5 250	3 940
	100	0.621	16 000	3·74 ˙ 106			12 000	3·74 ˙ 106			8 000	6 000
	150	0.889	22 000	5·61 ˙ 106			16 500	5·61 ˙ 106			11 000	8 250

AT10 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
AT10	+/- 0.8	+/- 0.5	- 0.1 / + 0.3	0 / - 0.1
ATL10	- 1 / + 0.4	+/- 1	- 0.1 / + 0.3	0 / - 0.15
ATK10K6	+/- 0.8	+/- 0.5	- 0.1 / + 0.3	0 / - 0.1
ATK10K13	+/- 0.8	+/- 0.5	- 0.1 / + 0.3	0 / - 0.1

Option:

tension plate

See *page 123*

Standard lengths and widths available

Linear belts (M)
- Every length tooth to tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- AT10: widths ≤ 100 mm, from 880 mm
- AT10: width 150 mm, from 1000 mm
- ATK10: all widths from 1000 mm

Options
- Stainless steel or aramide tension member, see page 6 (on request)
- Polyurethane see page 5 (on request)
- No option possible for BRECObasic®
- Coatings see pages 56 to 63

Self-guiding
- Intermediate widths (on request)

BELT ORDERING EXAMPLES			
Designation	Width	Profile / Length	Particuliar specifications
Welded linear BRECO belt	50	AT10K6/1600 V	
Open linear BRECO belt	50	AT10/2000 BAS M	PAZ[1]

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 to 6 weeks
Special belts		consult us

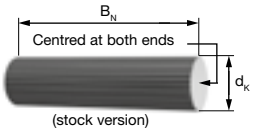
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ): see *page 56*
2. Polyurethane: see characteristics *page 5*
3. Polyurethane: TPUBAS partly recycled.

TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

Bars

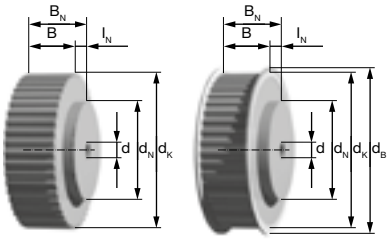


(stock version)

Standard pulleys

Version 2 (with flanges) :
stock up to Z = 44

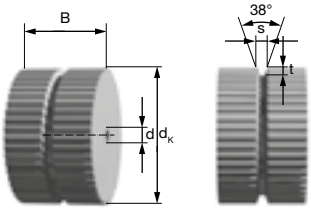
Version 0 (without flanges) :
stock from de Z = 45



Self-guiding pulleys

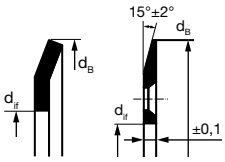
Pulleys on request
and only from Z = 20

K6		K13	
s	t	s	t
6.5	5	13.5	7.5



	Belt widths	b	12	16	20	25	32	50	75	100	150
Pulley widths	Pulley without hub	B	19	23	27	32	40	60	85	110	160
	Pulley with hub	B_N		33		42	50	70	95	120	170
	Self-guiding pulley without hub	B					37	55	80	105	155

The pulleys in stock all have a hub. **Standard width in stock in purple.**



angled straight at 15°

Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 32	1	angled	rolled
32 < Z ≤ 93	1,5	angled	rolled
B_N ≥ 66 et Z ≤ 93	2	angled	screwed
Z > 93	2	straight at 15°	screwed

Kinematics	Special toothforms type		AT10	ATL10	ATK10K6	ATK10K13
 Monoflexure	Steel tension members	Z min.	15	25	20	20
		dia. min. (mm)	50	80	80	60
	E tension members	Z min.	12		18	
		dia. min. (mm)	50		60	
	Stainless steel tension members*	Z min.	25	40	25	25
		dia. min. (mm)	80	120	80	80
 Contraflexure	Steel tension members	Z min.	25	25	25	25
		dia. min. (mm)	120	150	120	120
	E tension members	Z min.	20		20	
		dia. min. (mm)	80		80	
	Stainless steel tension members*	Z min.	40 (30)	50	40	40
		dia. min. (mm)	130	130	130	130

The numbers in brackets indicate the values to be used for welded belts.
*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request
- Tension member (zero or reduced backlash), see page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (ATL).

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Ø d
Aratron tooth pulley	AL	70	AT10/20-	2	E : 46 x 10	12H7

DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in stock with remachining1		2 weeks
Pulleys acc. to drawing		3 weeks

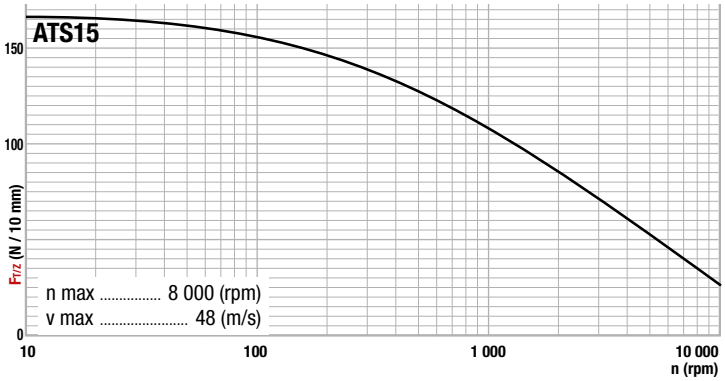
1. Only with a specific bore and / or keying.

Width B_N			Z	d_K	d_N	Bore d (H7)		d_B	d_{IF}
42	50	70				min. stock	max.		Rolled flanges
●			12	36.38	28	8	25	42	30
●			14	42.74	32	8	30	48	36
●			15	45.93	32	8	34	52	40
●			16	49.11	35	8	36	55	43
			17	52.29			40	58	46
●	●	●	18	55.48	40	8	44	61	49
●	●	●	19	58.66	44	8	46	64	52
●	●	●	20	61.84	46	12	50	68	54
			21	65.03			52	72	58
●	●	●	22	68.21	50	12	56	74	60
			23	71.39			60	76	62
●	●	●	24	74.57	58	12	62	80	66
●	●	●	25	77.76	60	12	66	84	70
			26	80.94			68	86	72
●	●	●	27	84.12	60	12	72	90	76
			28	87.31			76	93	79
			29	90.49			78	96	82
●	●	●	30	93.67	60	12	82	99	85
			31	96.86			84	102	88
●	●	●	32	100.04	65	12	88	106	92
			33	103.22			88	109	95
			34	106.41			92	112	98
			35	109.59			96	115	101
●	●	●	36	112.77	70	16	98	118	104
			37	115.95			101	121	107
			38	119.14			104	125	111
			39	122.32			106	128	114
●	●	●	40	125.50	80	16	110	131	117
			41	128.69			110	134	120
			42	131.87			112	137	123
			43	135.05			114	140	126
●	●	●	44	138.24	90	16	118	144	130
			45	141.42			120	147	133
			46	144.60			122	150	136
			47	147.79			122	153	139
●	●	●	48	150.97	95	16	124	156	142
			49	154.15			126	160	146
			50	157.33			130	163	149
			51	160.52			134	166	152
			52	163.70			136	169	155
			53	166.88			140	172	158
			54	170.07			144	176	162
			55	173.25			146	179	165
			56	176.43			150	182	168
			57	179.62			152	185	171
			58	182.80			156	188	174
			59	185.98			160	191	177
●	●	●	60	189.17	110	16	162	195	181
			61	192.35			164	198	184
			62	195.53			166	201	187
			63	198.72			170	204	190
			64	201.90			171	207	193
			65	205.08			174	210	196
			66	208.26			175	214	200
			67	211.45			177	217	203
			68	214.63			181	220	206
			69	217.81			185	223	209
			70	221.00			187	226	212
			71	224.18			191	230	216
			72	227.36			193	233	219
			73	230.55			197	236	222
			74	233.73			201	239	225
			75	236.91			203	242	228
			76	240.10			207	246	232
			77	243.28			209	249	235
			78	246.46			213	252	238
			79	249.64			215	255	241
			80	252.83			219	258	244
			81	256.01			223	262	248
			82	259.19			225	265	251
			83	262.38			229	268	254
			84	265.56			231	271	257
			85	268.74			235	274	260
			86	271.93			239	277	263
			87	275.11			241	281	267
			88	278.29			245	284	270
			89	281.48			247	287	273
			90	284.66			251	290	276

Z: number of teeth. D_{IF}: inside diameter of flanges.

TIMING BELTS

Tangential force transmittable by the teeth



Belt scale 1

Tangential force transmittable by the tension members

Profile/ pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
HIGH-PERFORMANCE APPLICATIONS												
ATS15	25	0.250	6 765	0·172 . 107			5 390	0·172 . 107				
	50	0.500	13 530	0·343 . 107			10 780	0·343 . 107				
	75	0.750	20 295	0·515 . 107			16 170	0·515 . 107				
	100	1.000	27 080	0·686 . 107			21 560	0·686 . 107				
	150	1.500	40 590	1·030 . 107			32 340	1·030 . 107				

ATS15 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
ATS15	+/- 1	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15

BRECOProtect® belt

Adapted to extreme environments and food applications.
Available in T10, AT10, AT15 profiles and pitches: see *page 12*

Standard lengths and widths available

Linear belts (M)
- Every length tooth to tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Options
- Stainless steel or aramide tension member, see page 6 (on request)
- Polyurethane see page 5 (on request)
- Coatings see pages 56 to 63

BELT ORDERING EXAMPLE			
Designation	Width	Profile / Length	Particuliar specifications
Open linear BRECO belt	50	ATS15/4500 M	

DELIVERY TIMES		
Standard belts		4 to 6 weeks
Special belts		Consult us

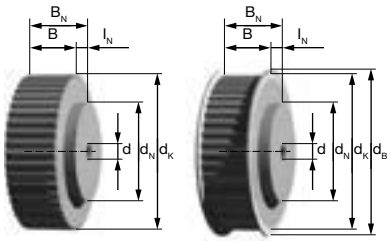
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ): see *page 56*
2. Polyurethane: see characteristics *page 5*

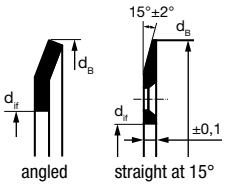
TOOTHED PULLEYS

Pulleys acc. to drawing see *page 8*

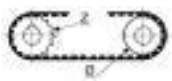
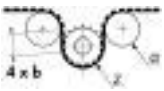
Standard pulleys



Belt widths	b	25	32	50	75	100	150
Widths of pulleys without hub	B	32	40	60	85	110	160



Flanges			
Z	**Thickness**	**Shape**	**Mounting**
Z ≤ 62	2	angled	screwed
Z > 62	2	straight at 15°	screwed

Kinematics	Tension member type		ATS15
 **Monoflexure**	**Steel tension members**	**Z min.**	25
		dia. min. (mm)	120
	E tension members	**Z min.**	
		dia. min. (mm)	
	Stainless steel tension members*	**Z min.**	30
		dia. min. (mm)	180
 **Contraflexure**	**Steel tension members**	**Z min.**	40
		dia. min. (mm)	250
	E tension members	**Z min.**	
		dia. min. (mm)	
	Stainless steel tension members*	**Z min.**	60
		dia. min. (mm)	300

*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (ATL).

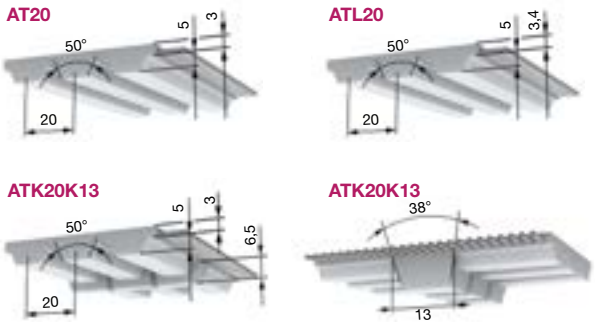
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Ø d
Aratron tooth pulley	ALHR	70	ATS15/27-	2	E : 50 x 10	14H7

DELIVERY TIMES	
Pulleys acc. to drawing	4 weeks

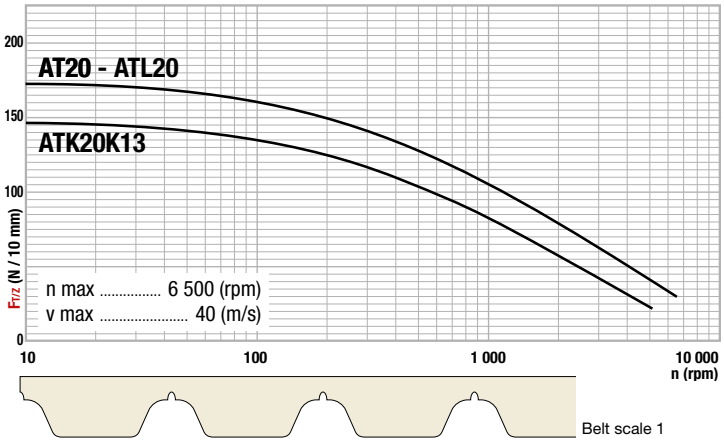
Z	d_K	d_N	Bore d (H7) min. stock	Bore d (H7) max.	d_B	d_{IF} Screwed flanges
25	116.79	50	12	90	125	92
26	121.56	50	12	93	128	95
27	126.34	50	12	99	134	101
28	131.11	58	12	102	137	104
29	135.88	58	12	109	144	111
30	140.66	60	12	112	147	114
31	145.43	60	12	118	153	120
32	150.21	65	12	121	156	123
33	154.98	65	12	128	163	130
34	159.76	65	16	131	166	133
35	164.53	65	16	137	172	139
36	169.31	70	16	141	176	143
37	174.08	70	16	147	182	149
38	178.86	70	16	150	185	152
39	183.63	70	16	156	191	158
40	188.41	80	16	160	195	162
41	193.18	110	16	166	201	168
42	197.95	110	16	169	204	171
43	202.73	140	16	176	210	178
44	207.50	140	16	179	214	181
45	212.28	140	16	185	220	187
46	217.05	140	16	188	223	190
47	221.83	140	16	195	230	197
48	226.60	140	16	198	234	200
49	231.38	140	16	204	239	206
50	236.15	140	16	207	242	209
51	240.93	140	16	214	249	216
52	245.70	140	16	217	252	219
53	250.48	160	20	223	258	225
54	255.25	160	20	226	262	228
55	260.03	160	20	233	268	235
56	264.80	160	20	236	271	238
57	269.57	160	20	242	277	244
58	274.35	160	20	245	281	247
59	279.12	160	20	252	287	254
60	283.90	160	20	255	290	257
61	288.67	160	20	261	296	263
62	293.45	160	20	265	300	267
63	298.22	160	24	271	306	273
64	303.00	160	24	274	310	276
65	307.77	160	24	281	315	283
66	312.55	160	24	284	319	286
67	317.32	160	24	290	325	292
68	322.10	160	24	293	329	295
69	326.87	160	24	300	335	302
70	331.64	160	24	303	338	305
71	336.42	160	24	309	344	311
72	341.19	160	24	314	348	314
73	345.97	160	24	315	354	321
74	350.74	160	24	319	357	324
75	355.52	160	24	325	363	330
76	360.29	160	24	335	367	334
77	365.07	160	24	335	372	336
78	369.84	160	24	340	377	341
79	374.62	160	24	345	382	346
80	379.39	160	24	349	386	350
81	384.17	160	24	354	391	355
82	388.94	160	24	359	396	360
83	393.71	160	24	364	401	365
84	398.49	160	24	369	405	369
85	403.26	160	24	373	410	374
86	408.04	160	24	378	415	379
87	412.81	160	24	383	420	384
88	417.59	160	24	388	425	389
89	422.36	160	24	392	429	393
90	427.14	160	24	397	434	398
91	431.91	160	24	402	440	403
92	436.69	160	24	407	444	408
93	441.46	160	24	412	448	412
94	446.24	160	24	416	453	417
95	451.01	160	24	421	459	422
96	455.79	160	24	426	463	427
97	460.56	160	24	431	468	432
98	465.33	160	24	435	472	436
99	470.11	160	24	440	478	441

Z: number of teeth. D_{IF}: inside diameter of flanges.

TIMING BELTS



Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

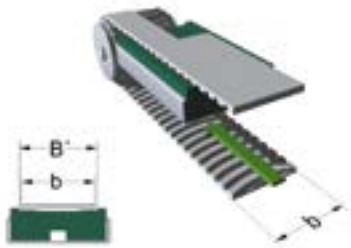
Profile/ pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
PRECISION APPLICATIONS												
AT20	25	0.240	5 600	1·40 · 106	o		4 480	1·40 · 106			2 800	2 240
	32	0.307	7 200	1·80 · 106	o		5 760	1·80 · 106			3 600	2 880
	50	0.480	11 200	2·80 · 106	o		8 960	2·80 · 106			5 600	4 480
	75	0.720	16 800	4·20 · 106	o		13 440	4·20 · 106			8 400	6 720
	100	0.960	22 400	5·60 · 106	o		17 920	5·60 · 106			11 200	8 960
	150	1.423	32 000	8·00 · 106			25 600	8·00 · 106			16 000	12 800
HIGH-PERFORMANCE APPLICATIONS												
ATL20	32	0.050	9 800	2·45 · 106	o		7 840	2·45 · 106				
	50	0.550	15 400	3·85 · 106	o		12 320	3·85 · 106				
	75	0.840	23 800	5·95 · 106	o		19 040	5·95 · 106				
	100	1.110	31 500	7·88 · 106	o		25 200	7·88 · 106				
	150	1.665	47 250	11·81 · 106	o		37 800	11·81 · 106				
SELF-GUIDING PRECISION APPLICATIONS												
ATK20K13	50	0.497	11 200	2·80 · 106			8 960	2·80 · 106			5 600	4 480
	75	0.730	16 800	4·20 · 106			13 440	4·20 · 106			8 400	6 720
	100	0.995	22 400	5·60 · 106			17 920	5·60 · 106			11 200	8 960

AT20 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
AT20	+/- 0.1	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15
ATL20	+/- 0.1	- 1.5 / - 0.4	- 0.2 / + 0.4	0 / - 0.15
ATK20K13	+/- 0.1	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15

Our other options

BAT self-guiding belts: see *pages 30 to 34*
Belt slider bed plates: see *page 127*



Standard lengths and widths available

Linear belts (M)
- Every length tooth to tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 1,000 mm

Options
- High-flexibility stainless steel or aramide tension members, see page 6 (on request)
- Polyurethane, see page 5 (on request)
- Coatings pages 56 to 63

BELT ORDERING EXAMPLES			
Designation	Width	Profile / length	Particular specifications
Open linear BRECO belt	50	AT20/2000 M	PAZ[1]
Welded linear BRECO belt	32	AT20/1600 V	
Open linear BRECO belt	50	ATL20/5000 M	
Open linear BRECO belt	50	ATK20K13/2000 M	PAZ[1]

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	o	4 weeks
Special belts		consult us

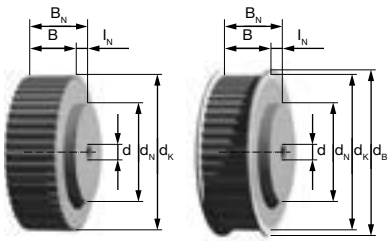
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ): see *page 56*
2. Polyurethane: see characteristics *page 5*

TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

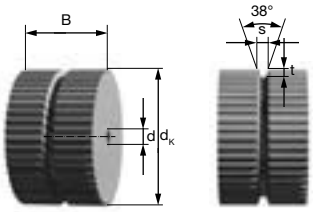
Standard pulleys



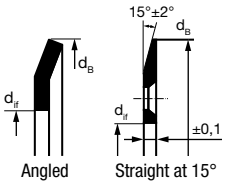
Self-guiding pulleys

Pulleys on request
and only from Z = 20

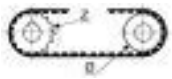
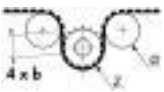
K13	
s	t
13.5	7.5



	Belt widths	b	25	32	50	75	100	150
Pulley widths	Pulley without hub	B	32	40	60	85	110	160
	Self-guiding pulley without hub	B			55	80	105	



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 46	2	Angled	Screwed
Z > 46	2	Straight at 15°	Screwed

Kinematics	Tension member type		BRECO M/V	BRECO M ATL20	BRECO M/V ATK20K13
 Monoflexure	Steel tension members	Z min.	18	25	20
		dia. min. (mm)	120	160	120
	E tension members	Z min.			
		dia. min. (mm)			
	Stainless steel tension members*	Z min.	25	25	32
		dia. min. (mm)	180	200	200
 Contraflexure	Steel tension members	Z min.	25	25	25
		dia. min. (mm)	180	250	180
	E tension members	Z min.			
		dia. min. (mm)			
	Stainless steel tension members*	Z min.	40	30	60
		dia. min. (mm)	380	300	380

*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (ATL).

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Ø d
Aratron tooth pulley	AL	60	AT20/27-	2		50H7

DELIVERY TIMES	
Pulleys acc. to drawing	4 weeks

Z	d_K	Bore d (H7) max.	d_B	d_{IF} Screwed flanges
18	111.77	86	121	77
19	118.14	93	128	83
20	124.50	100	134	89
21	130.87	105	140	96
22	137.24	112	147	102
23	143.60	118	153	109
24	149.97	125	160	115
25	156.33	131	166	121
26	162.70	137	172	128
27	169.07	144	179	134
28	175.43	150	185	140
29	181.80	156	192	147
30	188.17	163	198	153
31	194.53	169	204	159
32	200.90	175	210	166
33	207.26	182	217	172
34	213.63	188	223	179
35	220.00	195	229	185
36	226.36	201	236	191
37	232.73	207	242	198
38	239.10	214	249	204
39	245.46	220	255	210
40	251.83	226	261	217
41	258.19	233	268	223
42	264.56	239	274	229
43	270.93	245	280	236
44	277.29	252	287	242
45	283.66	258	293	249
46	290.03	265	300	255
47	296.39	271	306	261
48	302.76	278	312	268
49	309.12	284	319	274
50	315.49	290	325	280
51	321.86	296	331	287
52	328.22	303	338	293
53	334.59	310	344	299
54	340.95	315	350	306
55	347.32	322	357	312
56	353.69	328	363	319
57	360.05	335	370	325
58	366.42	341	376	331
59	372.79	347	382	338
60	379.15	354	389	344
61	385.52	360	395	350
62	391.88	366	401	357
63	398.25	373	408	363
64	404.62	379	414	370
65	410.98	385	420	376
66	417.35	392	427	382
67	423.72	398	433	389
68	430.08	405	440	395
69	436.45	406	446	401
70	442.81	412	452	408
71	449.18	419	459	414
72	455.55	425	465	420
73	461.91	431	471	427
74	468.28	438	478	433
75	474.64	444	484	440
76	481.01	450	490	446
77	487.38	457	497	452
78	493.74	463	503	459
79	500.11	470	510	465
80	506.48	476	516	471
81	512.84	482	522	478
82	519.21	485	529	484
83	525.57	495	535	490
84	531.94	501	541	497
85	538.31	503	548	503
86	544.67	509	554	510
87	551.04	516	561	516
88	557.41	522	567	522
89	563.77	528	573	529
90	570.14	535	580	535
91	576.50	541	586	541
92	582.87	548	592	548
93	589.24	554	599	554
94	595.60	580	605	561
95	601.97	566	611	567

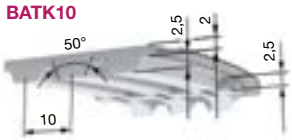
Z: number of teeth. D_{IF}: inside diameter of flanges.

SELF-GUIDING TIMING BELTS

BAT10

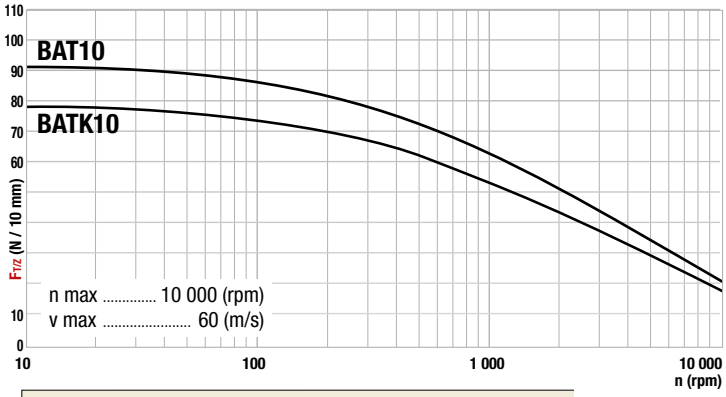
One direction of rotation

BATK10



Two directions of rotation

Tangential force transmittable by the teeth

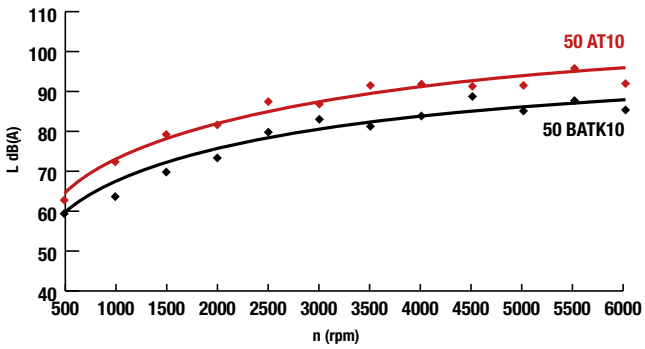


Belt scale 1

Tangential force transmittable by the tension members

Profile/pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F^N (N) standard tens. members	Permissible force at the join F^N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
SELF-GUIDING PRECISION APPLICATIONS												
BAT10	25	0.158	3 750	$1{\cdot}06 \cdot 10^6$			3 000	$1{\cdot}06 \cdot 10^6$			1 875	1 500
	32	0.180	5 000	$1{\cdot}37 \cdot 10^6$			4 000	$1{\cdot}37 \cdot 10^6$			2 500	2 000
	50	0.290	7 500	$2{\cdot}12 \cdot 10^6$			6 000	$2{\cdot}12 \cdot 10^6$			3 750	3 000
	75	0.436	12 000	$3{\cdot}18 \cdot 10^6$			9 000	$3{\cdot}18 \cdot 10^6$			6 000	4 500
	100	0.581	17 000	$4{\cdot}25 \cdot 10^6$			12 000	$4{\cdot}25 \cdot 10^6$			8 500	6 000
BATK10	32	0.192	5 000	$1{\cdot}37 \cdot 10^6$			4 000	$1{\cdot}37 \cdot 10^6$			2 500	2 000
	50	0.300	7 500	$2{\cdot}12 \cdot 10^6$			6 000	$2{\cdot}12 \cdot 10^6$			3 750	3 000
	75	0.450	12 000	$3{\cdot}18 \cdot 10^6$			9 000	$3{\cdot}18 \cdot 10^6$			6 000	4 500
	100	0.600	17 000	$4{\cdot}25 \cdot 10^6$			12 000	$4{\cdot}25 \cdot 10^6$			8 500	6 000

Acoustic curve 50 AT10 and 50 BATK10



Advantages

- Self-guiding: pulleys with no flanges.
- Very low noise level: less vibration during meshing.
- Very low polygon effect.
- Permanent contact during meshing: helicoidal meshing type.
- Suppressed vibrations when toothed support rollers or tension rollers are used.

BAT10 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
BAT10	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1
BATK10	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1

Belt-pilot calculation software

See link on our website

Standard lengths and widths available

Linear belts (M)
- Every length tooth to tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 880 mm

Options
- Stainless steel or aramide tension members, see page 6 (on request)
- Polyurethane, see page 5 (on request)
- Coatings, see pages 56 to 63

Self-guiding
- Intermediate widths (on request)

BELT ORDERING EXAMPLE			
Designation	Width	Profile / length	Particular specifications
Open linear BRECO belt	50	BATK10/5200 M	

DELIVERY TIMES	
Standard belts	4 to 6 weeks
Special belts	Consult us

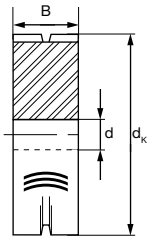
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*

TOOTHED PULLEYS

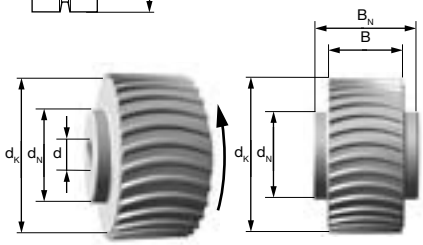
Pulleys acc. to drawing

The orientation of the teeth must be indicated in the pulley drawings by the symbol

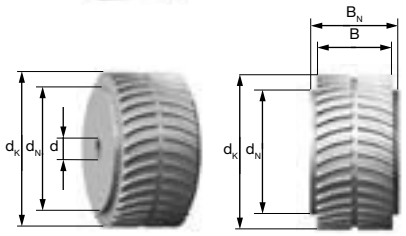


Standard pulleys

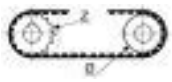
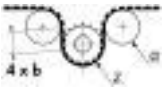
BAT10 pulley: one direction of rotation



BATK10 self-guiding pulley: two directions of rotation



Belt widths	b	25	32	50	75	100
Widths of pulleys without hub	B	30	35	55	80	105

Kinematics	Tension member type		BRECO® M (BRECO® V)
 **Monoflexure**	**Steel tension members**	**Z min.**	20 (25)
		dia. min. (mm)	60 (80)
	E tension members	**Z min.**	
		dia. min. (mm)	
	Stainless steel tension members*	**Z min.**	25
		dia. min. (mm)	80
 **Contraflexure**	**Steel tension members**	**Z min.**	25
		dia. min. (mm)	120
	E tension members	**Z min.**	
		dia. min. (mm)	
	Stainless steel tension members*	**Z min.**	40
		dia. min. (mm)	130

The numbers in brackets indicate the values to be used for welded belts.
*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways.

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	ALHR	55	BATK10/24-	2		25H7

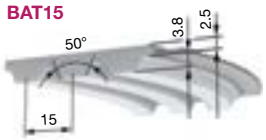
DELIVERY TIMES	
Pulleys acc. to drawing	4 weeks

Z	d_K	d_N	Bore d (H7) min.	Bore d (H7) max.
20	61.84	46	12	50
21	65.03	50	12	52
22	68.21	53	12	56
23	71.39	56	12	60
24	74.57	57	12	62
25	77.76	59	12	66
26	80.94	62	12	68
27	84.12	64	12	72
28	87.31	67	12	76
29	90.49	70	12	78
30	93.67	73	12	82
31	96.86	77	12	84
32	100.04	80	12	88
33	103.22	83	12	88
34	106.41	86	12	92
35	109.59	90	12	96
36	112.77	92	16	98
37	115.95	95	16	101
38	119.14	99	16	104
39	122.32	102	16	106
40	125.50	105	16	110
41	128.69	108	16	110
42	131.87	111	16	112
43	135.05	115	16	114
44	138.24	118	16	118
45	141.42	121	16	120
46	144.60	124	16	122
47	147.79	127	16	122
48	150.97	130	16	124
49	154.15	134	16	126
50	157.33	137	16	130
51	160.52	140	16	134
52	163.70	143	16	136
53	166.88	146	16	140
54	170.07	150	16	144
55	173.25	153	16	146
56	176.43	156	16	150
57	179.62	159	16	152
58	182.80	162	16	156
59	185.98	165	16	160
60	189.17	169	16	162
61	192.35	172	16	164
62	195.53	175	16	166
63	198.72	178	16	170
64	201.90	181	16	171
65	205.08	185	16	174
66	208.26	188	16	175
67	211.45	191	16	177
68	214.63	194	16	181
69	217.81	197	16	185
70	221.00	201	16	187
71	224.18	204	16	191
72	227.36	207	16	196
73	230.55	210	20	197
74	233.73	213	20	201
75	238.73	216	20	203
76	241.91	220	20	207
77	245.10	223	20	209
78	248.28	226	20	213
79	251.46	229	20	215
80	254.65	232	20	219
81	257.83	236	20	223
82	261.01	239	20	225
83	264.20	242	20	229
84	267.38	245	20	231
85	270.56	248	20	235
86	273.75	251	20	239
87	276.93	255	20	241
88	280.11	258	20	245
89	283.30	261	20	247
90	286.48	264	20	251

Z: number of teeth.

SELF-GUIDING TIMING BELTS

BAT15

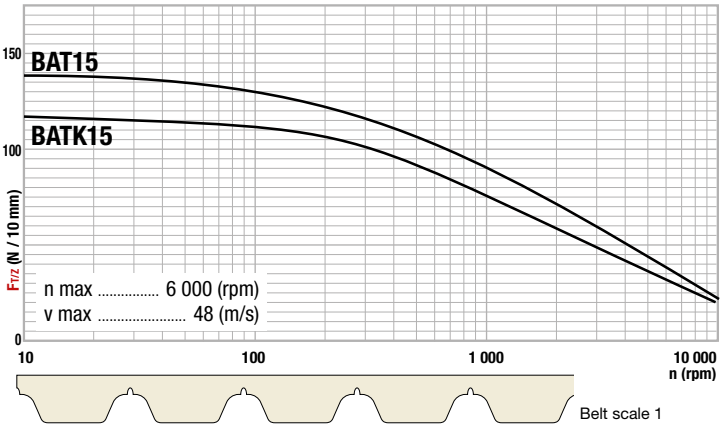


One direction of rotation

BATK15

Two directions of rotation

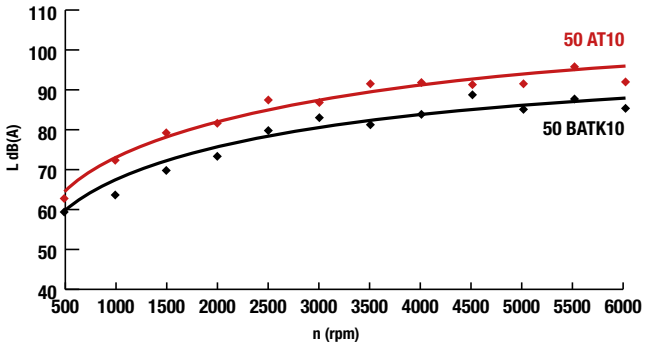
Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Profile/pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F^N (N) standard tens. members	Permissible force at the join F^N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
SELF-GUIDING PRECISION APPLICATIONS												
BAT15	50	0.428	11 200	2·8 . 106			9 000	2·8 . 106			5 600	4 500
	75	0.642	16 800	4·2 . 106			13 500	4·2 . 106			8 400	6 750
	100	0.856	22 400	5·6 . 106			18 000	5·6 . 106			11 200	9 000
BATK15	50	0.428	11 200	2·8 . 106			9 000	2·8 . 106			5 600	4 500
	75	0.642	16 800	4·2 . 106			13 500	4·2 . 106			8 400	6 750
	100	0.856	22 400	5·6 . 106			18 000	5·6 . 106			11 200	9 000

Acoustic curve 50 AT10 and 50 BATK10



Advantages

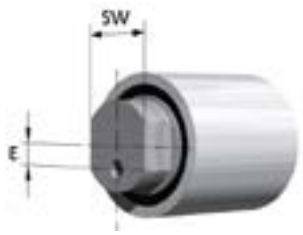
- Self-guiding: pulleys with no flanges.
- Very low noise level: less vibration during meshing.
- Very low polygon effect.
- Permanent contact during meshing: helicoidal meshing type.
- Suppressed vibrations when toothed support rollers or tension rollers are used.

BAT15 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
BAT15	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15
BATK15	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15

Accessory: tension roller

see *pages 130-133*



Standard lengths and widths available

Linear belts (M)
- Every length tooth to tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 960 mm

Options
- Stainless steel or aramide tension members. see page 6 (on request)
- Polyurethane. see page 5 (on request)
- Coatings see pages 56 to 63

BELT ORDERING EXAMPLE			
Designation	Width	Profile / length	Particular specifications
Welded linear BRECO belt	50	BAT15/1600 V	
Open linear BRECO belt	75	BATK15/2000 M	PAZ[1]
Open linear BRECO belt	50	BATK10/5200 M	PAZ[1]

DELIVERY TIMES	
Standard belts	4 to 6 weeks
Special belts	Consult us

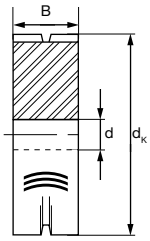
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*

TOOTHED PULLEYS

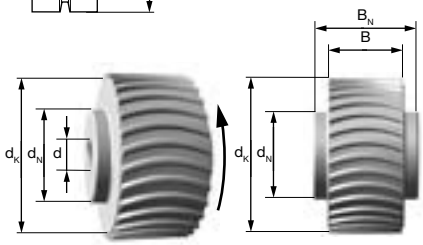
Pulleys acc. to drawing

The orientation of the teeth must be indicated in the pulley drawings by the symbol

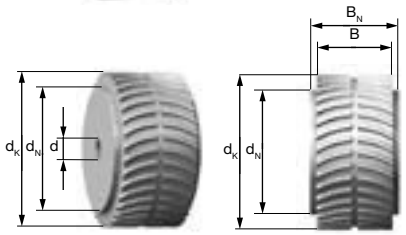


Standard pulleys

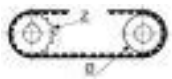
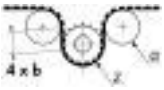
BAT15 pulley: one direction of rotation



BATK15 self-guiding pulley: two directions of rotation



Belt widths	b	50	75	100
Widths of pulleys without hub	B	55	80	105

Kinematics	Tension member type		BRECO M (BRECO V)
 **Monoflexure**	**Steel tension members**	**Z min.**	20 (25)
		dia. min. (mm)	100 (120)
	E tension members	**Z min.**	
		dia. min. (mm)	
	Stainless steel tension members*	**Z min.**	25
		dia. min. (mm)	120
 **Contraflexure**	**Steel tension members**	**Z min.**	30 (35)
		dia. min. (mm)	150 (180)
	E tension members	**Z min.**	
		dia. min. (mm)	
	Stainless steel tension members*	**Z min.**	35 (40)
		dia. min. (mm)	180 (190)

The numbers in brackets indicate the values to be used for welded belts.
*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS. see page 8

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways.

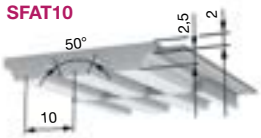
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	ALHR	55	BATK15/34-	0		25H7

DELIVERY TIMES	
Pulleys acc. to drawing	4 weeks

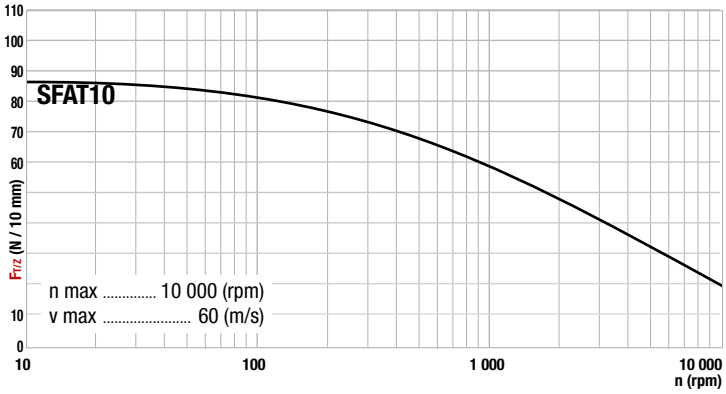
Z	d_K	d_N	Bore d (H7)	
			min.	max.
20	93.01	60	12	58
21	97.79	60	12	63
22	102.56	65	12	68
23	107.34	65	12	72
24	112.11	70	16	77
25	116.89	80	16	82
26	121.66	80	16	87
27	126.44	80	16	91
28	131.21	80	16	96
29	135.98	80	16	101
30	140.76	90	16	106
31	145.53	90	16	111
32	150.31	95	16	115
33	155.08	95	16	120
34	159.86	95	16	125
35	164.63	95	16	130
36	169.41	100	16	134
37	174.18	100	16	139
38	178.96	100	16	144
39	183.73	100	16	149
40	188.51	110	16	154
41	193.28	110	16	158
42	198.05	110	16	163
43	202.83	110	16	168
44	207.60	110	16	173
45	212.38	110	16	185
46	217.15	140	16	188
47	221.93	140	16	195
48	226.70	140	16	198
49	231.48	140	16	204
50	236.25	140	16	206
51	241.03	140	16	211
52	245.80	140	16	216
53	250.58	160	16	221
54	255.35	160	16	225
55	260.13	160	16	230
56	264.90	160	16	235
57	269.67	160	16	243
58	274.45	160	16	244
59	279.22	160	16	249
60	284.00	160	16	254
61	288.77	160	16	259
62	293.55	160	16	264
63	298.32	160	16	270
64	303.10	160	16	273
65	307.87	160	16	278
66	312.65	160	16	283
67	317.42	160	16	287
68	322.20	160	16	292
69	326.97	160	16	297
70	331.74	160	16	302
71	336.52	160	16	307
72	341.29	160	16	310
73	346.07	160	20	316
74	350.84	160	20	320
75	355.62	160	20	326
76	360.39	160	20	330
77	365.17	160	20	335
78	369.94	160	20	340
79	374.72	160	20	345
80	379.49	160	20	349
81	384.27	160	20	354
82	389.04	160	20	359
83	393.81	160	20	364
84	398.59	160	20	369
85	403.36	160	20	373
86	408.14	160	20	378
87	412.91	160	20	383
88	417.69	160	20	388
89	422.46	160	20	392
90	427.24	160	20	397

Z: number of teeth.

SELF-GUIDING TIMING BELTS



Tangential force transmittable by the teeth



Belt scale 1

Tangential force transmittable by the tension members

Profil/pas	Largeur de courroie (mm)	Poids (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F^N (N) standard tens. members	Permissible force at the join F^N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
HIGH-PERFORMANCE APPLICATIONS												
SFAT10	50	0.290	7 500	1·87 · 106			5 625	1·87 · 106			3 750	2 810
	75	0.436	10 500	2·62 · 106			7 875	2·62 · 106			5 250	3 940
	100	0.581	16 000	4·00 · 106			12 000	4·00 · 106			8 000	6 000

Advantages

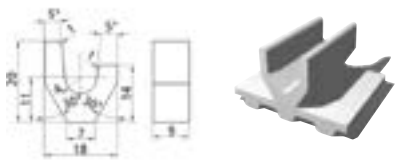
- Better meshing quality and therefore increased service life.
- Self-guiding: pulleys with no flanges.
- Reduced noise level: the meshing shock is limited, therefore the transmission is quieter.
- Maximum transmittable power: the full width of the teeth is utilised.
- Reduced polygon effect.
- Reduced vibration: when toothed support rollers or tension rollers are used.

SFAT10 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
SFAT10	+/- 0.5	+/- 0.8	- 0.1 / +0.3	0 / - 0.1

Example of a flight that can be welded to the back of the belt

see *page 66*



Standard lengths and widths available

Linear belts (M)
- Every length tooth to tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 880 mm

Options
- Stainless steel or aramide tension members, see page 6 (on request)
- Polyurethane, see page 5 (on request)
- Coatings, see pages 56 to 63

BELT ORDERING EXAMPLE			
Designation	Width	Profile / length	Particular specifications
Welded linear BRECO belt	50	SFAT10/1600 V	
Open linear BRECO belt	50	SFAT10/2000 M	PAZ[1]

DELIVERY TIMES	
Standard belts	4 to 6 weeks
Special belts	Consult us

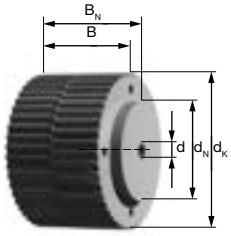
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*

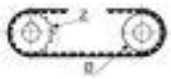
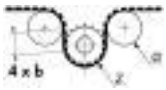
TOOTHED PULLEYS

Pulleys acc. to drawing see *page 8*

Standard pulleys



Belt widths	b	50	75	100
Widths of pulleys without hub	B	55	80	105

Kinematics	Tension member type		BRECO® M (BRECO® V)
 **Monoflexure**	**Steel tension members**	**Z min.**	15(25)
		dia. min. (mm)	50 (80)
	E tension members	**Z min.**	12
		dia. min. (mm)	50
	Stainless steel tension members*	**Z min.**	25
		dia. min. (mm)	80
 **Contraflexure**	**Steel tension members**	**Z min.**	25
		dia. min. (mm)	120
	E tension members	**Z min.**	20
		dia. min. (mm)	80
	Stainless steel tension members*	**Z min.**	40
		dia. min. (mm)	130

The numbers in brackets indicate the values to be used for welded belts.
*Special manufacture: minimum quantity.

Z	d_K	d_N	Bore d (H7) Min.
15	45.93	32	8
16	49.11	35	8
17	52.29	40	8
18	55.48	40	10
19	58.66	44	10
20	61.84	46	12
21	65.03	46	12
22	68.21	50	12
23	71.39	50	12
24	74.57	58	12
25	77.76	60	12
26	80.94	60	12
27	84.12	60	12
28	87.31	60	12
29	90.49	60	12
30	93.67	60	12
31	96.86	60	12
32	100.04	65	12
33	103.22	65	12
34	106.41	65	12
35	109.59	65	12
36	112.77	70	16
37	115.95	70	16
38	119.14	70	16
39	122.32	70	16
40	125.50	80	16
41	128.69	80	16
42	131.87	80	16
43	135.05	80	16
44	138.24	90	16
45	141.42	90	16
46	144.60	90	16
47	147.79	90	16
48	150.97	95	16
49	154.15	95	16
50	157.33	95	16
51	160.52	95	16
52	163.70	110	16
53	166.88	110	16
54	170.07	110	16
55	173.25	110	16
56	176.43	110	16
57	179.62	110	16
58	182.80	110	16
59	185.98	110	16
60	189.17	110	16

Z: number of teeth.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8

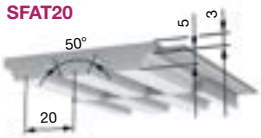
Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	65	SFAT10/45-	2	E : 110 x 10	25H7

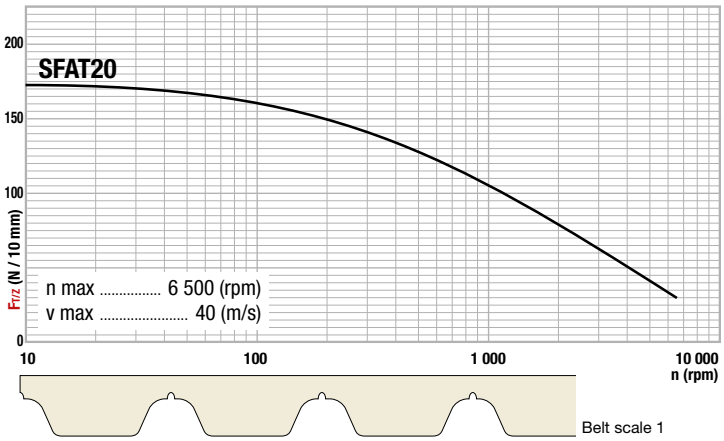
DELIVERY TIMES	
Pulleys acc. to drawing	4 weeks

SELF-GUIDING TIMING BELTS

SFAT20



Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Profile/pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]				Permissible force at the join F^N (N) standard tens. members	Permissible force at the join F^N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
HIGH-PERFORMANCE APPLICATIONS												
SFAT20	50	0.480	11 200	2·8 . 106			8 960	2·8 . 106			5 600	4 480
	75	0.720	16 800	4·2 . 106			13 440	4·2 . 106			8 400	6 720
	100	0.960	22 400	5·6 . 106			17 920	5·6 . 106			11 200	8 960

Advantages

- Better meshing quality and therefore increased service life.
- Self-guiding: pulleys with no flanges.
- Reduced noise level: the meshing shock is limited, therefore the transmission is quieter.
- Maximum transmittable power: the full width of the teeth is utilised.
- Reduced polygon effect.
- Reduced vibration: when toothed support rollers or tension rollers are used.

SFAT20 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
SFAT20	+/- 1.0	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15

Machining for integrating a metal tooth

see *page 65*

Standard lengths and widths available

Linear belts (M)
- Every length tooth to tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 1 500 mm

Options
- Stainless steel or aramide tension members, see page 6 (on request)
- Polyurethane, see page 5 (on request)
- Coatings, see pages 56 to 63

BELT ORDERING EXAMPLE			
Designation	Width	Profile / length	Particular specifications
Welded linear BRECO belt	50	SFAT20/1600 V	
Open linear BRECO belt	50	SFAT20/2000 M	PAZ[1]

DELIVERY TIMES	
Standard belts	4 to 6 weeks
Special belts	Consult us

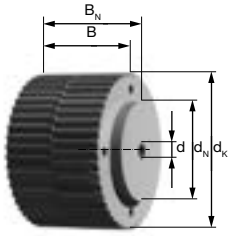
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*

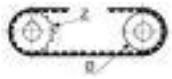
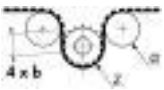
TOOTHED PULLEYS

Pulleys acc. to drawing see *page 8*

Standard pulleys



Belt widths	b	50	75	100
Widths of pulleys without hub	B	60	85	110

Kinematics	Tension member type		BRECO M (BRECO V)
 **Monoflexure**	**Steel tension members**	**Z min.**	18 (20)
		dia. min. (mm)	120
	E tension members	**Z min.**	
		dia. min. (mm)	
	Stainless steel tension members*	**Z min.**	32
		dia. min. (mm)	200
 **Contraflexure**	**Steel tension members**	**Z min.**	25
		dia. min. (mm)	180
	E tension members	**Z min.**	
		dia. min. (mm)	
	Stainless steel tension members*	**Z min.**	60
		dia. min. (mm)	380

The numbers in brackets indicate the values to be used for welded belts.
*Special manufacture: minimum quantity.

Z	d_K	d_N	Bore d (H7) min.
18	111.77	0	12
19	118.14	80	12
20	124.50	90	16
21	130.87	90	16
22	137.24	90	16
23	143.60	95	16
24	149.97	95	16
25	156.33	95	16
26	162.70	110	16
27	169.07	110	16
28	175.43	110	16
29	181.80	110	16
30	188.17	110	16
31	194.53	110	16
32	200.90	110	16
33	207.26	110	16
34	213.63	110	16
35	220.00	110	16
36	226.36	110	18
37	232.73	110	18
38	239.10	110	18
39	245.46	110	18
40	251.83	110	18
41	258.19	130	18
42	264.56	130	18
43	270.93	130	18
44	277.29	130	18
45	283.66	130	18
46	290.03	130	18
47	296.39	130	18
48	302.76	130	18
49	309.12	130	20
50	315.49	140	20
51	321.86	140	20
52	328.22	140	20
53	334.59	140	20
54	340.95	140	20
55	347.32	140	20
56	353.69	140	20
57	360.05	140	20
58	366.42	140	20
59	372.79	140	20
60	379.15	140	20
61	385.52	140	20
62	391.88	140	20
63	398.25	140	20
64	404.62	140	20
65	410.98	140	20
66	417.35	140	20
67	423.72	140	20
68	430.08	140	20
69	436.45	140	20
70	442.81	140	20
71	449.18	140	20
72	455.55	140	20

Z: number of teeth.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8

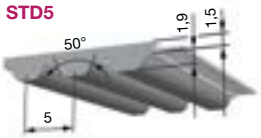
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	95	SFAT20/60-	2	E : 140 x 10	25H7

DELIVERY TIMES	
Pulleys acc. to drawing	4 weeks

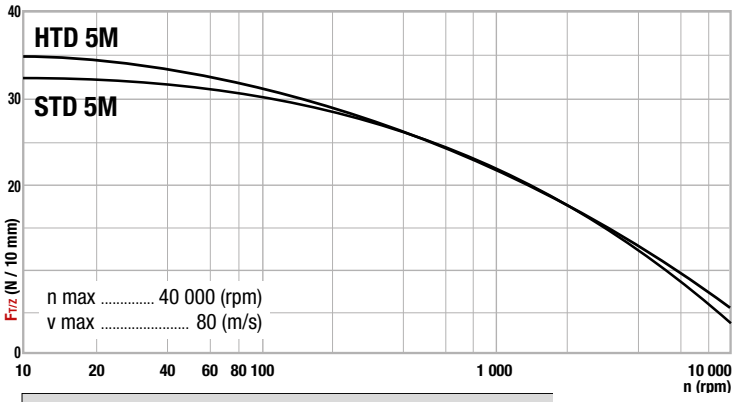
TIMING BELTS

HTD5

STD5



Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

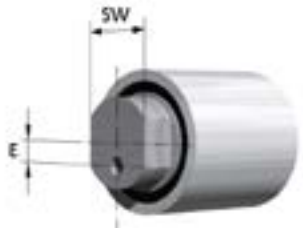
Profile/pitch	Belt width (mm)	Weight (kg/m) HTD	CONTI® SYNCHRODRIVE linear belts								HF welded belts (V)	
			Tension members: standard steel - polyurethane[2]				Tension members: stainless steel - polyurethane[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
HIGH-FLEXIBILITY APPLICATIONS												
HTD5 HF STD5 HF	5	0.017	150	3·75 · 104								
	10	0.034	300	7·50 · 104								
	15	0.050	450	11·25 · 104								
	20	0.067	600	15·00 · 104							300	
	25	0.084	750	18·75 · 104							375	
	30	0.101	900	22·50 · 104							450	
	40	0.134	1 200	30·00 · 104							600	
	50	0.168	1 500	37·50 · 104							750	
HIGH-PERFORMANCE APPLICATIONS												
HTD5 HPE[3] STD5 HPE[3]	10	0.041	650	$2{\cdot}00 \cdot 10^5$								
	15	0.061	975	$3{\cdot}00 \cdot 10^5$								
	20	0.081	1 300	$4{\cdot}00 \cdot 10^5$								
	25	0.102	1 625	$5{\cdot}00 \cdot 10^5$								
	30	0.122	1 950	$6{\cdot}00 \cdot 10^5$								
	40	0.162	2 600	$8{\cdot}00 \cdot 10^5$								
	50	0.203	3 250	$10{\cdot}00 \cdot 10^5$								
HIGH-RESISTANCE APPLICATIONS												
HTD5 HS[4] HTD5 HSE[3] STD5 HSE[3]	10	0.0470	1 200	0·350 . 106								
	15	0.0705	1 800	0·525 . 106								
	20	0.0940	2 400	0·700 . 106								
	25	0.1175	3 000	0·875 . 106								
	30	0.1410	3 600	1·050 . 106								
	40	0.1880	4 800	1·400 . 106								
	50	0.2350	6 000	1·750 . 106								

Tolerances

Profile	Belt width (mm)	Width (mm)	Length (mm/m)	Total thickness (mm)
HTD5	up to 25	+/- 0.5	+/- 1	+/- 0.25
	> 25-50	+/- 0.6	+/- 1	+/- 0.25
STD5	up to 25	+/- 0.5	+/- 1	+/- 0.25
	> 25-50	+/- 0.6	+/- 1	+/- 0.25

Accessory: tension roller with eccentric

see *page 130*



Standard lengths and widths available

Linear belts (M)
- In stock: rolls of 30 or 60 m
- Lengths greater than 60 m on request

BELT ORDERING EXAMPLES			
Designation	Width	Profile / length	Particular specifications
Welded CONTI SYNCHRODRIVE belt	50	HTD5M/2000 V HF	
Open CONTI SYNCHRODRIVE belt	20	HTD5M/30000 HP	

DELIVERY TIMES	
Standard belts	4 to 6 weeks
Special belts	Consult us

Recommended pre-tension: see *page 4*
General information: see *page 4*
1. Coatings (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*
3. High-flexibility tension members (E)
4. Version without PAZ

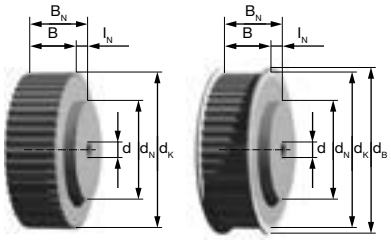
TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

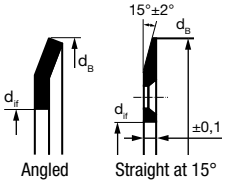
Standard pulleys

Version 2 (with flanges)

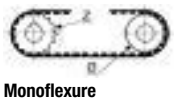
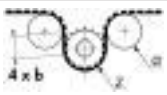
Version 0 (without flanges)



	Belt widths	b	10	15	20	25	30	40	50
Pulley widths	Pulley without hub	B	16	21	26	31	36	46	56
	Pulley with hub	B_N	22	27	32	37	42	52	62



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 68	1	Angled	Rolled
Z > 68	1.5	Angled	Rolled
Width > 66 mm	2	Angled	Screwed

Kinematics	Tension member type		HTD5 AND STD5		
				HP	HS
 Monoflexure	Steel tension members	Z min.	12		32
		dia. min. (mm)	19		50
	E tension members*	Z min.		16	24
		dia. min. (mm)		25	38
 Contraflexure	Steel tension members	Z min.	12		32
		dia. min. (mm)	30		100
	E tension members*	Z min.		16	24
		dia. min. (mm)		50	80

*Special manufacture: minimum quantity.

Z	d_K HTD	d_K STD	Bore d (H7) max.	d_B	d_{IF} Rolled flanges
12	17.96	18.14	8	21	14
13	19.55	19.73	8	21	14
14	21.14	21.32	11	25	17
15	22.73	22.91	12	28	18
16	24.32	24.50	14	32	20
17	25.92	26.10	17	32	23
18	27.51	27.69	17	32	23
19	29.10	29.28	19	36	25
20	30.69	30.87	19	36	25
21	32.28	32.46	22	38	28
22	33.87	34.05	21	37	27
23	35.47	35.65	24	40	30
24	37.06	37.24	24	42	30
25	38.65	38.83	27	44	33
26	40.24	40.42	27	44	33
27	41.83	42.01	30	48	36
28	43.42	43.60	30	48	36
29	45.01	45.19	34	52	40
30	46.60	46.79	34	52	40
31	48.20	48.38	37	55	43
32	49.79	49.97	37	55	43
33	51.38	51.56	36	56	42
34	52.97	53.15	40	58	46
35	54.56	54.74	42	60	48
36	56.16	56.34	42	60	48
37	57.75	57.93	42	63	48
38	59.34	59.52	42	63	48
39	60.93	61.11	46	66	52
40	62.52	62.70	46	66	52
41	64.11	64.29	52	72	58
42	65.70	65.89	52	72	58
43	67.30	67.48	52	72	58
44	68.89	69.07	54	74	60
45	70.48	70.66	54	74	60
46	72.07	72.25	60	80	66
47	73.66	73.84	60	80	66
48	75.25	75.43	60	80	66
49	76.85	77.03	62	82	68
50	78.44	78.62	64	84	70
51	80.03	80.21	66	86	72
52	81.62	81.80	66	86	72
53	83.21	83.39	66	86	72
54	84.80	84.98	70	90	76
55	86.40	86.58	70	90	76
56	87.99	88.17	73	93	79
57	89.58	89.76	77	97	83
58	91.17	91.35	77	97	83
59	92.76	92.94	77	97	83
60	94.35	94.53	79	99	85
61	95.94	96.12	79	99	85
62	97.54	97.72	86	106	92
63	99.13	99.31	86	106	92
64	100.72	100.90	86	106	92
65	102.31	102.49	86	106	92
66	103.90	104.08	90	110	96
67	105.49	105.67	86	106	92
68	107.09	107.27	90	110	96
69	108.68	108.86	90	110	96
70	110.27	110.45	90	110	96
71	111.86	112.04	90	110	96
72	113.45	113.63	89	115	95

Z: number of teeth. D_{IF}: inside diameter of flanges.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: steel, see page 9
- d_{max} : maximum bore without keyway for flanged pulley

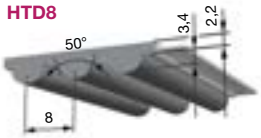
Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	26	HTD5/24-	2		12H7

DELIVERY TIMES	
Pulleys, standard or acc. to drawing	4 weeks

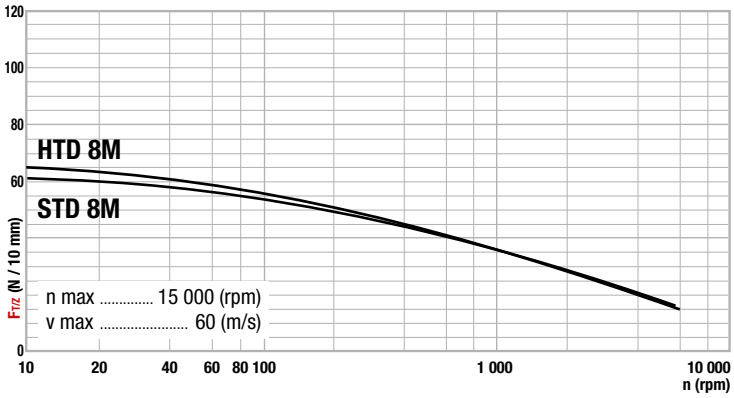
TIMING BELTS

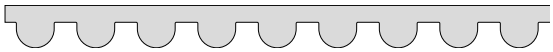
HTD8



STD8

Tangential force transmittable by the teeth





HTD8 belt scale 1

STD8 belt scale 1

Tangential force transmittable by the tension members

Profile/pitch	Belt width (mm)	Weight (kg/m) HTD	CONTI® SYNCHRODRIVE linear belts								HF welded belts (V)	
			Tension members: standard steel - polyurethane[2]				Tension members: stainless steel - polyurethane[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
HIGH-FLEXIBILITY APPLICATIONS												
HTD8 HF STD8 HF	10	0,054	650	0·2 . 106								
	15	0,081	975	0·3 . 106								
	20	0,108	1 300	0·4 . 106								
	25	0,135	1 625	0·5 . 106							750	
	30	0,162	1 950	0·6 . 106							900	
	40	0,216	2 600	0·8 . 106							1 200	
	50	0,270	3 250	1·0 . 106							1 500	
	55	0,297	3 575	1·1 . 106							1 650	
	85	0,459	5 525	1·7 . 106							2 550	
	100	0,540	6 500	2·0 . 106							3 000	
HIGH-PERFORMANCE APPLICATIONS												
HTD8 HP STD8 HP HTD8 HPE[3] HTD8 HP-Niro[4]	10*	0,063	1 200	0·350 . 106								
	15	0,095	1 800	0·525 . 106			1 620	0·473 . 106				
	20	0,126	2 400	0·700 . 106			2 160	0·630 . 106				
	25	0,158	3 000	0·875 . 106			2 700	0·788 . 106				
	30	0,190	3 600	1·050 . 10^6			3 240	0·945 . 106				
	40	0,253	4 800	1·400 . 10^6			4 320	1·260 . 10^6				
	50	0,316	6 000	1·750 . 10^6			5 400	1·580 . 10^6				
	55	0,348	6 600	1·930 . 10^6			5 940	1·730 . 10^6				
	85	0,537	10 200	2·980 . 10^6			9 180	2·680 . 10^6				
	100	0,632	12 000	3·500 . 10^6			10 800	3·150 . 10^6				
HIGH-RESISTANCE APPLICATIONS												
HTD8 HS[5] STD8 HS	20*	0,142	4 200	1·06 · 10^6								
	25	0,181	5 250	1·33 · 10^6								
	30	0,217	6 300	1·59 · 10^6								
	40	0,289	8 400	2·12 · 10^6								
	50	0,361	10 500	2·65 · 10^6								
	55	0,397	11 550	2·92 · 10^6								
	85	0,614	17 850	4·51 · 10^6								
	100	0,722	21 000	5·30 · 10^6								
	115*	0,830	24 150	6·10 · 10^6								
	120*	0,866	25 200	6·36 · 10^6								

Tolerances

Profile	Belt width (mm)	Width (mm)	Length (mm/m)	Total thickness (mm)
HTD8 STD8	up to 25	+/- 0.6	+/- 1	+/- 0.4
	> 25-50	+/- 0.7	+/- 1	+/- 0.4
	> 50	+/- 0.8	+/- 1	+/- 0.4

Option: expanding hubs

see *page 134*

Standard lengths and widths available

Linear belts (M)
- In stock: rolls of 30 or 60 m
- Lengths greater than 60 m on request

BELT ORDERING EXAMPLES			
Designation	Width	Profile / length	Particular specifications
Welded CONTI SYNCHRODRIVE belt	50	HTD8M/2000 V HF	
Open CONTI SYNCHRODRIVE belt	20	HTD8M/30000 M HP	

DELIVERY TIMES	
Standard belts	4 to 6 weeks
Special belts	Consult us

Recommended pre-tension: see *page 4*
General information: see *page 4*
1. Coatings (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*
3. High-flexibility tension members
4. Stainless steel tension members
5. Version without PAZ
* Only for the STD profile

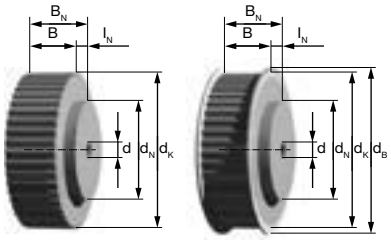
TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

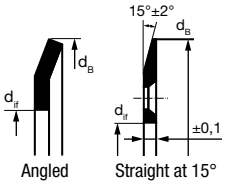
Standard pulleys

Version 2 (with flanges)

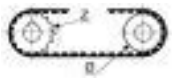
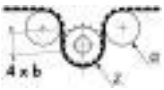
Version 0 (without flanges)



	Belt widths	b	10	15	20	25	30	40	50	55	85	100	115	120
Pulley widths	Pulley without hub	B	18	23	28	33	38	48	60	65	95	110	125	130
	Pulley with hub	B_N	28	33	38	53	48	58	70	75	105	120	135	140



Flanges			
Z	Thickness	Shape	Mounting
Z = 42	1	Angled	Rolled
42 < Z ≤ 116	1,5	Angled	Rolled
B_N ≥ 66 and Z ≤ 116	2	Angled	Screwed
Z > 116	2	Straight at 15°	Screwed

Kinematics	Tension member type		HTD8 AND STD8		
			HF	HP	HS
 Monoflexure	Steel tension members	Z min.	16	20	28
		dia. min. (mm)	40	50	70
	E tension members*	Z min.		16	
		dia. min. (mm)		40	
	Stainless steel tension members*	Z min.		24	
		dia. min. (mm)		60	
 Contraflexure	Steel tension members	Z min.	16	20	28
		dia. min. (mm)	60	100	120
	E tension members*	Z min.		16	
		dia. min. (mm)		80	
	Stainless steel tension members*	Z min.		24	
		dia. min. (mm)		120	

*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: steel, see page 9
- d_{max} : maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	48	HTD 8M/24	2	E : 45 X 10	12H7

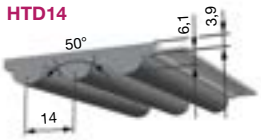
DELIVERY TIMES	
Pulleys, standard or acc. to drawing	4 weeks

Z	d_K	Bore d (H7) max.	d_B	d_{IF} Rolled flanges
16	39.37	21	43	31
17	41.92	23	45	33
18	44.47	26	48	36
19	47.01	28	50	38
20	49.56	26	56	42
21	52.11	26	55	43
22	54.65	29	58	46
23	57.20	32	63	48
24	59.75	34	66	52
25	62.29	34	66	52
26	64.84	35	72	58
27	67.38	39	74	60
28	69.93	42	74	60
29	72.48	47	80	66
30	75.02	47	82	68
31	77.57	48	84	70
32	80.12	51	86	72
33	82.66	57	86	72
34	85.21	57	90	76
35	87.76	58	93	79
36	90.30	63	97	83
37	92.85	64	97	83
38	95.40	56	99	85
39	97.94	67	103	87
40	100.49	72	105	91
41	103.04	66	110	96
42	105.58	66	110	96
43	108.13	80	115	95
44	110.68	83	115	95
45	113.22	83	118	104
46	115.77	89	123	107
47	118.31	89	123	107
48	120.86	93	127	111
49	123.41	96	131	117
50	125.95	96	131	117
51	128.50	99	135	119
52	131.05	102	135	119
53	133.59	106	140	123
54	136.14	109	143	127
55	138.69	109	143	127
56	141.23	114	148	131
57	143.78	113	148	131
58	146.33	113	152	135
59	148.87	121	158	142
60	151.42	125	158	142
61	153.97	125	160	146
62	156.51	128	164	145
63	159.06	128	168	148
64	161.60	133	168	148
65	164.15	137	175	157
66	166.70	132	175	157
67	169.24	132	175	157
68	171.79	132	175	157
69	174.34	147	185	170
70	176.88	138	185	170
71	179.43	138	188	161
72	181.98	153	188	161
73	184.52	145	192	175
74	187.07	160	192	175
75	189.62	160	196	176
76	192.16	163	198	184
77	194.71	166	200	180
78	197.26	166	204	190
79	199.80	172	207	187
80	202.35	172	207	187
81	204.89	179	210	196
82	207.44	179	214	200
83	209.99	182	217	203
84	212.53	185	220	206
85	215.08	177	220	206
86	217.63	177	223	209
87	220.17	183	226	206
88	222.72	183	230	216
89	225.27	195	230	216
90	227.81	198	233	219

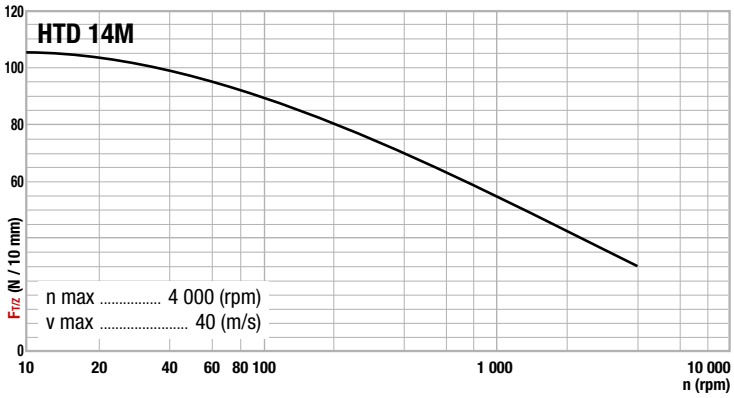
Z: number of teeth. D_{IF}: inside diameter of flanges.
Values only applicable to the HTD profile.

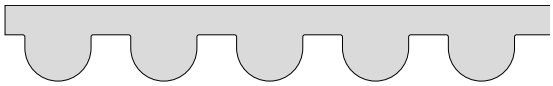
TIMING BELTS

HTD14



Tangential force transmittable by the teeth





HTD14 belt scale 1

Tangential force transmittable by the tension members

Profile/pitch	Belt width (mm)	Weight (kg/m) HTD	CONTI® SYNCHRODRIVE linear belts								HF welded belts (V)	
			Tension members: standard steel - polyurethane[2]				Tension members: stainless steel - polyurethane[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension member Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
HIGH-FLEXIBILITY APPLICATIONS												
HTD14 HF HTD14 HF NIRO[4]	20	0.207	2 400	$0{\cdot}700 \cdot 10^6$			2 160	$630 \cdot 10^3$				
	25	0.259	3 000	$0{\cdot}875 \cdot 10^6$			2 700	$788 \cdot 10^3$				
	30	0.311	3 600	$1{\cdot}050 \cdot 10^6$			3 240	$945 \cdot 10^3$			1 800	
	40	0.415	4 800	$1{\cdot}400 \cdot 10^6$			4 320	$1\,026 \cdot 10^3$			2 400	
	50	0.519	6 000	$1{\cdot}750 \cdot 10^6$			5 400	$1\,058 \cdot 10^3$			3 000	
	55	0.570	6 600	$1{\cdot}930 \cdot 10^6$			5 940	$1\,073 \cdot 10^3$			3 300	
	85	0.881	10 200	$2{\cdot}980 \cdot 10^6$			9 180	$2\,068 \cdot 10^3$			5 100	
	100	1.037	12 000	$3{\cdot}500 \cdot 10^6$			10 800	$3\,015 \cdot 10^3$			6 000	
HIGH-PERFORMANCE APPLICATIONS												
HTD14 HP	25	0.282	5 250	$1{\cdot}33 \cdot 10^6$								
	30	0.338	6 300	$1{\cdot}59 \cdot 10^6$								
	40	0.451	8 400	$2{\cdot}12 \cdot 10^6$								
	50	0.564	10 500	$2{\cdot}65 \cdot 10^6$								
	55	0.620	11 550	$2{\cdot}92 \cdot 10^6$								
	85	0.958	17 850	$4{\cdot}51 \cdot 10^6$								
	100	1.127	21 000	$5{\cdot}30 \cdot 10^6$								
	110	1.240	23 100	$5{\cdot}83 \cdot 10^6$								
	115	1.296	24 150	$6{\cdot}10 \cdot 10^6$								
	120	1.352	25 200	$6{\cdot}36 \cdot 10^6$								
HIGH-RESISTANCE APPLICATIONS												
HTD14 HS	50	0.57	12 500	$3{\cdot}15 \cdot 10^6$								
	55	0.627	13 750	$3{\cdot}47 \cdot 10^6$								
	85	0.969	21 250	$5{\cdot}36 \cdot 10^6$								
	100	1.14	25 000	$6{\cdot}30 \cdot 10^6$								
	110	1.254	27 500	$6{\cdot}93 \cdot 10^6$								
	115	1.311	28 750	$7{\cdot}25 \cdot 10^6$								
	120	1.368	30 000	$7{\cdot}56 \cdot 10^6$								
EXTREMELY HIGH-RESISTANCE APPLICATIONS												
HTD14 XHP-PAZ	40	0.56	19 000	$4{\cdot}80 \cdot 10^6$								
	50	0.70	23 800	6·00 · 106								
	55	0.77	26 100	6·60 · 106								
	85	1.19	40 400	$1{\cdot}02 \cdot 10^7$								
	100	1.40	47 600	$1{\cdot}20 \cdot 10^7$								
	115	1.61	54 700	$1{\cdot}38 \cdot 10^7$								
	120	1.68	57 100	$1{\cdot}44 \cdot 10^7$								
	150	2.10	71 400	$1{\cdot}80 \cdot 10^7$								

Tolerances

Profile	Belt width (mm)	Width (mm)	Length (mm/m)	Total thickness (mm)
HTD14	up to 25	+/- 0.6	+/- 1	+/- 0.6
	> 25 à -50 mm	+/- 1.0	+/- 1	+/- 0.6
	> 50 mm	+/- 1.2	+/- 1	+/- 0.6

Standard lengths and widths available

Linear belts (M)
- In stock: rolls of 30 or 60 m
- Lengths greater than 60 m on request

BELT ORDERING EXAMPLES			
Designation	Width	Profile / length	Particular specifications
Welded CONTI SYNCHRODRIVE belt	25	HTD14M/2000 V HF	
Open CONTI SYNCHRODRIVE belt	110	HTD14M/30000 M XHP	PAZ[1]

DELIVERY TIMES	
Standard belts	4 to 6 weeks
Special belts	Consult us

Recommended pre-tension: see *page 4*
General information: see *page 4*
1. Coatings (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*
3. High-flexibility tension members
4. Stainless steel tension members
5. Version without PAZ

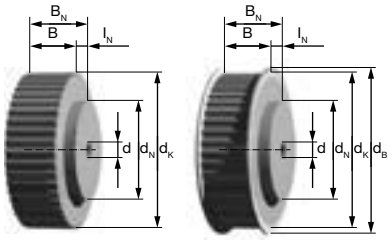
TOOTHED PULLEYS

Pulleys acc. to drawing see *page 8*

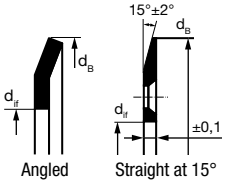
Standard pulleys

Version 2 (with flanges)

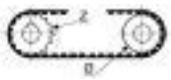
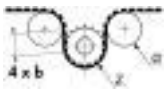
Version 0 (without flanges)



	Belt widths	b	20	25	30	40	50	55	85	100	115	120
Pulley widths	Pulley without hub	B	28	33	38	48	60	65	95	110	125	130
	Pulley with hub	B_N	38	43	48	58	70	75	105	120	135	140



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 65	2	Angled	Rolled
Z > 66	2	Straight at 15°	Screwed

Kinematics	Tension member type		HTD8 AND STD8			
			HF	HP	HS	XHP
 Monoflexure	Steel tension members	Z min.	18	26	34	44
		dia. min. (mm)	80	115	151	196
	E tension members*	Z min.				
		dia. min. (mm)				
	Stainless steel tension members*	Z min.	22			
		dia. min. (mm)	98			
 Contraflexure	Steel tension members	Z min.	18	26	34	44
		dia. min. (mm)	120	180	200	196
	E tension members*	Z min.				
		dia. min. (mm)				
	Stainless steel tension members*	Z min.	22			
		dia. min. (mm)	144			

Z	d_K	d_B	Flanges d_{IF}
24	104.29	115	70
25	108.75	115	70
26	113.20	121	77
27	117.66	123	91
28	122.12	128	83
29	126.57	134	89
30	130.99	140	96
31	135.43	147	102
32	139.88	147	102
33	144.33	153	109
34	148.79	160	115
35	153.22	160	115
36	157.68	166	121
37	162.14	172	128
38	166.60	172	128
39	171.06	179	134
40	175.49	185	140
41	179.92	192	147
42	184.38	192	147
43	188.83	198	153
44	193.28	204	159
45	197.74	204	159
46	202.20	210	166
47	206.66	217	172
48	211.11	223	179
49	215.57	223	179
50	220.03	229	185
51	224.48	236	191
52	228.94	236	191
53	233.40	242	198
54	237.85	249	204
55	242.31	249	204
56	246.76	256	213
57	251.22	261	217
58	255.68	268	223
59	260.13	268	223
60	264.59	274	229
61	269.05	280	236
62	273.50	280	236
63	277.96	287	242
64	282.41	293	249
65	286.87	300	255
66	291.33	300	255
67	295.78	306	273
68	300.24	312	268
69	304.70	312	268
70	309.15	319	274
71	313.61	319	274
72	318.06	322	289
73	322.51	331	287
74	326.98	338	293
75	331.43	338	293
76	335.89	344	299
77	340.35	350	306
78	344.80	357	312
79	349.26	357	312
80	353.71	363	319
81	358.17	370	325
82	362.63	376	331
83	367.09	376	331
84	371.54	382	338
85	376.00	386	350
86	380.45	390	338
87	384.91	395	350
88	389.37	401	357
89	393.82	401	357
90	398.28	408	363

Z: number of teeth. D_{IF}: inside diameter of flanges.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: steel, see page 9

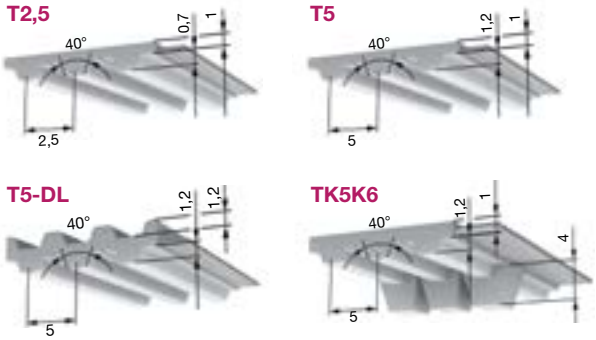
Options

- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request

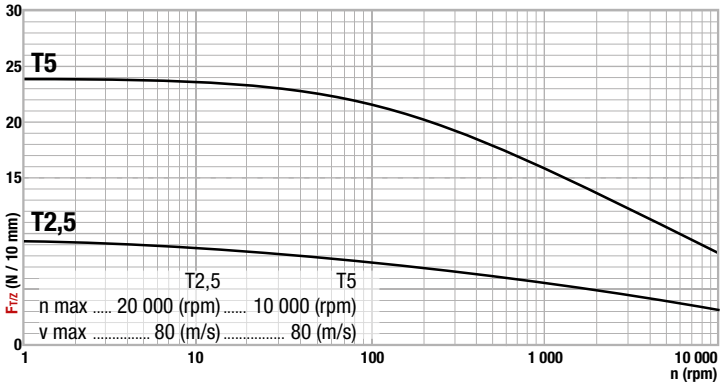
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	60	HTD14/27-	2		50H7

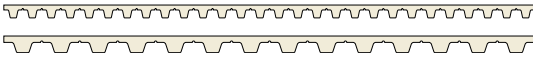
DELIVERY TIMES	
Pulleys, standard or acc. to drawing	4 weeks

TIMING BELTS



Tangential force transmittable by the teeth





T2.5 belt scale 1

T5 belt scale 1

Tangential force transmittable by the tension members

Profile/ pitch	Belt width (mm)	Weight (kg/m)		Linear belts (M)								Welded belts (V)	
				Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]					
		SD	DL	Permissible force F_N (N)	Specific elasticity of tension members Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension members Cspe (N)	Stock		Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
						Standard	PAZ[1]			Standard	PAZ[1]		
MICROMECHANICAL APPLICATIONS													
T2.5	6	0.009		60	1·50 · 104	●						30	
	8	0.012		77	1·93 · 104	○						39	
	10	0.015		98	2·45 · 104	○						49	
	12	0.018		120	3·00 · 104	●						60	
	16	0.024		160	4·00 · 104	○						80	
	20	0.030		196	4·90 · 104	○						98	
PRECISION APPLICATIONS													
T5 T5-DL	6	0.013		180	4·5 · 104	●		135	4·5 · 104			90	70.0
	8	0.017		240	6·0 · 104	○		180	6·0 · 104			120	90.0
	10	0.021	0.030	300	7·5 · 104	●		230	7·5 · 104			150	115.0
	12	0.025	0.036	360	9·0 · 104	○		280	9·0 · 104			180	140.0
	16	0.034	0.044	540	13·5 · 104	●*		410	13·5 · 104			270	205.0
	20	0.042	0.060	600	15·0 · 104	○		500	15·0 · 104			300	230.0
	25	0.053	0.070	840	21·0 · 104	●*		640	21·0 · 104			420	320.0
	32	0.067	0.090	1 080	27·0 · 104	○		820	27·0 · 104			540	420.0
	50	0.105	0.139	1 680	42·0 · 104	○		1 280	42·0 · 104			840	640.0
	64	0.134	0.192	1 920	48·0 · 104	○		1 500	48·0 · 104			960	750.0
	75	0.160	0.208	2 520	63·0 · 104	○		1 915	63·0 · 104			1 260	960.0
	100	0.233		3 360	84·0 · 104			2 580	84·0 · 104			1 680	1 290.0
SELF-GUIDING PRECISION APPLICATIONS													
TK5K6	25	0.067		840	21 · 10^4			640	21 · 10^4			420	320.0
	32	0.082		1 080	27 · 10^4			820	27 · 10^4			540	410.0
	50	0.119		1 680	42 · 10^4	●		1 280	42 · 10^4			840	640.0

* DL version not in stock.

T2.5 and T5 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
T2.5	+/- 0.5	+/- 0.8	- 0.1 / + 0.2	+/- 0.05
T5 T5-DL	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1
TK5K6	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1

Our belt machining options

Longitudinal machining, see *page 64*

Standard lengths and widths available

Linear belts (M)
- Every length tooth by tooth possible
- T2.5: In stock: rolls of 100 m
- T5: In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length:
  T2.5: standard from 880 mm
  (on request from 350 to 877.5 mm
  T5: 880 mm (minimum width: 10 mm)
  T5-DL: 1,000 mm

Options
- Stainless steel or aramide tension members, see page 6 (on request) T5 only
- Polyurethane, see page 5 (on request)
- Coatings, see pages 56 to 63

BELT ORDERING EXAMPLES			
Designation	Width	Profile / length	Particular specifications
Open linear BRECO belt	16	T2.5/2000 M	
Welded linear BRECO belt	25	T5/2500 V	PAZ[1]

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 to 6 weeks
Special belts		Consult us

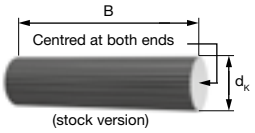
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*

TOOTHED PULLEYS

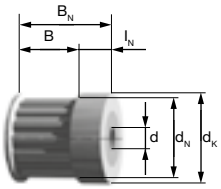
Pulleys acc. to drawing see page 8

Bars



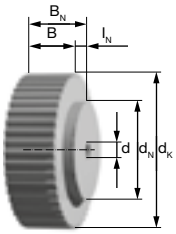
Standard pulleys

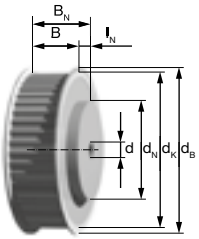
Version 2 (with flanges): : Stock T2.5 from Z = 12 to Z = 15



Version 2 (with flanges):
- Stock T2.5 from Z = 18 to Z = 40
- Stock T5 up to Z = 40

Version 0 (without flanges):
- Stock T2.5 for Z = 48 and Z = 60
- Stock T5 for Z = 48

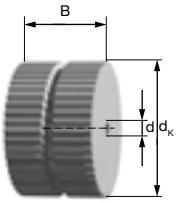


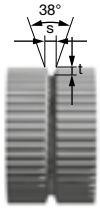


Self-guiding pulleys

Pulleys on request and only from Z = 20

K6	
s	t
6.5	5

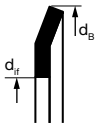




	T2.5 belt widths	b	6	8	10	12	16	20
Pulley widths	Pulley without hub	B	10	12	14	16	20	24
	Pulley with hub	B_N	16		20			

	T5 belt widths	b	6	8	10	12	16	20	25	32	50	64	75	100
Pulley widths	Pulley without hub	B	11	13	15	17	21	25	30	37	55	69	80	105
	Pulley with hub	B_N			21		27		36					
	Self-guiding pulley without hub	B_N							30	37	55		80	105

The pulleys in stock all have a hub. **Standard width in stock in purple.**



Angled

	Flanges			
	Z	Thickness	Shape	Mounting
T2.5		1	Angled	Rolled
T5	Z ≤ 63	1	Angled	Rolled
	Z > 63	1.5	Angled	Rolled

Kinematics	Tension members type		T2.5	T5 SD	T5 DL	TK5K6
 Monoflexure	Steel tension members	Z min.	15	10	15	25
		dia. min. (mm)	15	30		60
	E tension members*	Z min.		10		
		dia. min. (mm)		18		
	Stainless steel tension members*	Z min.		18		25
		dia. min. (mm)		30		60
 Contraflexure	Steel tension members	Z min.	18	15		25
		dia. min. (mm)	18	30		60
	E tension members*	Z min.		12		
		dia. min. (mm)		18		
	Stainless steel tension members*	Z min.		36		36
		dia. min. (mm)		60		80

*Special manufacture: minimum quantity. SD: single sided. DL: double sided

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	36	T5/48 -	0	E: 50 x 6	8H7
Aratron tooth pulley	AL	16	T2.5/32-	2	E: 16 x 6	6H7

DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys acc. to drawing		Consult us

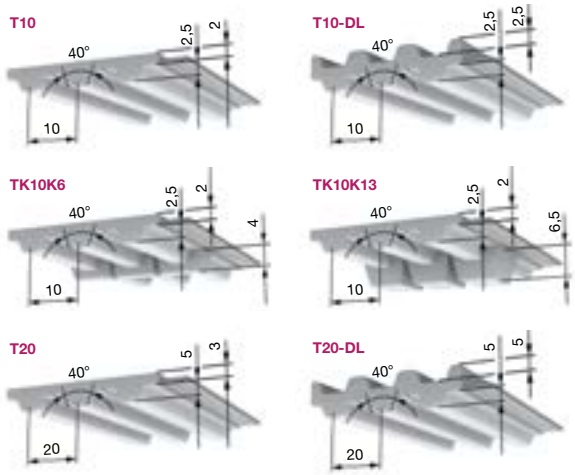
T2.5 stock, see *page 113*, T5 stock, see *page 115*.

T2.5							
Bars	Z	d_K	d_N	Bore d (H7)		d_B	d_{IF}
Stock B = 50				min. stock	max.		Rolled flanges
○	10	7.45	10	3	3	10	5
○	11	8.25			3	12	6
○	12	9.00	12	3	3	12	6
○	13	9.80			3.5	13	7
○	14	10.60	14	3	4	14	8
○	15	11.40	15	3	5	15	9
○	16	12.20	16	4	6	16	10
○	17	13.00			7	16	10
○	18	13.80	10	4	7	17	11
○	19	14.60	10	4	8	18	12
○	20	15.40	12	4	9	19	13
○	21	16.20			10	20	14
○	22	17.00			10	20	14
○	23	17.80			11	21	14
○	24	18.55	14	4	11	22	15
○	25	19.35	14	4	12	23	15
○	26	20.15			13	23	15
○	27	20.95			13	24	16
○	28	21.75			13	25	17
○	29	22.55			14	26	18
○	30	23.35	16	6	15	28	20
○	31	24.15			16	28	20
○	32	24.95	16	6	16	28	20
○	33	25.75			17	30	21
○	34	26.55			17	30	21
○	35	27.35			20	32	22
○	36	28.15	20	6	20	32	22
○	37	28.90			21	32	22
○	38	29.70			21	34	24
○	39	30.50			22	34	24
○	40	31.30	22	6	23	35	25
○	42	32.90			24	36	26
○	45	35.30			26	39	29
○	48	37.70	26	6	27	42	30
○	50	39.25			29	43	31
○	55	43.25			32	47	35
○	60	47.25	34	8	35	52	40
○	65	51.20			38	55	43
○	70	55.20			41	60	48
○	72	56.80			43	60	48
○	80	63.15			47	68	54
○	90	71.10			53	75	61
○	100	79.05			59	84	70

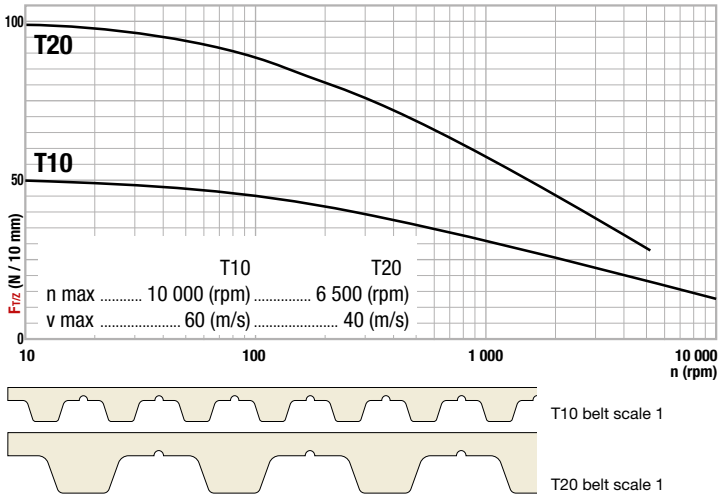
T5								
Bars		Z	d_K	d_N	Bore d (H7)		d_B	d_{IF}
Stock	Width B				Min. stock	max.		Rolled flanges
		10	15.05	8	4 *	6	20	12
		11	16.65			6	22	14
		12	18.25	12	4 *	6	23	15
		13	19.85			8	25	17
		14	21.45	14	6	8	26	18
○	150	15	23.05	16	6	10	28	20
○	150	16	24.60	18	6	12	30	21
		17	26.20			14	32	22
○	150	18	27.80	20	6	16	34	24
○	150	19	29.40	22	6	16	35	25
○	180	20	31.00	24	6	18	36	26
○		21	32.60			20	37	27
○	180	22	34.15			22	39	29
○		23	35.75			24	40	30
○	180	24	37.35	26	6	24	42	30
○	180	25	38.95	26	6	25	43	31
○		26	40.55			25	45	33
○	180	27	42.15	30	8	27	47	35
○	180	28	43.75			29	48	36
○		29	45.30			31	50	38
○	180	30	46.90	34	8	33	52	40
○		31	48.50			35	53	41
○	180	32	50.10	38	8	37	55	43
○		33	51.70			39	56	44
		34	53.30			39	58	46
○	180	35	54.85			40	60	48
○	180	36	56.45	38	8	42	61	49
		37	58.05			43	62	50
		38	59.65			45	64	52
		39	61.25			45	66	52
○	180	40	62.85	40	8	47	68	54
○	180	42	66.00			50	72	58
○	180	45	70.80			54	75	61
○	180	48	75.55	50	8	60	80	66
○	180	50	78.75			60	84	70
○		55	86.70			68	91	77
○	180	60	94.65	65	8	76	99	85
○		65	102.65			84	107	93
○		70	110.60			90	115	101
○	180	72	113.75			94	118	104
○	180	80	126.50			106	131	117
○	180	90	142.45			120	147	133
○	180	100	158.35			133	163	149

Z: number of teeth. D_{IF}: inside diameter of flanges.
Larger number of teeth possible * 6 mm for pulleys, width 36.

TIMING BELTS



Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Profile/ pitch	Belt width (mm)	Weight (kg/m)		Linear belts (M)								Welded belts (V)	
				Tension members: standard steel - polyurethane: TPU ST1[2]				Tension members: stainless steel - polyurethane: TPU AU1[2]					
		SD	DL	Permissible force F_N (N)	Specific elasticity of tension members Cspe (N)	Stock: Standard	Stock: PAZ[1]	Permissible force F_N (N)	Specific elasticity of tension members Cspe (N)	Stock: Standard	Stock: PAZ[1]	Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
SIMPLE APPLICATIONS													
T10 *basic*[3]	16	0.073		1 400	$0{\cdot}35 \cdot 10^6$	●						700	
	25	0.114		2 200	$0{\cdot}55 \cdot 10^6$	●						1 100	
	32	0.145		2 800	$0{\cdot}70 \cdot 10^6$	●						1 400	
	50	0.227		4 400	$1{\cdot}10 \cdot 10^6$	●						2 200	
	75	0.341		6 600	$1{\cdot}65 \cdot 10^6$	●						3 300	
	100	0.454		8 800	$2{\cdot}20 \cdot 10^6$	●						4 400	
PRECISION APPLICATIONS													
T10 T10-DL	10	0.045		880	$0{\cdot}220 . 10^6$			700	$0{\cdot}220 . 10^6$				
	12	0.054		1 056	$0{\cdot}264 . 10^6$			840	$0{\cdot}264 . 10^6$				
	16	0.073	0.094	1 400	$0{\cdot}350 . 10^6$	●		1 120	$0{\cdot}350 . 10^6$			700	560
	25	0.114	0.147	2 200	$0{\cdot}550 . 10^6$	●		1 760	$0{\cdot}550 . 10^6$			1 100	880
	32	0.145	0.188	2 800	$0{\cdot}700 . 10^6$	●		2 240	$0{\cdot}700 . 10^6$			1 400	1 120
	50	0.227	0.293	4 400	$1{\cdot}100 . 10^6$	●		3 520	$1{\cdot}100 . 10^6$			2 200	1 760
	75	0.341	0.440	6 600	$1{\cdot}650 . 10^6$	○		5 280	$1{\cdot}650 . 10^6$			3 300	2 640
	100	0.454	0.586	8 800	$2{\cdot}200 . 10^6$	○		7 040	$2{\cdot}200 . 10^6$			4 400	3 520
	150	0.681		13 200	$3{\cdot}300 . 10^6$			10 560	$3{\cdot}300 . 10^6$			6 600	5 280
SELF-GUIDING PRECISION APPLICATIONS													
TK10K6	25	0.129		2 400	$0{\cdot}55 \cdot 10^6$			1 920	$0{\cdot}55 \cdot 10^6$			1 200	960
	50	0.239		4 200	$1{\cdot}10 \cdot 10^6$			3 360	$1{\cdot}10 \cdot 10^6$			2 100	1 680
TK10K13	32	0.282		2 600	$0{\cdot}70 \cdot 10^6$	○		2 080	$0{\cdot}70 \cdot 10^6$			1 300	1 040
	50	0.407		4 200	$1{\cdot}10 \cdot 10^6$	○		3 360	$1{\cdot}10 \cdot 10^6$			2 100	1 680
	75	0.569		5 200	$1{\cdot}65 \cdot 10^6$	○		4 160	$1{\cdot}65 \cdot 10^6$			2 600	2 080
	100	0.735		8 400	$2{\cdot}20 \cdot 10^6$	○		6 720	$2{\cdot}20 \cdot 10^6$			4 200	3 360
PRECISION APPLICATIONS													
T20 T20-DL	20	0.147		2 800	$0{\cdot}70 \cdot 10^6$			2 000	$0{\cdot}70 \cdot 10^6$			1 400	1 000
	25	0.184	0.247	3 500	$0{\cdot}87 \cdot 10^6$	○		2 520	$0{\cdot}87 \cdot 10^6$			1 750	1 260
	32	0.236	0.316	4 500	$1{\cdot}13 \cdot 10^6$	○		3 240	$1{\cdot}13 \cdot 10^6$			2 250	1 620
	50	0.368	0.493	7 000	$1{\cdot}75 \cdot 10^6$	○		5 040	$1{\cdot}75 \cdot 10^6$			3 500	2 520
	75	0.552	0.793	10 500	$2{\cdot}63 \cdot 10^6$	○		7 560	$2{\cdot}63 \cdot 10^6$			5 250	3 780
	100	0.736	0.986	14 000	$3{\cdot}50 \cdot 10^6$	○		10 080	$3{\cdot}50 \cdot 10^6$			7 000	5 040
	150	1.095		20 000	$5{\cdot}00 \cdot 10^6$	○		14 400	$5{\cdot}00 \cdot 10^6$			10 000	7 200

DL version not in stock

T10 and T20 tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
T10 T10-DL	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1
TK10K6	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1
TK10K13	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1
T20 T20-DL	+/- 1.0	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15

Option: locking system

T10 DC rapid attachment (operating principle), see *page 72*

Standard lengths and widths available

Linear belts (M)
- Every length tooth by tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 1000 mm (1200 mm for width 150 in T20)

Options
- Stainless steel or aramide tension members, see page 6 (on request)
- Polyurethane, see page 5 (on request)
- Coatings, see pages 56 to 63

BELT ORDERING EXAMPLES			
Designation	Width	Profile / length	Particular specifications
Open linear BRECO belt	25	T10/1600 M	PAZ[1]
Welded linear BRECO belt	25	T10/1600 V	PAZ[1]
Open linear BRECO belt	25	TK10K6/1600 M	
Welded linear BRECO belt	25	T10DC/2000	NOT FITTED

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 to 6 weeks
Special belts		Consult us

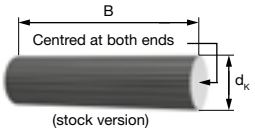
Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*
3. Polyurethane: TPUBAS partly recycled.

TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

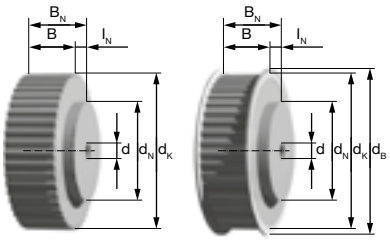
Bars



Standard pulleys

Version 2 (with flanges):
stock up to Z = 40
(T10 only)

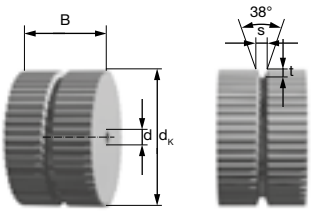
Version 0 (without flanges):
stock from Z = 48



Self-guiding pulleys

Pulleys on request and only from Z = 20

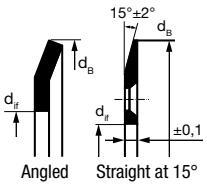
K6		K13	
s	t	s	t
6.5	5	13.5	7.5



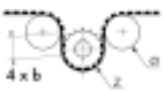
	T10 belt widths	b	10	12	16	20	25	32	50	75	100	150
Pulley widths	Pulley without hub	B	16	17	21	25	30	40	56	81	108	158
	Pulley with hub	B_N	26		31		40	50	66			
	Self-guiding pulley without hub	B					30	37	55	80	105	155

	T20 belt widths	b	20	25	32	50	75	100	150
Pulley widths	Pulley without hub	B	27	32	40	60	85	110	160
	Pulley with hub	B_N	37	42	50	70	95	120	170

The pulleys in stock all have a hub. **Standard width in stock in purple.**



	Flanges			
	Z	Thickness	Shape	Mounting
T10	Z ≤ 32	1	Angled	Rolled
	32 < Z ≤ 93	1,5	Angled	Rolled
	B_N ≥ 66 and Z ≤ 93	2	Angled	Screwed
	Z > 93	2	Straight at 15°	Screwed
T20	Z ≤ 46	2	Angled	Screwed
	Z > 46	2	Straight at 15°	Screwed

Kinematics	Tension members type		T10 SD	T10 DL	TK10K6	TK10K13	T20 SD	T20 DL
 Monoflexure	Steel tension members	Z min.	12	20	20	25	15	25
		dia. min. (mm)	60		60	80	120	150
	E tension members*	Z min.	10				12	25
		dia. min. (mm)	50				100	150
	Stainless steel tension members*	Z min.	25		25	25	20	30
		dia. min. (mm)	80		80	80	130	150
 Contraflexure	Steel tension members	Z min.	20		25	25	25	25
		dia. min. (mm)	60		80	80	120	180
	E tension members*	Z min.	15				22	25
		dia. min. (mm)	50				120	180
	Stainless steel tension members*	Z min.	40		40	40	30	
		dia. min. (mm)	130		130	130	180	

*Special manufacture: minimum quantity. SD: single sided. DL: double sided.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	66	T10/36 -	2	E: 46 x 10	8H7

DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys acc. to drawing		Consult us

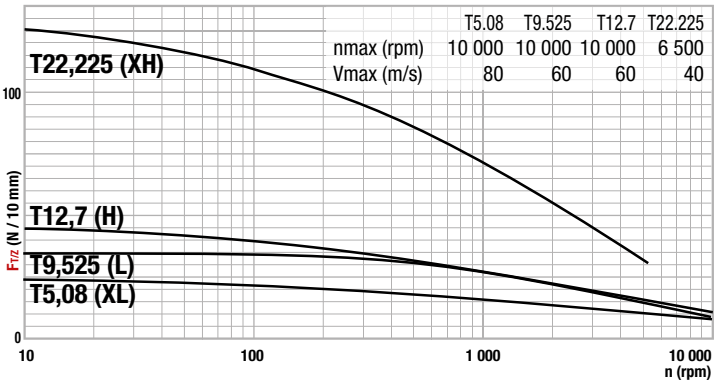
T10										
Width B_N					Z	d_K	d_N	Bore d (H7)		Rolled flanges
31	40	50	66	bar				Min. stock	Max.	d_B
●	●				12	36.35	28	6	24	42
					13	39.55			26	45
●	●				14	42.70	32	8	30	48
●	●				15	45.90	32	8	34	52
●	●				16	49.10	35	8	36	55
					17	52.25			40	58
●	●	o	o		18	55.45	40	8 (10*)	44	61
●	●	o	o		19	58.65	44	8 (10*)	46	64
●	●	o	o		20	61.80	46	8 (12*)	50	68
		o	o		21	65.00			52	72
		o	o		22	68.20			56	74
		o	o		23	71.35			60	76
●	●	o	o		24	74.55	58	8 (12*)	62	80
●	●	o	o		25	77.75	60	8 (12*)	66	84
		o	o		26	80.90			68	86
●	●	o	o		27	84.10	60	8 (12*)	72	90
		o	o		28	87.25			76	93
		o	o		29	90.45			78	96
●	●	o	o		30	93.65	60	8 (12*)	82	99
		o	o		31	96.80			84	102
●	●	o	o		32	100.00	65	10 (12*)	88	106
		o	o		33	103.20			88	109
		o	o		34	106.35			92	112
		o	o		35	109.55			96	115
●	●	o	o		36	112.75	70	10 (16*)	98	118
		o	o		37	115.90			101	121
		o	o		38	119.10			104	125
		o	o		39	122.30			106	128
●	●	o	o		40	125.45	80	10 (16*)	110	131
		o	o		41	128.65			110	134
		o	o		42	131.85			112	137
		o	o		43	135.00			114	140
		o	o		44	138.20			118	144
		o	o		45	141.40			120	147
		o	o		46	144.55			122	150
		o	o		47	147.75			122	153
●	●	o	o		48	150.95	95	16	124	156
		o	o		49	154.10			126	160
		o	o		50	157.30			130	163
		o	o		51	160.50			134	166
		o	o		52	163.65			136	169
		o	o		53	166.85			140	172
		o	o		54	170.05			144	176
		o	o		55	173.20			146	179
		o	o		56	176.40			150	182
		o	o		57	179.60			152	185
		o	o		58	182.75			156	188
		o	o		59	185.95			160	191
●	●	o	o		60	189.15	110	16	162	195

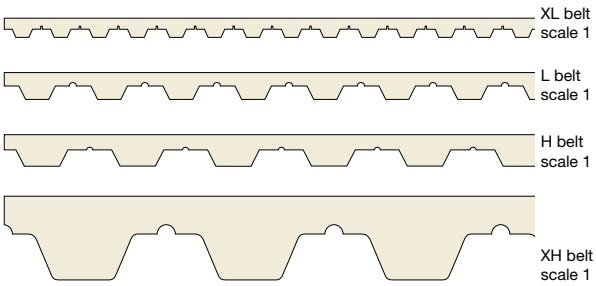
T20				
Z	d_K	d_{max}	Screwed flanges	
			d_B	d_{IF}
15	92.65	67	102	58
16	99.00	74	109	64
17	105.35	80	115	70
18	111.75	86	121	77
19	118.10	93	128	83
20	124.45	100	134	89
21	130.85	105	140	96
22	137.20	112	147	102
23	143.55	118	153	109
24	149.95	125	160	115
25	156.30	131	166	121
26	162.65	137	172	128
27	169.05	144	179	134
28	175.40	150	185	140
29	181.75	156	192	147
30	188.15	163	198	153
31	194.50	169	204	159
32	200.85	175	210	166
33	207.25	182	217	172
34	213.60	188	223	179
35	219.95	195	229	185
36	226.35	201	236	191
37	232.70	207	242	198
38	239.05	214	249	204
39	245.40	220	255	210
40	251.80	226	261	217
41	258.15	233	268	223
42	264.50	239	274	229
43	270.90	245	280	236

Z: number of teeth. DIF: inside diameter of flanges.
Larger number of teeth possible * For B_N = 50 and 66.

TIMING BELTS

Tangential force transmittable by the teeth





Tangential force transmittable by the tension members

Profile/pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)								Welded belts (V)	
			Tension members: standard steel - polyurethane: TPU ST[2]				Tension members: stainless steel - polyurethane: TPU AU[2]				Permissible force at the join F_N (N) standard tens. members	Permissible force at the join F_N (N) stainless st. tens. members
			Permissible force F_N (N)	Specific elasticity of tension members Cspe (N)	Stock		Permissible force F_N (N)	Specific elasticity of tension members Cspe (N)	Stock			
					Standard	PAZ[1]			Standard	PAZ[1]		
T5.08 (XL) T1/5"	6.35	0.015	210	$5{\cdot}25 \cdot 10^4$								
	7.94	0.019	240	$6{\cdot}00 \cdot 10^4$							120	
	9.53	0.023	330	$8{\cdot}25 \cdot 10^4$							165	
	12.7	0.03	390	$9{\cdot}75 \cdot 10^4$							195	
	19.1	0.046	660	$16{\cdot}50 \cdot 10^4$							330	
	25.4	0.061	840	$21{\cdot}00 \cdot 10^4$							420	
T9.525 (L) T3/8"	9.53	0.033	630	$15{\cdot}80 \cdot 10^4$							315	
	12.7	0.044	840	$21{\cdot}00 \cdot 10^4$							420	
	19.1	0.066	1 260	$31{\cdot}50 \cdot 10^4$							630	
	25.4	0.08	1 680	$42{\cdot}00 \cdot 10^4$							840	
	38.1	0.133	2 520	$63{\cdot}00 \cdot 10^4$							1 260	
	50.8	0.178	3 500	$87{\cdot}00 \cdot 10^4$							1 750	
	76.2	0.266	5 040	126·00 · 104							2 520	
T12.7 (H) T1/2"	12.7	0..53	1 000	$0{\cdot}25 \cdot 10^6$			800	$0{\cdot}25 \cdot 10^6$			500	400
	19.1	0.081	1 600	$0{\cdot}40 \cdot 10^6$			1280	$0{\cdot}40 \cdot 10^6$			800	640
	25.4	0.108	2 200	$0{\cdot}55 \cdot 10^6$			1760	$0{\cdot}55 \cdot 10^6$			1 100	880
	38.1	0.161	3 200	$0{\cdot}80 \cdot 10^6$			2560	$0{\cdot}80 \cdot 10^6$			1 600	1 280
	50.8	0.216	4 400	$1{\cdot}10 \cdot 10^6$			3520	$1{\cdot}10 \cdot 10^6$			2 200	1 760
	76.2	0.324	6 600	$1{\cdot}65 \cdot 10^6$			5280	$1{\cdot}65 \cdot 10^6$			3 300	2 640
	101.6	0.432	8 800	$2{\cdot}20 \cdot 10^6$			7040	$2{\cdot}20 \cdot 10^6$			4 400	3 520
	152.4	0.648	13 200	$3{\cdot}30 \cdot 10^6$			10560	$3{\cdot}30 \cdot 10^6$			6 600	5 280
T12.7 K13 (HK) TK1/2"	38.1	0.222	3 200	$0{\cdot}80 \cdot 10^6$			2560	$0{\cdot}80 \cdot 10^6$			1 600	1 280
	50.8	0.338	4 400	$1{\cdot}10 \cdot 10^6$			3360	$1{\cdot}10 \cdot 10^6$			2 100	1 680
	76.2	0.507	4 800	$1{\cdot}65 \cdot 10^6$			3840	$1{\cdot}65 \cdot 10^6$			2 400	1 920
	101.6	0.469	6 200	$2{\cdot}20 \cdot 10^6$			4960	$2{\cdot}20 \cdot 10^6$			3 100	2 480
T22.225 (XH) T7/8"	25.4	0.265	3 500	$0{\cdot}87 \cdot 10^6$							1 750	
	38.1	0.398	5 250	$1{\cdot}31 \cdot 10^6$							2 625	
	50.8	0.530	7 000	$1{\cdot}75 \cdot 10^6$							3 500	
	76.2	0.795	10 500	$2{\cdot}63 \cdot 10^6$							5 250	
	101.6	1.059	14 000	$3{\cdot}50 \cdot 10^6$							7 000	

Tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)	Thickness of tooth (mm)
T5.08 (XL)	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.05
T9.525 (L)	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1
T12.7 (H)	+/- 0.5	+/- 0.8	- 0.1 / + 0.3	0 / - 0.1
T22.225 (XH)	+/- 1.0	+/- 0.8	- 0.1 / + 0.3	0 / - 0.15

Our belt machining options

Water jet machining, see page 60

Standard lengths and widths available

Linear belts (M)
- Every length tooth by tooth possible
- In stock: rolls of 50 or 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 880 mm

Options
- Stainless steel or aramide tension members, according to pitches, see page 6 (on request)
- Polyurethane, see page 5 (on request)
- Coatings, see pages 56 to 63

BELT ORDERING EXAMPLES			
Designation	Width	Profile / length	Particular specifications
Open linear BRECO belt	12,7	T12.7/2000 M	PAZ[1]
Welded linear BRECO belt	25,4	T22.225/3600 V	

DELIVERY TIMES		
Standard belts		4 to 6 weeks
Special belts		Consult us

Recommended pre-tension: see page 4
General information: see page 4
1. Backing (PAZ) see page 56
2. Polyurethane: see characteristics page 5

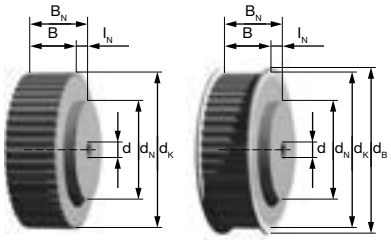
TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

Standard pulleys

Version 2 (with flanges):
stock up to Z = 44

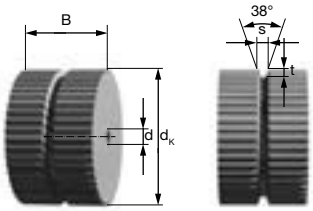
Version 0 (without flanges):
stock from Z = 45



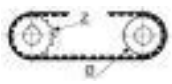
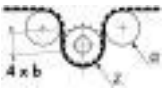
Self-guiding pulleys

Pulleys on request and only from Z = 20

K13	
s	t
13,5	7,5



	Belt widths	b (mm)	Pas	6.35	7.9	9.5	12.7	19.1	25.4	38.1	50.8	76.2	101.6
Pulley widths	Code (1/100 inch)			25	31	37	50	75	100	150	200	300	400
	Pulley without hub	B (mm)	XL et L	11.3	12.8	14.3	19	25.4	31.8	44.5	57.3	83.5	108.9
			H et XH			16	19	25	32	44	59	84	111

Kinematics	Tension members type		XL	L	H		XH
				STANDARD	STANDARD	HK	STANDARD
 Monoflexure	Steel tension members	Z min.	10 (25)	15 (20)	14	20	18
		dia. min. (mm)	30 (60)	60	60	80	150
	E tension members	Z min.					
		dia. min. (mm)					
	Stainless steel tension members*	Z min.			25	25	
		dia. min. (mm)			100	100	
 Contraflexure	Steel tension members	Z min.	15 (25)	20 (25)	20	20	20 (25)
		dia. min. (mm)	30 (60)	60 (80)	80	80	180
	E tension members	Z min.					
		dia. min. (mm)					
	Stainless steel tension members*	Z min.			40	40	
		dia. min. (mm)			160	160	

The numbers in brackets indicate the values to be used for welded belts.
*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material: 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 8
- d_{max}: maximum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the possible surface treatments are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	32	T12.7/20-	2	none	12H7

DELIVERY TIMES	
Pulleys acc. to drawing	4 weeks

Type T5.08 (XL) 1/5"				Type T9.525 (L) 3/8"			
Z	d_k	d_b	d_{max}	Z	d_k	d_b	d_{max}
10	15.66	23	6	10	29.56	36	
11	17.28	23	6	11	32.60	38	
12	18.90	25	6	12	35.62	42	24
13	20.52	25	8	13	38.65	44	26
14	22.13	28	8	14	41.70	48	30
15	23.75	28	10	15	44.75	51	34
16	25.36	32	12	16	47.75	54	36
17	26.98	32	14	17	50.78	57	40
18	28.60	36	16	18	53.81	60	44
19	30.22	36	16	19	56.84	63	46
20	31.83	38	18	20	59.88	66	50
21	33.45	38	20	21	62.91	71	52
22	35.07	42	22	22	65.94	75	56
24	38.30	44	24	23	68.97	79	60
26	41.53	48	25	24	72.00	79	62
27	43.15	48	27	25	75.04	83	66
28	44.77	51	29	26	78.07	87	68
30	48.00	54	33	27	81.10	87	72
32	51.24	57	37	28	84.13	91	76
34	54.47	60	39	30	90.20	97	82
35	56.09	63	40	32	96.26	103	88
36	57.70		42	33	99.29	106	88
38	60.94		45	34	102.32	111	92
40	64.17		47	35	105.35	111	96
42	67.41		50	36	108.39	115	98
44	70.64		52	40	120.51	127	110
48	77.11		60	42	126.58	135	112
52	83.57		64	44	132.64	140	118
60	96.51		76	45	135.67	143	120
72	115.92		94	48	144.77	152	124
				50	150.83		130
				52	156.90		136
				56	169.02		150
				57	172.06		152
				60	181.15		162
				72	217.53		193
				84	253.92		231
				96	290.30		269

Type T12.7 (H) 1/2"				Type T22.225 (XH) 7/8"			
Z	d_k	d_b	d_{max}	Z	d_k	d_b	d_{max}
14	55.22	63	30	18	124.55	138	86
15	59.27	66	34	19	131.62	146	93
16	63.31	71	36	20	138.69	154	100
17	67.35	75	40	21	145.77	160	105
18	71.39	79	44	22	152.84	168	112
19	75.44	83	46	24	166.99	183	125
20	79.48	87	50	25	174.07	188	131
21	83.52	91	52	26	181.14	198	137
22	87.56	93	56	27	188.22	200	144
23	91.61	97	60	28	195.29	211	150
24	95.65	103	62	30	209.44	226	163
25	99.69	106	66	32	223.59	240	175
26	103.73	111	68	34	237.74	256	188
27	107.78	115	72	38	266.03	-	214
28	111.82	119	76	40	280.18	-	226
29	115.86	123	78	48	336.78	-	278
30	119.90	127	82	60	421.67	-	354
32	127.99	135	88	72	506.56	-	425
33	132.03	140	88	84	591.46	-	501
34	136.07	143	92	96	676.35	-	573
35	140.12	148	96				
36	144.16	152	98				
38	152.24	158	104				
40	160.33	168	110				
42	168.41	180	112				
44	176.50	184	118				
45	180.54	192	120				
48	192.67	200	124				
50	200.75		130				
52	208.84		136				
58	233.09		156				
60	241.18		162				
70	281.61		187				
72	289.69		193				
84	338.20		231				
96	386.71		269				

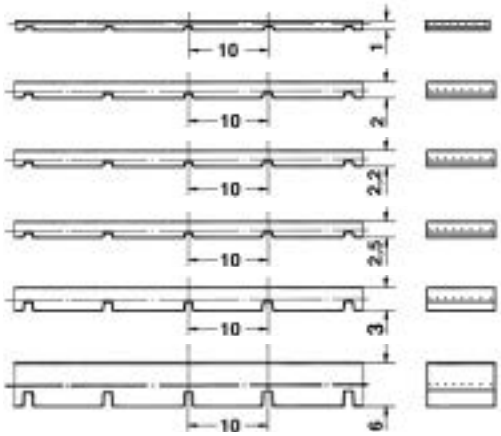
Z: number of teeth. Intermediate and larger number of teeth possible.

FLAT BELTS

Type BRECO® F

Type CONTI® POLYFLAT

BRECO® F	
Profile	b in mm
F1	1
F2	2
F2.2	2.2
F2.5	2.5
F3	3
F6	6
CONTI® POLYFLAT	
Profil	b en mm
XHS	4.5



Belt F1 - BRM scale 1

Belt F2 - BRM-V scale 1

Belt F2.2 - BRM-V scale 1

Belt F2.5 - BRM-V scale 1

Belt F3 - BRM-V scale 1

Belt F6 - BRM-V scale 1

Tangential force transmittable by the tension members

Profile / pitch	Belt width (mm)	Weight (kg/m)	Linear belts (M)										Welded belts (V)	
			Tension members : standard steel					Tension members : stainless steel						
			Permissible force F_N (N)	Tensile strength F_N (N)	Specific elasticity of tension members Cspe (N)	Stock		Permissible force F_N (N)	Tensile strength F_N (N)	Specific elasticity of tension members Cspe (N)	Stock		Permissible force at the join F_N (N) standard tension members	Permissible force at the join F_N (N) stainless tension members
						Standard	PAZ[1]				Standard	PAZ[1]		
F1	8	0.012	300	1 200	$0{\cdot}75 \cdot 10^5$			230	920	$0{\cdot}75 \cdot 10^5$				
	10	0.015	360	1 440	$0{\cdot}90 \cdot 10^5$			275	1 100	$0{\cdot}90 \cdot 10^5$				
	15	0.023	510	2 040	$1{\cdot}28 \cdot 10^5$			390	1 560	$1{\cdot}28 \cdot 10^5$				
	20	0.030	720	2 880	$1{\cdot}80 \cdot 10^5$			550	2 200	$1{\cdot}80 \cdot 10^5$				
F2	25	0.081	2 200	8 800	$0{\cdot}55 \cdot 10^6$			1 760	7 040	$0{\cdot}55 \cdot 10^6$			1 100	880
	32	0.101	2 600	10 400	$0{\cdot}65 \cdot 10^6$			2 080	8 320	$0{\cdot}65 \cdot 10^6$			1 300	1 040
	50	0.161	4 400	17 600	$1{\cdot}10 \cdot 10^6$			3 520	1 480	$1{\cdot}10 \cdot 10^6$			2 200	1 760
	75	0.241	6 600	26 400	$1{\cdot}65 \cdot 10^6$			5 380	21 120	$1{\cdot}65 \cdot 10^6$			3 300	2 640
	100	0.322	8 800	35 200	$2{\cdot}26 \cdot 10^6$			7 040	28 160	$2{\cdot}26 \cdot 10^6$			4 400	3 520
F2.2	20	0.071	2 500	10 000	$0{\cdot}625 . 10^6$			1 875	7 500	$0{\cdot}625 . 10^6$			1 250	940
	25	0.092	3 500	14 000	$0{\cdot}875 . 10^6$			2 625	10 500	$0{\cdot}875 . 10^6$			1 750	1 315
	30	0.120	4 500	18 000	$1{\cdot}130 . 10^6$			3 375	13 500	$1{\cdot}130 . 10^6$			2 250	1 685
	32	0.130	5 000	20 000	$1{\cdot}250 . 10^6$			3 750	15 000	$1{\cdot}250 . 10^6$			2 500	1 875
	40	0.146	5 500	22 000	$1{\cdot}380 . 10^6$			4 125	16 500	$1{\cdot}380 . 10^6$			2 750	2 060
	50	0.213	7 000	28 000	$1{\cdot}750 . 10^6$			5 250	21 000	$1{\cdot}750 . 10^6$			3 500	2 625
	75	0.309	10 000	40 000	$2{\cdot}500 . 10^6$			7 500	30 000	$2{\cdot}500 . 10^6$			5 000	3 750
	100	0.366	14 000	56 000	$3{\cdot}500 . 10^6$			10 500	42 000	$3{\cdot}500 . 10^6$			7 000	5 250
F2.5	50	0.263	11 200	44 800	$2{\cdot}8 . 10^6$			8 960	35 840	$2{\cdot}8 . 10^6$			5 600	11 200
	100	0.526	22 400	89 600	$5{\cdot}6 . 10^6$			17 920	71 680	$5{\cdot}6 . 10^6$			4 480	8 960
F3	30	0.197	8 400	33 600	$2{\cdot}10 \cdot 10^6$			6 710	26 880	$2{\cdot}10 \cdot 10^6$			4 200	3 360
	50	0.343	14 700	58 800	$3{\cdot}68 \cdot 10^6$			11 760	47 040	$3{\cdot}68 \cdot 10^6$			7 350	5 880
	100	0.686	30 800	123 200	$7{\cdot}70 \cdot 10^6$			24 640	98 560	$7{\cdot}70 \cdot 10^6$			15 400	12 320
F6	30	3232	1 800	7 200	$4{\cdot}0 . 10^6$			1 440	5 760	$4{\cdot}0 . 10^6$			900	720
BELTS CONTI® POLYFLAT - BLACK POLYURETHANE														
XHS*	85	0.892	40 000	160 000	$10{\cdot}0 . 10^6$									
	100	1.050	48 000	192 000	$11{\cdot}8 . 10^6$									
	120	1.260	57 600	230 400	$14{\cdot}2 . 10^6$									
	150	1.575	72 000	288 000	$18{\cdot}0 . 10^6$									

* Consult us for other wrap diameters.

Flat belts tolerances

Profile	Width (mm)	Length (mm/m)	Total thickness (mm)
F1	+/- 0.5	+/- 0.8	+/- 0.2
F2	+/- 0.5	+/- 0.8	- 0.1 / + 0.3
F2.2	+/- 0.5	+/- 0.8	- 0.1 / + 0.3
F2.5	+/- 0.5	+/- 0.8	- 0.1 / + 0.3
F3	+/- 0.5	+/- 0.8	- 0.1 / + 0.3
F6	+/- 0.5	+/- 0.8	+/- 0.2
POLYFLAT	+/- 0.5	+/- 0.8	+/- 0.3

Available versions with endless tension members

Flat belt BRECOFLEX® F2							
Widths	b	16	25	32	50	75	100
F_N standard tension members	N	1 000	1 800	2 300	3 800	5 800	7 800
F_N stainless tension members	N	800	1 440	1 840	3 040	4 640	6 240
Weight	kg	0.050	0.078	0.100	0.157	0.235	0.313
Lengths from 1 500 to 2 000 mm							

Standard lengths and widths available

Linear belts (M)
- Every length from groove to groove possible
- In stock: rolls of 100 m
- Lengths greater than 100 m on request

Welded belts (V)
- Minimum length: 880 mm (except for F1 which is not a welded size)

Options
- Stainless steel tension members, see page 6 (on request)
- Polyurethane, see page 5 (on request)
- Coatings, see pages 56 to 63

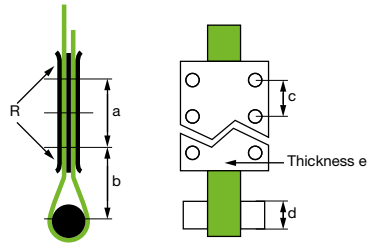
BELTS ORDERING EXAMPLE			
Designation	Width	Profile / length	Particular specifications
Welded linear BRECO belt	25	F2,5/8520 V	PAZ[1]
Open linear BRECO belt	50	F6/10000 M	
FLAT BELT CONTI POLYFLAT	20	XHS/30000 M	

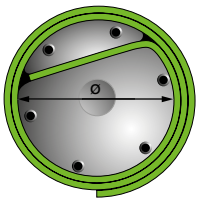
DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts		4 to 6 weeks
Special belts		Consult us

Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Backing (PAZ) see *page 56*
2. Standard tension membres: high flexibility

FASTENING ELEMENTS FOR FLAT BELTS





Fastening element Type 1

The indicated values are only guidelines.

Type 1	F1	F2	F2,2	F2,5	F3	XHS
a min (mm)	40	50	60	80	125	180
b min (mm)	25	30	45	50	75	120
c (mm) approx	20	25	20	20	25	30
Ø d min (mm)	16	25	30	30	50	80
e min (mm)	3	3	4	5	5	7
Radius R (mm)	10	12	15	15	25	40
Thread	M5	M6	M6	M6	M8	M12

Fastening element Type 2

The indicated values are only guidelines.

Type 2	F1	F2	F2,2	F2,5	F3	XHS
Ø (mm) minimum	40	50	60	80	100	225

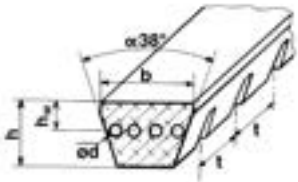
V-BELTS SERIES FERROPAN PROFILES K - V AND FLEX

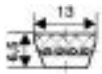
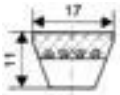
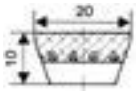
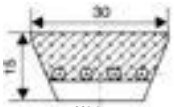
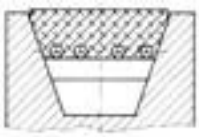
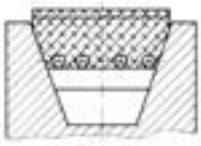
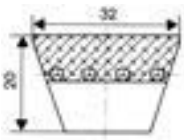
Ferropan V

Ferropan Flex

Polyurethane belts with steel tension members	profile 13	profile 17	profile 20	profile 30	profile 32
Length, Lw continuous ± 1,25 ‰ (mm)	1 200	1 500	1 600	2 000	2 500
Minimum length BFX (mm)	2 500	2 500	2 500	2 500	2 500
Width, b ± 0,25	13	17	20	30	32
Height, h ± 0,25	6.5	11	10	15	20
hw values for Lw choice	3.25	4	5	9	8
Pitch: t (mm)	8	10	10	15	15
Steel strand dia. Ø	0.9	1.2	1.2	2.5	2.5
Pulley dia., dw. min.	75	110	100	200	200
FN Permissible force * (N)	1000	1600	1600	5800	5800
Tensile strength/cross-section* (N)	1 800	3 900	3 900	12 500	12 500
Elongation at adm. Load FN (%)	0.4	0.4	0.4	0.4	0.4
Weight per m of length (kg/m)	0.1	0.22	0.25	0.58	0.75

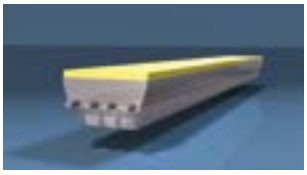
* Value to be divided by 2 for welded belts



Profile FERROPAN	Standard	With coating
 K13	 Standard groove 13/A SPA	 Standard groove 13/A SPA
 K17	 Standard groove 17/B SPB	 Standard groove 17/B SPB
 K20	 Standard groove 20	 Standard groove 20
 K30	 Standard groove 30	 Standard groove 30
 K32	 Standard groove 32/D	 Standard groove 32/D

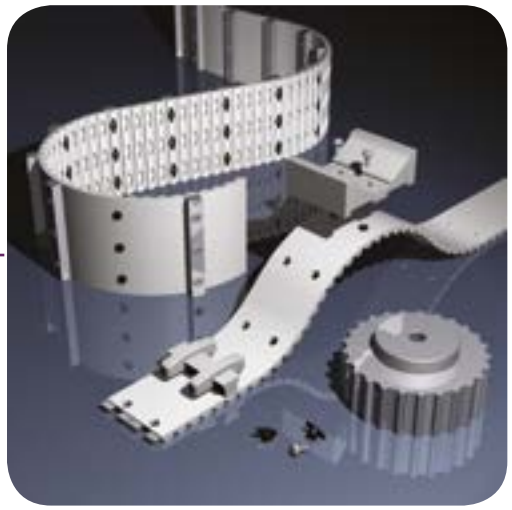
Option

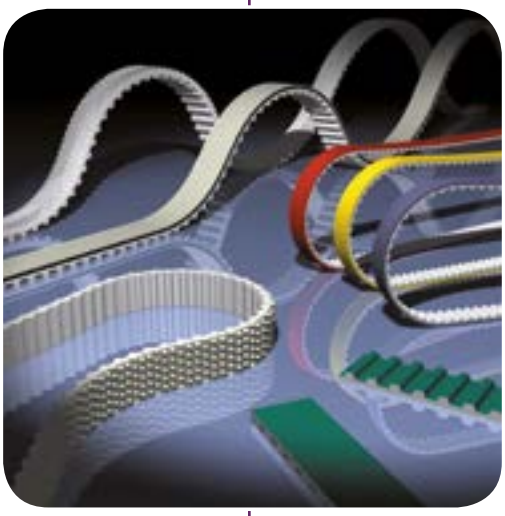
Coatings, see *page 56*. Consult us.

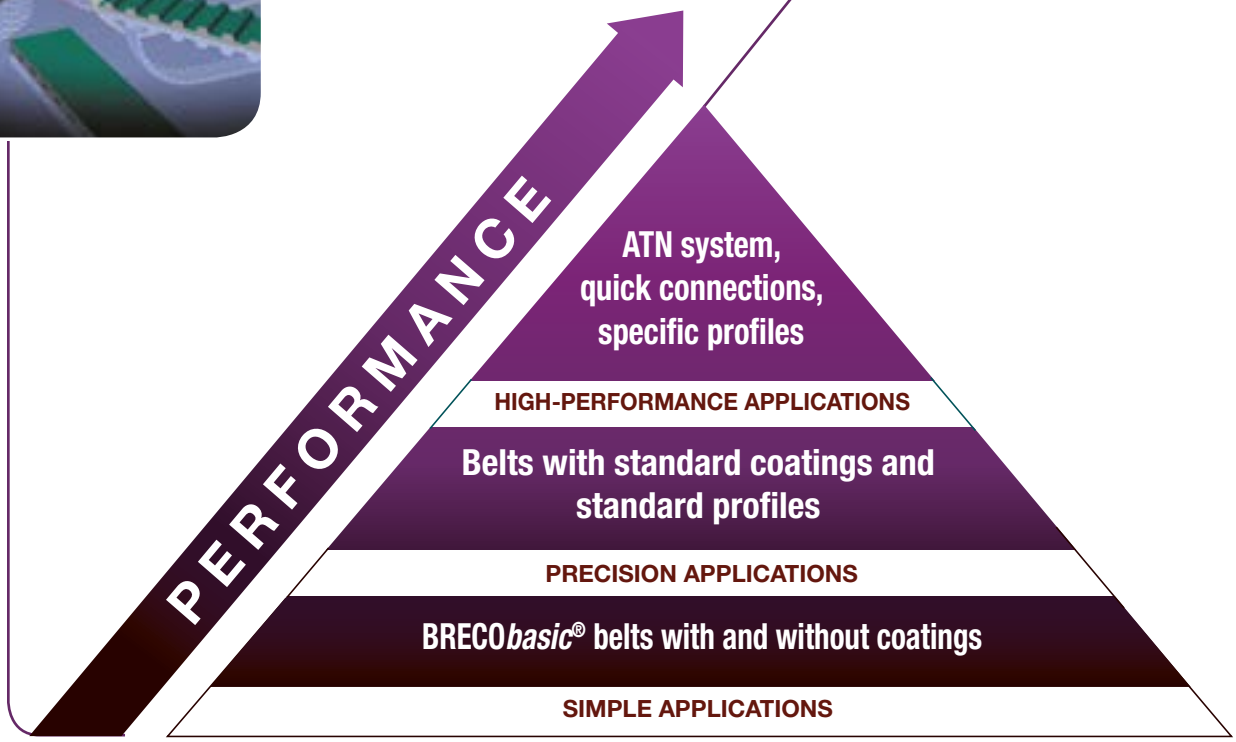


EXEMPLE DE COMMANDE DE BELTS			
Designation	Type	Profile / Length	Particular specification
FRP		K13/3000 V	

DELIVERY TIMES		
Standard belts	●	4 to 6 weeks
Special belts		Consult us







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CONVEYING APPLICATIONS

General design

Your conveying, transport or positioning project combines abrasion resistance, positioning precision and modularity: **Aratron** offers a full range of belts with coatings, specific machining and profiles which are welded or secured by the ATN system.

The choice of belt depends on the load to be conveyed, or more exactly on the distribution of the load on the belt and on the friction coefficient between the slider bed and the belt.
Welded BRECO® belts (V) are generally used for transport applications; the characteristics of these belts are specified in the chapter "Linear Technologies".

Coated belts

Linear BRECO® and BRECOFLEX® belts can be fitted with different types of coatings. They can also be used in a wide range of applications in transport technologies depending on whether adherence or, conversely, sliding with good abrasion resistance is required.
It is, however, important to note that the reduced number of tension members in the join area of welded BRECO® belts (V) reduces by half the nominal transmittable force: the elements are described in the chapter "Linear Technologies".

Machined belts

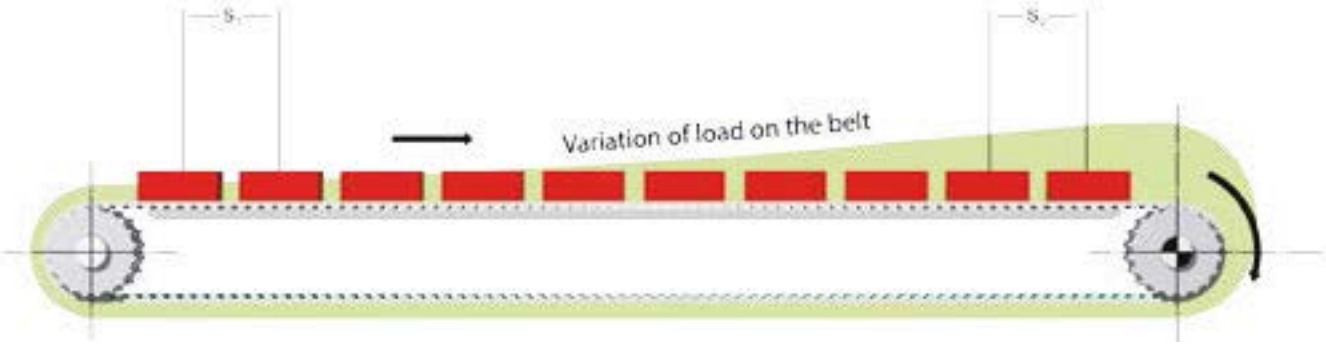
BRECO® and BRECOFLEX® belts can be reworked to suit the coating and/or the function to be carried out. We can deliver all longitudinal or transversal forms as well as machining that crosses the belt.

Belts with profiles

BRECO® and BRECOFLEX® belts can be produced with profiles which are welded or attached with our ATN system to suit the requirements and the loads to be conveyed.

1 / Dimensioning

Conveying belts must preferably be driven in the positive direction to avoid slip.



Calculation of the tangential force F_t

The tangential force F_t applied to the drive system can be determined as from the global transported load:

$$F_t = 9{,}80.m.\mu + m.\gamma$$

F_t: tangential force (N)
m: mass of product to be transported (kg)
μ: friction coefficient between the timing belt and the sliding bed
γ: acceleration (m/s²)

The following values can be used as friction coefficients μ:
- Steel/PU 92 Shore A: 0.6 - 0.7
- Steel/PAZ: 0.2 - 0.4
- PE/PU: 0.3 - 0.4

The values of the friction coefficients generally demonstrate very high variations. We recommend that you carry out tests. (Information without obligation).

Notes on elongation
The elastic elongation of a belt is dependent on its stiffness and is proportional to the load. Elongation will therefore be higher in S_2.

$$\text{Distance } S_1 < S_2$$

Pre-tension force

The pre-tension force in a conveyor belt must be regulated in such a way that a residual tension is conserved in the unloaded span. The applied pre-tension force must be:

$$F_{pt} > 0.5 \,.\, F_t$$

Calculation of the belt width b

$$b\ (mm) = \frac{10 \,.\, F_t\ (N)}{Z_e \,.\, F_{t/z}}$$

F_t: tangential force (calculated)
$F_{t/z}$: force transmittable by the teeth
Z_e: number of teeth in mesh for welded belts. Z_e max. : 6 teeth

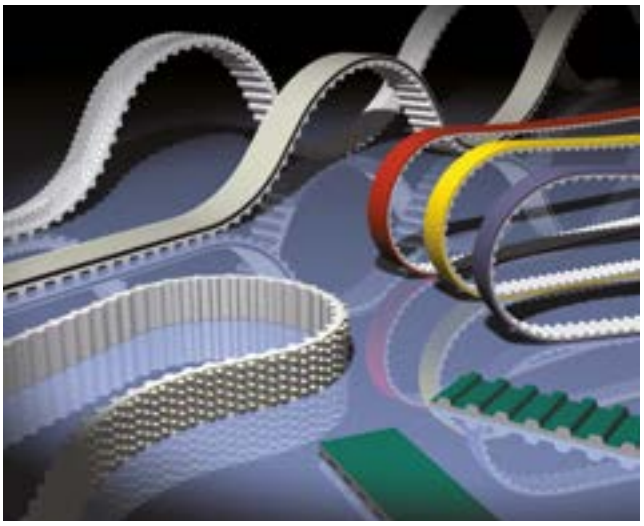
The following condition must be satisfied for a welded belt:

$$F_N \text{ welded} = \frac{F_N}{2} \geq F_t + F_{pt}$$

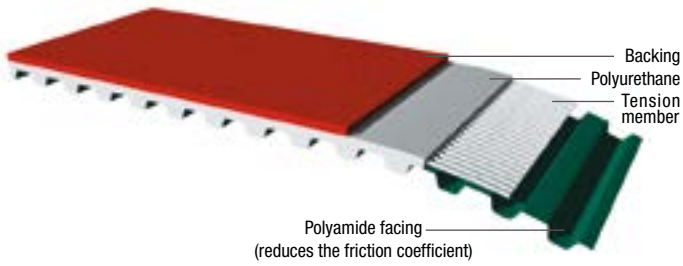
2 / Coatings

The choice of coating is dependent on the characteristics of the parts to be transported and on the required level of adherence:
- High adherence for high-performance transport,
- Low adherence to reduce the transmission of power,
- Soft coating for fragile objects,
- Hard coating for sharp-angled objects.

Machining can be performed on the back or the toothed side of the belt to meet specific needs. Notches made in very thick coatings, for example, enable the flexibility of the belt to be preserved.



Structure of a belt



Friction

The friction of the belt on a support produces heat which increases with the weight of the objects being transported. It is therefore important to choose the base of the support well to reduce the level of friction to maximum effect. The sliding bed must ensure a good degree of heat dissipation under high pressures.
The friction values are dependent on the temperature: they increase when the temperature increases and decrease when the temperature is around zero.

Resistance to chemical agents

The resistance of each component of a coated belt must be considered separately on the basis of each application.
The resistance depends, among other things, on the pH, the concentration and the temperature of the chemical agents, and on the period of time that the fluid is in contact. Thus, simple oils generally do not have any negative effects on a belt. However, oil additives together with temperatures in excess of 40°C can shorten the service life.

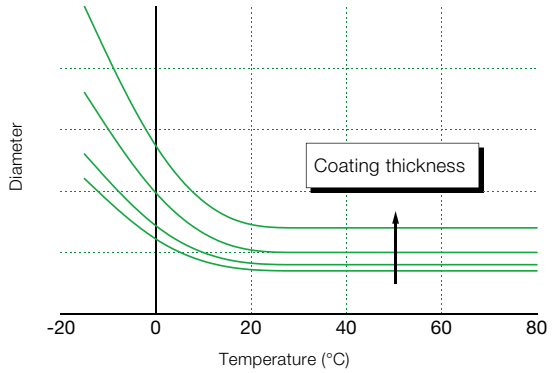
Influence of temperature

When hot parts are transported (temperature above 80°C), it is necessary to ensure that the duration of contact is as short as possible to prevent the coating structure from exceeding 80°C.

A belt with coating can resist a hotter load over a short distance or for a short period on condition that adequate cooling is provided for the rest of the run.
The resistance of the teeth is slightly reduced for temperatures above 60°C. It is necessary to provide additional protection only in the event of increased load on the teeth.

The flexibility of the coating and that of the belt are reduced at low temperatures.
Larger pulley diameters must therefore be chosen. Contact us for further advice on this subject.

The diameter of the pulleys depends on the temperature

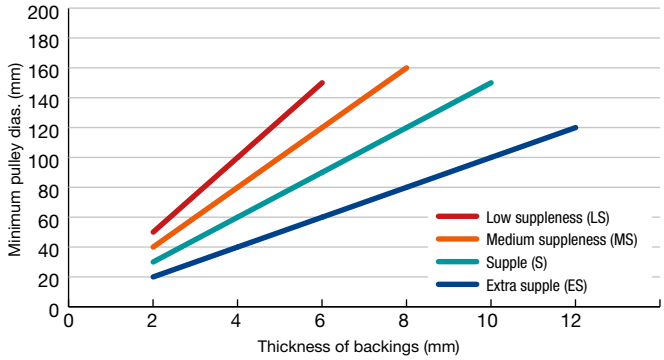


Minimum pulley diameter as a function of the thickness of the coating

The pulleys must have a minimum diameter which depends on:
- the thickness of the coating,
- its degree of suppleness,
- its resistance to cracking/tearing,
- the temperature.

Maintaining this diameter determines the service life of the coated belt.

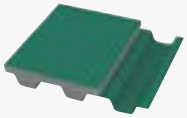
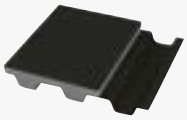
The coating can be slit transversally to increase its suppleness.



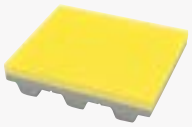
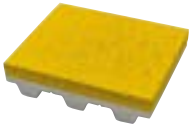
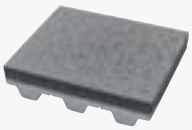
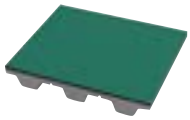
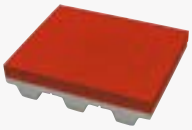
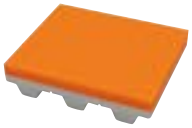
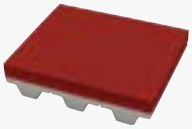
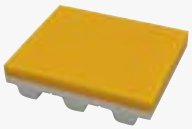
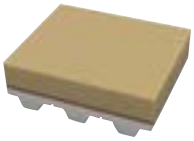
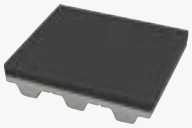
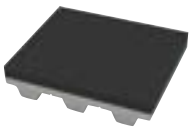
Comments:
- Given values for an ambient temperature of 20°C
- The suppleness of each coating is specified on the following pages

Rapid coating selection table based on the product to be transported

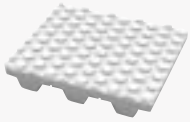
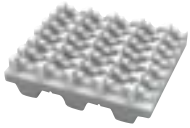
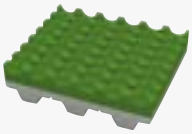
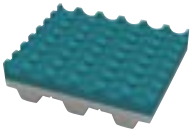
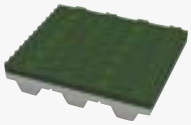
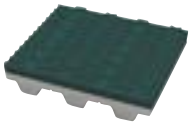
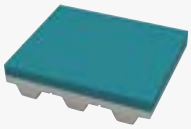
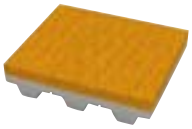
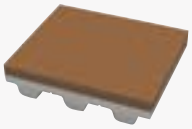
		Hardness SHA	Density kg/m³	Suppleness	Card Paper	Steel Sheet metal	Glass	Wood	Food FDA	Wet environment	Oily environment	Dusty environment	Sharp product	Hot product > 80°C	Heavy product	Fragile product
POLYURETHANE	AFT - HV film	85				●	●	●			●		●		●	
	PU 385	85		LS		●	●	●			●		●		●	
	Ripples TR1 and TR2	85					●	●		●	●					
	WM 385	85								●	●				●	
	NP 385	85						●		●	●	●				
	FG 385	85						●		●	●	●			●	
	PU 60 ShA	60		MS	●		●									
	Polytan D15	70		LS			●			●			●		●	
	PU YELLOW or PU GREY	55		MS	●	●	●									
RUBBER	Hamid				●											
	Linatex	38		MS	●	●	●	●								
	Linatrile	55		MS	●	●					●			+		
	Linard 60	60		MS										+		
	Linaplus FG FDA	38		MS					●	●						
	RP 400	39		MS	●	●	●									
	Correx	36		MS		●										
	Porol		160-200	S	●					●	●					●
	NBR 65	60-70		LS							●			+		
PVC	PVC herringbone FDA	60		LS					●	●				+		
	PVC film FDA	60		LS					●	●				+		
	PVC nubs FDA	60		LS					●	●				+		
	Supergrip FDA	30		S					●	●				+		
	Supergrip GREEN or BLUE	40		S	●		●	●		●		●		+		●
	Minigrip GREEN or BLUE	65-50		MS	●					●				+		
	PVC film BLUE	50		MS	●	●		●						+	●	
POLYURETHANE FOAM	Celloflex		350	PS	●									+		●
	Sylomer BROWN		400	PS	●											
	Sylomer YELLOW		150	MS												●
	Sylomer BLUE		220	MS			●									●
	Sylomer GREEN		300	MS												●
	Sylomer RED		510	PS	●											
	Sylodyn GREY		680	PS	●											
	Sylodyn GREEN		600	PS	●											
	Sylodyn YELLOW		450	PS	●											
MISCEL-LANEOUS	TT 60			PS			●							++		
	Viton	70-80		PS										+++	●	
	Chrome leather			PS		●					●			++		

	Type	Colour	Indicative hardness when new	Thicknesses (mm) / Minimum pulley diameters (mm)[1]	Thickness tolerances of belt with coating
Polyamide fabrics **PAZ** (facing on the teeth) - **PAR** (coating on the back)	BRECO/BRECOFLEX® 	Green	Polyamide	0.5 | 0.8 15 Available in stock in version BRECO*basic*® PAZ for the pitches T10 and AT10	+/- 0.2 mm
	SYNCHRODRIVE® 	Black	Polyamide	0.5 | 0.8 15	+/- 0.2 mm
	BRECO/BRECOFLEX® Antistatic polyamide coating 	Black	Approx. 0.5 mm of PU 385 covered by antistatic fabric 0.1 mm thick	0.6 20	+/- 0.2 mm
Polyurethane	AFT extruded with the belt 	Translucent	Polyurethane 85 SH A	1.5 (T5, AT5) | 2 (T10, T20, AT10, AT20, pitch in inches) Ø 80 | Ø 80 Available in stock in version BRECO*basic*® AFT2 for the pitches T10 and AT10	+/- 0.4 mm (+/- 0.1 mm possible by grinding)[2]
	PU 385 	Translucent	Polyurethane 85 SH A	3 | 4 | 5 | 6 75 | 100 | 125 | 150	+/- 0.4 mm (+/- 0.1 mm possible by grinding)[2]
	HV Folie 	Translucent	Polyurethane 85 SH A	1 | 2 60 | 80	+/- 0.4 mm (+/- 0.1 mm possible by grinding)[2]
	Ripples TR1 and TR2 	Translucent	Polyurethane E 85 SH A	TR1 : 2,4 Groove depth: 0,5 | TR2 : 2,5 Groove depth: 1,4 80 | 80 Available in stock in version BRECO*basic*® TR1 for the pitches T10 and AT10	+/- 0.5 mm
	WM 385 	Translucent	Polyurethane 85 SH A	4 100	+/- 0.4 mm
	NP 385 	Translucent	Polyurethane 85 SH A	4 100	+/- 0.4 mm
	FG 385 	Translucent	Polyurethane 85 SH A	4 100	+/- 0.4 mm
	Pu 60 SHORE 	Translucent	Polyurethane 60 SH A	2 | 3 | 4 | 5 | 6 40 | 60 | 80 | 100 | 120	+/- 0.4 mm (+/- 0.1 mm possible by grinding)[2]

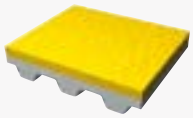
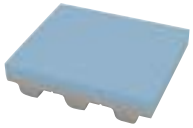
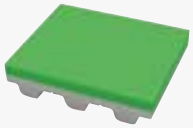
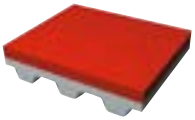
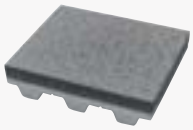
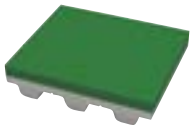
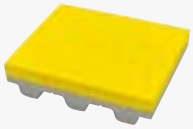
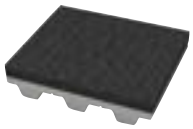
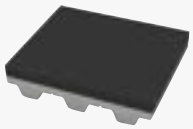
Usage temperatures	Suppleness	**Friction coefficients** (indicative values)		Properties	Areas of use	Machining possibilities
		On steel	On paper			
From - 20 to + 50°C	See table Min. dia. of pulleys	0.3	0.2	Resistant to simple oils and greases.	For transport by accumulation with sliding bed (see *page 121*).	-
From - 20 to + 50°C	See table Min. dia. of pulleys	0.3		Resistant to simple oils and greases.	For transport by accumulation with sliding bed (see *page 121*).	-
From - 20 to + 50°C	See table Min. dia. of pulleys	0.3		Resistant to simple oils and greases.	Transport by accumulation of electrical or electronic parts.	Conductance $10^5\Omega$ in new state.
From - 20 to + 80°C		0.7		Resistant to simple oils, greases, petrol/gasoline and ozone.	All types of transport (glass, sheet metal, harmful metal parts).	Edges: ground and milled. Surface: ground.
From - 20 to + 80°C	LS	0.7	0.6	Resistant to simple oils, greases, petrol/gasoline and ozone.	All types of transport (glass, sheet metal, sharp metal parts).	Edges: ground and milled. Surface: ground.
From - 20 to + 80°C		0.7	0.6	Resistant to simple oils and greases.	All types of transport (glass, sheet metal, sharp metal parts).	Edges: ground and milled.
From - 20 to + 80°C		0.7	0.6	Resistant to simple oils, greases, petrol/gasoline and ozone.	All types of transport in wet or dusty environments (water, oil). For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 20 to + 80°C		0.7	0.6	Resistant to simple oils, greases, petrol/gasoline and ozone.	All types of transport in wet or dusty environments (water, oil). For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 20 to + 80°C		0.7	0.6	Resistant to simple oils, greases, petrol/gasoline and ozone.	All types of transport in wet or dusty environments (water, oil). For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 20 to + 80°C		0.7	0.6	Resistant to simple oils, greases, petrol/gasoline and ozone.	All types of transport in wet or dusty environments (water, oil). For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 20 to + 80°C	MS			Resistant to simple oils, greases, petrol/gasoline and ozone.	All types of transport requiring high abrasion resistance.	Edges: ground and milled. Surface: ground.

	Type	Colour	Indicative hardness when new	Thicknesses (mm) / Minimum pulley diameters (mm)[1]	Thickness tolerances of belt with coating
Polyurethane	Polytan D15 	Translucent yellow	Polyurethane 70 SH A	2 / 50 3 / 75 4 / 100 5 / 125 6 / 150	+/- 0.6 mm (+/- 0.1 mm possible by grinding)[2]
Polyurethane	PU GELB 	Yellow	Polyurethane 55 SH A	2 / 60 3 / 60 4 / 80 5 / 100 6 / 120 8 / 160 10 / 160 Available in stock in version BRECO*basic*® PU YELLOW for the pitches T10 and AT10, 2 mm thickness	+/- 0.4 mm (+/- 0.1 mm possible by grinding)[2]
Polyurethane	PU GRAU 	Grey	Polyurethane 55 SH A	2 / 60 3 / 60 4 / 80 5 / 100 6 / 120 8 / 160 10 / 160	+/- 0.4 mm (+/- 0.1 mm possible by grinding)[2]
Rubber	HAMID 	Top layer green, bottom layer black	Transport side: green NBR nitrile rubber Intermediate layer: hamid Belt side: black NBR nitrile rubber	1.4 / 20	+/- 0.5 mm
Rubber	LINATEX 	Red	95 % natural rubber 38 SH A	2 / 60 3 / 60 4 / 80 5 / 100 6 / 120 8 / 160 10 / 160	-1 / + 1.8 mm (+/- 0.2 mm possible by grinding)[2]
Rubber	LINATRILE 	Orange	Nitrile base vulcanisation 55 SH A	3 / 60 5 / 100 6 / 120	-1 / + 1.8 mm (+/- 0.2 mm possible by grinding)[2]
Rubber	LINARD 60 	Red	Silica-reinforced natural rubber 60 SH A	3 / 60 5 / 100 6 / 120	-1 / + 1.8 mm (+/- 0.2 mm possible by grinding)[2]
Rubber	LINAPLUS FG FDA 	White	Vulcanised natural rubber 38 SH A	3 / 60 5 / 100 6 / 120	-1 / + 1.8 mm (+/- 0.2 mm possible by grinding)[2]
Rubber	RP 400 	Yellow	Natural rubber 39 SH A	2 / 40 3 / 60 4 / 80 5 / 100 6 / 120	+/- 0.7 mm (+/- 0.2 mm possible by grinding)[2]
Rubber	CORREX 	Light brown	Parablond rubber 36 SH A	4 / 80 6 / 120 10 / 160	+/- 0.7 mm (+/- 0.2 mm possible by grinding)[2]
Rubber	POROL 	Black	Closed cell rubber foam 160 -200 kg/m³	3 / 55 5 / 75 10 / 120	+/- 0.7 mm
Rubber	NBR 65 	Black	Nitrile rubber 60 TO 70 SH A	1,5 / 50 3 / 75	+/- 0.6 mm (+/- 0.2 mm possible by grinding)[2]

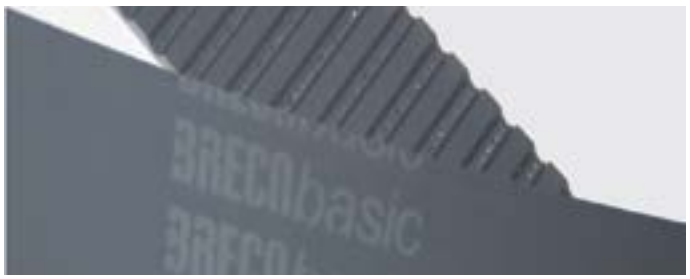
Usage temperatures	Suppleness	Friction coefficients (indicative values) On steel	On paper	Properties	Areas of use	Machining possibilities
From - 20 to + 80°C	LS	0.7	0.7	Resistant to simple oils and greases. Good resistance to ozone and to UV.	All types of transport, transport of harmful mechanical parts.	Edges: ground and milled. Surface: ground
From - 10 to + 70°C	MS	0.4	0.8	Good resistance to oil and to greases. Poor resistance to water.	All types of transport Transporting plates: wood, glass, plaster… Paper	Edges: ground and milled. Surface: ground
From - 10 to + 70°C	MS	0.4	0.8	Good resistance to oil and to greases. Poor resistance to water.	All types of transport Transporting plates: wood, glass, plaster… Paper	Edges: ground and milled. Surface: ground
From - 30 to + 60°C				Resistant to simple oils, greases and water.	Transporting paper, printing and shaping, letter sorting.	Edges: ground and milled. Surface: ground
From - 30 to + 70°C	MS	0.8	0.8	Conditionally resistant to oil. Resistant to water abrasion, resistant to water, avoid direct exposure to sunlight.	All types of transport	Milling and grinding of edges may be possible.
From - 20 to + 110°C	MS	0.8	0.8	Resistant to oils, greases and other chemical products. Resistant to water. Resistant to abrasion.	Transporting of paraffin products, vacuum transport.	Edges: ground and milled. Surface: ground
From - 20 to + 110°C	MS			Resistant to oils and greases Very high rebound resilience.	Products moving on the surface, mixture of fine/rough products	Edges: ground and milled. Surface: ground
From - 30 to + 70°C	MS	0.8	0.8	Resistant to chemical products. Pressure-resistant (consult us).	Food products in a wet or damp environment. FDA approval. For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	Edges: ground and milled. Surface: ground
From - 30 to + 80°C	MS	0.8	0.8	Resistant to oils and greases.	Glass and metal industries. Wear resistance.	Edges: conditionally ground and milled. Surface: ground
Up to + 70°C	MS	0.8	0.8	Resistant to simple oils and greases.	Wear resistance. Transporting sheet metal and pipes.	Edges: conditionally ground and milled. Surface: ground
From - 30 to + 70°C	S			Resistant to water, seawater, methanol, acetone, detergents, acids and alkalis (conditionally).	Labelling machines, transporting fragile parts, paper and textile industries, transporting cardboard. For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	
From - 30 to + 70°C	LS	0.4	0.5	Resistant to oils, resistance to acids and alkalis (conditionally).	Transporting oily parts.	Edges: conditionally ground and milled. Surface: ground

	Type	Colour	Indicative hardness when new	Thicknesses (mm) / Minimum pulley diameters (mm)[1]	Thickness tolerances of belt with coating
PVC	PVC Fischgrät FDA 	White	60 SH A	3 / 60 (2/4/5/6 mm on request)	+/- 0.5 mm
PVC	PVC Folie FDA 	White	60 SH A	2 / 60 (1/3/4/5/6 mm on request)	+/- 0.5 mm
PVC	PVC NOPPEN FDA 	White	60 SH A	1.5 / 60	+/- 0.5 mm
PVC	SUPERGRIP FDA 	White	30 SH A	4 / 60	+/- 0.5 mm
PVC	SUPERGRIP GRÜN 	Green	40 SH A	4 / 60	+/- 0.5 mm
PVC	SUPERGRIP BLAU 	Blue	40 SH A	4 / 60 Available in stock in version BRECO*basic*® SUPERGRIP for the pitches T10 and AT10	+/- 0.5 mm
PVC	MINIGRIP GRÜN 	Green	65 SH A	1.5 / 30	+/- 0.5 mm
PVC	MINIGRIP BLAU 	Blue	50 SH A	1.5 / 30	+/- 0.5 mm
PVC	PVC Folie BLAU 	Blue	50 SH A	1 / 30 (2/3/4/5/6 mm on request)	+/- 0.5 mm
Polyurethane foam	CELLOFLEX 	Dark yellow	Density approx. 350 mg/m³	2 / 30; 3 / 45; 4 / 60; 5 / 75; 6 / 90; 8 / 120; 10 / 120	+/- 0.7 mm
Polyurethane foam	SYLOMER BRAUN 	Light brown	Density 400 g/m³	6 / 60; 12 / 80	+/- 0.7 mm (+/- 0.3 mm by grinding)[2]

Usage temperatures	Suppleness	Friction coefficients (indicative values) On steel	On paper	Properties	Areas of use	Machining possibilities
From - 10 to + 110°C	LS	0.7	0.6	Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Suitable for transporting non-packed food products in a wet or damp environment. FDA approval. For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 10 to + 110°C	LS	0.7	0.6	Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Suitable for transporting non-packed food products in a wet or damp environment. FDA approval. For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 10 to + 110°C	LS			Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Suitable for transporting non-packed food products in a wet or damp environment. FDA approval. For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 10 to + 110°C	S			Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Suitable for transporting non-packed food products in a wet or damp environment. FDA approval. For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 15 to + 90°C	S	0.9	1	Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Inclined transport, incline conveyors, glass industry.	-
From - 15 to + 90°C	S	0.9	1	Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Inclined transport, incline conveyors, wood, glass industry.	-
From - 10 to + 110°C	MS	0.9	1	Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Transporting moist products, wood industry. For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 15 to + 90°C	MS	0.9	1	Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Transporting moist products. For wet environments provide stainless steel tension member belts or BRECOprotect® belts.	-
From - 15 to + 90°C	MS	0.9	1	Resistant to oils and greases. Resistant to acids and alkalis (conditionally).	Transporting paper, film, wood and sheet metal. Pharmaceutical and packing industries. Used in card readers.	-
From - 30 to + 80°C	LS			Resistant to simple oils, greases and water.	Transporting fragile products, film and packing industries.	Edges: ground and milled. Surface: ground.
From - 30 to + 70°C	LS	0.7	0.8	Resistant to simple oils and greases.	Paper and textile industries. Transporting fragile parts.	Edges: conditionally ground and milled. Surface: ground

	Type	Colour	Indicative hardness when new	Thicknesses (mm) / Minimum pulley diameters (mm)[1]	Thickness tolerances of belt with coating
Polyurethane foam	SYLOMER GELB 	Yellow	Density 150 g/dm³	6 / 12 60 / 80	+/- 0.7 mm (+/- 0.3 mm by grinding)[2]
	SYLOMER BLAU 	Blue	Density 220 g/dm³	6 / 12 60 / 80	+/- 0.7 mm (+/- 0.3 mm by grinding)[2]
	SYLOMER GRÜN 	Green	Density 300 g/dm³	6 / 12 60 / 80	+/- 0.7 mm (+/- 0.3 mm by grinding)[2]
	SYLOMER ROT 	Red	Density 510 g/dm³	6 / 12 60 / 80	+/- 0.7 mm (+/- 0.3 mm by grinding)[2]
	SYLOMER GRAU 	Grey	Density 680 g/dm³	6 / 12 60 / 80	+/- 0.7 mm (+/- 0.3 mm by grinding)[2]
	SYLODYN GRÜN 	Green	Density 600 g/dm³	6 80	+/- 0.7 mm (+/- 0.3 mm by grinding)[2]
	SYLODYN GELB 	Yellow	Density 450 g/dm³	6 80	+/- 0.7 mm (+/- 0.3 mm by grinding)[2]
Miscellaneous	TT 60 - Polyester fibre 	Black		2 120	+/- 0.5 mm
	VITON - Fluoropolymer elastomer 	Black	70 to 80 SH A	2 / 4 80 / 100	+/- 0.6 mm (+/- 0.2 mm by grinding)[2]
	CHROME LEATHER 	Grey		2 / 3 100 / 120	+/- 0.7 mm

BRECO*basic*® belts T10 and AT10 with coatings



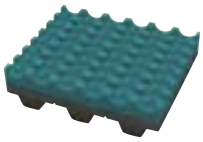
For simple product conveying applications we recommend the standard or PAZ BRECO*basic*® belt fitted or not fitted with coatings:
- AFT 2 mm,
- PU GELB 2 mm,
- SUPERGRIP BLAU,
- or rippled TR1.

The BRECO*basic*® belt is a high-quality product which provides a solution to your conveying problems with regard to sustainable development due to the fact that it uses 40% recycled polyurethane.

Usage temperatures	Suppleness	Friction coefficients (indicative values) On steel	On paper	Properties	Areas of use	Machining possibilities
From - 30 to + 70°C	MS			Resistant to simple oils and greases.	Paper and textile industries. Transporting fragile parts.	Edges conditionally ground and milled. Surface: ground.
From - 30 to + 70°C	MS	0.7	0.8	Resistant to simple oils and greases.	Paper and textile industries. Transporting fragile parts. Transport by gripping between two belts.	Edges conditionally ground and milled. Surface: ground.
From - 30 to + 70°C	MS	0.7	0.8	Resistant to simple oils and greases.	Paper and textile industries. Transporting fragile parts. Transport by gripping between two belts.	Edges conditionally ground and milled. Surface: ground.
From - 30 to + 70°C	LS			Resistant to simple oils and greases.	Paper and textile industries. Transporting fragile parts. Transport by gripping between two belts.	Edges conditionally ground and milled. Surface: ground.
From - 30 to + 70°C	LS			Resistant to simple oils and greases.	Paper and textile industries. Transport by gripping between two belts.	Edges conditionally ground and milled. Surface: ground.
From - 30 to + 70°C	LS				Paper and textile industries. Transport by gripping between two belts.	Edges conditionally ground and milled. Surface: ground.
From - 30 to + 70°C	LS				Paper and textile industries. Transporting fragile parts. Transport by gripping between two belts.	Edges conditionally ground and milled. Surface: ground.
From - 10 to + 120°C	LS			Resistant to oils and greases. Antistatic properties.	Glass industry.	-
From - 10 to + 190°C 275° short term	LS			Very good resistance to oils, greases and hydrocarbons. Impermeable to gases and water vapour.	Transporting fragile parts, cardboard, glass and metal parts.	Edges conditionally ground and milled. Surface: ground.
From - 10 to + 120°C	LS			Resistant to oils and greases. Weather resistant.	Transporting oil- or grease-saturated parts, sheet metal and pipes.	-


BRECO*basic*® + AFT2


BRECO*basic*® + PU GELB 2 mm


BRECO*basic*® + SUPERGRIP BLAU


BRECO*basic*® + TR1

Advantages:
- 40% recycled polyurethane,
- Coatings applied directly without glue,
- The coatings are not connected on the join area,
- Tension members specially designed for transporting.

BELT WITH BACKING ORDERING EXAMPLE				
Designation	Type	Width	Profile / length	Particular specification
Welded linear BRECO belt	BRV	50	AT10/1800 V	Celloflex 2 mm

MACHINING OF TIMING BELTS

BRECO® and BRECOFLEX® belts with or without coatings can be machined in order to perform specific functions.

Belts with thicker backs ("DR" type) can be reworked in a greater variety of ways. Bear in mind however that belts with thicker backs are less flexible: they have to be used in combination with pulleys with larger diameters than the standard pulleys. Flexibility can be enhanced by lateral grooves or slits.

Belts can also be machined by water jet. This makes it possible to fashion high-precision shapes and cutouts for special applications.

Pitch	T5	T10 - AT10	T20 - AT20	L	H
Back thickness (mm)	2.2	4.5	8	2.85	3.55
Max. machining depth (mm)	1.2	2.5	5	1.8	2.2

Maximum machining depths of DR belts

Lateral back milling

Lateral grooves increase belt flexibility.
Milled grooves, in as much as they can be technically implemented, can also be used to ensure positioning or indexing.

Longitudinal back milling

Longitudinal milling offers various guidance solutions irrespective of the belt pitch:
- A trapezoidal section groove can guide the belt
- A V- or semicircular groove allows the transported product to be guided or driven

The depth of the groove X must be dimensioned starting from the belt back.

Longitudinal back milling

The backs of BRECO® and SYNCHROFLEX® belts can be ground. The backs of BRECOFLEX® belts are ground during the production process.
This operation is recommended for:
- increasing the belt thickness precision (± 0.2)
- obtaining a roughened surface

Important: The total thickness X must conform to a minimum thickness so as not to damage the tension members.

Edge grinding

Edge grinding produces belts with close width tolerances. This is adapted in particular to BRECO® belts guided by rails where ground edges may be necessary.

Removal of teeth

MECHANICAL LOCKING SYSTEMS

Groups of teeth or individual teeth can be removed. The remaining teeth are then used to provide precise positioning.

Longitudinal tooth milling

BRECO® belts with longitudinally milled teeth are often produced in combination with sections without tension members to effect vacuum conveying. We offer numerous possibilities in this field.

The machining depth X is calculated from the tip of the tooth.

Perforating

Perforated belts are fashioned for belts with zones which do not have tension members and where the teeth have been longitudinally machined. They are used in vacuum conveying applications, a field in which we have a wealth of experience. It is therefore possible to convey parts such as extremely fragile films or metal plates one square metre in area.

Water jet machining

Various shapes can be produced by cutting with water jet. This process delivers clean machining, extremely precise and with no burrs.

1 / Timing belt joint

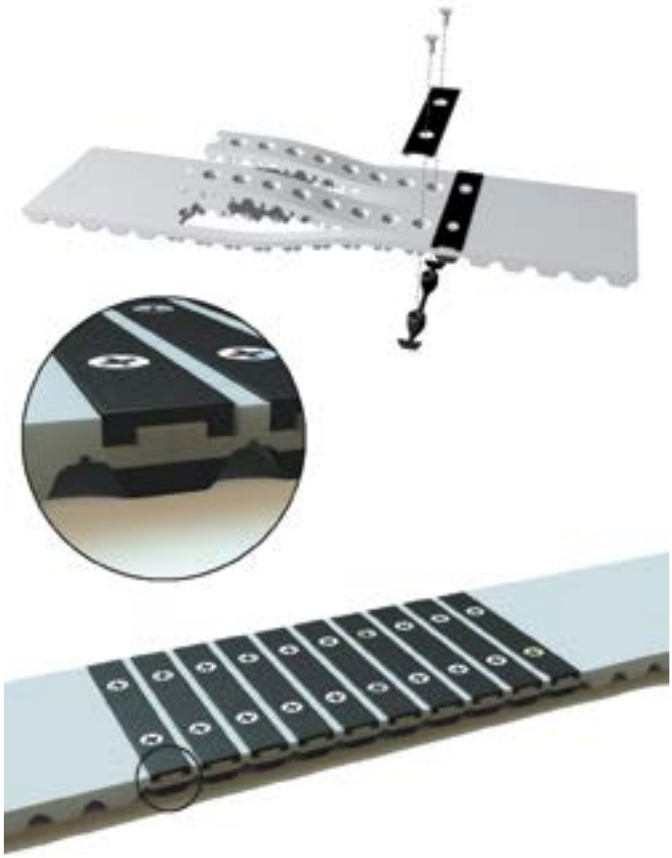
Locks for T10 and AT10 pitches

The locks save maintenance time and afford your work teams complete freedom of action.
The belts are supplied:
- pre-prepared (cut to length and machined to the teeth and back level)
- together with the kit (plates and screws).

The back of the belt is thicker owing to the inclusion of the locks.
Consult us for the specifications to be provided when ordering. A single quick connection kit can also be supplied.

Characteristics of quick connection elements	Carbon fibre reinforced polyamide
Length of locks (tooth centre to tooth centre)	90 mm
Number of elements in kit	10
Width of back plate	8 mm
Total thickness of belt (DC version)	5,5 mm
Minimum number of teeth on pulleys (normal backlash only)	25
Available widths in AT10 DC and T10 DC	32, 50, 75 et 100 mm
Transmittable forces in locks:	
32 mm	550 N
50 mm	750 N
75 mm	1 000 N
100 mm	1 500 N

For belts with weld-on profiles a minimum distance of 100 mm between the profiles is required.



2 / Pin joint connections

The "PIN JOINT" system is available for the pitches T10, AT10, H, T20 and AT20 (other pitches on request). The ends are cut into fingers as for a weld, and then the teeth are pierced to allow the insertion of metal rods, which provide the connection.

The belt is assembled at the assembly site thanks to a mounting tool.
The mounting tool is available on request.
Available widths: 25, 32, 50 and 75 mm.

3 / BRECO® metal cross-teeth

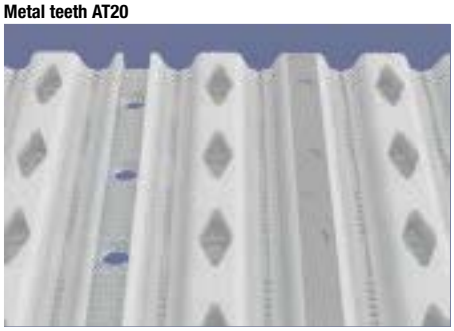
When high loads are applied to the profiles it is advisable to use metal cross-teeth to fasten the profiles. Precautions must be taken in terms of the wrap diameters to prevent the tension members from being ruptured by the bending stresses.

Profile	Material	For belt type	Screw type
AT10	Aluminium	50 AT10, 50 ATN10	M4 x 8 M4 x 12 M4 x 16
	Brass	50 AT10, 50 ATN10, 100 AT10, 100 ATN 10	
	Stainless steel		
	Brass	75 AT10, 75 ATN10	
	Stainless steel		

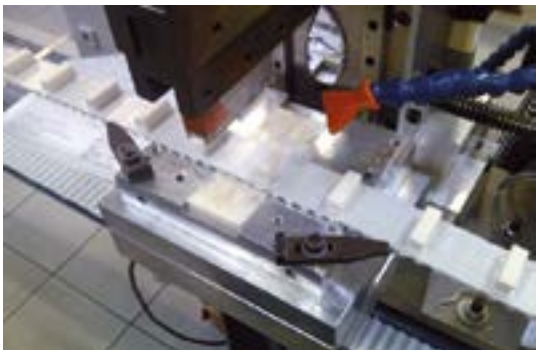
Profile	Material	For belt type	Screw type
AT20	Aluminium	50 AT20, 50 ATN20	M5 x 12 M5 x 16 M5 x 20
	Brass		
	Stainless steel		
	Brass	75 AT20, 75 ATN20	
	Stainless steel		

Metal teeth AT10

Metal teeth AT20

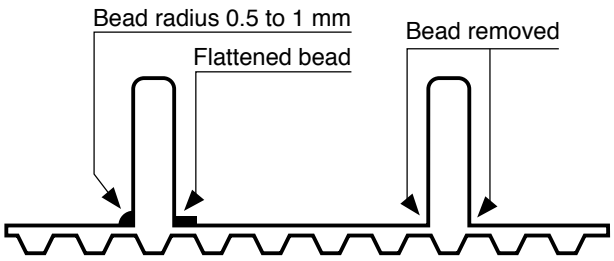


WELD-ON PROFILES - IMPLEMENTATION



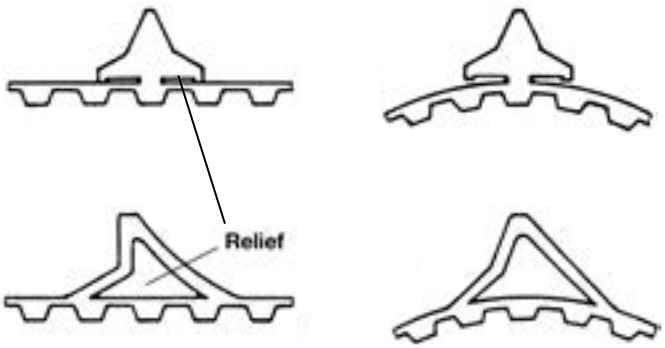
1 / Welding of profiles

The thermoplastic polyurethane, base of BRECO® welded (V) and BRECOFLEX® belts, can be used to produce profileed belts by means of a welding process.
The profiles, depending on how many there are, are welded on manually or automatically.
The welding bead is between 0.5 and 1 mm thick and with varying degrees of flattening.
If the welding bead were to obstruct your application, specify in the drawings or in the order "Bead removed".



2 / Width of the weld

To maintain the flexibility of the belt as it wraps over the pulleys, the profiles are only welded on in their centre section with a support point on either side, or else at the two ends with a central relief.

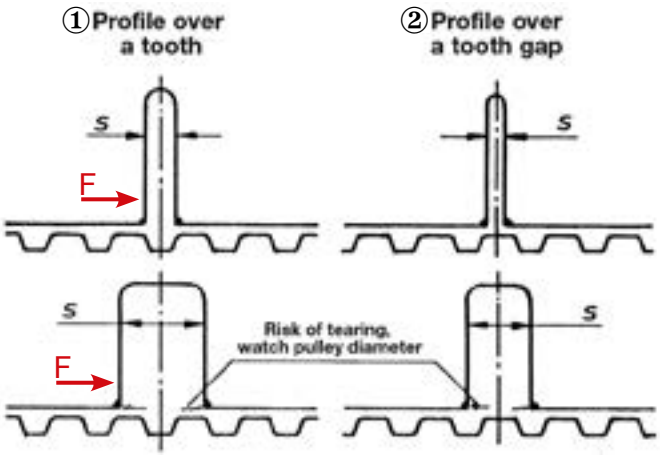


Profiles that require large weld surfaces can be made more flexible by means of slits.

In the case of transversal profiles welded on high-width belts, it will be necessary to take into account possible "transversal bending" (consult us).

3 / Position and thickness of profiles

The flexibility of the timing belt can be altered by the position of the weld-on profile depending on whether it is aligned over a tooth or a tooth gap. The first option is the preferred solution.
As a general rule the thickness S of the profile must be as low as possible. The table below sets out the maximum profile thicknesses S based on the number of pulley teeth and the position of the profile in relation to the tooth.



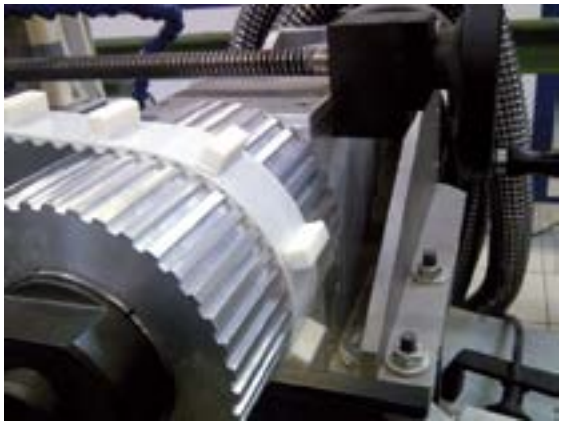
F: permissible nominal force at the profile base. 20 daN/cm² on the weld section.

Thickness Smax as a function of number of pulley teeth and belt type

(values established on the base of 92 Sh hardness profiles).

	18		20		25		30		40		50		60		100	
	①	②	①	②	①	②	①	②	①	②	①	②	①	②	①	②
T2.5			3	2	3	2	3	2	4	2	5	3	5	4	6	6
AT3			3	2	4	2	5	3	6	3	8	4	9	6	10	8
T5	4	2	5	2	6	2	6	3	8	4	9	6	10	8	12	10
T10	7	3	8	3	9	4	10	4	12	6	14	9	15	12	20	20
T20	11	4	12	5	13	5	15	6	18	8	20	12	23	20	30	30
AT5	4	2	5	2	6	2	6	3	8	4	9	6	10	8	12	10
AT10	7	3	8	3	9	4	10	4	12	6	14	9	15	12	20	20
AT15					11	4	12	5	15	7	17	10	19	16	25	25
SFAT10*	6		7		8		9		10		12		14		20	
BATK10*	6		7		8		9		10		12		14		20	
SFAT15*	8		9		10		11		13		15		16		25	
AT20	11	4	12	5	13	5	15	6	18	8	20	12	23	20	30	30
SFAT20*	10		11		12		13		15		18		20		20	
MXL			2	1	2.5	1	2.5	1.5	3.5	1.5	4	2	4.5	3	5	5
XL	4	2	5	2	6	2	6	3	8	4	9	6	10	8	12	10
L	5	3	6	3	7	3	8	4	10	5	12	7	13	10	16	16
H	7	4	8	4	9	5	10	6	12	7	14	10	15	12	20	20
XH	12	4	13	5	14	5	15	6	18	8	20	12	23	20	30	30

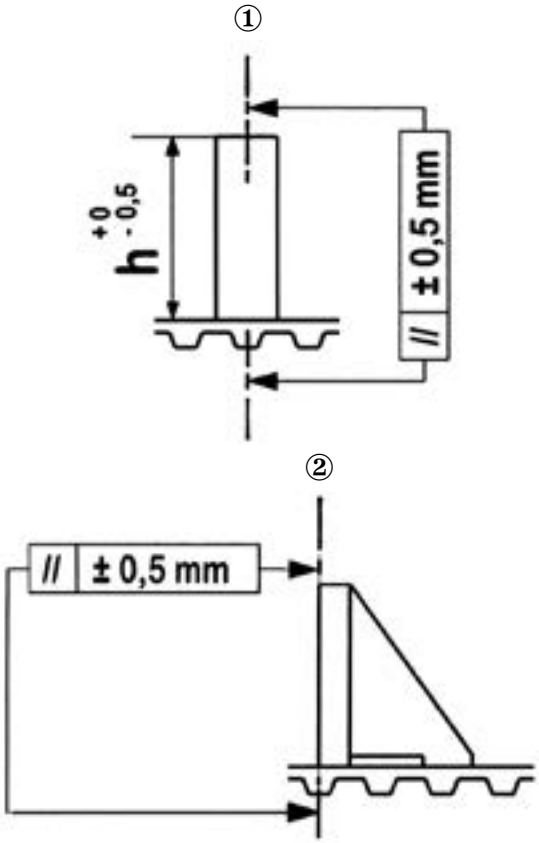
* These belts have offset or curved teeth; the value of Smax is the same regardless of where the profile is welded on.



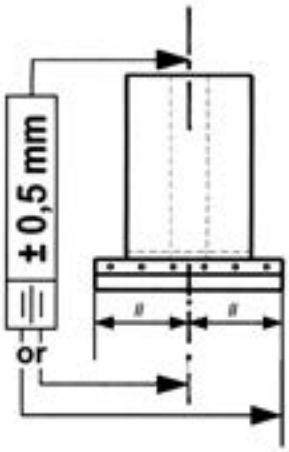
4 / Manufacturing tolerances

4.1 Positioning tolerance on the belt

The profiles are generally positioned in relation to a tooth.
The standard precision is ±0.5 mm between the axis of a tooth and the axis ① or the reference edge ② of a profile.



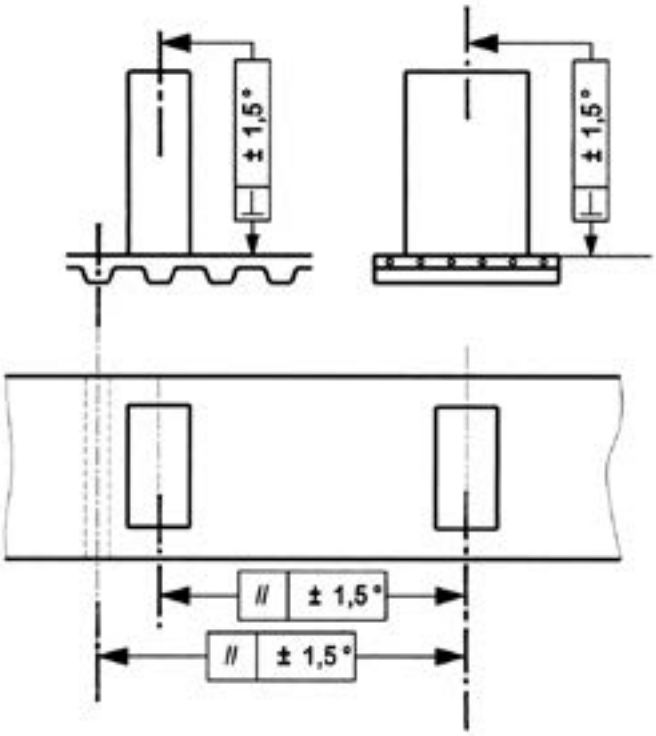
The width positioning tolerance is ± 0.5 mm in relation to the centre line of the belt or of an edge of the belt.
The profile height tolerance is 0 - 0.5 mm (note: the profile drawings are always dimensioned in the welded position).



A profile supplied separately is therefore 0.4 to 0.7 mm higher to take into account the reduced height at the weld.
Closer tolerances can be obtained by means of additional machining or a specific welding process (consult us).

4.2 Perpendicularity and parallelism tolerances

The perpendicularity and parallelism tolerances are in the region of ±1.5°, like the tolerances for a different angle of 90°.

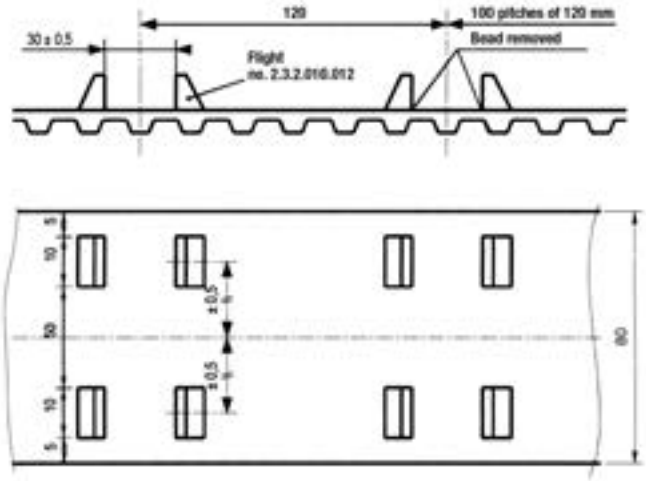


4.3 Positioning tolerance of profiles over the full length of a belt

Errors are not cumulative due to the fact that the profiles are positioned in relation to a tooth. However, it is necessary to take into account the belt length tolerance and possibly the elastic elongation under pre-tension force (F_{pt}).
If the profiles cannot be positioned in relation to a tooth, it is advisable to prepare a precise drawing and consult us.

4.4 Tolerance of a group of profiles between themselves

Weld positioning equipment will be required when conveying and positioning necessitate a high degree of accuracy for a group of profiles. It is advisable to consult us with a precisely toleranced drawing.
Example:



We will propose tolerances which we can guarantee based on our production options.

5 / Profiles

How weld-on profiles are produced is dependent on their number and their geometric complexity:
- Simple or complex high-volume profile: produced by moulding
- Simple low-volume profile: production by machining or water jet cutting from a polyurethane block.

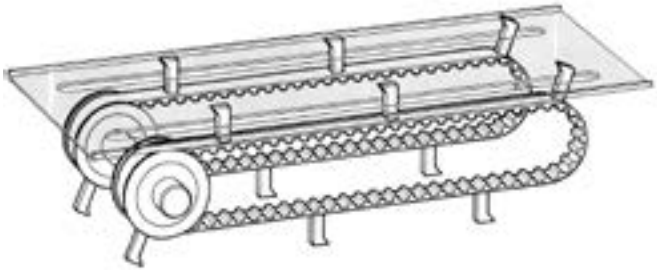
It is also possible to produce moulded profiles on SYNCHROFLEX® belts. This procedure is the most reliable because it produces a high-strength profile/profile. However, it can only be used for large quantities because it requires investment in a complete mould.

We invite you to contact our sales department regarding our options before a new profile is created: we have in effect a library of more than **3000 different models** and we regularly create new models in response to customer requests.

5.1 Extra-flat profiles

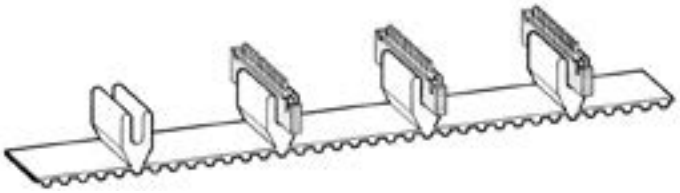
Profiles reinforced or not reinforced with glass fibre.
Application example: conveying cosmetic, hygiene and ultra-light products, diskettes.

5.2 Simple geometric profiles



Profiles can be offset for conveying.
Application example: light conveying on slider bed.

5.3 Support profiles

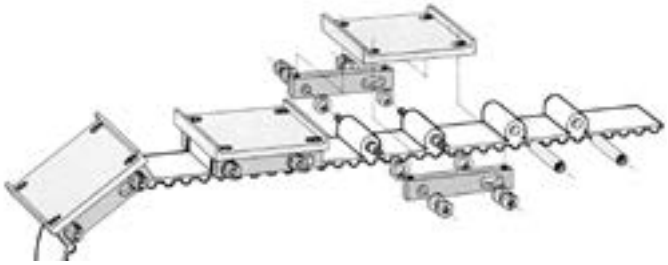


Profiles with geometry adapted to the parts to be conveyed.
Application example: conveying of connectors.

5.4 Gripping profiles

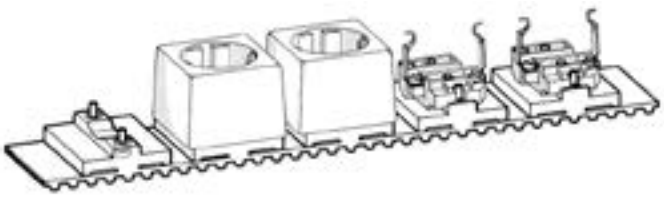
Profiles with a radius adapted to the cylinder to be conveyed.
Application example: gripping profile, held by gripping.

5.5 Profiles for shaft supports



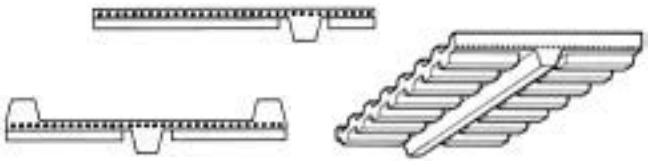
Profiles accommodating shafts or bushings.
Application example: conveying with metal support.

5.6 Profiles with inserts

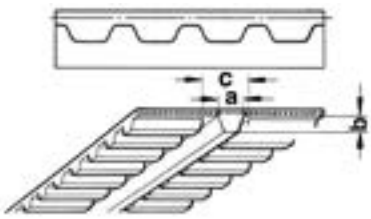


Smooth inserts for centring, threaded for fastening.
Application example: assembly of power sockets.

5.7 Longitudinal guide profiles



All the belts can be fitted with a longitudinal profile. The K6 and K13 profiles can essentially be attached to all belt types.
Application example: TK-ATK non-slit for guiding on grooved pulleys or profiled slider beds.



Continuous trapezoidal profiles fastened by machining and welding:

	K6	K13
a	6	13
b	4	6,5
c	12	20

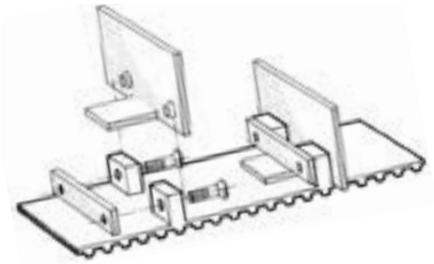
Wrap diameter:

Pitch	Number of teeth Z minimum	Rollers on back minimum dia. in mm
TK5K6	25	60
ATK5K6	25	60
TK10K6	20	60
TK10K13	25	120
ATK10K6	20	120
ATK10K13	25	120
TK20K13	15	180
ATK20K13	25	180
HKk13	20	120
FK2K6	Ø 60	60
FK2K13	Ø 80	120

5.8 Profiles for assembly by insertion

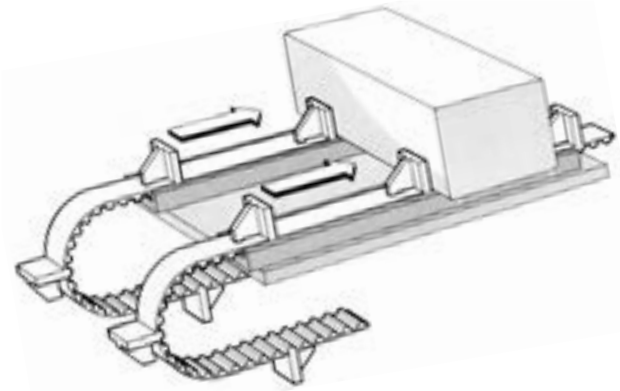
Dovetailed or T profiles for mounting/removing specific dies.
Application example: rapidly interchangeable polyethylene dies.

5.9 Profiles with locating holes



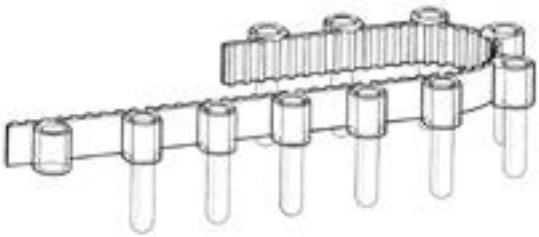
Profiles for locating supplementary metal parts.
Application example: heavy conveying on polyamide slider beds.

5.10 Support profiles



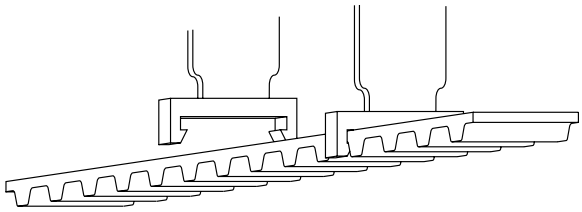
Profiles with or without inserts, simple or with a large weld surface and flexibility slits.

5.11 Profiles specific to a function



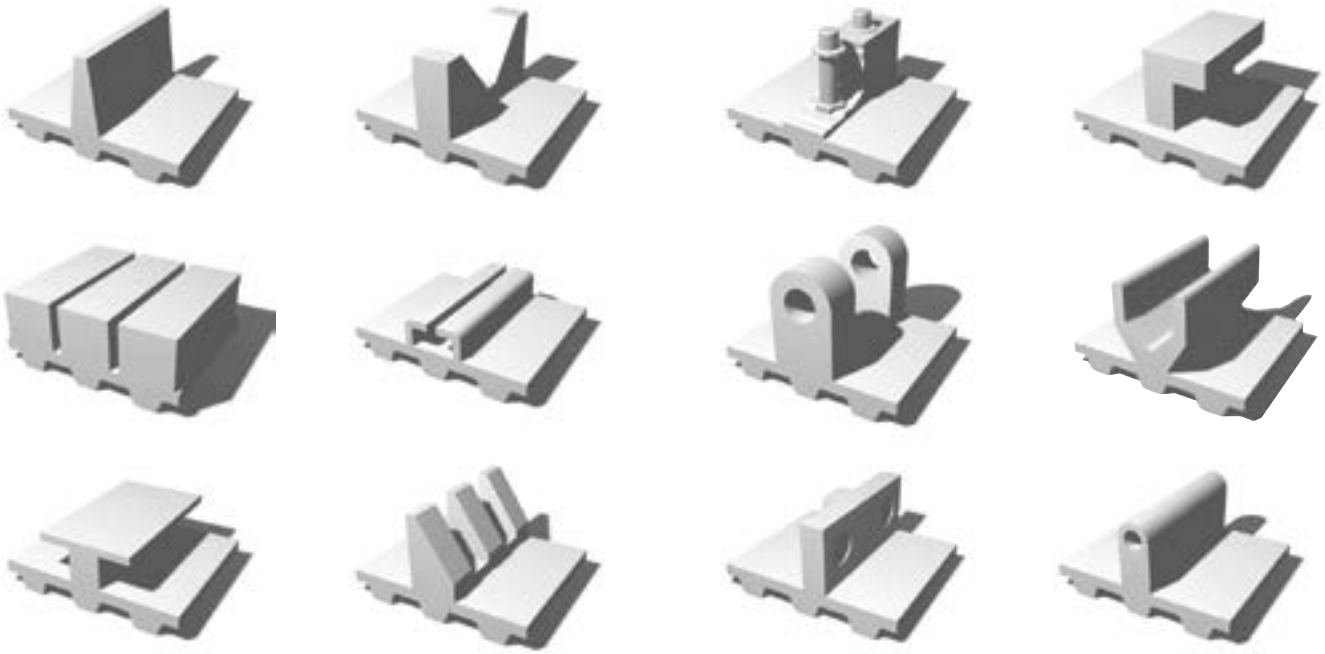
We develop profiles adapted to your specific function.
Application example: profile designed to hold test tubes.

5.12 Clip-on profiles



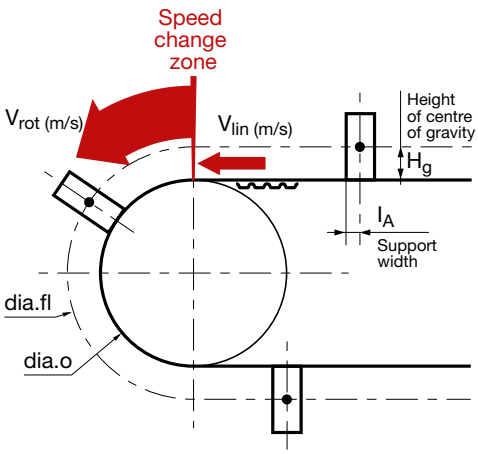
Non-welded profiles.
Special models created for each application.

5.13 Some other examples



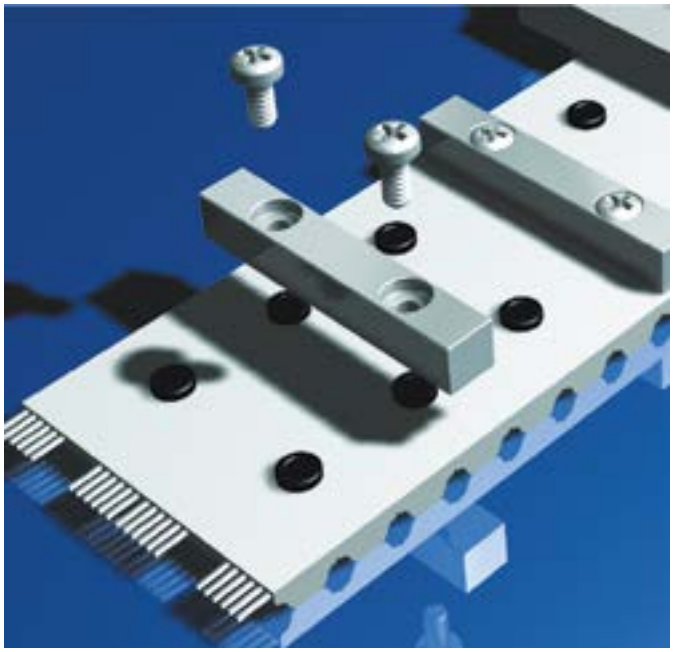
6 / Static and dynamic function of profiles for ATN belts

6 / Static and dynamic function of profiles for ATN belts
The characteristics of the insert parts on Page 68 are essential for determining the permissible forces on the drives. However, the design must take into account the dynamic forces which are produced in the acceleration phases and when the linear speed changes to peripheral speed on the pulley (V_{lin} to V_{rot}).
Our technical department can provide you with useful advice on determining the size of the profiles based on our curve sheets.



SCREW-ON PROFILES IMPLEMENTATION

The ATN modular belt concept enables profiles to be attached with the aid of insert parts. The fastening centre distances are multiples of 10, 12.7 and 20 mm according to the belt pitch.



1 / Advantages

1.1 Highly modular

- Possibility of fitting standard profiles or specific profiles unique to the user, in all materials.
- Possibility during use of equipping the belt with different profile profiles or of modifying a fastening centre distance without removing the belt.
- Possibility of fastening different types of profiles on a standard base.

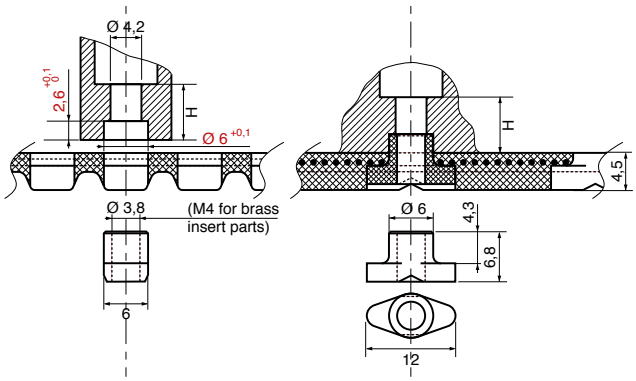
1.2 Very easy to use

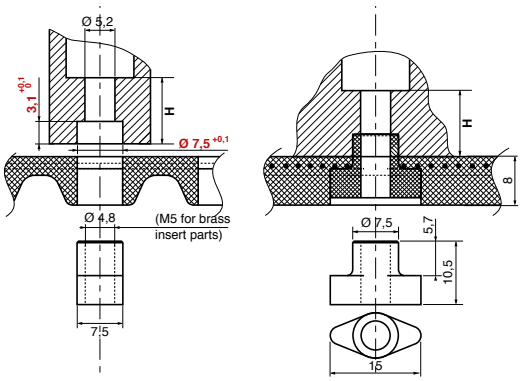
- Fitting directly by the user without specific tools or additional machining.
- Possibility of joining "open belts" on the machine using mechanical joint systems.
- Use of standard AT10, AT20 pulleys (except for the ATN12.7 pitch, for which the pulleys are "according to drawing" only: consult us).
- Seal removal using the piercing tool and the mounting plate (see page 73)

2 / Specific details

- The belts are systematically produced with cavities in each tooth.
- The backs of the belts are flat. The holes are closed off by a 0.2 mm thick seal.
- The insert parts must be inserted by hand into the teeth.
- The profiles are fastened with tapping screws or M screws (see page 72).
- The profiles can withstand the transmission of high forces.
- Brass and stainless steel insert parts with M4 (ATN10, ATN12.7) and M5 (ATN20, ATNS20) threads are available.
- EJOT Delta PT screws for synthetic materials are available.
- M4 x 12 and M5 x 16 screws in stainless steel and galvanised steel are available (can also be used in brass and stainless steel insert parts).

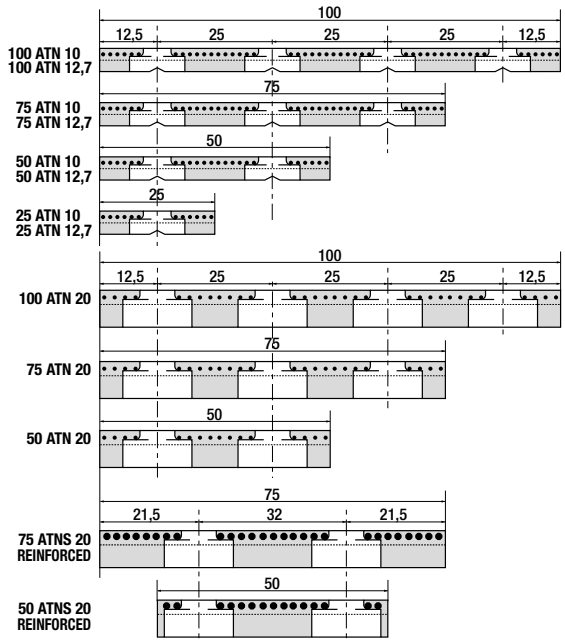
ATN10 and ATN12.7 profiles





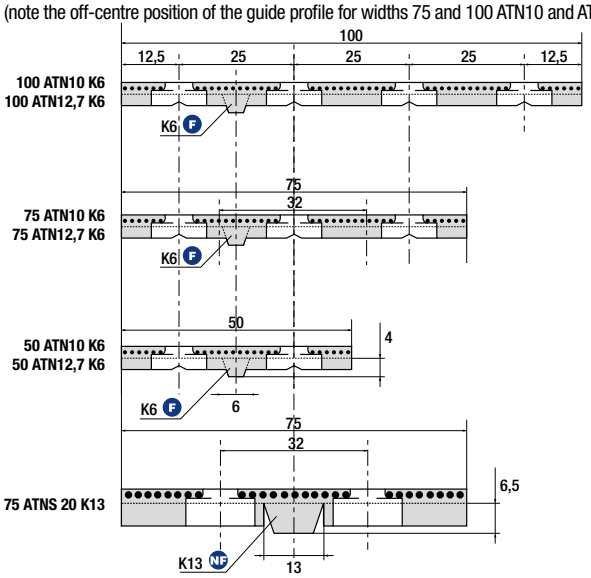
In red: dimensions necessary for good assembly

ATN belt



Self-guiding ATN belt

(note the off-centre position of the guide profile for widths 75 and 100 ATN10 and ATN12.7)



F : slit
NF : not slit

ATN20 and ATNS20 profiles

3 / Insert parts

High-strength polyamide

Polyamide fastening inserts call for the use of tapping screws which are available in stock (see table below). The use of other non-approved tapping screws may cause deformation of the inserts or a reduction of the nominal tension force.

Brass and stainless steel

These inserts are provided with a threaded locating hole, allowing the use of standard M4 (ATN10/12.7) and M5 (ATN20) screws.

Characteristic of insert parts

Type	Material	Profile material	Tightening torque (N.cm)	Axial force (N)	Screw type
ATN10 & ATN12.7	Polyamide	Polyamide	70	100	Tapping
		Metal	70	100	
		PU	50	40	
	Brass	Polyamide	100	170	M4
		Metal	100	320	
	Stainless steel	Polyamide	100	170	
		Metal	100	320	
ATN20 & ATNS20	Polyamide	Polyamide	100	160	Tapping
		Metal	100	160	
		PU	80	40	
	Brass	Polyamide	150	240	M5
		Metal	150	490	
	Stainless steel	Polyamide	150	240	
		Metal	150	490	

4 / Screws

	Galvanised steel screw DIN 7984	Stainless steel 1.4301 screw DIN 7984	Hardened steel PT10 tapping screw
ATN10 / ATN12.7 / ATN10K6 / ATN12.7K6	M4 x 8	VA M4 x 8	Z40 x 8
	M4 x 12	VA M4 x 12	Z40 x 12
	M4 x 16	VA M4 x 16	Z40 x 16
ATN20 / ATNS20	M5 x 12	VA M5 x 12	Z50 x 12
	M5 x 16	VA M5 x 16	Z50 x 16
	M5 x 20	VA M5 x 20	Z50 x 20

5 / Option: connection with lock system

Belts are normally joined by welding. We nevertheless suggest a lock system for complex installations.

Belt versions

Version C

Standard belt, plate with extra thickness.

Version DC

Belt with extra thickness of PU on the back and embedded back plates.

Version DC pro

Allows the attachment of a profile in the connection area.

For the DC and DC PRO versions the thickness of the belts is increased by 0.9 mm.

The mechanical joint system for ATN belts enables the belt to be quickly changed without removal from the machine.
The belt can be supplied pre-assembled or ready for assembly with a "connection elements" kit.

Version that can be produced:

	Version C	Version DC
ATN10	●	●
ATN12.7	●	●
ATN20		●
ATNS20		●
ATN10 K6	●	●
ATN12.7K6	●	●

Force transmittable by the mechanical locks

Belt widths (mm)	50	75	100
ATN10 - ATN10 K6	750 N	1 150 N	1 500 N
ATN12.7 - ATN12.7 K6	750 N	1 150 N	1 500 N
ATN20	1 000 N	1 500 N	2 000 N
ATNS20	1 000 N	1 500 N	-

Length of mechanical locks

Applicable regardless of version (C, DC or DC PRO):
For ATN10 and ATN12.7: 10 teeth, 9 pitches.
For ATN20 and ATNS20: 9 teeth, 8 pitches.

6 / Fitting accessories

Piercing tool

The piercing tool makes it easy to remove the 0.2 mm thick seal which closes off the back of the belt before the inserts are attached. We are also able to remove seals in series at our factory.

	Stock	Length (mm)	Dia. (mm)
ATN10 & ATN12.7		70	6
ATN20 & ATNS20		70	7.5

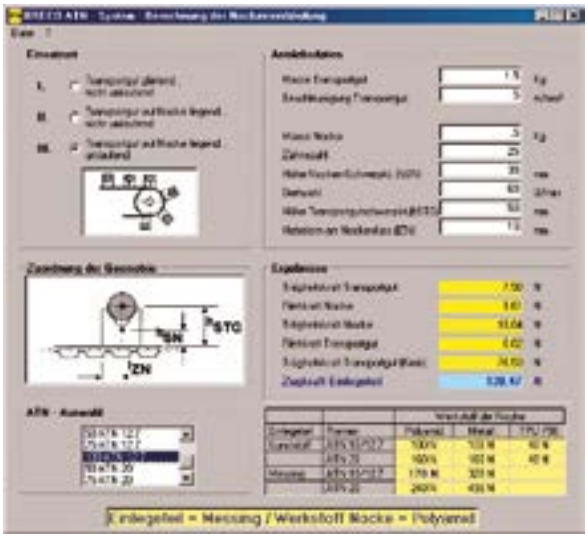
Mounting plate

Toothed polyamide plates are designed to help attach the available inserts. This plate prevents the insert from rotating and the belt tooth from deforming when the profile is tightened on the back of the belt.

	Stock	L	B	h	m	d
ATN10		50	100	12	50	M5
ATN12.7		63.5	100	12	50	M5
ATN20		100	100	14	50	M5

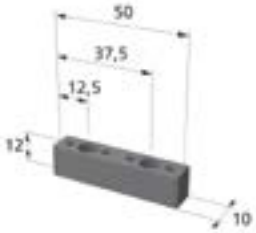
7 / Dimensioning program

The calculation program ATN-CONNECT allows us to dimension profiles correctly.



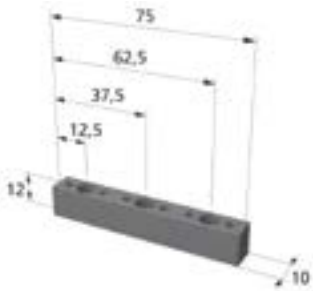
8 / Library of profiles

SIMPLE GEOMETRIC PROFILE (INDEXING / SUPPORT)
- For 50ATN10 and 50ATN12.7
- Z40 x 12 screw



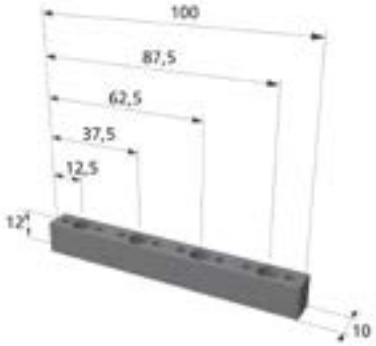
Reference 1.001.008

SIMPLE GEOMETRIC PROFILE (INDEXING / SUPPORT)
- For 75ATN10 and 75ATN12.7
- Z40 x 12 screw



Reference 1.001.009

SIMPLE GEOMETRIC PROFILE (INDEXING / SUPPORT)
- For 100ATN10 and 100ATN12.7
- Z40 x 12 screw



Reference 1.001.010

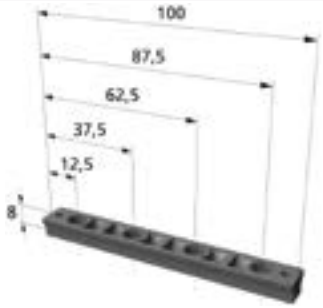
ASSEMBLY PROFILE
- For 50ATN10 and 50ATN12.7
- Z40 x 8 screw

Reference 1.001.005

ASSEMBLY PROFILE
- For 75ATN10 and 75ATN12.7
- Z40 x 8 screw

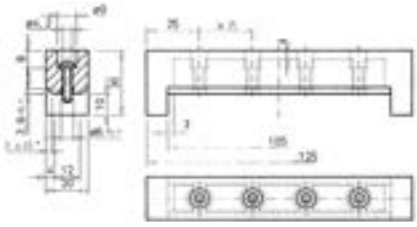
Reference 1.001.006

ASSEMBLY PROFILE
- For 100ATN10 and 100ATN12.7
- Z40 x 8 screw



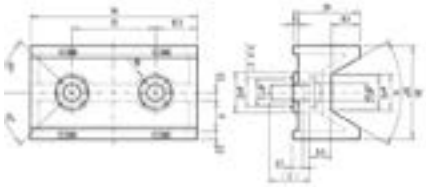
Reference 1.001.007

SIMPLE GEOMETRIC PROFILE (INDEXING / SUPPORT)
- For 100ATN10
- Z40 x 16 screw



Reference 1.020.005

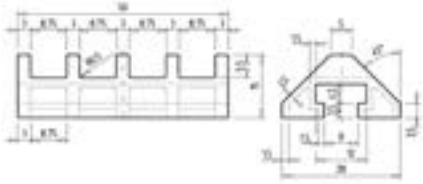
SUPPORT PROFILE
- For 50ATN10 and 50ATN12.7
- Z40 x 12 screw
- For 50ATNS20
- Z50 x 12 screw



For 50ATN10 and 50ATN12.7: Reference 1.020.003

For 50ATNS20: Reference 1.020.004

SUPPORT PROFILE (STANDARD / SPECIFIC)
- For profile 1.001.005
- For 50ATN10 and 50ATN12



Reference 1.002.007

TIMING BELTS

ATN10

ATN10 DC

ATN12,7

ATN12,7 DC

ATN10K6

ATN10K6 DC

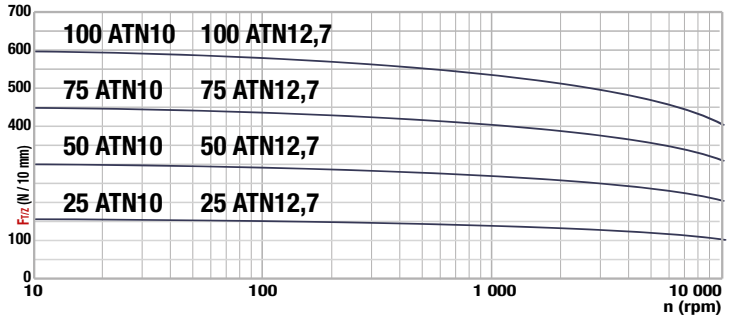
ATN12,7K6

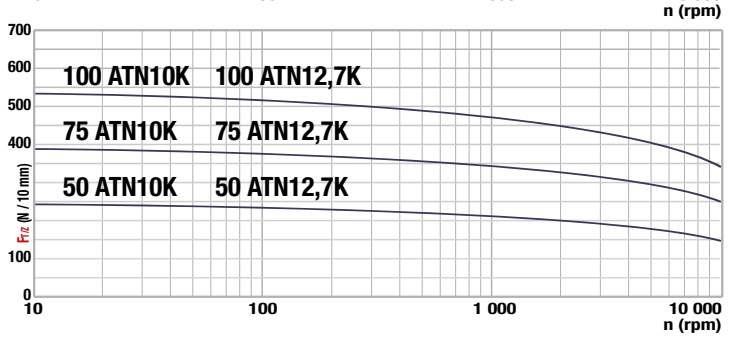
ATN12,7K6 DC

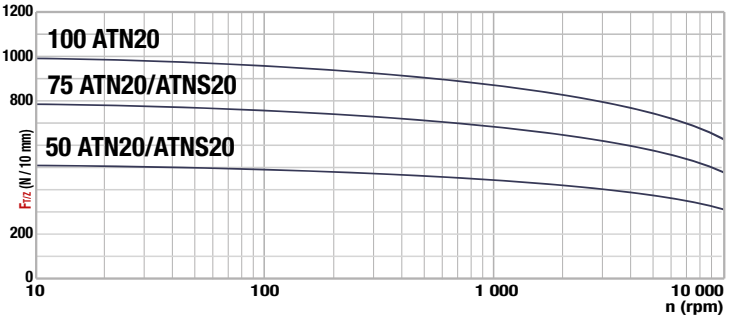
ATN20 / ATNS20

Seal removal

Tangential force transmittable by the teething







Tangential force transmittable by the tension members

Profile/pitch	Belt width (mm	LINEAR BELTS - BRM								WELDED BELTS - BRV
		Standard tens. members - TPU ST1[2]		Stock		St. steel tens. members - TPU AU1[2]		Stock		Permissible force F_N (N) standard or st. steel tens. member at the join
		Permissible force F_N (N)	Specific elasticity of tension members Cspe (N)	Standard	PAZ[1]	Permissible force F_N (N)		Standard	PAZ[1]	
ATN10* - ATN10 DC ATN12.7 - ATN12.7 DC ATN10 K6 - ATN10 K6 DC ATN12.7K6 - ATN12.7K6 DC	25	3 000	$0{\cdot}75 \cdot 10^6$			2 150	$0{\cdot}54 \cdot 10^6$			1 000
	50	6 000	$1{\cdot}5 \cdot 10^6$			4 300	$1{\cdot}08 \cdot 10^6$			2 000
	75	9 000	$2{\cdot}25 \cdot 10^6$			6 450	$1{\cdot}61 \cdot 10^6$			3 000
	100	12 000	$3{\cdot}0 \cdot 10^6$			8 600	$2{\cdot}15 \cdot 10^6$			4 000
ATN20	50	8 000	$2 \cdot 10^6$			7 300	$1{\cdot}83 \cdot 10^6$			2 700
	75	12 000	$3 \cdot 10^6$			10 950	$2{\cdot}73 \cdot 10^6$			4 000
	100	16 000	$4 \cdot 10^6$			14 600	$3{\cdot}65 \cdot 10^6$			5 400
ATNS20	50	11 200	$2{\cdot}8 \cdot 10^6$							2 700
	75	19 600	$4{\cdot}2 \cdot 10^6$							4 000

* Reference held in stock

Belt width (mm)	Weight (kg/m)									
	ATN10	ATN10 DC	ATN10 K6	ATN10 K6 DC	ATN12.7	ATN12.7 DC	ATN12.7K6	ATN12.7K6 DC	ATN20	ATNS20
25	0.120				0.111					
50	0.240	0.300	0.245	0.305	0.222	0.282	0.226	0.286	0.403	0.433
75	0.360	0.450	0.364	0.457	0.333	0.423	0.340	0.430	0.604	0.717
100	0.480	0.600	0.490	0.610	0.444	0.564	0.453	0.573	0.806	

Manufacturing capacities

	Available	Min. welded lengths
ATN10 - ATN10 DC **ATN10 K6 - ATN10 K6 DC** **ATN12.7 - ATN12.7 DC** **ATN12.7K6 - ATN12.7K6 DC**	Rolls 50-100 m above this: on request	880 mm
ATN20 - ATNS20	Rolls 50 m above this: on request	1 000 mm

Standard lengths available

- Every length tooth to tooth possible

Option

Stainless steel tension member, see *page 6* (on request)
Polyurethane, see *page 5* (on request)

BELT ORDERING EXAMPLES

Designation	Width	Profile / length	Particular specifications	No. of holes / width	Centre distance B	Centre distance c
Open linear BRECO belt	50	ATN10/2000 M	DC			
BRECO quick connection	50	ATN10/	Fitted			
Welded linear BRECO belt	75	ATNS20/6000 V		2	32	100

Recommended pre-tension: see *page 4*
General information: see *page 4*

1. Coatings (PAZ) see *page 56*
2. Polyurethane: see characteristics *page 5*

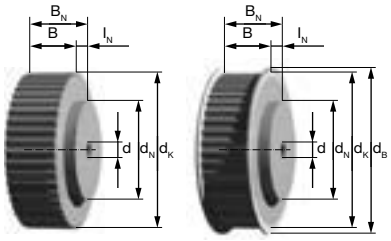
TOOTHED PULLEYS

Pulleys acc. to drawing see *page 8*

Standard pulleys

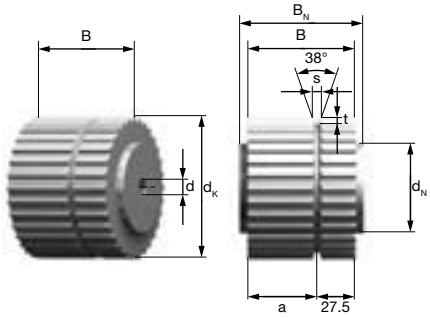
Stocks
Version 2:
(with flanges)
Up to Z = 44

Version 0:
(without flanges)
From Z = 45



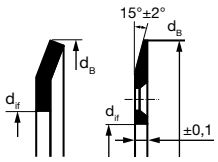
Self-guiding pulleys

K6	
s	t
6.5	5



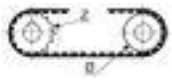
	Belt widths ATN10 - ATN12.7 - ATN20	b	25	50	75	100
Pulley widths	Pulley without hub	B	32	60	85	110
	Pulley with hub	B_N	42	70	95	120

	Belt widths ATN10K6	b		50	75	100
Pulley widths	Pulley without hub	B		55	80	105
	Pulley with hub	B_N		65	90	115
	Toothed width (mm)	a		27.5	52.5	77.5



Angled Straight at 15°

	Flanges			
	Z	Thickness	Shape	Mounting
AT10 AT12.7	Z ≤ 32	1	Angled	Rolled
	32 < Z ≤ 93	1,5	Angled	Rolled
	B_N ≥ 66 and Z ≤ 93	2	Angled	Screwed
	Z > 93	2	Straight at 15°	Screwed
AT20	Z ≤ 46	2	Angled	Screwed
	Z > 46	2	Straight at 15°	Screwed

Kinematics	Binding type		ATN10 ATN10 DC ATN10 K6 ATN10 K6 DC	ATN12.7 ATN12.7 DC ATN12.7K6 ATN12.7K6 DC	ATN20	ATNS20
 Monoflexure	Standard st. tens. members	Z min.	25	20	20	25
		dia. min. (mm)	80	80	125	160
	Stainless st. tens. members	Z min.	25	20	20	
		dia. min. (mm)	80	80	120	

AT10			AT12.7*			AT20		
Z	d_K	d_B	Z	d_K	d_B	Z	d_K	d_B
18	55.48	61	20	79.03	87	20	124.50	134
19	58.66	64	21	83.07	91	21	130.87	140
20	61.84	68	22	87.12	93	22	137.24	147
21	65.03	72	23	91.16	97	23	143.60	153
22	68.21	74	24	95.2	100	24	149.97	160
23	71.39	76	25	99.24	106	25	156.33	166
24	74.57	80	26	103.29	110	26	162.70	172
25	77.76	84	27	107.33	115	27	169.07	179
26	80.94	86	28	111.37	118	28	175.43	185
27	84.12	90	29	115.41	123	29	181.80	192
28	87.31	93	30	119.46	127	30	188.17	198
29	90.49	96	31	123.5	131	31	194.53	204
30	93.67	99	32	127.54	135	32	200.90	210
31	96.86	102	33	131.58	138	33	207.26	217
32	100.04	106	34	135.63	143	34	213.63	223
33	103.22	109	35	139.69	148	35	220.00	229
34	106.41	112	36	143.71	152	36	226.36	236
35	109.59	115	37	147.75	154	37	232.73	242
36	112.77	118	38	151.8	158	38	239.10	249
37	115.95	121	39	155.84	164	39	245.46	255
38	119.14	125	40	159.88	168	40	251.83	261
39	122.32	128	41	163.92	172	41	258.19	268
40	125.50	131	42	167.97	175	42	264.56	274
41	128.69	134	43	172.01	183	43	270.93	280
42	131.87	137	44	176.05	183	44	277.29	287
43	135.05	140	45	180.09	188	45	283.66	293
44	138.24	144	46	184.14	192	46	290.03	300
45	141.42	147	47	188.18	196	47	296.39	306
46	144.60	150	48	192.22	198	48	302.76	312
47	147.79	153	49	196.26	205	49	309.12	319
48	150.97	156	50	200.31	211	50	315.49	325
49	154.15	160	51	204.35	216	51	321.86	331
50	157.33	163	52	208.39	216	52	328.22	338
51	160.52	166	53	212.43	220	53	334.59	344
52	163.70	169	54	216.48	223	54	340.95	350
53	166.88	172	55	220.52	226	55	347.32	357
			56	224.56	230	56	353.69	363
			57	228.6	242	57	360.05	370
			58	232.68	242	58	366.42	376
			59	236.69	242	59	372.79	382
			60	240.73	248	60	379.15	389

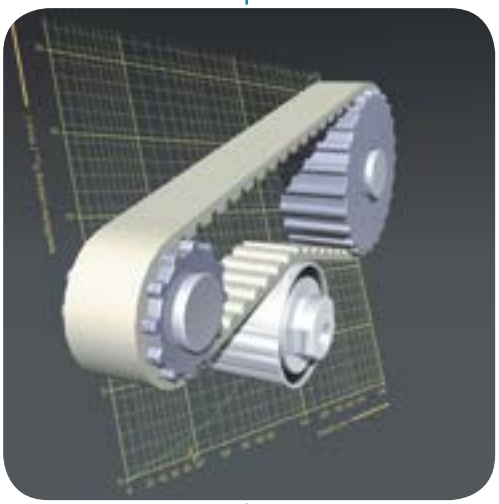
* Important: profile AT12.7 and not T12.7 (H).
Details and stock pulleys T10: *page 47*
Details pulleys T20: *page 47*

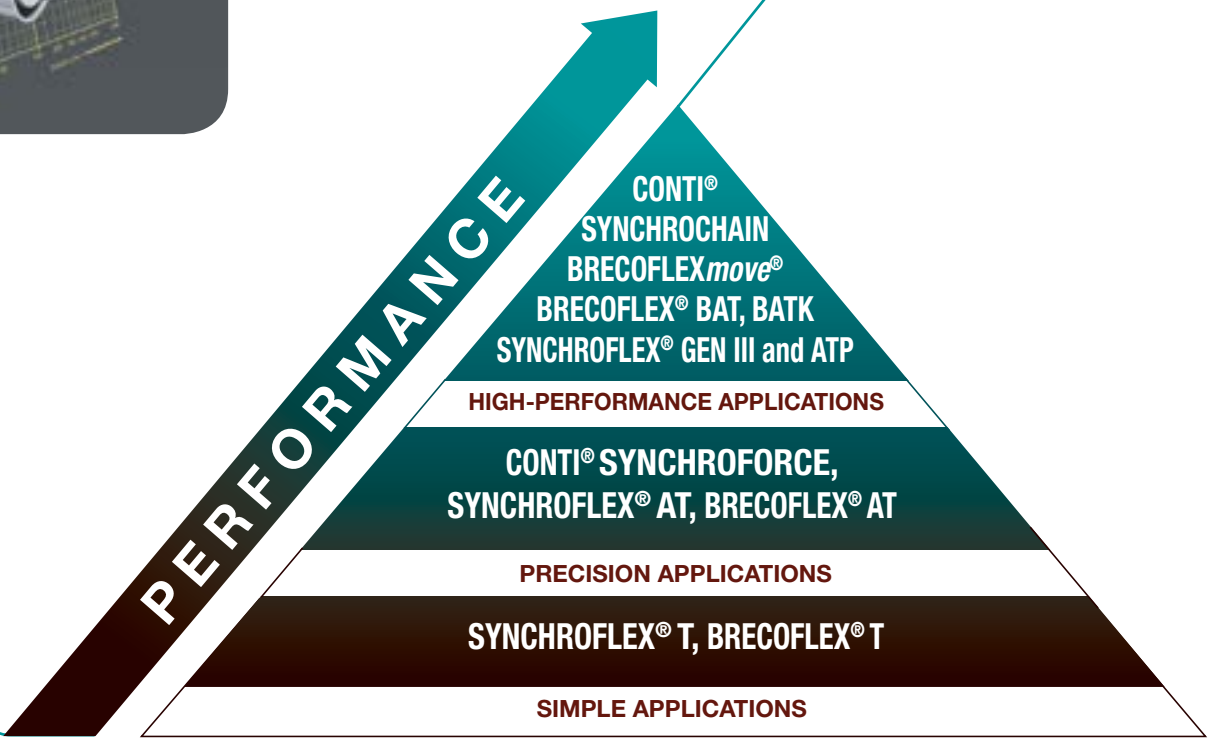
Comments

- Larger number of teeth possible
- Standard material: 6026 see page 8
- Standard flanges: steel

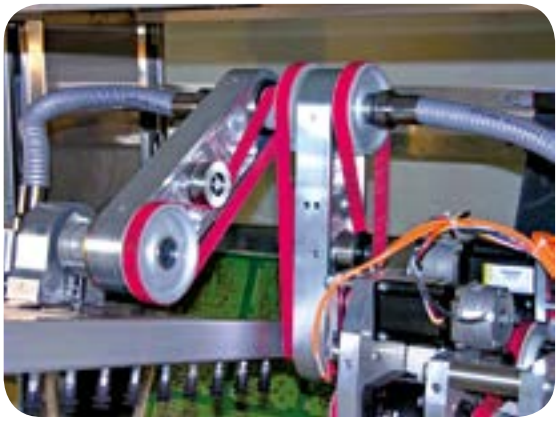
Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 9
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	60	ATN10/30	2	none	4H7




PERFORMANCE
CONTI®
SYNCHROCHAIN
BRECOFLEX*move*®
BRECOFLEX® BAT, BATK
SYNCHROFLEX® GEN III and ATP
HIGH-PERFORMANCE APPLICATIONS
CONTI® SYNCHROFORCE,
SYNCHROFLEX® AT, BRECOFLEX® AT
PRECISION APPLICATIONS
SYNCHROFLEX® T, BRECOFLEX® T
SIMPLE APPLICATIONS

POWER APPLICATIONS



The term power application is used to define the transmission of motion from one driving pulley to one or more driven pulleys.

General design

- You are planning to produce a simple power transmission, without any specific constraints
- Or, alternately, you are looking to produce a complex transmission:
  - with high dynamic load,
  - requiring backlash-free angular positioning precision.

In all cases, **Aratron** can offer a full range of power transmission belts.

Our belts are used to produce power transmissions:
- with a low centre distance,
- for high lengths up to 22 metres,
- for the rotation of several shafts,
- with directional reversal,
- with high speed and low torque,
- with very high torque and low speed,
- with zero backlash.

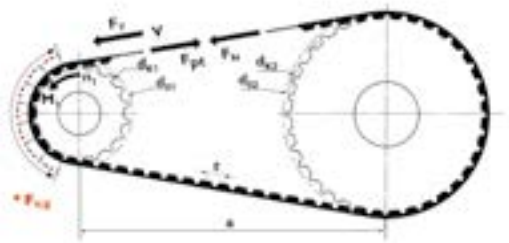
It is important to be familiar with the mechanical properties of your installation and of the drive to make an optimum solution. Every belt has specific properties which can impact on the correct functioning of the assembly.

You have at your disposal a very large selection of belts:
- polyurethane base: **BRECOFLEX®, BRECOFLEX*move*® SYNCHROFLEX®, CONTI® SYNCHROCHAIN** belts,
- polychloroprene base: **CONTI® SYNCHROFORCE** and **CONTI® SYNCHROTWIN** belts.

They can be used in a variety of applications:
- industrial machines,
- packing machines,
- robotics,
- injection machines,
- agricultural machines…

1 / Technical data

1.1 Kinematics and symbols



a	Centre distance (mm)
b	Belt width (mm)
d_K...	Pulley outside diameter (mm)
d_0...	Pitch circle diameter (mm) (coincides with tension member axis) $d_0 = \frac{Z.t}{\pi}$
F_N	Nominal tangential force transmittable by the tension members, for 10 mm of width (N) **Value to be divided by 2 for BRECO® welded (V) belts**
F_{pt}	Installation pre-tension force (N)
F_T	Tangential force (N)
$F_{t/z}$	Tangential force transmittable (N) by a tooth in mesh per 10 mm of belt width (see curve)

L	Belt length (mm)
M	Torque (Nm)
n_1	Rotational speed (rpm) of the small toothed pulley
P	Power (kW)
t	Pitch (mm)
v	Linear speed (m/s)
Z	Number of pulley teeth
Z_B	Number of belt teeth
Z_e	Number of teeth in mesh on the small pulley
Z_1	Number of teeth on the small pulley
Z_2	Number of teeth on the big pulley
K	Constant for measuring pre-tension (see *page 124*)

Z_e: Number of teeth in mesh on the small pulley. For the calculation:
max. 6 for CONTI®SYNCHROFORCE CXA CXP and CONTI®SYNCHROCHAIN belts.
max. 12 for SYNCHROFLEX® and BRECOFLEX® belts.
max. 16 for SYNCHROFLEX® GEN III belts.

1.2 Power or torque to be transmitted

$$P_{(kW)} = \frac{M_{(Nm)} \cdot n_{1(tr/min)}}{9550}$$

$$M_{(Nm)} = \frac{F_{T(N)} \cdot d_{K1(mm)}}{2000}$$

1.3 Application factors

Different factors must be taken into consideration in order to determine the type of belt chosen as follows.

Meshing factor: c_1

(only applicable to CONTI®SYNCHROFORCE and CONTI®SYNCHROCHAIN belts)

Number of teeth in mesh	Meshing factor c_1
3	0.4
4	0.6
5	0.8
≥ 6	1.0

Load factor: c_2

Consumers	Electric motor $M_{max} < 1.5\ M_n$ turbine motor expl 8 cyl. Cœf c_2	Electric motor $1,5\ Mn < M_{max} < 2,5\ M_n$ turbine motor expl 4 - 6 cyl. Cœf c_2	Electric motor $M_{max} > 2,5\ M_n$ M_n hydraulic turbine motor mot. < 4 cyl. Cœf c_2
Small masses to be accelerated, constant running	1 to 1.2	1.3 to 1.5	1.6 to 1.8
Medium masses to be accelerated, constant running	1.3 to 1.5	1.6 to 1.8	1.9 to 2.2
Medium masses to be accelerated and high shocks	1.6 to 1.8	1.9 to 2.2	2.3 to 2.8
Large masses to be accelerated and high shocks	1.9 to 2.2	2.3 to 2.8	2.9 to 3.3
Large masses to be accelerated and very high shocks	2.3 to 2.8	2.9 to 3.3	3.4 to 5

Step-up factor: c_3

For a step-up transmission take an application factor according to the table below.

Step-up ratio	Step-up factor c_3
From 1 to 1.5	0.1
From 1.5 to 2.5	0.2
2.5 and more	0.3

Fatigue factor: c_4

(only applicable to CONTI®SYNCHROFORCE and CONTI®SYNCHROCHAIN belts)
The fatigue factor takes into account the utilisation period to guarantee an operating period.

Period and type of operation	Fatigue factor c_4
Daily period 10-16 h	+0.2
Daily period > 16 h	+0.4
Additional contraflexure (e.g. with tension rollers)	+0.2
Intermittent operation	-0.2

Elongation factor: c_5

(only applicable to CONTI®SYNCHROFORCE and CONTI®SYNCHROCHAIN belts)
The elongation factor maintains synchronisation while increasing stiffness.

Length factor c_5						
3M belt						
Belt length L (mm)	< 191	191-260	261-400	401-600	> 600	
c_5	0.8	0.9	1.0	1.1	1.2	
5M belt						
Belt length L (mm)	< 441	441-500	501-800	801-1100	> 1100	
c_5	0.8	0.9	1.0	1.1	1.2	
8M belt						
Belt length L (mm)	< 640	640-959	960-1249	1280-1799	> 1799	
c_5	0.8	0.9	1.0	1.1	1.2	
14M belt						
Belt length L (mm)	< 1400	1400-1777	1778-2099	2100-2589	2590-3499	> 3499
c_5	0.8	0.9	0.95	1.0	1.05	1.1

Width factor: c_6

(only applicable to CONTI®SYNCHROFORCE and CONTI®SYNCHROCHAIN belts)
The values of power P_N are given for a well-defined belt width. The width factor c_6 must be applied to P_N (reference) to obtain the transmittable power for a lower or higher belt width.

Global application factor: c_0

The power to be transmitted P must be corrected based on the types of engines and consumers, on the operating conditions and on the transmission ratio if it is a step-up transmission:

- For SYNCHROFLEX® and BRECOFLEX® belts

$$c_0 = c_2 + c_3$$

- - For CONTI®SYNCHROFORCE and CONTI®SYNCHROCHAIN belts

$$c_0 = c_2 + c_3 + c_4$$

1.4 Determining the pre-tension force

The pre-tension force per span is dependent on the tangential force to be transmitted and on the number of belt teeth according to the mounting type.

Drive configuration	Pre-tension force per span
Two-pulley drive $Z_B < 60$	$F_{pt} = 1/3\ F_t$
Two-pulley drive $< Z_B < 150$	$F_{pt} = 1/2\ F_t$
Two-pulley drive $Z_B > 150$	$F_{pt} = 2/3\ F_t$
Multiple-pulley drive L taut span = L slack span	$F_{pt} = F_t$
Multiple-pulley drive L taut span > L slack span	$F_{pt} > F_t$

Z_B: number of belt teeth
L: belt length (in mm)

1.5 Force permissible by the tension members

In dynamics a transfer of load is effected from the slack span to the taut span, which produces a component force. The force of the taut span does not have to be higher than the nominal transmittable force.

$$F_{bt} < F_N$$
$$F_{bt} = F_{pt} + F_t/2$$

F_{bt}: force in the taut span

For emergency braking the peak braking torque must be taken into account.

1.6 Determining the belt length "L" and centre distance "a"

For a simple two-pulley transmission with a 1/1 ratio

$$L(mm) = 2 \cdot a + Z_1 \cdot t$$

For a simple two-pulley transmission (step-down or step-up).

$$L(mm) \simeq \frac{\pi}{2} \cdot (d_{02} + d_{01}) + 2 \cdot a + \frac{(d_{02} - d_{01})^2}{4 \cdot a}$$

For a ratio of more than 5:1 contact us.

For a multiple-pulley transmission consult us with a sketch fixing the x-y coordinates of the axes and the limit of their possible variations. Our engineers will use our software to calculate the precise length of the belt.

2 / Determination method: BRECOFLEX® and SYNCHROFLEX®

2.1 Power or torque to be transmitted

The timing belt transmits a power P (kW) or more exactly a torque M (N_m) by the teeth in mesh Z_e on the small pulley of diameter d_{K1} (mm) turning at a speed n1 (rpm). Each tooth in mesh is capable of transmitting a maximum force of $F_{T/Z}$. To define a belt, it is therefore essential to know the tangential force F_T (N) which will be applied to the teeth in mesh Z_e and to the tension members of the binding.

Note: For the simplicity of the calculation we liken d_k to d_0.

$$F_{T(N)} = \frac{2000 \cdot M_{(Nm)}}{d_{k1(mm)}} \qquad F_{T(N)} = \frac{1{,}91 \cdot 10^7 \cdot P_{(kW)}}{n_{1(tr/min)} \cdot d_{k1(mm)}}$$

2.2 Determining the belt width

Depending on the power to be transmitted the pitch is chosen in the table below, then the number of teeth in mesh Z_e on the smaller pulley d_{K1} is determined.

$$Z_e = \text{integer part of } \left[\frac{Z_1}{2} - \frac{t \cdot Z_1}{2 \cdot \pi^2 \cdot a} (Z_2 - Z_1) \right]$$

Note: Z_e can also be determined graphically.
Important - For the calculation:
- CONTI®SYNCHROCHAIN and CONTI®SYNCHROFORCE belts: maximum 6 teeth
- BRECOFLEX® and SYNCHROFLEX® belts: maximum 12 teeth
- SYNCHROFLEX® GEN III belts: maximum 16 teeth

The belt width b is determined with the formula below based on the curve sheets on the page corresponding to the chosen profile, the value $F_{T/Z}$.

$$b(mm) = \frac{10 \cdot F_{T(N)}}{Z_e \cdot F_{T/Z(N)}}$$

2.3 Quick guide to choice of profiles

P max (kW)	F_N* (N) for 10 mm of belt width	Vmax (m/s)	n rotational speed (rpm)	Belt type	Page
≤ 0.5	≤ 117	80	20 000	T2.5	108
≤ 5	≤ 380	80	20 000	AT3	78
≤ 6	≤ 599	80	20 000	AT3 GEN III	78
≤ 15	≤ 700	60	10 000	AT5	80
≤ 18	≤ 787	60	10 000	AT5 GEN III	80
≤ 70	≤ 1600	70	10 000	AT10	82
≤ 70	≤ 1600	70	10 000	BAT10. BATK10. SFAT10	88
≤ 87	≤ 2000	87	10 000	AT10 GEN III	82
≤ 100	≤ 1600	60	10 000	ATP10	94
≤ 135	≤ 2120	48	8 000	SFAT15	90
≤140	≤ 2160	48	8 000	BATK15	90
≤ 150	≤ 2200	60	10 000	ATP10 GEN III	94
≤ 160	≤ 2800	50	10 000	ATP15 GEN III	96
≤ 200	≤ 2400	50	10 000	ATP15	96
≤ 200	≤ 2600	60	10 000	ATS15	84
≤ 200	≤ 2120	40	6 500	SFAT20	92
≤ 200	≤ 2120	40	6 500	AT20	86
≤ 250	≤ 2880	40	6 500	AT20 GEN III	86

2.4 Example for determining a polyurethane belt (PU)

Let us take a power to transmit of max. 6 kW at a speed of 5600 rpm with a step-down ratio of 28/35 between a DC motor and a centrifuge. The centre distance is 150 mm ± 10 mm. What belt width and length to choose?

Determining the application factor:

Fatigue factor c_2 :
Small masses to be accelerated and constant running: **c_2 = 1.0**

Acceleration factor: c_3

c_3 = 0

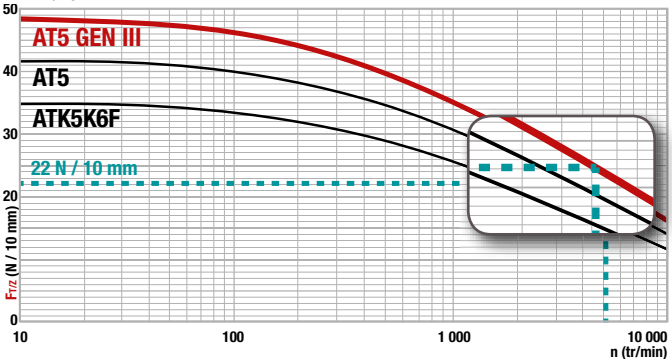
$$C_0 = C_2 + C_3$$

which gives a running factor c_0 : **c_0 = 1**

- Power transmission: thus BRECOFLEX® or SYNCHROFLEX® (non-spliced belt)
- Diameter of the small pulley dk1 of 28 teeth = 43.35 mm
- Number of teeth in mesh on d_{k1} :

$$Z_e = \left[\frac{28}{2} - \frac{5 \cdot 28}{2 \cdot \pi^2 \cdot 150} (35 - 28) \right] = 13{,}72 \quad \textit{maxi pour le calcul 12}$$

- Force transmittable by tooth: *value to be taken from the curves, in our case we have 22 N/10 mm.



- Calculation of width in relation to the teeth

$$F_{T(N)} = \frac{1{,}91 \cdot 10^7 \cdot 6}{5600 \times 43{,}35} = 472\ N$$

$$b = \frac{10 \cdot 472}{12 \cdot 22} = 17{,}87$$

Standard width = 25

- Calculation of length

$$d_{O1} = \frac{28 \cdot 5}{\pi} = 44{,}56 \qquad d_{O2} = \frac{35 \cdot 5}{\pi} = 55{,}70$$

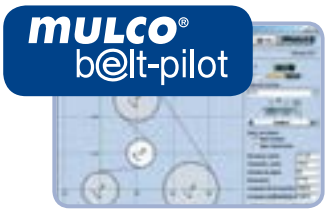
$$L_{(mm)} = \frac{\pi}{2} (55{,}7 + 44{,}56) + 2 \cdot 150 + \frac{(55{,}70 - 44{,}56)^2}{4 \cdot 150} = 457{,}62$$

Standard length = 455

Chosen belt:
SYNCHROFLEX 25 AT5/455 GENIII timing belt

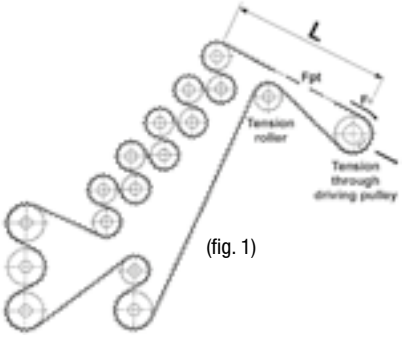
2.5 Calculation program

The belt-pilot calculation program allows you to determine a belt and download CAD files. You can access the program on our website at www.aratron.se

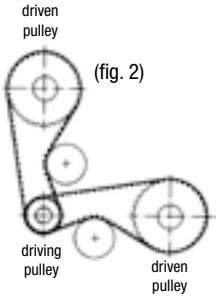


2.6 Synchronisation

The synchronisation for multiple-pulley transmissions (fig. 1) or transmissions of a motor with several motions (fig. 2) depends on the stiffness of the belt or belts according to the application.



(fig. 1)



(fig. 2)

The elongation of the belt run in the acceleration or braking phase is determined using the following formula:

$$\Delta_L = \frac{F \cdot L}{c_{spec}}$$

The stiffness constant is dependent on the elastic elongation and the nominal transmittable force.

$$c_{spec} = \frac{F_N}{4\ ‰}$$

Example: BRECOFLEX® 25AT5 timing belt

$$c_{spec} = \frac{2030\ N}{4\ ‰} = 0{,}5 \cdot 10^6\ N$$

3 / Determination method: CONTI® SYNCHROCHAIN and CONTI® SYNCHROFORCE

3.1 Determining the belt width

The belt width is dependent on the application factors, the meshing, the elongation and the nominal power to be transmitted. Therefore we must determine the width factor c_6:

Conditions to be fulfilled:

$$c_{6\ belt} \geq c_{6\ theoretical}$$

where

$$c_{6\ theoretical} = \frac{P \times c_0}{P_N \times c_1 \times c_5}$$

Where: P: power of installation (in kW)
P_N : power in relation to table reference width (in kW)

3.2 Example of determining a polychloroprene belt

Let us take a belt transmission for sawing wood with a low ratio 38/56 starting torque.
Electric motor: P = 12 kW, $M_{max} = 2 \times M_N$
Nominal rotation n_1=1450 rpm.
- Driven pulley: n_2=1000 rpm.
- Diameter ≤ 150 mm
- Centre distance: a ~ 300 mm

Usage condition: 16 h / day

Determining the application factor: c_0

Load factor: c_2

Small masses to be accelerated and constant running: **c_2 = 1.4**

Acceleration factor: c_3

c_3 = 0

Fatigue factor: c_4

c_4 = 0.2

$$C_0 = C_2 + C_3 + C_4$$

which gives a running factor C_0 :
c_0 = 1.4 + 0 + 0.2 = 1,6

Selection of belt pitch which is dependent:
- on the power to be transmitted
- on the rotation of the small pulley n(k)

Choice of profile
Select the pitch and the profile according to the data in the tables representing the P_N on the corresponding pages:

P(N) transmittable for belt of 20 mm width

Chosen belt: CONTI®SYNCHROFORCE CXP, HTD8

Speed of small pulley n = rpm	No. of teeth on small pulley															
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72
	Pitch diameter d_n in mm															
	56.02	61.12	66.12	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	132.42	142.60	162.97	183.35
10	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.18	0.20	0.23	0.25	0.30	0.35
40	0.25	0.28	0.31	0.34	0.38	0.41	0.45	0.48	0.52	0.55	0.63	0.71	0.79	0.87	1.04	1.22
50	0.30	0.34	0.38	0.42	0.46	0.50	0.54	0.59	0.63	0.68	0.77	0.87	0.96	1.07	1.28	1.49
100	0.56	0.63	0.71	0.78	0.86	0.93	1.01	1.10	1.18	1.26	1.44	1.61	1.80	1.99	2.38	2.79
200	1.05	1.18	1.32	1.45	1.60	1.74	1.89	2.04	2.19	2.35	2.67	3.01	3.35	3.70	4.43	5.19
300	1.51	1.70	1.89	2.09	2.30	2.51	2.72	2.94	3.16	3.38	3.85	4.33	4.82	5.32	6.37	7.47
400	1.96	2.20	2.45	2.71	2.97	3.24	3.52	3.80	4.09	4.38	4.98	5.60	6.24	6.89	8.25	9.67
500	2.39	2.69	3.00	3.31	3.63	3.96	4.30	4.65	5.00	5.35	6.09	6.84	7.62	8.42	10.08	11.81
600	2.82	3.17	3.53	3.90	4.28	4.67	5.07	5.47	5.88	6.31	7.17	8.06	8.98	9.92	11.87	13.91
700	**3.24**	**3.64**	**4.05**	**4.48**	**4.92**	**5.36**	**5.82**	**6.28**	**6.76**	**7.24**	**8.23**	**9.26**	**10.31**	**11.39**	**13.64**	**15.98**
800	3.65	4.10	4.57	5.05	5.54	6.05	6.56	7.08	7.60	8.16	9.28	10.44	11.62	12.84	15.37	18.01
950	**4.26**	**4.79**	**5.33**	**5.89**	**6.47**	**7.05**	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	**12.18**	**13.56**	**14.99**	**17.94**	**21.02**
1000	4.46	5.01	5.58	6.17	6.77	7.39	[illegible]	8.66	9.31	9.97	[illegible]	12.75	14.20	15.69	18.78	22.01
1200	5.25	5.91	6.58	7.27	7.98	8.70	[illegible]	10.19	10.96	11.75	[illegible]	15.02	16.73	18.48	22.12	25.92
1450	**6.23**	**7.00**	**7.80**	**8.61**	**9.45**	**10.31**	[illegible]	**12.08**	**12.99**	**13.92**	[illegible]	**17.80**	**19.82**	**21.90**	**26.22**	**30.72**
1600	6.80	7.65	8.52	9.41	10.33	11.26	[illegible]	13.20	14.20	15.21	[illegible]	19.44	21.66	23.93	28.64	33.56
1800	7.56	8.50	9.47	10.46	11.48	12.52	[illegible]	14.67	15.78	16.91	[illegible]	21.61	24.07	26.60	31.84	37.31
2000	8.31	9.34	10.40	11.50	12.62	13.76	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	23.76	26.46	29.24	34.99	41.01
2200	9.05	10.18	11.33	12.52	13.74	14.99	16.27	17.57	18.89	20.24	23.02	25.88	28.82	31.85	38.12	44.67
2500	10.15	11.41	12.71	14.05	15.41	16.81	18.24	19.70	21.19	22.71	25.82	29.02	32.33	35.72	42.76	50.10
2850	**11.42**	**12.84**	**14.30**	**15.80**	**17.34**	**18.91**	**20.52**	**22.16**	**23.84**	**25.54**	**29.04**	**32.65**	**36.36**	**40.18**	**48.09**	**56.36**
3000	11.96	13.44	14.97	16.54	18.16	19.80	21.49	23.21	24.96	26.74	30.41	34.19	38.08	42.07	50.36	59.01
3500	13.73	15.44	17.20	19.00	20.85	22.74	24.68	26.65	28.66	30.71	34.92	39.26	43.73	48.32	57.83	67.77
4000	15.48	17.41	19.39	21.42	23.51	25.64	27.82	30.05	32.31	34.63	39.37	44.26	49.30	54.47	65.20	76.41
4500	17.21	19.35	21.55	23.81	26.13	28.50	30.92	33.40	35.92	38.49	43.76	49.20	54.80	60.55	72.47	84.93
5000	18.91	21.27	23.69	26.17	28.72	31.33	33.99	36.71	39.48	42.31	48.10	54.08	60.23	66.55	79.66	93.35
5500	20.60	23.17	25.80	28.51	31.28	34.12	37.03	39.99	43.01	46.08	52.40	58.91	65.61	72.50	86.78	101.69
6000	22.28	25.05	27.90	30.83	33.83	36.90	40.04	43.24	46.50	49.83	56.65	63.69	70.94	78.39	93.83	109.95

where PN = 12.99 kW

Meshing factor: c_1

Number of teeth in mesh:

$$Z_e = \left[\frac{38}{2} - \frac{8 \times 38}{2\pi^2 \times 300}(56 - 38)\right] = 18.92$$

Z_e = 18. We have more than six teeth in mesh, thus **c_1 = 1**

Elongation factor: c_5

The elongation factor is dependent on the length of the belt:

$$L_{(mm)} \approx \frac{\pi}{2}(142.6 + 96.77) + 2 \times 300 + \frac{(142.6-96.77)^2}{4 \times 300} = 978\ mm$$

Retained belt length: 960 mm ; Z = 120
We thus have **c = 1**

Belt width

$$c_{6\ \text{theoretical}} = \frac{12.0 \times 1.6}{12.99 \times 1.0 \times 1.0} = 1.48$$

Conditions to be fulfilled:

$$c_{6\ \text{belt}} \geq c_{6\ \text{theoretical}}$$

Width factor c_6

Belt widths	20	30	40	50	65	85
Factor c_6	1	1.58	2.16	2.73	3.6	4.76

The retained factor c_6 is 1.58

P_R: value of power transmittable by the selected belt.

$$P_R = P_N \times c_6$$

P_R = 12.99 x 1.58 = 20.53 kW

Which allows us to determine the actual application factor: $c_{0\ \text{actual}}$

$$c_{6\ \text{actual}} = \frac{P_R}{P}$$

$c_{0\ \text{actual}}$ = 20.53/12 = 1.71

Chosen belt:
CONTI® SYNCHROFORCE 30 HTD8/960 CXP timing belt

3.3 Calculation program

The ContiTech calculation program allows you to determine a CONTI® SYNCHROCHAIN or CONTI® SYNCHROFORCE belt. You will find the link to access this program on our website at:
www.aratron.se

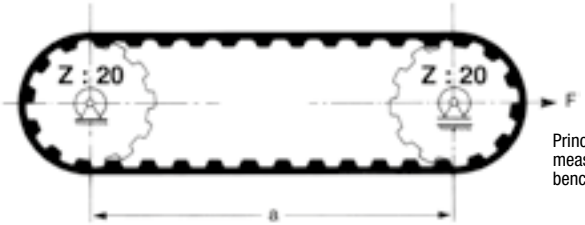
4 / General tolerances

4.1 Length tolerances

Length tolerances in relation to centre distance	
BRECOFLEX®	
Belt length (mm)	**Length tolerance**
1000 to 1960	± 0.60
1960 to 3500	± 0.95
3500 to 4500	± 1.20
4500 to 6000	± 1.50
6000 to 10000	± 2.40
10000 to 22000	± 4.50

Length tolerances in relation to centre distance	
SYNCHROFLEX®	
Belt length (mm)	**Length tolerance**
up to 320	± 0.15
320 - 630	± 0.18
630 - 1000	± 0.25
1000 - 1960	± 0.40
1960 - 3500	± 0.50
3500 - 4000	± 0.80
4000 - 6000	± 1.20

Length tolerances in relation to centre distance	
CONTI® SYNCHROFORCE and CONTI® SYNCHROCHAIN	
Belt length (mm)	**Length tolerance**
up to 150	± 0.15
151 - 255	± 0.20
256 - 400	± 0.23
401 - 560	± 0.25
561 - 800	± 0.30
801 - 1000	± 0.33
1001 - 1270	± 0.38
1271 - 1500	± 0.40
1501 - 1800	± 0.43
1801- 2000	± 0.45
2001 - 2250	± 0.48
> 2 250	0.05 mm per additional 500 mm



Principle of measuring bench

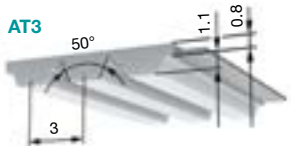
4.2 Width and thickness tolerances

Belt type	Width tolerances			Back thickness tolerances
	Up to 50 mm	50 to 100 mm	Above 100 mm	
BRECOFLEX® - SYNCHROFLEX®				
T2	± 0.3 mm	± 0.5 mm	± 0.5 % width	± 0.15 mm
T2.5				
M				
AT3				
T5				
AT5	± 0.5 mm			± 0.3 mm
CATK5				
T10				
AT10	± 1 mm	± 1 mm	± 1 % width	± 0.45 mm
BATK10				
SFAT10				
ATP10				
AT15				
ATP15				
SFAT15				
SFAT20				
T20				
AT20				
CONTI® SYNCHROCHAIN				
CTD 8M	± 0.65 mm	± 1.3 mm	± 1.5 %	± 0.30 mm
CTD 14M	± 1 mm	± 2 mm	± 2 %	±0.45 mm

CONTI® SYNCHROFORCE HTD			
Width b (mm)	**Width tolerance for a length L in mm**		
	< 880 (mm)	**from 881 to 1760 (mm)**	**> 1760 (mm)**
≤ 9	+ 0.4	+ 0.4	
	- 0.8	- 0.8	
10 - 40	+ 0.8	+ 0.8	+ 0.8
	- 0.8	- 1.2	- 1.2
41 - 50	+0.8	+ 1.2	+ 1.2
	- 1.2	- 1.2	- 1.5
51 - 85	+ 1.2	+ 1.5	+ 1.5
	- 1.2	- 1.5	- 2.0
86 - 170	+ 1.5	+ 1.5	+ 2
	- 1.5	- 2.0	- 2.0
> 170		+ 4.8	+ 4.8
		- 4.8	- 4.8

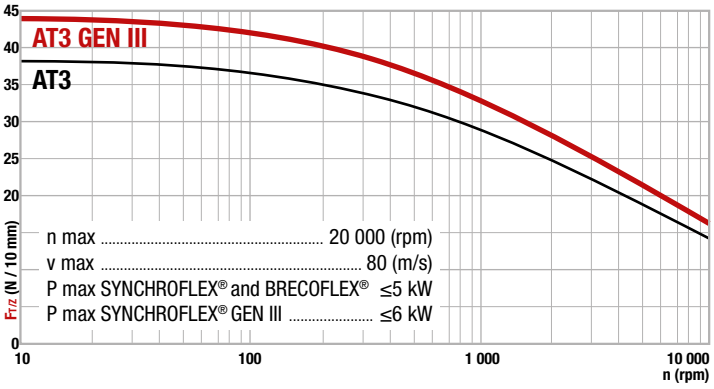
CONTI® SYNCHROFORCE HTD				
Type	HTD5M	HTD 8M	STD 8M	HTD 14M
Pitch in mm	5	8	8	14
Thickness tolerance	± 0.25	±0.40	± 0.40	± 0.60

TIMING BELTS



Belt scale 1

Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	6	8	10	12	16	20	25	32	50
SYNCHROFLEX® GEN III belt										
F_N	(N)	330	465	599	735	1002	1275	1608	2079	3300
Weight	(kg/m)	0.016	0.020	0.026	0.031	0.041	0.052	0.065	0.083	0.130
SYNCHROFLEX® and BRECOFLEX® belts										
F_N standard tens. members	(N)	190	370	380	480	645	850	1100	1406	2240
F_N stainless st. tens. members	(N)	165	280	335	460	656	810	970	1230	2130
Weight	(kg/m)	0.014	0.185	0.023	0.028	0.037	0.046	0.058	0.074	1.160

Standard widths in green.

Manufacturing capacities

	SYNCHROFLEX®	SYNCHROFLEX® GEN III	BRECOFLEX® AT3 - AT3 PAZ
Lengths smaller than 720 mm	Standard length only		
Lengths from 720 to 1701 mm	Standard length only		All intermediate lengths can be produced[1] Min. quantity: 1 sleeve 100 mm
Polyurethanes[2]	DEDU 8600	DADU9333	TPU ST1
Winding	Monofilar	Bifilar	Lengths from 720 to 1701 mm: bifilar
Tension members[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (aramide, high-flexibility tension members, stainless steel } Consult us
4. See "Coatings" *page 56*

Standard lengths profile / mm	No. of teeth	SYNCHROFLEX® and SYNCHROFLEX® GEN III	BRECOFLEX®
AT3 / 150	50	●	
AT3 / 201	67	●	
AT3 / 252	84	●	
AT3 / 267	89	●	
AT3 / 270	90	●	
AT3 / 300	100	●	
AT3 / 351	117	●	
AT3 / 399	133	●	
AT3 / 417	139	●	
AT3 / 450	150	●	
AT3 / 501	167	●	
AT3 / 549	183	●	
AT3 / 600	200	●	
AT3 / 639	213	●	
AT3/ 648	216	●	
AT3/ 714	238	○	
AT3 / 720	340		○
AT3 / 816	272	●	
AT3 / 819	273		○
AT3 / 900	300	●	
AT3 / 918	306		○
AT3 / 1011	337	●	
AT3 / 1017	339		○
AT3 / 1116	373		○
AT3 / 1215	405		○
AT3 / 1314	438		○
AT3 / 1413	471		○
AT3 / 1512	504		○
AT3 / 1611	537		○
AT3 / 1701	567		○

Width max. = 100 mm

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLES				
Designation	Width	Profile / length	Type	Particular specification
SYNCHROFLEX timing belt	12	AT3/549	SYN	GENIII
BRECOFLEX timing belt	12	AT3/1050	BFX	PAZ

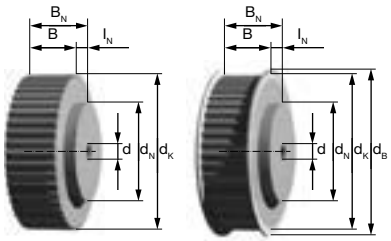
TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

Standard pulleys

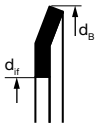
Version 2 (with flanges):
stock up to Z = 44

Version 0 (no flanges):
stock from Z = 45



	Belt widths	b	6	8	10	12	16	20	25	32	50
Pulley widths	Pulley without hub	B	10	13	15	17	22	26	32	40	58
	Pulley with hub	B_N	16		21		28				

The pulleys in stock all have a hub. **Standard widths in stock in green.**



Angled

Flanges			
Z	Thickness	Shape	Mounting
All numbers of teeth	1	Angled	Rolled

Kinematics	Tension member type		AT3
 Monoflexure	Standard st. tens. member	Z min.	
		dia. min. (mm)	
	E tension member	Z min.	15
		dia. min. (mm)	20
	Stainless steel tension member*	Z min.	20
		dia. min. (mm)	30
 Contraflexure	Standard st. tens. member	Z min.	
		dia. min. (mm)	
	E tension member	Z min.	20
		dia. min. (mm)	20
	Stainless steel tension member*	Z min.	30
		dia. min. (mm)	40

*Special manufacture: minimum quantity

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8
- Flange: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley.

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

We recommended the use of HR aluminium to avoid deformation of the keyways in high-performance transmissions (GEN III).

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	21	AT3/20-	2	E : 14 x 6	4H7

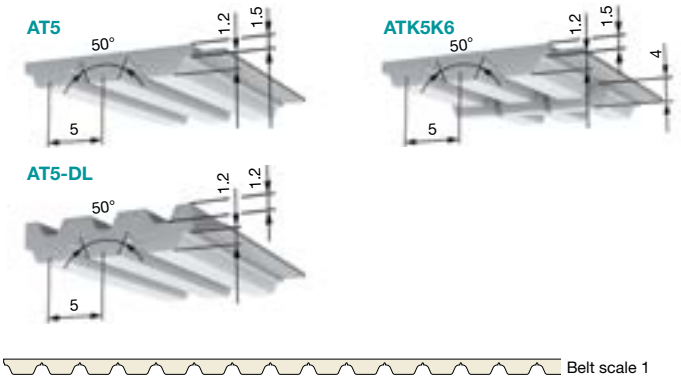
DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in stock with remachining[1]		2 weeks
Pulleys acc. to drawing		4 weeks

1. Only with a specific bore and / or keying.

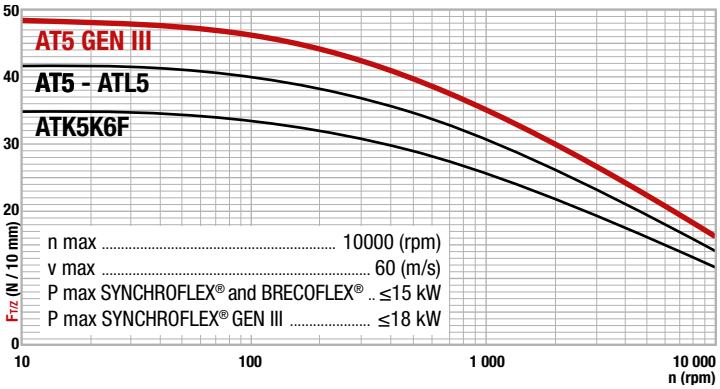
Width B_N			Z	d_K	d_N	Bore d (H7)		d_B	d_{IF}
16	21	28				min. stock	max.		Rolled flanges
●	●	●	15	13.91	10	4	4	17	11
●	●	●	16	14.87	10	4	5	18	12
			17	15.82			6	19	13
●	●	●	18	16.78	12	4	7	21	14
			19	17.73			8	23	15
●	●	●	20	18.69	14	4	9	24	16
			21	19.64			10	25	17
●	●	●	22	20.60	14	6	11	26	18
			23	21.55			12	26	18
●	●	●	24	22.51	14	6	13	28	20
●	●	●	25	23.46	16	6	14	30	21
			26	24.42			15	30	21
●	●	●	27	25.37	16	6	15	30	21
			28	26.33			16	32	22
			29	27.28			17	34	24
●	●	●	30	28.24	20	6	18	34	24
			31	29.19			19	35	25
●	●	●	32	30.15	20	6	20	36	26
			33	31.10			21	36	26
			34	32.06			22	37	27
			35	33.01			23	39	29
●	●	●	36	33.97	22	6	24	40	30
			37	34.92			25	40	30
			38	35.88			26	42	30
			39	36.83			27	42	30
●	●	●	40	37.79	26	6	28	43	31
			41	38.74			29	45	33
			42	39.70			30	45	33
			43	40.65			31	47	35
●	●	●	44	41.61	30	6	32	47	35
●	●	●	45	42.56	30	6	33	48	36
			46	43.52			34	50	38
			47	44.47			35	50	38
●	●	●	48	45.43	34	6	36	52	40
			49	46.38			36	52	40
			50	47.34			37	53	41
			51	48.29			38	53	41
			52	49.25			39	55	43
			53	50.20			40	55	43
			54	51.16			41	56	44
			55	52.11			42	58	46
			56	53.07			43	58	46
			57	54.02			44	60	48
			58	54.98			45	60	48
			59	55.93			46	61	49
●	●	●	60	56.89			47	62	50
			61	57.84			48	64	52
			62	58.80			49	64	52
			63	59.75			50	66	52
			64	60.71			51	66	52
			65	61.66			52	68	54
			66	62.62			53	68	54
			67	63.57			54	70	56
			68	64.53			55	70	56
			69	65.48			56	72	58
			70	66.43			57	72	58
			71	67.39			58	74	60
●	●	●	72	68.34			58	74	60
			73	69.30			59	74	60
			74	70.25			60	75	61
			75	71.21			61	76	62
			76	72.16			62	78	64
			77	73.12			63	78	64
			78	74.07			64	80	66
			79	75.03			65	80	66
			80	75.98			66	82	68
			81	76.94			67	82	68
			82	77.89			68	84	70
			83	78.85			69	84	70
			84	79.80			70	86	72
			85	80.76			71	86	72
			86	81.71			72	88	74
			87	82.67			73	88	74
			88	83.62			74	90	76
			89	84.58			75	90	76
			90	85.53			76	91	77
			91	86.49			77	93	79
			92	87.44			78	93	79

Z: number of teeth.

TIMING BELTS



Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	6	10	12	16	25	32	50	75	100
SYNCHROFLEX® GEN III belt										
F_N	(N)	417	787	940	1342	2175	2823	4489	6803	9117
Weight	(kg/m)	0.022	0.036	0.043	0.058	0.090	0.115	0.180	0.270	0.360
SYNCHROFLEX® and BRECOFLEX® belts										
F_N standard tension members	(N)	350	700	840	1260	2030	2660	4200	6370	8610
F_N stainless steel tension members	(N)	230	455	540	820	1320	1730	2730	4140	5597
Weight SYNCHROFLEX® and BRECOFLEX® AT5	(kg/m)	0.020	0.031	0.037	0.052	0.085	0.105	0.164	0.241	0.328
Weight BRECOFLEX® ATK5K6	(kg/m)							0.167		0.334
Weight BRECOFLEX® AT5-DL	(kg/m)	0.024	0.040	0.048	0.064	0.101	0.130	0.204	0.307	0.410

Standard widths in green.

Manufacturing capacities

	SYNCHROFLEX®	SYNCHROFLEX® GEN III	BRECOFLEX® AT5 - AT5 PAZ	BRECOFLEX® ATK5K6 - ATK5K6 PAZ
Lengths up to 700 mm	Standard length only		Standard length only	
Lengths from 720 to 22 000 mm			All intermediate lengths can be produced[1]	
Versions DL and DL/PAZ[4]			All intermediate lengths can be produced[1]	
Polyurethanes[2]	DEDU 8600	DADU 9333	Lengths smaller than 700 mm TPU ST3 Lengths greater than 720 mm TPU ST1	TPU ST1
Winding	Monofilar	Bifilar	Lengths from 720 to 15 000 mm: bifilar	Lengths from 1 075 to 15 000 mm: bifilar
Tension members[3]	Steel	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (aramide, high-flexibility tension members, stainless steel } Consult us
4. See "Coatings" *page 56*

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

Standard lengths profile / mm	No. of teeth	SYNCHROFLEX® and SYNCHROFLEX® GEN III	BRECOFLEX® SD	BRECOFLEX® DL	BRECOFLEX® ATK5 K6
AT 5 / 225	45	●	○		
AT 5 / 255	51	●	○		
AT 5 / 260	52	●			
AT 5 / 280	56	●	○		
AT 5 / 300	60	●			
AT 5 / 305	61		●		
AT 5 / 330	66	●			
AT 5 / 340	68	●	○		
AT 5 / 375	75	●			
AT 5 / 390	78	●	○		
AT 5 / 420	84	●	○		
AT 5 / 450	90	●			
AT 5 / 455	91	●	○		
AT 5 / 480	96	●			
AT 5 / 490	98	○			
AT 5 / 500	100	●	○		
AT 5 / 525	105	●			
AT 5 / 545	109	●	○		
AT 5 / 600	120	●			
AT 5 / 610	122	●	○		
AT 5 / 620	124	●			
AT 5 / 630	126	●			
AT 5 / 660	132	●	○		
AT 5 / 670	134	●			
AT 5 / 690	138	●			
AT 5 / 710	142	●			
AT 5 / 720	144	●	○		○
AT 5 / 750	150	●			
AT 5 / 780	156	●	○		○
AT 5 / 825	165	●			
AT 5 / 840	168		●		○
AT 5 / 855	171		●		○
AT 5 / 860	172	●			
AT 5 / 875	175	○	○		○
AT 5 / 900	180	●	○	○	○
AT 5 / 920	184	●			
AT 5 / 960	192		○	○	○
AT 5 / 975	195	●			
AT 5 / 990	198		●	○	○
AT 5 / 1005	201		○	○	○
AT 5 / 1020	204		●	○	○
AT 5 / 1050	210	●			
AT 5 / 1075	215		●	○	○
AT 5 / 1090	218		○		
AT 5 / 1100	220		●	○	○
AT 5 / 1125	225	●			
AT 5 / 1215	243		●	○	○
AT 5 / 1230	246	●			
AT 5 / 1380	276		●	○	○
AT 5 / 1400	280		●	○	○
AT 5 / 1500	300	●	○	○	○
AT 5 / 1600	320		●	○	○
AT 5 / 1640	328		○		
AT 5 / 1700	340		●	○	○
AT 5 / 1750	350	●			
AT 5 / 1800	360		●	○	○
AT 5 / 1900	380		●	○	○
AT 5 / 2000	400	●	○	○	○
AT 5 / 2120	424		○	○	○
AT 5 / 2240	448		○	○	○
AT 5 / 2360	472		○	○	○
AT 5 / 2500	500		○	○	○
AT 5 / 2650	530		○	○	○
AT 5 / 2800	560		○	○	○
AT 5 / 3000	600		○	○	○
AT 5 / 3150	630		○	○	○
AT 5 / 3550	710		○	○	○
AT 5 / 3750	750		○	○	○
AT 5 / 3800	760	○			
AT 5 / 4000	800		○	○	○
AT 5 / 4250	850		○	○	○
AT 5 / 4500	900		○	○	○
AT 5 / 4750	950		○	○	○
AT 5 / 5000	1000		○	○	○
AT 5 / 5300	1060		○	○	○
AT 5 / 5600	1120		○	○	○
AT 5 / 6000	1200		○	○	○
AT 5 / 6300	1260		○	○	○
AT 5 / 6700	1340		○	○	○
AT 5 / 7100	1420		○	○	○
AT 5 / 7500	1500		○	○	○

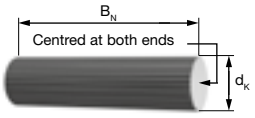
width max. = 100 mm

SD: single sided. DL: double sided.

BELT ORDERING EXAMPLES				
Designation	Width	Profile / length	Type	Particular specification
SYNCHROFLEX timing belt	50	AT5/ 900	SYN	GEN III
BRECOFLEX timing belt	50	AT5/1100	BFX	PAZ

TOOTHED PULLEYS

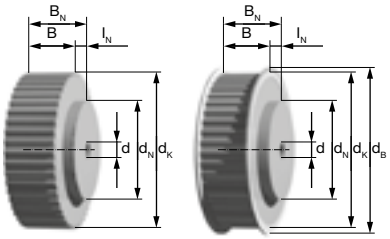
Bars



Standard pulleys

Version 2 (with flanges):
stock up to Z = 44

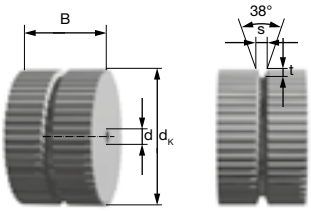
Version 0 (no flanges):
stock from Z = 48



Self-guiding pulleys

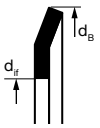
Pulleys on request and only from Z = 18

K6	
s	t
6.5	5



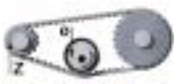
	Belt widths	b	6	10	12	16	25	32	50	75	100
Pulley widths	Pulley without hub	B	12	16	18	22	32	40	60	85	110
	Pulley with hub	B_N		22		28	38	46			
	Self-guiding pulley without hub	B						37	55		

The pulleys in stock all have a hub. **Standard widths in stock in green.**



Angled

Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 63	1	Angled	Rolled
Z > 63	1.5	Angled	Rolled

Kinematics	Tension member type		SYNCHROFLEX® and SYNCHROFLEX® GEN III	BRECOFLEX® SD	BRECOFLEX® DL	BRECOFLEX® ATK5 K6
 Monoflexure	Steel tension members	Z min.		18	25	25
		dia. min. (mm)		30	60	60
	E tension members	Z min.	15	12	20	25
		dia. min. (mm)	25	18	20	40
	Stainless steel tension members*	Z min.	25	22	25	25
		dia. min. (mm)	40	35	60	40
 Contraflexure	Steel tension members	Z min.		25	25	25
		dia. min. (mm)		60	60	80
	E tension members	Z min.	20	20	20	25
		dia. min. (mm)	60	50	50	80
	Stainless steel tension members*	Z min.	30	30	30	30
		dia. min. (mm)	70	60	60	80

*Special manufacture: minimum quantity

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley.

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (GEN III).

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	38	AT5/25-	2	E : 26 X 6	4H7

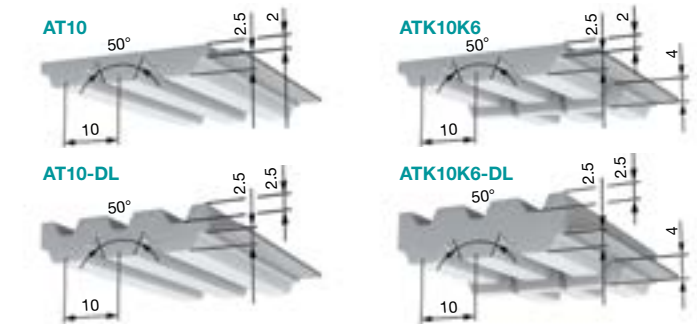
DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in stock with remachining[1]		2 weeks
Pulleys acc. to drawing		4 weeks

1. Only with a specific bore and / or keying.

Width B_N					Z	d_K	d_N	Bore d (H7)		d_B	d_{if}
22	28	38	46	Bars				min. stock	max.		Rolled flanges
●	○	○	○		12	17.88	12	4	8	23	15
●	●	○	○		14	21.06	14	4	8	26	18
●	●	○	○	150	15	22.65	16	6	10	28	20
●	●	○	○	150	16	24.24	18	6	12	30	21
					17	25.84			14	32	22
●	●	●	○	150	18	27.43	20	6	16	34	24
●	●	●	○	150	19	29.02	22	6	16	35	25
●	●	●	○	180	20	30.61	24	6	18	36	26
					21	32.20			20	37	27
●	●	●	○	180	22	33.79	24	6	22	39	29
					23	35.39			24	40	30
●	●	●	○	180	24	36.98	26	8	24	42	30
●	●	●	○	180	25	38.57	26	8	25	43	31
					26	40.16			25	45	33
●	●	●	○	180	27	41.75	30	8	27	47	35
					28	43.34			29	48	36
					29	44.93			31	50	38
●	●	●	○	180	30	46.53	34	8	33	52	40
					31	48.12			35	53	41
●	●	●	○	180	32	49.71	38	8	37	55	43
					33	51.30			39	56	44
					34	52.89			39	58	46
					35	54.48			40	60	48
●	●	●	○	180	36	56.08	38	8	42	61	49
					37	57.67			43	62	50
					38	59.26			45	64	52
					39	60.85			45	66	52
●	●	●	○	180	40	62.44	40	8	47	68	54
					41	64.03			48	70	56
					42	65.63			50	72	58
					43	67.22			52	72	58
●	●	●	○	180	44	68.81	50	8	52	74	60
					45	70.40			54	75	61
					46	71.99			56	76	62
					47	73.58			58	78	64
●	●	●	○	180	48	75.17	50	8	60	80	66
					49	76.77			60	82	68
					50	78.36			60	84	70
					51	79.95			62	86	72
					52	81.54			64	86	72
					53	83.13			66	88	74
					54	84.72			66	90	76
					55	86.32			68	91	77
					56	87.91			70	93	79
					57	89.50			72	94	80
					58	91.09			74	96	82
					59	92.68			74	99	85
●	●	●	○	180	60	94.27	65	8	76	99	85
					61	95.86			79	100	86
					62	97.46			80	102	88
					63	99.05			82	104	90
					64	100.64			82	105	91
					65	102.23			84	107	93
					66	103.83			86	109	95
					67	105.41			88	112	98
					68	107.01			90	112	98
					69	108.60			90	115	101
					70	110.19			90	115	101
					71	111.78			92	117	103
●	●	●	○	180	72	113.37	80	8	94	118	104
					73	114.96			96	121	107
					74	116.55			96	121	107
					75	118.15			98	123	109
					76	119.74			100	125	111
					77	121.33			102	128	114
					78	122.92			104	128	114
					79	124.51			104	131	117
					80	126.10			106	131	117
					81	127.70			108	134	120
					82	129.29			110	134	120
					83	130.88			110	137	123
					84	132.47			112	137	123
					85	134.06			114	140	126
					86	135.65			116	142	128
					87	137.24			119	142	128
					88	138.84			119	144	130
					89	140.43			120	147	133

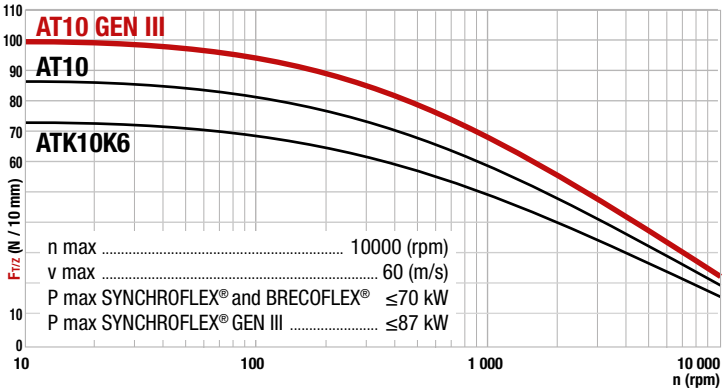
Z: number of teeth.

TIMING BELTS



Belt scale 1

Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	16	20	25	32	50	75	100	150
SYNCHROFLEX® GEN III belt									
F_N	(N)	3000	4000	5000	6750	10750	16500	22000	33500
Weight	(kg/m)	0.117	0.146	0.183	0.234	0.365	0.548	0.730	1.095
SYNCHROFLEX® and BRECOFLEX® belts									
F_N standard tension members	(N)	2000	2750	3500	4750	7750	12000	16000	24500
F_N stainless steel tension members	(N)	1440	1980	2520	3420	5580	8640	11520	17640
Weight SYNCHROFLEX® and BRECOFLEX® AT10	(kg/m)	0.101	0.126	0.158	0.202	0.315	0.473	0.63	0.945
Weight BRECOFLEX® ATK10K6	(kg/m)					0.290		0.581	
Weight BRECOFLEX® AT10 DL	(kg/m)			0.184	0.233	0.375	0.566	0.755	
Weight BRECOFLEX® ATK10K6 DL	(kg/m)					0.386		0.766	

Standard widths in green.

Manufacturing capacities

	SYNCHROFLEX®	SYNCHROFLEX® GEN III	BRECOFLEX® AT10-AT10 PAZ	BRECOFLEX® AT-K10K6-ATK10K6 PAZ
Lengths up to 700 mm	Standard length only		Standard length only	
Lengths from 720 to 22 000 mm			All intermediate lengths can be produced[1]	
Versions DL and DL/PAZ[4]			All intermediate lengths can be produced[1]	
Polyurethanes[2]	DEDU 8600	DADU 9333	Lengths smaller than 700 mm TPU ST3 Lengths greater than 720 mm TPU ST1	TPU ST1
Winding	Monofilar	Bifilar	Lengths from 720 to 22 000 mm: bifilar	Bifilar
Tension members[3]	Steel	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (aramide, high-flexibility tension members, stainless steel
} Consult us
4. See "Coatings" *page 56*

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

Standard lengths profile / mm	No. of teeth	SYNCHROFLEX® and SYNCHROFLEX® GEN III	BRECOFLEX® AT10 standard SD	BRECOFLEX® AT10 standard DL	BRECOFLEX® AT-K10K6 standard SD	BRECOFLEX® AT-K10K6 standard DL
AT10 / 400	40		●			
AT10 / 440	44	○				
AT10 / 460	46	●				
AT10 / 500	50	●	○			
AT10 / 530	53		●			
AT10 / 560	56	●	○			
AT10 / 570	57	○				
AT10 / 580	58	●				
AT10 / 600	60	●				
AT10 / 610	61	●	○			
AT10 / 630	63		●			
AT10 / 660	66	●	○			
AT10 / 700	70	●	○			
AT10 / 720	72		●			
AT10 / 730	73	●				
AT10 / 780	78	●	○			
AT10 / 800	80	●	○			
AT10 / 810	81		○			
AT10 / 840	84	●	○			
AT10 / 850	85		○			
AT10 / 880	88	●	●			
AT10 / 890	89	●	○			
AT10 / 920	92	●	○			
AT10 / 960	96	●	○			
AT10 / 970	97		●			
AT10 / 980	98	●	○			
AT10 / 1000	100	●				
AT10 / 1010	101	●	○			
AT10 / 1050	105	●				
AT10 / 1080	108	●	○			
AT10 / 1100	110	●				
AT10 / 1150	115	●	○	○		
AT10 / 1200	120	●				
AT10 / 1210	121	●	○	○		
AT10 / 1240	124		●	○		
AT10 / 1250	125	●	○	○		
AT10 / 1280	128	●				
AT10 / 1300	130	●				
AT10 / 1320	132	●	○	○		
AT10 / 1350	135	●				
AT10 / 1360	136	●				
AT10 / 1400	140	●	○	○		
AT10 / 1480	148	●				
AT10 / 1500	150	●	○	○	○	○
AT10 / 1600	160	●	○	○	○	○
AT10 / 1700	170	●	○	○	○	○
AT10 / 1720	172	●				
AT10 / 1800	180	●	○	○	○	○
AT10 / 1860	186	●				
AT10 / 1900	190	○	●	○	○	○
AT10 / 1940	194	●				
AT10 / 2000	200		●	○	○	○
AT10 / 2120	212		○	●	○	○
AT10 / 2240	224		●	○	○	○
AT10 / 2360	236		●	○	○	○
AT10 / 2500	250		●	○	○	○
AT10 / 2650	265		○	○	○	○
AT10 / 2800	280		○	○	○	○
AT10 / 3000	300		○	○	○	○
AT10 / 3150	315		○	○	○	○
AT10 / 3350	335		●	○	○	○
AT10 / 3550	355		○	○	○	○
AT10 / 3750	375		○	○	○	○
AT10 / 4000	400		●	○	○	○
AT10 / 4250	425		○	○	○	○
AT10 / 4500	450		○	○	○	○
AT10 / 4750	475		○	○	○	○
AT10 / 5000	500		○	○	○	○
AT10 / 5300	530		○	○	○	○
AT10 / 5600	560		○	○	○	○
AT10 / 6000	600		○	○	○	○
AT10 / 6300	630		○	○	○	○
AT10 / 6700	670		○	○	○	○
AT10 / 7100	710		○	○	○	○
AT10 / 7500	750		○	○	○	○
AT10 / 8000	800		○	○	○	○
AT10 / 9000	900		○	○	○	○

width max. = 100 mm
width max. = 100 mm
width max. = 100 mm
width max. = 150 mm
width max. = 100 mm

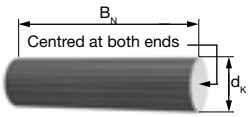
SD: single sided. DL: double sided.

BELT ORDERING EXAMPLES				
Designation	Width	Profile / length	Type	Particular specification
SYNCHROFLEX timing belt	25	AT10 / 1500	SYN	GEN III
BRECOFLEX timing belt	50	ATK10K6 / 1600	BFX	PAZ

TOOTHED PULLEYS

Pulleys acc. to drawing *see page 8*

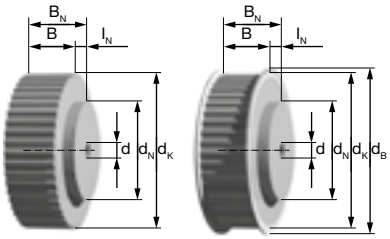
Bars



Standard pulleys

Version 2 (with flanges):
stock up to Z = 44

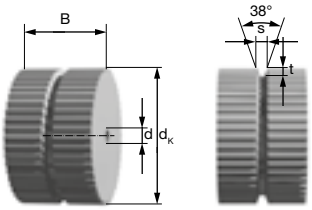
Version 0 (no flanges):
stock from Z = 48



Self-guiding pulleys

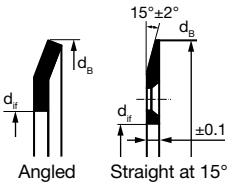
Pulleys on request and only from Z = 20

K6	
s	t
6.5	5

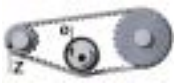


	Belt widths	b	16	20	25	32	50	75	100	150
Pulley widths	Pulley without hub	B	23	27	32	40	60	85	110	160
	Pulley with hub	B_N			42	50	70			
	Self-guiding pulley without hub	B					55		105	

The pulleys in stock all have a hub. **Standard widths in stock in green.**



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 32	1	Angled	Rolled
32 < Z ≤ 93	1,5	Angled	Rolled
B_N ≥ 66 and Z ≤ 93	2	Angled	Screwed
Z > 93	2	Straight at 15°	Screwed

Kinematics	Tension member type		AT10	AT10-DL	ATK10K6	ATK10K6-DL
 Monoflexure	Steel tension members	Z min.	15	25	20	25
		dia. min. (mm)	50	80	80	80
	E tension members*	Z min.	12	20	18	20
		dia. min. (mm)	50	80	60	80
	Stainless steel tension members*	Z min.	25	40	25	40
		dia. min. (mm)	80	120	80	120
 Contraflexure	Steel tension members	Z min.	25	25	25	25
		dia. min. (mm)	120	120	120	120
	E tension members*	Z min.	20	20	20	22
		dia. min. (mm)	80	80	80	100
	Stainless steel tension members*	Z min.	40	40	40	40
		dia. min. (mm)	120	120	120	120

*Special manufacture: minimum quantity

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley.

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (GEN III).

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	70	AT10/20-	2	E : 46 x 10	12H7

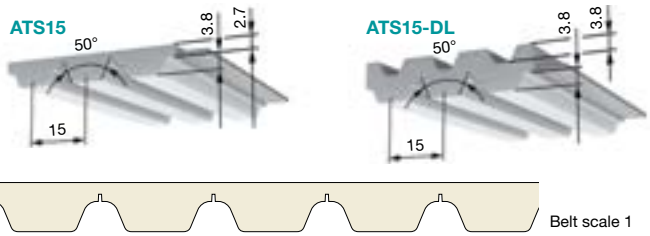
DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in stock with remachining[1]		2 weeks
Pulleys acc. to drawing		4 weeks

1. Only with a specific bore and / or keying.

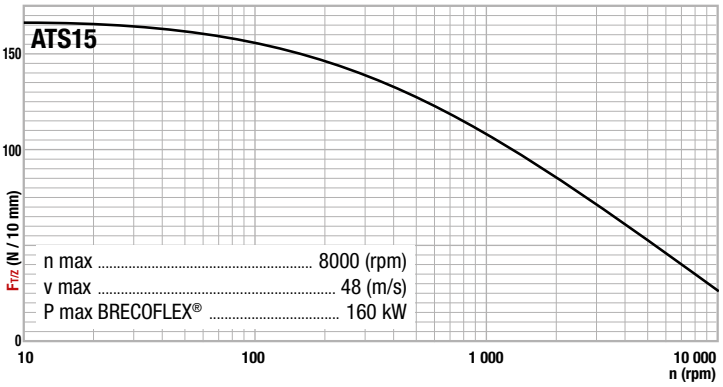
Width B_N				Z	d_K	d_N	Bore d (H7)		d_B	d_{IF}
42	50	70	Bars 180				min. stock	max.		Rolled flanges
○				12	36.38	28	8	25	42	30
○				14	42.74	32	8	30	48	36
●				15	45.93	32	8	34	52	40
○				16	49.11	35	8	36	55	43
				17	52.29			40	58	46
○	○	●		18	55.48	40	8	44	61	49
●	○	●		19	58.66	44	8	46	64	52
●	●	●		20	61.84	46	12	50	68	54
				21	65.03			52	72	58
●	●	●		22	68.21	50	12	56	74	60
				23	71.39			60	76	62
●	●	●		24	74.57	58	12	62	80	66
●	●	●		25	77.76	60	12	66	84	70
				26	80.94			68	86	72
●	●	●		27	84.12	60	12	72	90	76
				28	87.31			76	93	79
				29	90.49			78	96	82
●	●	●		30	93.67	60	12	82	99	85
				31	96.86			84	102	88
●	●	●		32	100.04	65	12	88	106	92
				33	103.22			88	109	95
				34	106.41			92	112	98
				35	109.59			96	115	101
●	●	●		36	112.77	70	16	98	118	104
				37	115.95			101	121	107
				38	119.14			104	125	111
				39	122.32			106	128	114
●	●	●		40	125.50	80	16	110	131	117
				41	128.69			110	134	120
				42	131.87			112	137	123
				43	135.05			114	140	126
●	●	●		44	138.24	90	16	118	144	130
				45	141.42			120	147	133
				46	144.60			122	150	136
				47	147.79			122	153	139
●	●	●		48	150.97	95	16	124	156	142
				49	154.15			126	160	146
				50	157.33			130	163	149
				51	160.52			134	166	152
				52	163.70			136	169	155
				53	166.88			140	172	158
				54	170.07			144	176	162
				55	173.25			146	179	165
				56	176.43			150	182	168
				57	179.62			152	185	171
				58	182.80			156	188	174
				59	185.98			160	191	177
●	●	●		60	189.17	110	16	162	195	181
				61	192.35			164	198	184
				62	195.53			166	201	187
				63	198.72			170	204	190
				64	201.90			171	207	193
				65	205.08			174	210	196
				66	208.26			175	214	200
				67	211.45			177	217	203
				68	214.63			181	220	206
				69	217.81			185	223	209
				70	221.00			187	226	212
				71	224.18			191	230	216
				72	227.36			193	233	219
				73	230.55			197	236	222
				74	233.73			201	239	225
				75	236.91			203	242	228
				76	240.10			207	246	232
				77	243.28			209	249	235
				78	246.46			213	252	238
				79	249.64			215	255	241
				80	252.83			219	258	244
				81	256.01			223	262	248
				82	259.19			225	265	251
				83	262.38			229	268	254
				84	265.56			231	271	257
				85	268.74			235	274	260
				86	271.93			239	277	263
				87	275.11			241	281	267
				88	278.29			245	284	270
				89	281.48			247	287	273
				90	284.66			251	290	276

Z: number of teeth.

TIMING BELTS



Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	25	32	50	75	100
BRECOFLEX® belts						
F_N standard tension members	(N)	6150	7995	12915	19680	26445
F_N stainless steel tension members	(N)	4900	6370	10290	15680	21070
Weight BRECOFLEX® ATS15	(kg/m)	0.219	0.280	0.438	0.656	0.875
Weight BRECOFLEX® ATS15 DL	(kg/m)	0.294	0.377	0.589	0.883	1.178

Manufacturing capacities

	BRECOFLEX® AT15S - AT15S PAZ
Lengths from 1 500 to 22 000 mm	All intermediate lengths can be produced[1]
Versions DL and DL/PAZ[4]	
Polyurethanes[2]	TPU ST1
Winding	Lengths from 1 500 to 22 000 mm: bifilar
Tension members[3]	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (aramide, high-flexibility tension members, stainless steel } Consult us
4. See "Coatings" *page 56*

Standard lengths profile / mm	No. of teeth	BRECOFLEX® SD	BRECOFLEX® DL
ATS15 / 1500	100	o	o
ATS15 / 1590	106	o	o
ATS15 / 1710	114	o	o
ATS15 / 1800	120	o	o
ATS15 / 1905	127	o	o
ATS15 / 1995	133	o	o
ATS15 / 2250	150	o	o
ATS15 / 2505	167	o	o
ATS15 / 2790	186	o	o
ATS15 / 3000	200	o	o
ATS15 / 3285	219	o	o
ATS15 / 3495	233	o	o
ATS15 / 3750	250	o	o
ATS15 / 4005	267	o	o
ATS15 / 4245	283	o	o
ATS15 / 4500	300	o	o
ATS15 / 4740	316	o	o
ATS15 / 4995	333	o	o
ATS15 / 5295	353	o	o
ATS15 / 5595	373	o	o
ATS15 / 5760	384	o	o
ATS15 / 6000	400	o	o
ATS15 / 6300	420	o	o
ATS15 / 6705	447	o	o
ATS15 / 7095	473	o	o
ATS15 / 7500	500	o	o

width max. = 100 mm

SD: single sided. DL: double sided.

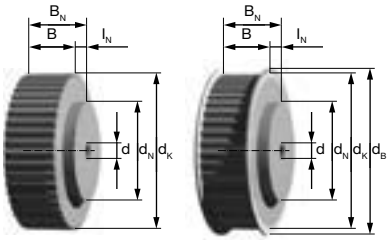
DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	o	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

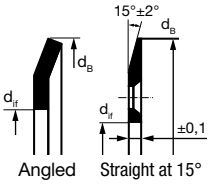
BELT ORDERING EXAMPLES				
Designation	Width	Profile / length	Type	Particular specification
BRECOFLEX timing belt	50	ATS15/1800	BFX	
BRECOFLEX timing belt	75	ATS15/ 5600	BFX	PAZ

TOOTHED PULLEYS

Standard pulleys



Belt widths	b	25	32	50	75	100
Widths of pulleys without hub	B	32	40	60	85	110



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 62	2	Angled	Screwed
Z > 62	2	Straight at 15°	Screwed

Kinematics	T type		BRECOFLEX® SD	BRECOFLEX® DL
 Monoflexure	Steel tension members	Z min.	25	40
		dia. min. (mm)	120	250
	E tension members	Z min.		
		dia. min. (mm)		
	Stainless steel tension members*	Z min.	30	60
		dia. min. (mm)	180	300
 Contraflexure	Steel tension members	Z min.	40	40
		dia. min. (mm)	250	250
	E tension members	Z min.		
		dia. min. (mm)		
	Stainless steel tension members*	Z min.	60	60
		dia. min. (mm)	300	300

*Special manufacture: minimum quantity

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8
- Standard flanges: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley.

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways.

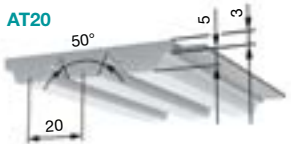
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	70	ATS15/27 -	2	E : 50 x 10	14H7

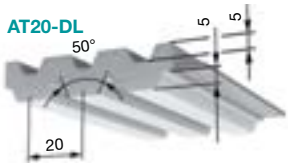
DELIVERY TIMES	
Pulleys acc. to drawing	Consult us

Z	d_K	d_N	Bore d (H7) min. stock	Bore d (H7) max.	d_B	d_{IF} Screwed flanges
25	116.79	50	12	90	125	92
26	121.56	50	12	93	128	95
27	126.34	50	12	99	134	101
28	131.11	58	12	102	137	104
29	135.88	58	12	109	144	111
30	140.66	60	12	112	147	114
31	145.43	60	12	118	153	120
32	150.21	65	12	121	156	123
33	154.98	65	12	128	163	130
34	159.76	65	16	131	166	133
35	164.53	65	16	137	172	139
36	169.31	70	16	141	176	143
37	174.08	70	16	147	182	149
38	178.86	70	16	150	185	152
39	183.63	70	16	156	191	158
40	188.41	80	16	160	195	162
41	193.18	110	16	166	201	168
42	197.95	110	16	169	204	171
43	202.73	140	16	176	210	178
44	207.50	140	16	179	214	181
45	212.28	140	16	185	220	187
46	217.05	140	16	188	223	190
47	221.83	140	16	195	230	197
48	226.60	140	16	198	234	200
49	231.38	140	16	204	239	206
50	236.15	140	16	207	242	209
51	240.93	140	16	214	249	216
52	245.70	140	16	217	252	219
53	250.48	160	20	223	258	225
54	255.25	160	20	226	262	228
55	260.03	160	20	233	268	235
56	264.80	160	20	236	271	238
57	269.57	160	20	242	277	244
58	274.35	160	20	245	281	247
59	279.12	160	20	252	287	254
60	283.90	160	20	255	290	257
61	288.67	160	20	261	296	263
62	293.45	160	20	265	300	267
63	298.22	160	24	271	306	273
64	303.00	160	24	274	310	276
65	307.77	160	24	281	315	283
66	312.55	160	24	284	319	286
67	317.32	160	24	290	325	292
68	322.10	160	24	293	329	295
69	326.87	160	24	300	335	302
70	331.64	160	24	303	338	305
71	336.42	160	24	309	344	311
72	341.19	160	24	314	348	314
73	345.97	160	24	315	354	321
74	350.74	160	24	319	357	324
75	355.52	160	24	325	363	330
76	360.29	160	24	335	367	334
77	365.07	160	24	335	372	336
78	369.84	160	24	340	377	341
79	374.62	160	24	345	382	346
80	379.39	160	24	349	386	350
81	384.17	160	24	354	391	355
82	388.94	160	24	359	396	360
83	393.71	160	24	364	401	365
84	398.49	160	24	369	405	369
85	403.26	160	24	373	410	374
86	408.04	160	24	378	415	379
87	412.81	160	24	383	420	384
88	417.59	160	24	388	425	389
89	422.36	160	24	392	429	393
90	427.14	160	24	397	434	398
91	431.91	160	24	402	440	403
92	436.69	160	24	407	444	408
93	441.46	160	24	412	448	412
94	446.24	160	24	416	453	417
95	451.01	160	24	421	459	422
96	455.79	160	24	426	463	427
97	460.56	160	24	431	468	432
98	465.33	160	24	435	472	436
99	470.11	160	24	440	478	441

Z: number of teeth.

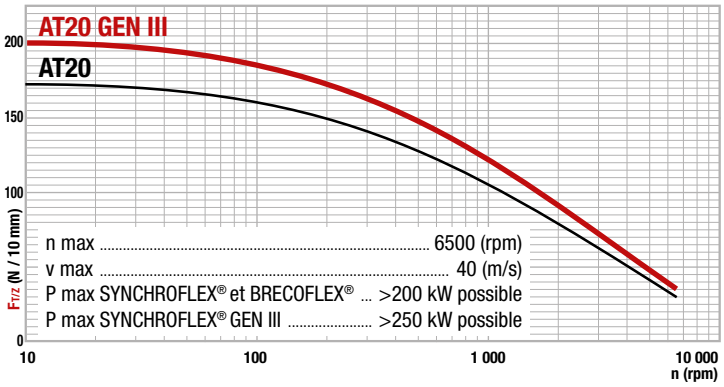
TIMING BELTS





Belt scale 1

Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	25	32	50	75	100	150
SYNCHROFLEX® GEN III belt							
F_N	(N)	6300	8550	13950	21600	28800	44100
Weight	(kg/m)	0.290	0.371	0.583	0.870	1.160	1.740
SYNCHROFLEX® belt							
F_N standard tension members	(N)	5200	6750	11250	17550	23850	36450
Weight	(kg/m)	0.264	0.339	0.530	0.795	1.060	1.590
BRECOFLEX® belts							
F_N standard tension members	(N)	4600	6000	10000	15600	21200	32400
F_N stainless steel tension members	(N)	3750	4800	8000	12480	16960	25920
Weight BRECOFLEX® AT20	(kg/m)	0.240	0.307	0.480	0.720	0.960	1.423
Weight BRECOFLEX® AT20-DL	(kg/m)	0.285	0.365	0.57	0.855	1.14	

Manufacturing capacities

	SYNCHROFLEX®	SYNCHROFLEX® GEN III	BRECOFLEX® AT20 - AT20 PAZ
Lengths from 1100 to 22,000 mm	Standard length only		All intermediate lengths can be produced[1]
Versions DL and DL/PAZ[4]			
Polyurethanes[2]	DEDU 8600	DADU 9333	TPU ST1
Winding	Monofilar	Bifilar	Lengths from 1 500 to 22 000 mm: bifilar
Binding[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other bindings (aramide, high-flexibility tension members, stainless steel } Consult us
4. See "Coatings" *page 56*

Standard lengths profile / mm	No. of teeth	SYNCHROFLEX®	SYNCHROFLEX® GEN III	BRECOFLEX® SD	BRECOFLEX® DL
AT20 / 1000	50	o	o		
AT20 / 1100	55	o	o		
AT20 / 1200	60	o	o	width max. = 100 mm	
AT20 / 1260	63	o	o		
AT20 / 1500	75	o	o	o	o
AT20 / 1600	80	o	o	o	o
AT20 / 1700	85	o	o	o	o
AT20 / 1760	88	o	o		
AT20 / 1800	90	o	o	o	o
AT20 / 1900	95	o	o	o	o
AT20 / 1960	98	o	o		
AT20 / 2000	100			o	o
AT20 / 2120	106			o	o
AT20 / 2240	112			o	o
AT20 / 2360	118			o	o
AT20 / 2500	125			o	o
AT20 / 2660	133			o	o
AT20 / 2800	140			o	o
AT20 / 3000	150			o	o
AT20 / 3160	158			o	o
AT20 / 3360	168			o	o
AT20 / 3560	178			o	o
AT20 / 3760	188			o	o
AT20 / 4000	200			o	o
AT20 / 4260	213			o	o
AT20 / 4500	225			o	o
AT20 / 4760	238			o	o
AT20 / 5000	250			o	o
AT20 / 5300	265			o	o
AT20 / 5600	280			o	o
AT20 / 6000	300			o	o
AT20 / 6300	315			o	o
AT20 / 6700	335			o	o
AT20 / 7100	355			o	o
AT20 / 7500	375			o	o
AT20 / 8000	400			o	o
AT20 / 8500	425			o	o
AT20 / 9000	450			o	o

width max. = 150 mm

width max. = 100 mm

SD: single sided. DL: double sided.

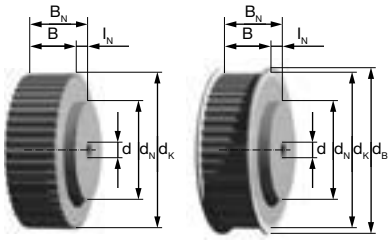
DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	o	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

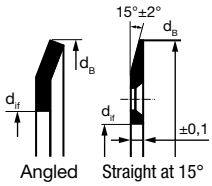
BELT ORDERING EXAMPLES				
Designation	Width	Profile / length	Type	Particular specification
SYNCHROFLEX timing belt	50	AT20/1000	SYN	GEN III
BRECOFLEX timing belt	50	AT20/1800	BFX	

TOOTHED PULLEYS

Standard pulleys



Belt widths	b	25	32	50	75	100	150
Widths of pulleys without hub	B	32	40	60	85	110	160



Flanges			
Z	**Thickness**	**Shape**	**Mounting**
Z ≤ 46	2	Angled	Screwed
Z > 46	2	Straight at 15°	Screwed

Kinematics	Tension member type		BRECOFLEX® SD	BRECOFLEX® DL
 Monoflexure	Steel tension members	Z min.	18	25
		dia. min. (mm)	120	180
	E tension members	Z min.	15	20
		dia. min. (mm)	100	160
	Stainless steel tension members*	Z min.	32	60
		dia. min. (mm)	200	380
 Contraflexure	Steel tension members	Z min.	25	25
		dia. min. (mm)	180	180
	E tension members	Z min.	22	20
		dia. min. (mm)	150	160
	Stainless steel tension members*	Z min.	40	40
		dia. min. (mm)	300	300

*Special manufacture: minimum quantity

Comments

- Standard material 6026 conforming to RoHS, see page 8
- Flange: galvanised steel, see page 9
- d_{max}: maximum bore without keyway for flanged pulley.

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

We recommended the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (GEN III).

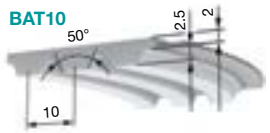
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/no. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	60	AT20/27-	2	none	8H7

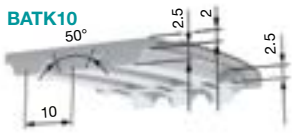
DELIVERY TIMES	
Pulleys acc. to drawing	Consult us

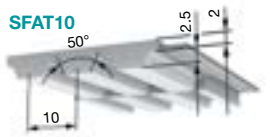
Z	d_K	Bore d (H7) max.	d_B	d_{IF} Screwed flanges
18	111.77	86	121	77
19	118.14	93	128	83
20	124.50	100	134	89
21	130.87	105	140	96
22	137.24	112	147	102
23	143.60	118	153	109
24	149.97	125	160	115
25	156.33	131	166	121
26	162.70	137	172	128
27	169.07	144	179	134
28	175.43	150	185	140
29	181.80	156	192	147
30	188.17	163	198	153
31	194.53	169	204	159
32	200.90	175	210	166
33	207.26	182	217	172
34	213.63	188	223	179
35	220.00	195	229	185
36	226.36	201	236	191
37	232.73	207	242	198
38	239.10	214	249	204
39	245.46	220	255	210
40	251.83	226	261	217
41	258.19	233	268	223
42	264.56	239	274	229
43	270.93	245	280	236
44	277.29	252	287	242
45	283.66	258	293	249
46	290.03	265	300	255
47	296.39	271	306	261
48	302.76	278	312	268
49	309.12	284	319	274
50	315.49	290	325	280
51	321.86	296	331	287
52	328.22	303	338	293
53	334.59	310	344	299
54	340.95	315	350	306
55	347.32	322	357	312
56	353.69	328	363	319
57	360.05	335	370	325
58	366.42	341	376	331
59	372.79	347	382	338
60	379.15	354	389	344
61	385.52	360	395	350
62	391.88	366	401	357
63	398.25	373	408	363
64	404.62	379	414	370
65	410.98	385	420	376
66	417.35	392	427	382
67	423.72	398	433	389
68	430.08	405	440	395
69	436.45	406	446	401
70	442.81	412	452	408
71	449.18	419	459	414
72	455.55	425	465	420
73	461.91	431	471	427
74	468.28	438	478	433
75	474.64	444	484	440
76	481.01	450	490	446
77	487.38	457	497	452
78	493.74	463	503	459
79	500.11	470	510	465
80	506.48	476	516	471
81	512.84	482	522	478
82	519.21	485	529	484
83	525.57	495	535	490
84	531.94	501	541	497
85	538.31	503	548	503
86	544.67	509	554	510
87	551.04	516	561	516
88	557.41	522	567	522
89	563.77	528	573	529
90	570.14	535	580	535
91	576.50	541	586	541
92	582.87	548	592	548
93	589.24	554	599	554
94	595.60	580	605	561
95	601.97	566	611	567

Z: number of teeth.

SELF-GUIDING TIMING BELTS

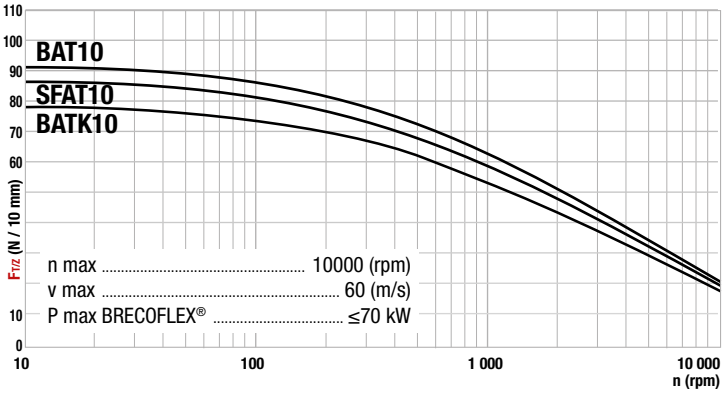






Belt scale 1

Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	32	50	75	100
BRECOFLEX® BAT10 and BATK10 belts					
F_N standard tension members	(N)	4 750	7 750	12 000	16 000
F_N stainless steel tension members	(N)	3 420	5 580	8 640	11 520
Weight BRECOFLEX® BAT10	(kg/m)	0.180	0.290	0.436	0.581
Weight BRECOFLEX® BATK10	(kg/m)	0.192	0.300	0.450	0.600
BRECOFLEX® SFAT10 belts					
F_N standard tension members	(N)		7 750	12 000	16 000
F_N stainless steel tension members	(N)		5 580	8 640	11 520
Weight BRECOFLEX® SFAT10	(kg/m)		0.290	0.436	0.581

Manufacturing capacities

	BRECOFLEX® BAT10 - BAT10 PAZ	BRECOFLEX® BATK10 - BATK10 PAZ	BRECOFLEX® SFAT10 - SFAT10 PAZ
Lengths from 720 to 1 100 mm	All intermediate lengths can be produced[1]		
Lengths from 1 100 to 22 000 mm	All intermediate lengths can be produced[1]		
Polyurethanes[2]	TPU ST1		
Winding	Bifilar	Bifilar	Bifilar
Tension members[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (aramide, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" *page 56*

Important

- **BAT10 belts** turn in one direction only
- **BATK10 belts** can turn in both directions (Consult us)

Advantages

- **Better meshing quality** and therefore increased service life.
- **Self-guiding:** pulleys with no flanges.
- **Reduced noise level:** the meshing noise is limited, therefore the transmission is quieter.
- **Maximum transmittable power:** the full width of the teeth is utilised.
- **Reduced polygon effect.**
- **Reduced vibration:** when toothed support rollers or tension rollers are used.

Standard lengths profile / mm	No. of teeth	BRECOFLEX® BAT10	BRECOFLEX® BAKT10
BAT10 / 720	72	o	
BAT10 / 780	78	o	
BAT10 / 800	80	o	
BAT10 / 810	81	o	
BAT10 / 840	84	o	
BAT10 / 850	85	o	
BAT10 / 880	88	o	
BAT10 / 890	89	o	
BAT10 / 920	92	o	
BAT10 / 960	96	o	
BAT10 / 970	97	o	
BAT10 / 980	98	o	
BAT10 / 1010	101	o	
BAT10 / 1080	108	o	
BAT10 / 1100	110	o	o
BAT10 / 1150	115	o	o
BAT10 / 1210	121	o	o
BAT10 / 1240	124	o	o
BAT10 / 1250	125	o	o
BAT10 / 1320	132	o	o
BAT10 / 1400	140	o	o
BAT10 / 1500	150	o	o
BAT10 / 1600	160	o	o
BAT10 / 1700	170	o	o
BAT10 / 1800	180	o	o
BAT10 / 1900	190	o	o
BAT10 / 2000	200	o	o
BAT10 / 2120	200		o
BAT10 / 2240	200	o	o
BAT10 / 2360	200		o
BAT10 / 2500	200	o	o
BAT10 / 2800	200	o	o
BAT10 / 3000	200	o	o
BAT10 / 3150	200		o
BAT10 / 3350	200		o
BAT10 / 3550	200	o	o
BAT10 / 3750	200		o
BAT10 / 4000	400	o	o
BAT10 / 4250	425		o
BAT10 / 4500	450	o	o
BAT10 / 4750	475		o
BAT10 / 5000	500	o	o
BAT10 / 5300	530		o
BAT10 / 5600	560	o	o
BAT10 / 6000	600	o	o
BAT10 / 6300	630		o
BAT10 / 6700	670	o	o
BAT10 / 7100	710	o	o
BAT10 / 7500	750	o	o
BAT10 / 8000	750	o	o
BAT10 / 9000	750	o	o

Width max. = 100 mm

Standard lengths profile / mm	No. of teeth	SFAT10
SFAT10 / 1100	110	o
SFAT10 / 1200	120	o
SFAT10 / 1300	130	o
SFAT10 / 1400	140	o
SFAT10 / 1500	150	o
SFAT10 / 1600	160	o
SFAT10 / 1700	170	o
SFAT10 / 1800	180	o
SFAT10 / 1900	190	o
SFAT10 / 2000	200	o
SFAT10 / 2240	224	o
SFAT10 / 2500	250	o
SFAT10 / 2800	280	o
SFAT10 / 3000	300	o
SFAT10 / 3550	355	o
SFAT10 / 4000	400	o
SFAT10 / 4500	450	o
SFAT10 / 5000	500	o
SFAT10 / 5600	260	o
SFAT10 / 6000	600	o
SFAT10 / 6700	670	o
SFAT10 / 7100	710	o
SFAT10 / 7500	750	o

Width max. = 100 mm

DELIVERY TIMES		
Standard belts	o	4 weeks
Special belts		Consult us

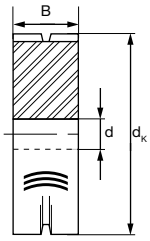
Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
BRECOFLEX timing belt	50	BAT10/1800	BFX	
BRECOFLEX timing belt	75	BATK10/5600	BFX	PAZ
BRECOFLEX timing belt	50	SFAT10/1800	BFX	

TOOTHED PULLEYS

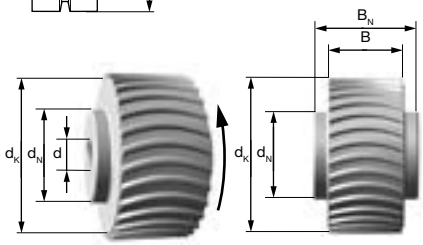
Pulleys acc. to drawing

The orientation of the teeth must be indicated in the pulley drawings by the symbol

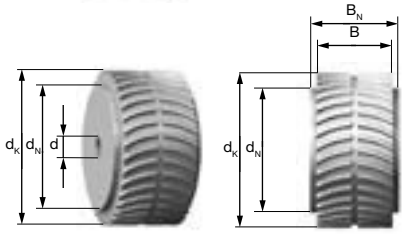


Standard pulleys

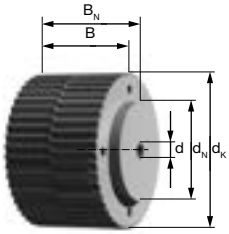
BAT10 pulley: one direction of rotation



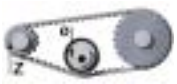
BATK10 self-guiding pulley: two directions of rotation



SFAT10 self-guiding pulley



		BAT10 & BATK10			
			SFAT10		
Belt widths	b	32	50	75	100
Widths of pulleys without hub	B	37	55	80	105

Kinematics	Tension member type		BAT10 & BATK10	SFAT10
 **Monoflexure**	**Steel tension members**	**Z min.**	20	15
		ø min (mm)	60	50
	E tension members*	**Z min.**	18	12
		ø min (mm)	50	50
	Stainless steel tension members*	**Z min.**	25	25
		ø min (mm)	80	80
 **Contraflexure**	**Steel tension members**	**Z min.**	25	25
		ø min (mm)	120	120
	E tension members*	**Z min.**	20	20
		ø min (mm)	80	80
	Stainless steel tension members*	**Z min.**	40	40
		ø min (mm)	130	130

*Special manufacture: minimum quantity

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8

Options

- The different materials such as steel and stainless steel and the surface treatment are shown on page 8

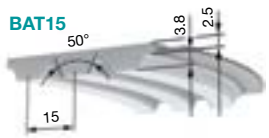
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	ALHR	55	BATK10/34	0		25H7
Aratron tooth pulley	ST	115	SFAT10/25	0	E : 80 X 10	20H7

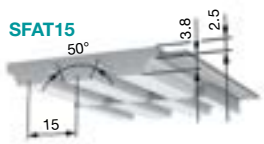
DELIVERY TIMES	
Pulleys acc. to drawing	Consult us

Z	d_K	Hub d_N	Bore d min.	Bore d max.
BAT10 - BATK10				
20	61.84	46	12	50
21	65.03	50	12	52
22	68.21	53	12	56
23	71.39	56	12	60
24	74.57	57	12	62
25	77.76	59	12	66
26	80.94	62	12	68
27	84.12	64	12	72
28	87.31	67	12	76
29	90.49	70	12	78
30	93.67	73	12	82
31	96.86	77	12	84
32	100.04	80	12	88
33	103.22	83	12	88
34	106.41	86	12	92
35	109.59	90	12	96
36	112.77	92	16	98
37	115.95	95	16	101
38	119.14	99	16	104
39	122.32	102	16	106
40	125.50	105	16	110
41	128.69	108	16	110
42	131.87	111	16	112
43	135.05	115	16	114
44	138.24	118	16	118
45	141.42	121	16	120
46	144.60	124	16	122
47	147.79	127	16	122
48	150.97	130	16	124
49	154.15	134	16	126
50	157.33	137	16	130
51	160.52	140	16	134
52	163.70	143	16	136
53	166.88	146	16	140
54	170.07	150	16	144
55	173.25	153	16	146
56	176.43	156	16	150
57	179.62	159	16	152
58	182.80	162	16	156
59	185.98	165	16	160
60	189.17	169	16	162
61	192.35	172	16	164
62	195.53	175	16	166
63	198.72	178	16	170
64	201.90	181	16	171
65	205.08	185	16	174
66	208.26	188	16	175
67	211.45	191	16	177
68	214.63	194	16	181
69	217.81	197	16	185
70	221.00	201	16	187
SFAT10				
15	45.93	32	8	17
16	49.11	35	8	20
17	52.29	40	8	24
18	55.48	40	10	27
19	58.66	44	10	30
20	61.84	46	12	33
21	65.03	46	12	36
22	68.21	50	12	40
23	71.39	50	12	43
24	74.57	58	12	46
25	77.76	60	12	49
26	80.94	60	12	52
27	84.12	60	12	55
28	87.31	60	12	59
29	90.49	60	12	62
30	93.67	60	12	65
31	96.86	60	12	68
32	100.04	65	12	71
33	103.22	65	12	75
34	106.41	65	12	78
35	109.59	65	12	81
36	112.77	70	16	84
37	115.95	70	16	87
38	119.14	70	16	90
39	122.32	70	16	94
40	125.50	80	16	97
41	128.69	80	16	100
42	131.87	80	16	103
43	135.05	80	16	106
44	138.24	90	16	110
45	141.42	90	16	113
46	144.60	90	16	116
47	147.79	90	16	119
48	150.97	95	16	122
49	154.15	95	16	125
50	157.33	95	16	129
51	160.52	95	16	132
52	163.70	110	16	135
53	166.88	110	16	138
54	170.07	110	16	141
55	173.25	110	16	145
56	176.43	110	16	148
57	179.62	110	16	151
58	182.80	110	16	154
59	185.98	110	16	157
60	189.17	110	16	160

Z: number of teeth.

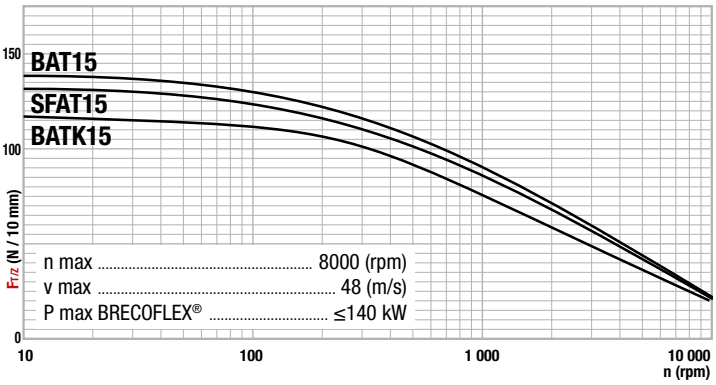
SELF-GUIDING TIMING BELTS





Belt scale 1

Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	50	75	100
BRECOFLEX® BAT15 and BATK15 belts				
F_N standard tension members	(N)	10400	16000	21600
F_N stainless steel tension members	(N)	8300	12800	17300
Weight BRECOFLEX® BAT15 BATK15	(kg/m)	0.420	0.629	0.836
BRECOFLEX® SFAT15 belts				
F_N standard tension members	(N)	10000	15600	21200
F_N stainless steel tension members	(N)	8000	12480	16960
Weight BRECOFLEX® SFAT15	(kg/m)	0.440	0.660	0.875

Manufacturing capacities

	BRECOFLEX® BAT15 - BAT15 PAZ	BRECOFLEX® BATK15 - BATK15 PAZ	BRECOFLEX® SFAT15 - SFAT15 PAZ
Lengths from 1 100 to 21 990 mm	All intermediate lengths can be produced[1]		
Polyurethanes[2]	TPU ST1		
Winding	Lengths from 1 500 to 21 990 mm: bifilar		
Tension members[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (aramide, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" *page 56*

Important

- **BAT15 belts** turn in one direction only
- **BATK15 belts** can turn in both directions

Standard lengths profile / mm	No. of teeth	BRECOFLEX® BAT15 - BATK15
BAT15 / BATK15 / 1 500	100	o
BAT15 / BATK15 / 1 590	106	o
BAT15 / BATK15 / 1 710	114	o
BAT15 / BATK15 / 1 800	120	o
BAT15 / BATK15 / 1 905	127	o
BAT15 / BATK15 / 1 995	133	o
BAT15 / BATK15 / 2 250	150	o
BAT15 / BATK15 / 2 505	167	o
BAT15 / BATK15 / 2 790	186	o
BAT15 / BATK15 / 3 000	200	o
BAT15 / BATK15 / 3 285	219	o
BAT15 / BATK15 / 3 495	233	o
BAT15 / BATK15 / 3 750	250	o
BAT15 / BATK15 / 4 005	267	o
BAT15 / BATK15 / 4 245	283	o
BAT15 / BATK15 / 4 500	300	o
BAT15 / BATK15 / 4 740	316	o
BAT15 / BATK15 / 4 995	333	o
BAT15 / BATK15 / 5 295	353	o
BAT15 / BATK15 / 5 595	373	o
BAT15 / BATK15 / 5 760	384	o
BAT15 / BATK15 / 6 000	400	o
BAT15 / BATK15 / 6 300	420	o
BAT15 / BATK15 / 6 705	447	o
BAT15 / BATK15 / 7 095	473	o
BAT15 / BATK15 / 7 500	500	o

Width max. = 100 mm

Standard lengths profile / mm	No. of teeth	BRECOFLEX® SFAT15
SFAT15 / 1500	100	o
SFAT15 / 1590	106	o
SFAT15 / 1710	114	o
SFAT15 / 1800	120	o
SFAT15 / 1905	127	o
SFAT15 / 1995	133	o
SFAT15 / 2250	150	o
SFAT15 / 2505	167	o
SFAT15 / 2790	186	o
SFAT15 / 3000	200	o
SFAT15 / 3495	233	o
SFAT15 / 3750	250	o
SFAT15 / 4005	267	o
SFAT15 / 4500	300	o
SFAT15 / 4995	333	o
SFAT15 / 5295	353	o
SFAT15 / 5595	373	o
SFAT15 / 6000	400	o
SFAT15 / 6300	420	o
SFAT15 / 6705	447	o
SFAT15 / 7095	473	o
SFAT15 / 7500	500	o

Width max. = 100 mm

Advantages

- Self-guiding: pulleys with no flanges
- Very low noise level
- Very low polygon effect
- Reduced vibrations when support rollers or tension rollers are used

DELIVERY TIMES		
Standard belts	o	4 weeks
Special belts		Consult us

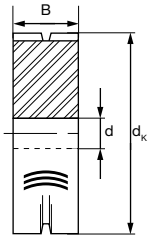
Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
BRECOFLEX timing belt	50	BAT15/1800	BFX	
BRECOFLEX timing belt	75	BATK15/5600	BFX	PAZ
BRECOFLEX timing belt	50	SFAT15/1800	BFX	

TOOTHED PULLEYS

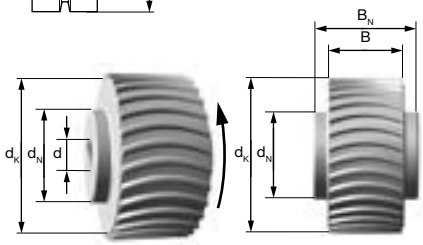
Pulleys acc. to drawing

The orientation of the teeth must be indicated in the pulley drawings by the symbol

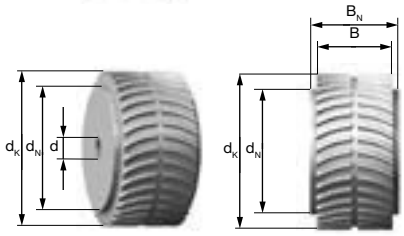


Standard pulleys

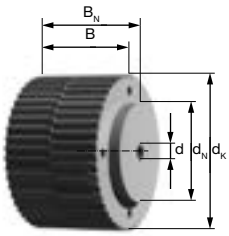
BAT15 pulley: one direction of rotation.



BATK15 self-guiding pulley: two directions of rotation



SFAT15 self-guiding pulley



Belt widths	b	50	75	100
Widths of pulleys without hub	B	55	80	105

Kinematics	Tension member type		BAT15 & BATK15	SFAT15
 Monoflexure	Steel tension members	Z min.	20	
		ø min (mm)	100	
	E tension members*	Z min.	15	
		ø min (mm)	70	
	Stainless steel tension members*	Z min.	25	
		ø min (mm)	120	
 Contraflexure	Steel tension members	Z min.	30	25
		ø min (mm)	150	
	E tension members*	Z min.	25	
		ø min (mm)	120	
	Stainless steel tension members*	Z min.	35	
		ø min (mm)	180	

*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8

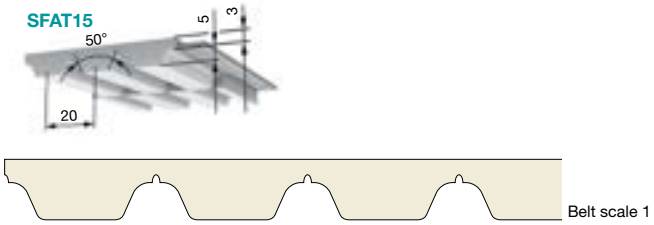
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	ALHR	55	BATK10/34	0		25H7
Aratron tooth pulley	ST	115	SFAT10/25	0	E : 80 X 10	20H7

DELIVERY TIMES	
Pulleys acc. to drawing	Consult us

Z	d_K	Hub d_N	Bore d min.	Bore d max.
BAT15 - BATK15				
20	93.01	60	12	58
21	97.79	60	12	63
22	102.56	65	12	68
23	107.34	65	12	72
24	112.11	70	16	77
25	116.89	80	16	82
26	121.66	80	16	87
27	126.44	80	16	91
28	131.21	80	16	96
29	135.98	80	16	101
30	140.76	90	16	106
31	145.53	90	16	111
32	150.31	95	16	115
33	155.08	95	16	120
34	159.86	95	16	125
35	164.63	95	16	130
36	169.41	100	16	134
37	174.18	100	16	139
38	178.96	100	16	144
39	183.73	100	16	149
40	188.51	110	16	154
41	193.28	110	16	158
42	198.05	110	16	163
43	202.83	110	16	168
44	207.60	110	16	173
45	212.38	110	16	185
46	217.15	140	16	188
47	221.93	140	16	195
48	226.70	140	16	198
49	231.48	140	16	204
50	236.25	140	16	206
51	241.03	140	16	211
52	245.80	140	16	216
53	250.58	160	16	221
54	255.35	160	16	225
55	260.13	160	16	230
56	264.90	160	16	235
57	269.67	160	16	243
58	274.45	160	16	244
59	279.22	160	16	249
60	284.00	160	16	254
61	288.77	160	16	259
62	293.55	160	16	264
63	298.32	160	16	270
64	303.10	160	16	273
65	307.87	160	16	278
66	312.65	160	16	283
67	317.42	160	16	287
68	322.20	160	16	292
69	326.97	160	16	297
70	331.74	160	16	302
71	336.52	160	16	307
72	341.29	160	16	310
73	346.07	160	20	316
74	350.84	160	20	320
75	355.62	160	20	326
76	360.39	160	20	330
77	365.17	160	20	335
SFAT15				
20	93.01	60	12	58
21	97.79	60	12	63
22	102.56	65	12	68
23	107.34	65	12	72
24	112.11	70	12	77
25	116.89	80	12	82
26	121.66	80	12	87
27	126.44	80	12	91
28	131.21	80	12	96
29	135.98	80	12	101
30	140.76	90	12	106
31	145.53	90	12	111
32	150.31	95	12	115
33	155.08	95	12	120
34	159.86	95	12	125
35	164.63	95	16	130
36	169.41	100	16	134
37	174.18	100	16	139
38	178.96	100	16	144
39	183.73	100	16	149
40	188.51	110	16	154
41	193.28	110	16	158
42	198.05	110	16	163
43	202.83	110	16	168
44	207.60	110	16	173
45	212.38	110	16	177
46	217.15	140	16	182
47	221.93	140	16	187
48	226.70	140	16	192
49	231.48	140	16	196
50	236.25	140	16	201
51	241.03	140	16	206
52	245.80	140	16	211
53	250.58	160	16	216
54	255.35	160	16	220
55	260.13	160	16	225
56	264.90	160	16	230
57	269.67	160	16	235
58	274.45	160	16	239
59	279.22	160	16	244
60	284.00	160	16	249

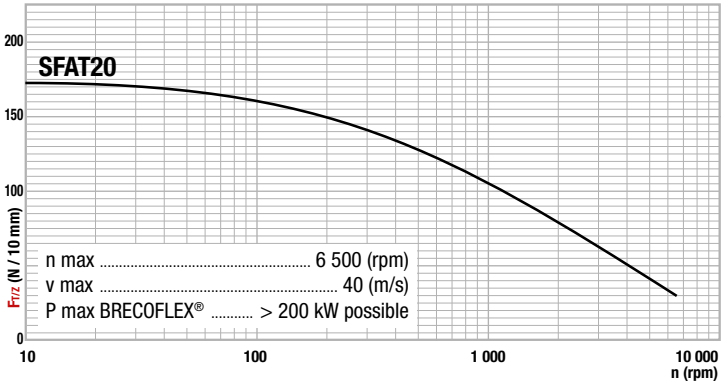
Z: number of teeth.

SELF-GUIDING TIMING BELTS



Standard lengths profile / mm	No. of teeth	BRECOFLEX®
SFAT20 / 1500	75	o
SFAT20 / 1600	80	o
SFAT20 / 1700	85	o
SFAT20 / 1800	90	o
SFAT20 / 1900	95	o
SFAT20 / 2000	100	o
SFAT20 / 2240	112	o
SFAT20 / 2500	125	o
SFAT20 / 2800	140	o
SFAT20 / 3000	150	o
SFAT20 / 3560	178	o
SFAT20 / 3760	188	o
SFAT20 / 4000	200	o
SFAT20 / 4500	225	o
SFAT20 / 5000	250	o
SFAT20 / 5600	280	o
SFAT20 / 6000	300	o
SFAT20 / 6700	335	o
SFAT20 / 7100	355	o
SFAT20 / 7500	375	o

Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	50	75	100	150
BRECOFLEX® belt					
F_N standard tension members	(N)	10 000	15 600	21 200	32 400
F_N stainless steel tension members	(N)	8 000	12 480	16 960	25 920
Weight BRECOFLEX® SFAT20	(kg/m)	0.480	0.720	0.960	1.423

Manufacturing capacities

	BRECOFLEX® SFAT20 - SFAT20 PAZ
Lengths from 1 500 to 22 090 mm	All intermediate lengths can be produced[1]
Polyurethanes[2]	TPU ST1
Winding	Lengths from 1 500 to 21 990 mm: bifilar
Tension members[3]	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (aramide, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" *page 56*

Advantages

- **Better meshing quality** and therefore increased service life.
- **Self-guiding:** pulleys with no flanges.
- **Reduced noise level:** the meshing jolt is limited, therefore the transmission is quieter.
- **Maximum transmittable power:** the full width of the toothing is utilised.
- **Reduced polygon effect.**
- **Reduced vibration:**
- when toothed support rollers or tension rollers are used.

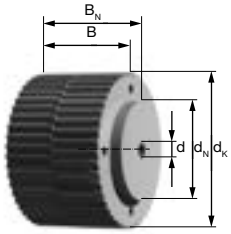
DELIVERY TIMES		
Standard belts	o	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLE				
Designation	Type	Width	Profile / Length	Particular specification
BRECOFLEX timing BELT	BFX	50	SFAT20/1800	

TOOTHED PULLEYS

Standard pulleys



Belt widths	b	50	75	100	150
Widths of pulleys without hub	B	55	80	105	155

Kinematics	Tension member type		SFAT20
 Monoflexure	Steel tension members	Z min.	18
		ø min (mm)	120
	E tension members*	Z min.	15
		ø min (mm)	100
	Stainless steel tension members*	Z min.	32
		ø min (mm)	200
 Contraflexure	Steel tension members	Z min.	25
		ø min (mm)	180
	E tension members*	Z min.	22
		ø min (mm)	150
	Stainless steel tension members*	Z min.	40
		ø min (mm)	300

*Special manufacture: minimum quantity.

Z	d_K	Hub d_N	Bore	
			d min.	d max.
18	111.77	70	12	70
19	118.14	80	12	76
20	124.50	90	16	83
21	130.87	90	16	89
22	137.24	90	16	95
23	143.60	90	16	102
24	149.97	95	16	108
25	156.33	95	16	114
26	162.70	95	16	121
27	169.07	110	16	127
28	175.43	110	16	133
29	181.80	110	16	140
30	188.17	110	16	146
31	194.53	110	16	153
32	200.90	110	16	159
33	207.26	110	16	465
34	213.63	110	16	172
35	220.00	110	16	178
36	226.36	110	18	184
37	232.73	110	18	191
38	239.10	110	18	197
39	245.46	110	18	203
40	251.83	110	18	210
41	258.19	130	18	216
42	264.56	130	18	223
43	270.93	130	18	229
44	277.29	130	18	235
45	283.66	130	18	242
46	290.03	130	18	248
47	296.39	130	18	254
48	302.76	130	18	261
49	309.12	130	20	267
50	315.49	140	20	273
51	321.86	140	20	280
52	328.22	140	20	286
53	334.59	140	20	293
54	340.95	140	20	299
55	347.32	140	20	305
56	353.69	140	20	312
57	360.05	140	20	318
58	366.42	140	20	324
59	372.79	140	20	331
60	379.15	140	20	337
61	385.52	140	20	344
62	391.88	140	20	350
63	398.25	140	20	356
64	404.62	140	20	363
65	410.98	140	20	369
66	417.35	140	20	375
67	423.72	140	20	382
68	430.08	140	20	388
69	436.45	140	20	394
70	442.81	140	20	401
71	449.18	140	20	407
72	455.55	140	20	414

Z: number of teeth.

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8
- Flange: galvanised steel, see page 9

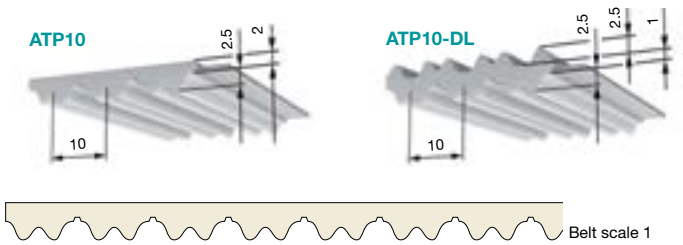
Options

- The different materials such as steel and stainless steel and the surface treatment are shown on *page 8*
- Special toothforms (zero or reduced backlash), see *page 8*

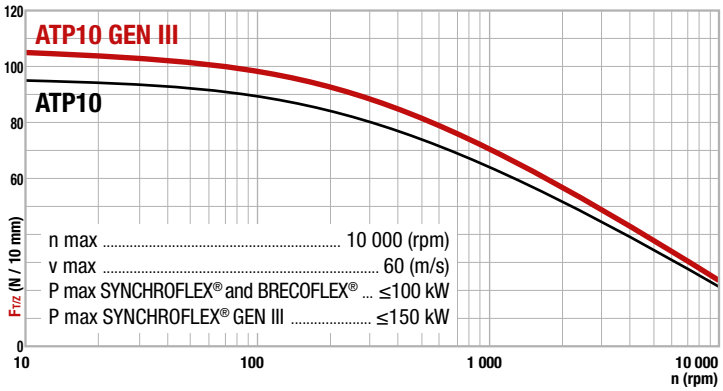
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	ALHR	115	SFAT20/27 -	0	E : 110 X 10	12H7

DELIVERY TIMES	
Pulleys acc. to drawing	Consult us

TIMING BELTS



Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	16	25	32	50	75	100	150
SYNCHROFLEX® GEN III belt								
F_N	(N)	3000	5000	6750	10750	16500	22000	33500
Weight	(kg/m)	0.109	0.170	0.218	0.340	0.510	0.680	1.020
BRECOFLEX® belts								
F_N standard tension members	(N)	2000	3500	4750	7750	12000	16000	
Weight BRECOFLEX® ATP10	(kg/m)	0.096	0.150	0.200	0.300	0.450	0.600	
Weight BRECOFLEX® ATP10-DL	(kg/m)	0.097	0.154	0.2	0.316	0.477	0.636	
SYNCHROFLEX® belts								
F_N standard tension members	(N)	2000	3500	4750	7750	12000	16000	24500
Weight SYNCHROFLEX® standard	(kg/m)	0.096	0.150	0.192	0.300	0.450	0.600	0.900

Manufacturing capacities

	SYNCHROFLEX®	SYNCHROFLEX® GEN III	BRECOFLEX® ATP10
Lengths up to 1 090 mm	Standard length only		
Lengths from 1 100 to 12 000 mm			All intermediate lengths can be produced[1]
Versions DL			All intermediate lengths can be produced[1]
Polyurethanes[2]	DEDU 8600	DADU 9333	TPU SM1
Winding	Monofilaire	Bifilar	Lengths from 1 100 to 12 000 mm: bifilar
Tension members[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*) } Consult us
3. Other tension members (aramide, high-flexibility tension members, stainless steel)
4. See "Coatings" *page 56*

Standard lengths profile / mm	No. of teeth	SYNCHROFLEX® SD SYNCHROFLEX® GEN III	BRECOFLEX® SD	BRECOFLEX® DL
ATP10 / 630	63	●		
ATP10 / 660	66	●		
ATP10 / 700	70	●		
ATP10 / 780	78	●		
ATP10 / 840	84	●		
ATP10 / 890	89	●		
ATP10 / 920	92	●		
ATP10 / 1010	101	●		
ATP10 / 1080	108	●		
ATP10 / 1100	110			
ATP10 / 1150	115	●		
ATP10 / 1280	128	●		
ATP10 / 1400	140	●		
ATP10 / 1500	150		○	○
ATP10 / 1600	160		○	○
ATP10 / 1650	165	○		
ATP10 / 1700	170		○	○
ATP10 / 1800	180	○	○	○
ATP10 / 1900	190		○	○
ATP10 / 2000	200		○	○
ATP10 / 2120	212		○	○
ATP10 / 2240	224		○	○
ATP10 / 2360	236		○	○
ATP10 / 2500	250		○	○
ATP10 / 2650	265		○	○
ATP10 / 2800	280		○	○
ATP10 / 3000	300		○	○
ATP10 / 3150	315		○	○
ATP10 / 3350	335		○	○
ATP10 / 3550	355		○	○
ATP10 / 3750	375		○	○
ATP10 / 4000	400		○	○
ATP10 / 4250	425		○	○
ATP10 / 4500	450		○	○
ATP10 / 4750	475		○	○
ATP10 / 5000	500		○	○
ATP10 / 5300	530		○	○
ATP10 / 5600	560		○	○
ATP10 / 6000	600		○	○
ATP10 / 6300	630		○	○

Width max. = 100 mm

SD: single toothing. DL: double toothing.

DELIVERY TIMES		
Standard belts	○	3 days acc. to availability
Standard belts	○	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
SYNCHROFLEX timing belt	50	ATP10/2500	SYN	GEN III
BRECOFLEX timing belt	50	ATP10/4500	BFX	DL

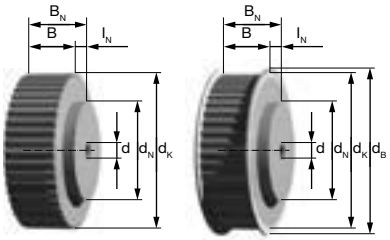
TOOTHED PULLEYS

Pulleys acc. to drawing *see page 8*

Standard pulleys

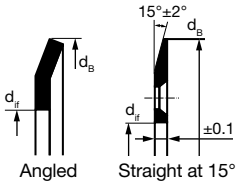
Version 2 (with flanges):
stock up to Z = 44

Version 0 (without flanges)



	Belt widths	b	16	25	32	50	75	100	150
Pulley widths	Pulley without hub	B	23	32	40	60	85	110	160
	Pulley with hub	B_N	33	42	50	70	95	120	170

The pulleys in factory stock all have a hub. **Standard width in stock in green.**



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 39	1.5	Angled	Rolled
39 < Z ≤93	2	Angled	Screwed
B_N ≥ 66 and Z < 40	2	Angled	Screwed
Z > 93	2	Straight at 15°	Screwed

Kinematics	Tension member type		BRECOFLEX® SD	BRECOFLEX® DL
 Monoflexure	Steel tension members	Z min.	15	25
		ø min (mm)	50	80
	E tension members*	Z min.	12	20
		ø min (mm)	50	60
	Stainless steel tension members	Z min.		
		ø min (mm)		
 Contraflexure	Steel tension members	Z min.	25	25
		ø min (mm)	120	120
	E tension members*	Z min.	20	20
		ø min (mm)	80	100
	Stainless steel tension members	Z min.		
		ø min (mm)		

*Special manufacture: minimum quantity.

Width B_N 42	50	70	Z	d_K	d_N	Bore d (H7) min. stock	max.	d_B	d_{if} Rolled flanges	Screwed flanges
			15	46.15			34	52	38	21
			16	49.33			36	55	41	25
			17	52.51			40	58	44	28
			18	55.70			44	61	47	31
			19	58.88			46	64	50	34
o	o	o	20	62.06	46	12	50	68	57	36
			21	65.25			52	72	58	37
			22	68.43			56	74	60	41
			23	71.61			60	78	64	44
o	o	o	24	74.79	58	12	62	80	66	47
			25	77.98			66	84	70	50
			26	81.16			68	86	73	53
			27	84.34			72	90	76	57
			28	87.53			76	93	79	60
			29	90.71			78	96	82	63
o	o	o	30	93.89	60	12	82	99	95	66
			31	97.08			84	102	88	69
o	o	o	32	100.26	65	12	88	105	91	73
			33	103.44			88	109	95	76
			34	106.63			92	112	98	79
			35	109.81			96	115	101	82
o	o	o	36	112.99	70	16	98	118	104	85
			37	116.17			101	121	107	88
			38	119.36			104	125	111	92
			39	122.54			106	128	114	95
o	o	o	40	125.72	80	16	110	131		98
			41	128.91			110	134		101
			42	132.09			112	137		104
			43	135.27			114	140		108
		o	44	138.46	90	16	118	144		111
			45	141.64			120	147		114
			46	144.82			122	150		117
			47	148.01			122	153		120
			48	151.19			124	156		123
			49	154.37			126	160		127
			50	157.56			130	163		130
			51	160.74			134	166		133
			52	163.92			136	169		136
			53	167.10			140	172		139
			54	170.29			144	176		143
			55	173.47			146	179		146
			56	176.65			150	182		149
			57	179.84			152	185		152
			58	183.02			156	188		155
			59	186.20			160	191		158
			60	189.39			162	195		162
			61	192.57			164	198		165
			62	195.75			166	201		168
			63	198.94			170	204		171
			64	202.12			171	207		174
			65	205.30			174	210		178
			66	208.48			175	214		181
			67	211.67			177	217		184
			68	214.85			181	220		187
			69	218.03			185	223		190
			70	221.22			187	226		193
			71	224.40			191	230		197
			72	227.58			193	233		200
			73	230.77			197	236		203
			74	233.95			201	239		206
			75	237.13				242		209

Z: number of teeth.

Comments

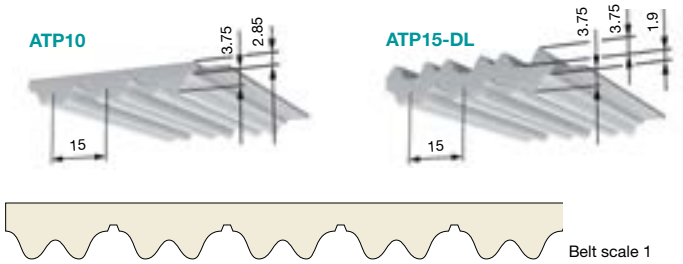
- Larger number of teeth possible
- Standard material: aluminium HR (7075), see page 8
- Flange: galvanised steel, see page 9
- d_{max}: max.mum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	60	ATP10/27-	2		8H7

DELIVERY TIMES		
Pulleys in factory stock	o	2 weeks

TIMING BELTS



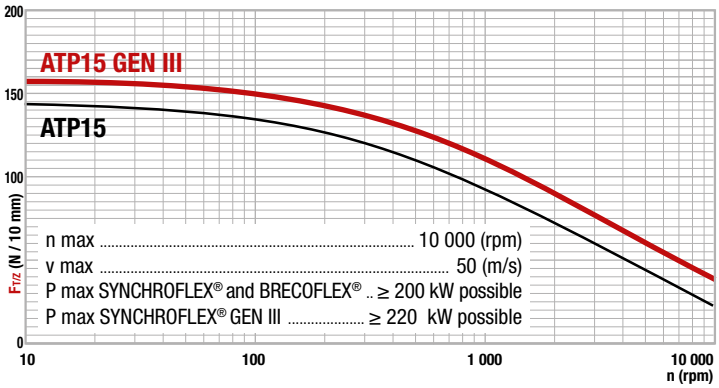
Standard lengths profile / mm	No. of teeth	SYNCHROFLEX® and SYNCHROFLEX® GEN III	BRECOFLEX® SD	BRECOFLEX® DL
ATP15 / 1125	75	o		
ATP15 / 1185	79	o		
ATP15 / 1260	84	o		
ATP15 / 1500	100			
ATP15 / 1560	104	o		
ATP15 / 1740	116		o	o
ATP15 / 1965	131		o	o
ATP15 / 2100	140		o	o
ATP15 / 2250	150		o	o
ATP15 / 2385	159		o	o
ATP15 / 2520	168		o	o
ATP15 / 2670	178		o	o
ATP15 / 2805	187		o	o
ATP15 / 3000	200		o	o
ATP15 / 3225	215		o	o
ATP15 / 3450	230		o	o
ATP15 / 3675	245		o	o
ATP15 / 3900	260		o	o
ATP15 / 4125	275		o	o
ATP15 / 4500	300		o	o
ATP15 / 4875	325		o	o
ATP15 / 5250	350		o	o
ATP15 / 5625	375		o	o
ATP15 / 6000	400		o	o

Width max. = 150 mm

Width max. = 100 mm

SD: single toothing. DL: double toothing.

Tangential force transmittable by the teeth



Tangential force transmittable by the tension members

Belt widths	b (mm)	25	32	50	75	100	150
SYNCHROFLEX® GEN III belt							
F_N	(N)	6 300	8 550	13 950	21 600	28 800	44 100
Weight	(kg/m)	0.218	0.279	0.436	0.654	0.872	1.308
SYNCHROFLEX® et BRECOFLEX® belts							
F_N standard tension members	(N)	4 950	6 750	11 250	17 550	23 850	36 450
Weight BRECOFLEX® ATP15	(kg/m)	0.200	0.256	0.400	0.600	0.800	1.200
Weight BRECOFLEX® ATP15 DL	(kg/m)	0.21	0.272	0.432	0.654	0.876	

Manufacturing capacities

	SYNCHROFLEX®	SYNCHROFLEX® GEN III	BRECOFLEX® ATP15
Lengths from 1 500 to 12 000 mm	Standard length only		All intermediate lengths can be produced[1]
Versions DL and DL PAZ[4]			
Polyurethanes[2]	DEDU 8600	DADU 9333	TPU SM1
Winding	Monofilar	Bifilar	Lengths from 1 500 to 12 000 mm: bifilar
Tension members[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (aramide, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" *page 56*

DELIVERY TIMES		
Standard belts	o	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
SYNCHROFLEX timing belt	50	ATP15/2500	SYN	GEN III
BRECOFLEX timing belt	50	ATP15/4500	BFX	DL

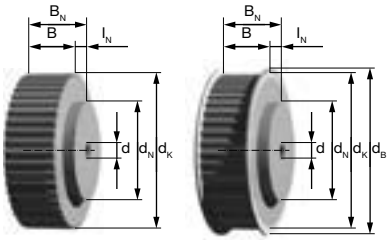
TOOTHED PULLEYS

Pulleys acc. to drawing *see page 8*

Standard pulleys

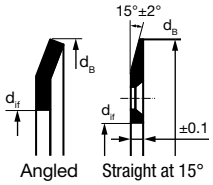
Version 2 (with flanges):
stock up to Z = 44

Version 0 (without flanges) :
stock from Z = 45



	Belt widths	b	25	32	50	75	100	150
Pulley widths	Pulley without hub	B	32	40	60	85	110	160
	Pulley with hub	B_N	42	50	70	95	120	170

The pulleys in factory stock all have a hub. **Standard width in stock in green.**



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 62	2	Angled	Screwed
Z > 62	2	Straight at 15°	Screwed

Kinematics	Tension member type		SYNCHROFLEX® BRECOFLEX® SD	BRECOFLEX® DL
 Monoflexure	Steel tension members	Z min.	20	25
		ø min (mm)	100	120
	E tension members*	Z min.	18	20
		ø min (mm)	80	100
	Stainless steel tension members	Z min.		
		ø min (mm)		
 Contraflexure	Steel tension members	Z min.	30	30
		ø min (mm)	160	160
	E tension members*	Z min.	25	25
		ø min (mm)	120	140
	Stainless steel tension members	Z min.		
		ø min (mm)		

*Special manufacture: minimum quantity

Width B_N			Z	d_K	d_N	Bore d (H7)		d_B	d_{IF}
42	50	70				min. stock	max.		Screwed flanges
o	o	o	20	93.39	46	12	62	100	66
			21	98.17			70	106	73
			22	102.94			74	109	76
			23	107.72			79	115	82
o	o	o	24	112.49	58	12	84	118	85
			25	117.27			89	125	92
			26	122.04			94	128	95
			27	126.82			96	134	101
			28	131.59			103	137	104
			29	136.36			108	144	111
o	o	o	30	141.14	60	12	113	147	114
			31	145.91			117	153	120
o	o	o	32	150.69	65	12	122	156	123
			33	155.46			127	163	130
			34	160.24			132	166	133
			35	165.01			137	172	139
o	o	o	36	169.79	70	16	141	176	143
			37	174.56			146	182	149
			38	179.34			151	185	152
			39	184.11			156	191	158
o	o	o	40	188.89	80	16	160	195	162
			41	193.66			165	201	168
			42	198.44			170	204	171
			43	203.21			175	210	178
		o	44	207.98	90	16	179	214	181
			45	212.76				220	187
			46	217.53			184	223	190
			47	222.31			187	230	197
			48	227.03			192	234	200
			49	231.56			197	239	206
			50	236.63			202	242	209
			51	241.41			207	249	216
			52	246.48			212	252	219
			53	250.96			216	258	225
			54	255.73			220	262	228
			55	260.51			225	268	235
			56	265.28			230	271	238
			57	270.05			235	277	244
			58	274.83			240	281	247
			59	279.60			245	287	254
			60	284.38			250	290	257
			61	289.15			255	296	263
			62	293.93			260	300	267
			63	298.70			265	306	273
			64	303.48			270	310	276
			65	308.25			275	315	283
			66	313.03			280	319	286
			67	317.80			285	325	292
			68	322.58			290	329	295
			69	327.35			295	335	302
			70	332.13			300	338	305
			71	336.90			305	344	311
			72	341.67			310	348	314
			73	346.45			315	354	321
			74	351.22			320	357	324
			75	356.00			330	363	330
			76	360.77			335	367	334
			77	365.55			340	372	335
			78	370.32			345	377	340
			79	375.10			350	382	345
			80	379.87			355	386	350

Z: number of teeth.

Comments

- Larger number of teeth possible
- Standard material: aluminium HR (7075), see page 8
- Flange: galvanised steel, see page 9
- d_{max}: max. mum bore without keyway for flanged pulley

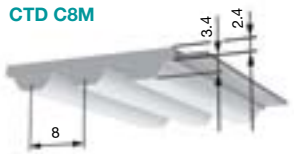
Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	60	ATP15/27-	2		8H7

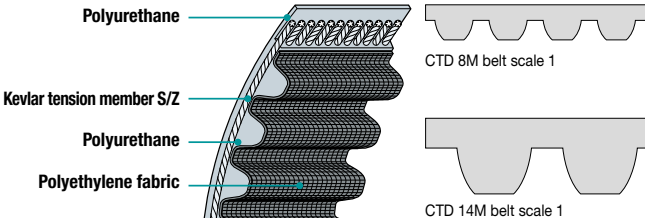
DELIVERY TIMES		
Pulleys in factory stock	o	2 weeks

TIMING BELTS

CTD C8M



CTD C14M



P_N transmittable for belt of 10 mm width

CONTI® SYNCHROCHAIN Kevlar CTD C8M

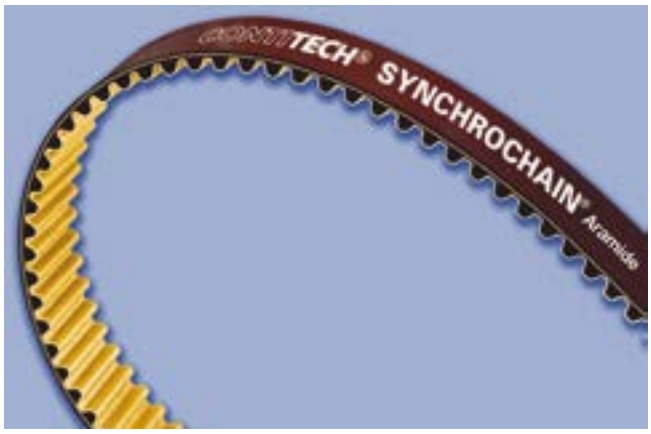
Speed of small pulley n = rpm	No. of teeth on small pulley															
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72
	Pitch diameter d_0 in mm															
	56.02	61.12	66.12	71.30	76.39	81.49	86.58	91.77	96.77	101.86	112.05	122.23	132.42	142.6	162.97	183.35
10	0.05	0.06	0.06	0.07	0.08	0.08	0.09	0.10	0.10	0.11	0.12	0.14	0.15	0.17	0.20	0.23
20	0.10	0.11	0.12	0.13	0.14	0.15	0.17	0.18	0.19	0.20	0.23	0.26	0.28	0.31	0.37	0.43
40	0.18	0.20	0.22	0.24	0.26	0.29	0.31	0.33	0.36	0.38	0.43	0.48	0.53	0.58	0.69	0.80
100	0.41	0.46	0.51	0.56	0.61	0.66	0.71	0.76	0.82	0.87	0.98	1.10	1.22	1.34	1.58	1.84
200	0.77	0.85	0.95	1.04	1.13	1.23	1.33	1.43	1.53	1.63	1.84	2.06	2.28	2.50	2.96	3.44
300	1.10	1.23	1.36	1.50	1.64	1.77	1.92	2.06	2.21	2.35	2.66	2.97	3.28	3.61	4.27	4.96
400	1.43	1.60	1.77	1.94	2.12	2.30	2.49	2.67	2.86	3.05	3.44	3.85	4.26	4.68	5.54	6.43
500	1.75	1.96	2.16	2.38	2.59	2.82	3.04	3.27	3.50	3.74	4.21	4.71	5.21	5.72	6.78	7.87
600	2.07	2.31	2.55	2.80	3.06	3.32	3.59	3.85	4.13	4.40	4.97	5.55	6.14	6.75	7.99	9.28
700	**2.37**	**2.65**	**2.93**	**3.22**	**3.52**	**3.82**	**4.12**	**4.43**	**4.74**	**5.06**	**5.71**	**6.38**	**7.06**	**7.75**	**9.18**	**10.66**
800	2.68	2.99	3.31	3.64	3.97	4.31	4.65	5.00	5.35	5.71	6.45	7.20	7.97	8.75	10.36	12.03
1000	3.28	3.66	4.05	4.45	4.85	5.27	5.69	6.12	6.55	6.99	7.89	8.81	9.75	10.70	12.68	14.72
1200	3.86	4.31	4.78	5.25	5.72	6.21	6.71	7.21	7.72	8.24	9.30	10.38	11.49	12.62	14.95	17.35
1450	**4.59**	**5.12**	**5.67**	**6.22**	**6.79**	**7.37**	**7.96**	**8.56**	**9.16**	**9.78**	**11.03**	**12.32**	**13.64**	**14.98**	**17.74**	**20.59**
1600	5.01	5.60	6.19	6.80	7.42	8.06	8.70	9.35	10.02	10.69	12.06	13.47	14.90	16.37	19.39	22.51
1800	5.58	6.22	6.89	7.57	8.26	8.96	9.68	10.40	11.14	11.89	13.42	14.98	16.58	18.21	21.57	25.04
2000	6.13	6.85	7.58	8.32	9.08	9.86	10.64	11.44	12.26	13.08	14.76	16.48	18.23	20.03	23.72	27.54
2400	7.23	8.07	8.94	9.81	10.71	11.62	12.55	13.49	14.45	15.42	17.40	19.43	21.50	23.62	27.97	32.47
3000	8.85	9.88	10.93	12.01	13.10	14.22	15.36	16.51	17.68	18.87	21.29	23.77	26.31	28.90	34.22	39.73
3500	10.17	11.35	12.57	13.80	15.06	16.35	17.65	18.98	20.32	21.69	24.47	27.32	30.24	33.22	39.34	
4000	11.47	12.81	14.18	15.57	17.00	18.44	19.92	21.41	22.93	24.47	27.61	30.83	34.12	37.48		
4500	12.76	14.25	15.77	17.32	18.91	20.52	22.15	23.82	25.51	27.22	30.71	34.29	37.95			
5000	14.04	15.67	17.35	19.05	20.80	22.57	24.37	26.20	28.06	29.94	33.78	37.72				
5500	15.30	17.08	18.91	20.77	22.67	24.60	26.56	28.56	30.58	32.63	36.82	41.11				

CONTI® SYNCHROCHAIN Kevlar CTD C14M

Speed of small pulley n = rpm	No. of teeth on small pulley														
	28	30	32	34	36	38	40	42	44	46	48	52	56	64	72
	Pitch diameter d_0 in mm														
	124.78	133.69	142.6	151.52	160.43	169.34	178.25	187.17	196.08	204.99	213.9	231.73	249.55	285.21	320.86
10	0.31	0.33	0.36	0.38	0.41	0.43	0.46	0.48	0.51	0.53	0.56	0.61	0.66	0.76	0.87
20	0.55	0.60	0.64	0.68	0.73	0.77	0.82	0.86	0.91	0.95	1.00	1.09	1.18	1.37	1.55
40	0.99	1.07	1.14	1.22	1.30	1.38	1.46	1.54	1.62	1.70	1.78	1.94	2.11	2.44	2.77
100	2.13	2.30	2.46	2.63	2.80	2.97	3.14	3.31	3.49	3.66	3.84	4.19	4.54	5.25	5.97
200	3.80	4.10	4.40	4.70	5.00	5.31	5.61	5.92	6.23	6.54	6.85	7.48	8.11	9.38	10.67
300	5.34	5.76	6.18	6.60	7.03	7.45	7.88	8.32	8.75	9.18	9.62	10.50	11.39	13.17	14.98
400	6.79	7.33	7.86	8.40	8.94	9.48	10.03	10.58	11.13	11.69	12.24	13.36	14.49	16.76	19.06
500	8.19	8.83	9.48	10.12	10.78	11.43	12.09	12.75	13.42	14.09	14.76	16.10	17.46	20.20	22.98
600	9.54	10.29	11.04	11.79	12.55	13.32	14.08	14.86	15.63	16.41	17.19	18.76	20.34	23.54	26.77
700	**10.85**	**11.70**	**12.56**	**13.42**	**14.28**	**15.15**	**16.02**	**16.90**	**17.78**	**18.67**	**19.56**	**21.34**	**23.14**	**26.78**	**30.45**
800	12.14	13.09	14.04	15.00	15.97	16.94	17.92	18.90	19.89	20.88	21.87	23.87	25.88	29.94	34.06
1000	14.63	15.77	16.93	18.09	19.25	20.42	21.60	22.78	23.97	25.16	26.36	28.77	31.20	36.10	41.05
1200	17.04	18.38	19.72	21.07	22.43	23.79	25.16	26.54	27.92	29.31	30.71	33.51	36.34	42.05	47.82
1450	**19.97**	**21.53**	**23.10**	**24.69**	**26.28**	**27.87**	**29.48**	**31.10**	**32.72**	**34.34**	**35.98**	**39.27**	**42.58**	**49.27**	**56.03**
1600	21.68	23.38	25.09	26.81	28.53	30.27	32.01	33.77	35.53	37.29	39.07	42.64	46.24	53.50	60.84
1800	23.93	25.80	27.69	29.58	31.49	33.41	35.33	37.27	39.21	41.16	43.12	47.06	51.03	59.04	67.15
2000	26.14	28.18	30.24	32.31	34.39	36.49	38.59	40.70	42.82	44.96	47.09	51.40	55.73	64.49	73.34
2400	30.45	32.83	35.23	37.64	40.07	42.50	44.95	47.41	49.89	52.37	54.86	59.87	64.92	75.12	
3000	36.70	39.57	42.46	45.37	48.29	51.23	54.19	57.15	60.13	63.12	66.13	72.17	78.26		
3500	41.75	45.02	48.31	51.62	54.95	58.29	61.65	65.02	68.41	71.82	75.24				
4000	46.69	50.35	54.03	57.73	61.45	65.18	68.94	72.72	76.51	80.31					

Length	No. of teeth	CTD C8M
640	80	○
720	90	○
800	100	○
896	112	○
920	115	○
960	120	○
1000	125	○
1040	130	○
1120	140	○
1200	150	○
1224	153	○
1280	160	○
1440	180	○
1600	200	○
1760	220	○
1792	224	○
2000	250	○
2400	300	○
2520	315	○
2840	355	○
3200	400	○
3600	450	○
4000	500	○

Length	No. of teeth	CTD C14M
994	71	○
1 120	80	○
1 190	85	○
1 260	90	○
1 400	100	○
1 568	112	○
1 610	115	○
1 750	125	○
1 890	135	○
1 960	140	○
2 100	150	○
2 240	160	○
2 380	170	○
2 520	180	○
2 660	190	○
2 800	200	○
3 136	224	○
3 304	236	○
3 500	250	○
3 850	275	○
3 920	280	○
4 410	315	○



Width factor c_6

Belt widths	12	21	36	62
Width factor c_6 CTD C8M	1.2	2.1	3.6	6.2

Belt widths	20	37	68	90	125
Width factor c_6 CTD C14M	2	3.7	6.8	9	12.5

Tangential force transmittable by the tension members

CONTI® SYNCHROCHAIN CTD C8M belt					
Belt widths	b (mm)	12	21	36	62
F_N binding Kevlar	(N)	1 150	2 140	3 790	6 650
Weight	(kg/m)	0.051	0.089	0.152	0.262
CONTI® SYNCHROCHAIN CTD C14M belt					
Belt widths	b (mm)	20	37	68	90	125
F_N binding Kevlar	(N)	3 600	6 600	12 090	15 980	22 180
Weight	(kg/m)	0.155	0.286	0.526	0.696	0.966

DELIVERY TIMES		
Belts in stock	●	4 weeks
Standard belts	○	Consult us

BELT ORDERING EXAMPLES			
Designation	Width	Profile / Length	Particular specification
CONTI SYNCHROCHAIN timing belt	21	CTD C8M/1224	Kevlar
CONTI SYNCHROCHAIN timing belt	68	CTD C14M/2590	Kevlar

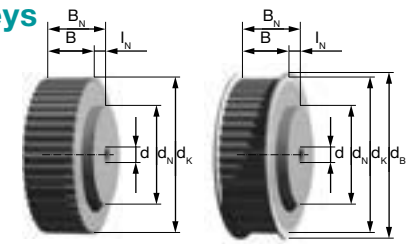
TOOTHED PULLEYS

Pulleys acc. to drawing *see page 8*

Standard pulleys

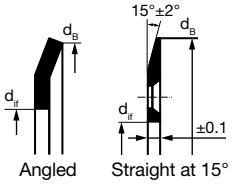
Version 2 (with flanges):
Up to Z = 44

Version 0 (without flanges) :
From Z = 45



	Belt widths CTD 8	b	12	21	36	62
Pulley widths	Pulley without hub	B	19	30	44	72
	Pulley with hub	B_N	29	40	54	82

	Belt widths CTD 14	b	20	37	68	90	125
Pulley widths	Pulley without hub	B	28	45	64	100	135
	Pulley with hub	B_N	28	55	74	110	145



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 42	1	Angled	Rolled
42 < Z ≤ 116	1,5	Angled	Rolled
B_N ≥ 66 and Z ≤ 116	2	Angled	Screwed
Z > 116	2	Straight at 15°	Screwed

Z	d_K	d_N	Bore d (H7) standard	Bore d (H7) max.	d_B	d_{if} Rolled flanges
CTD C8M						
16	39.14		8	21	43	31
17	41.69		8	23	45	33
18	44.24		8	26	48	36
19	46.78		8	28	50	38
20	49.33		8	26	56	42
21	51.88		8	26	55	43
22	54.42	43	12	29	58	46
23	56.97		12	32	63	48
24	59.52	45	12	34	66	52
25	62.06		12	34	66	52
26	64.61	50	12	35	72	58
27	67.15		12	39	74	60
28	69.70	50	15	42	74	60
29	72.25		15	47	80	66
30	74.79	55	15	47	82	68
31	77.34		15	48	84	70
32	79.89	60	15	51	86	72
33	82.43		15	57	86	72
34	84.98	70	15	57	90	76
35	87.53		15	58	93	79
36	90.07	70	15	63	97	83
37	92.62		15	64	97	83
38	95.17	75	15	56	99	85
39	97.71		15	67	103	87
40	100.26	75	15	72	105	91
41	102.81		15	66	110	96
42	105.35		15	66	110	96
43	107.90		15	80	115	95
44	110.45	75	15	83	115	95
45	112.99		15	83	118	104
46	115.54		15	89	123	107
47	118.08		15	89	123	107
48	120.63	75	15	93	127	111
49	123.18		15	96	131	117
50	125.72		15	96	131	117
51	128.27		15	99	135	119
52	130.82		15	102	135	119
53	133.36		15	106	140	123
54	135.91		15	109	143	127
55	138.46		15	109	143	127
56	141.00	80	15	114	148	131
64	161.37	80	15	133	168	148
72	181.75	80	15	153	188	161
80	202.12	90	15	172	207	187
CTD C14M						
18	77.41				91	59
19	81.87				91	59
20	86.33				91	59
21	90.78				100	66
22	95.24				102	58
23	99.70				106	73
24	104.15				115	70
25	108.61				115	70
26	113.06				121	77
27	117.52				123	91
28	121.98	100	24		128	83
29	126.43				134	89
30	130.89	100	24		140	96
31	135.35				147	102
32	139.80	100	24		147	102
33	144.26				153	109
34	148.72	100	24		160	115
35	153.17				160	115
36	157.63	100	24		166	121
37	162.08				172	128
38	166.54	120	24		172	128
39	171.00				179	134
40	175.45	120	24		185	140
41	179.91				192	147
42	184.37				192	147
43	188.82				198	153
44	193.28	120	24		204	159
45	197.74				204	159
46	202.19				210	166
47	206.65				217	172
48	211.10	135	28		223	179
49	215.56				223	179
50	220.02				229	185
51	224.47				236	191
52	228.93				236	191
53	233.39				242	198
54	237.84				249	204
55	242.30				249	204
56	246.75	135	28		256	213
57	251.21				261	217
58	255.67				268	223
59	260.12				268	223
60	264.58				274	229
61	269.04				280	236
62	273.49				280	236
63	277.95				287	242
64	282.41	135	28		293	249
65	286.86				300	255
66	291.32				300	255
67	295.77				306	273
68	300.23				312	268
69	304.69				312	268
70	309.14				319	274

Comments

- Larger number of teeth possible.
- Standard flanges: steel, see *page 9*
- d_{max}: max. mum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on *page 8*
- Special flanges on request

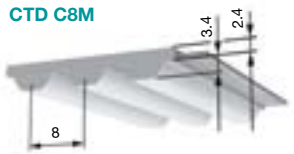
We recommend the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (CONTI®SYNCHROCHAIN).

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	40	CTD 8M/24	2	E : 45 x 10	12H7

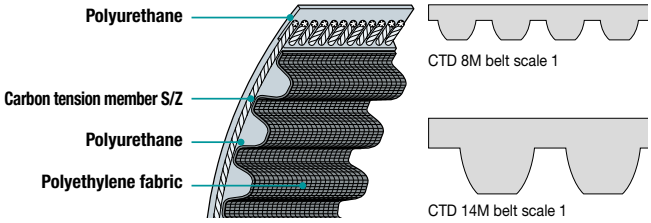
DELIVERY TIMES	
Pulleys acc. to drawing	Consult us

TIMING BELTS

CTD C8M



CTD C14M



P_N transmittable for belt of 10 mm width

CONTI® SYNCHROCHAIN carbon CTD C8M

Speed of small pulley n = rpm	No. of teeth on small pulley															
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72
	Pitch diameter d_0 in mm															
	56.02	61.12	66.12	71.30	76.39	81.49	86.58	91.77	96.77	101.86	112.05	122.23	132.42	142.60	162.97	183.35
10	0.06	0.07	0.08	0.09	0.10	0.10	0.11	0.12	0.13	0.14	0.16	0.17	0.19	0.21	0.25	0.29
20	0.12	0.14	0.15	0.16	0.18	0.19	0.21	0.23	0.24	0.26	0.29	0.33	0.36	0.40	0.47	0.54
40	0.23	0.25	0.28	0.31	0.34	0.36	0.39	0.42	0.45	0.48	0.55	0.61	0.67	0.74	0.88	1.02
100	0.52	0.58	0.64	0.71	0.77	0.84	0.90	0.97	1.04	1.11	1.25	1.40	1.54	1.70	2.01	2.33
200	0.97	1.09	1.20	1.32	1.44	1.56	1.69	1.81	1.94	2.07	2.34	2.61	2.89	3.18	3.76	4.37
300	1.40	1.57	1.73	1.90	2.08	2.25	2.43	2.62	2.80	2.99	3.37	3.77	4.17	4.58	5.43	6.30
400	1.82	2.03	2.25	2.47	2.69	2.92	3.16	3.39	3.64	3.88	4.38	4.89	5.41	5.94	7.04	8.17
500	2.23	2.48	2.75	3.02	3.30	3.58	3.86	4.15	4.45	4.75	5.36	5.98	6.62	7.27	8.61	9.99
600	2.62	2.93	3.24	3.56	3.89	4.22	4.56	4.90	5.24	5.60	6.31	7.05	7.80	8.57	10.15	11.78
700	**3.02**	**3.37**	**3.73**	**4.09**	**4.47**	**4.85**	**5.24**	**5.63**	**6.03**	**6.43**	**7.26**	**8.10**	**8.97**	**9.85**	**11.67**	**13.55**
800	3.40	3.80	4.21	4.62	5.04	5.47	5.91	6.35	6.80	7.26	8.19	9.14	10.12	11.12	13.17	15.28
1000	4.16	4.65	5.15	5.65	6.17	5.69	7.23	7.77	8.32	8.88	10.02	11.19	12.38	13.60	16.11	18.70
1200	4.91	5.48	6.07	6.66	7.27	7.89	8.52	9.16	9.81	10.47	11.82	13.19	14.60	16.04	18.99	22.05
1450	**5.83**	**6.51**	**7.20**	**7.91**	**8.63**	**9.37**	**10.11**	**10.87**	**11.64**	**12.43**	**14.02**	**15.65**	**17.32**	**19.03**	**22.54**	**26.16**
1600	6.37	7.11	7.87	8.64	9.43	10.24	11.05	11.88	12.73	13.58	15.32	17.11	18.94	20.80	24.64	28.60
1800	7.08	7.91	8.75	9.62	10.49	11.39	12.30	13.22	14.16	15.11	17.05	19.03	21.06	23.14	27.40	31.81
2000	7.79	8.70	9.63	10.58	11.54	12.53	13.52	14.54	15.57	16.62	18.75	20.93	23.17	25.45	30.14	34.99
2400	9.19	10.26	11.35	12.47	13.61	14.77	15.95	17.15	18.36	19.59	22.11	24.69	27.32	30.01	35.54	41.26
3000	11.24	12.55	13.89	15.26	16.65	18.07	19.51	20.98	22.46	23.97	27.05	30.20	33.43	36.72	43.48	50.48
3500	12.92	14.43	15.97	17.54	19.14	20.77	22.43	24.11	25.82	27.56	31.09	34.72	38.42	42.21	49.98	
4000	14.58	16.28	18.02	19.79	21.60	23.44	25.31	27.21	29.14	31.09	35.08	39.17	43.35	47.62		
4500	16.22	18.11	20.04	22.01	24.02	26.2.7	28.15	30.26	32.41	34.59	39.02	43.57	48.22			
5000	17.84	19.92	22.04	24.21	26.42	28.67	30.96	33.29	35.65	38.04	42.92	47.93				
5500	19.44	21.71	24.02	26.39	28.80	31.25	33.75	36.28	38.86	41.46	46.79	52.24				

Length	No. of teeth	CTD C8M
640	80	o
720	90	o
800	100	o
896	112	o
920	115	o
960	120	o
1 000	125	o
1 040	130	o
1 120	140	o
1 200	150	o
1 224	153	o
1 280	160	o
1 440	180	o
1 600	200	o
1 760	220	o
1 792	224	o
2 000	250	o
2 400	300	o
2 520	315	o
2 840	355	o
3 200	400	o
3 600	450	o
4 000	500	o

CONTI® SYNCHROCHAIN carbon CTD C14M

Speed of small pulley n = rpm	No. of teeth on small pulley														
	28	30	32	34	36	38	40	42	44	46	48	52	56	64	72
	Pitch diameter d_0 in mm														
	124.78	133.69	142.6	151.52	160.43.	169.34	178.25	187.17	196.08	204.99	213.90	231.73	249.55	285.21	320.86
10	0.40	0.43	0.46	0.49	0.52	0.55	0.58	0.62	0.65	0.68	0.71	0.78	0.84	0.98	1.11
20	0.71	0.76	0.8l	0.87	0.93	0.99	1.04	1.10	1.16	1.22	1.28	1.39	1.51	1.75.	1.99
40	1.26	1.36	1.46	1.56	1.66	1.76	1.87	1.97	2.07	2.17	2.28	2.49	2.70	3.12	3.55
100	2.72	2.94	3.15	3.37	3.5B	3.80	4.02	4.24	4.46	4.68	4.91	5.35	5.81	6.72	7.64
200	4.86	5.24	5.63	6.01	6.40	6.79	7.18	7.57	7.97	8.37	8.76	9.57	10.37	12.00	13.65
300	6.83	7.36	7.90	8.44	8.99	9.53	10.08	10.64	11.19	11.75	12.31	13.43	14.56	16.85	19.16
400	8.69	9.37	10.05	10.74	11.43	12.13	12.83	13.53	14.24	14.95	15.66	17.09	18.53	21.44	24.38
500	10.47	11.29	12.12	12.95	13.78	14.62	15.46	16.31	17.16	18.02	18.87	20.60	22.33	25.84	29.39
600	12.20	13.16	14.12	15.08	16.06	17.03	18.01	19.00	19.99	20.99	21.99	23.99	26.02	30.10	34.24
700	**13.88**	**14.97**	**16.06**	**17.16**	**18.27**	**19.38**	**20.50**	**21.62**	**22.75**	**23.88**	**25.01**	**27.30**	**29.60**	**34.25**	**38.95**
800	15.52	16.74	17.96	19.19	20.43	21.67	22.92	24.18	25.44	26.70	27.97	30.53	33.10	38.30	43.56
1000	18.71	20.18	21.65	23.13	24.62	26.12	27.63	29.14	30.66	32.19	33.72	36.80	39.90	46.17	52.51
1200	21.80	23.50	25.22	26.95	28.68	30.43	32.18	33.95	35.72	37.49	39.28	42.87	46.48	53.78	61.17
1450	**25.54**	**27.54**	**29.55**	**31.57**	**33.61**	**35.65**	**37.71**	**39.77**	**41.85**	**43.93**	**46.02**	**50.23**	**54.46**	**63.01**	**71.67**
1600	27.73	29.90	32.09	34.29	36.50	38.72	40.95	43.19	45.44	47.70	49.97	54.54	59.14	68.43	77.82
1800	30.61	33.00	35.41	37.84	40.28	42.73	45.19	47.67	50.15	52.65	55.15	60.19	65.27	75.52	85.89
2000	33.43	36.05	38.68	41.33	43.99	46.67	49.36	52.06	54.78	57.50	60.24	65.74	71.29	82.48	93.81
2400	38.94	41.99	45.05	48.14	51.25	54.36	57.50	60.65	63.81	66.98	70.17	76.58	83.04	96.08	
3000	46.94	50.62	54.31	58.03	61.77	65.53	69.31	73.10	76.91	80.74	84.58	92.31	100.10		
3500	53.41	57.59	61.79	66.03	70.28	74.56	78.85	83.17	87.51	91.86	96.23				
4000	59.72	64.40	69.10	73.84	78.59	83.37	88.18	93.01	97.66	102.73					

Length	No. of teeth	CTD C14M
994	71	o
1 120	80	o
1 190	85	o
1 260	90	o
1 400	100	o
1 568	112	o
1 610	115	o
1 750	125	o
1 890	135	o
1 960	140	o
2 100	150	o
2 240	160	o
2 380	170	o
2 520	180	o
2 660	190	o
2 800	200	o
3 136	224	o
3 304	236	o
3 500	250	o
3 850	275	o
3 920	280	o
4 410	315	o

Width factor c_6

Belt widths	12	21	36	62
Width factor c_6 CTD C8M	1.2	2.1	3.6	6.2

Belt widths	20	37	68	90	125
Width factor c_6 CTD C14M	2	3.7	6.8	9	12.5

Tangential force transmittable by the tension members

CONTI® SYNCHROCHAIN CTD C8M belt					
Belt widths	b (mm)	12	21	36	62
F_N carbon tension member	(N)	2 350	4 150	7 150	12 350
Weight	(kg/m)	0.054	0.095	0.162	0.279
CONTI® SYNCHROCHAIN CTD C14M belt					
Belt widths	b (mm)	20	37	68	90	125
F_N carbon tension member	(N)	5 400	9 750	18 100	24 500	33 600
Weight	(kg/m)	0.156	0.289	0.530	0.702	0.975

DELIVERY TIMES		
Standard belts	o	4 weeks

BELT ORDERING EXAMPLES			
Designation	Width	Profile / Length	Particular specification
CONTI SYNCHROCHAIN timing belt	21	CTD C8M/1224	Carbon
CONTI SYNCHROCHAIN timing belt	68	CTD C14M/2590	Carbon

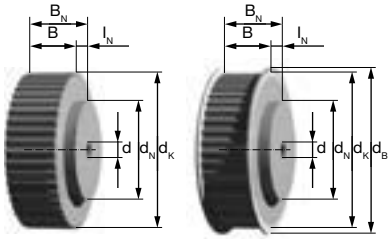
TOOTHED PULLEYS

Pulleys acc. to drawing *see page 8*

Standard pulleys

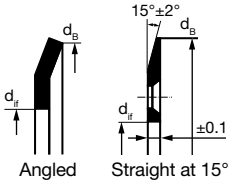
Version 2 (with flanges):
Up to Z = 44

Version 0 (without flanges) :
From Z = 45



	Belt widths CTD 8	b	12	21	36	62
Pulley widths	Pulley without hub	B	19	30	44	72
	Pulley with hub	B_N	29	40	54	82

	Belt widths CTD 14	b	20	37	68	90	125
Pulley widths	Pulley without hub	B	28	45	64	100	135
	Pulley with hub	B_N	28	55	74	110	145



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 42	1	Angled	Rolled
42 < Z ≤ 116	1,5	Angled	Rolled
B_N ≥ 66 and Z ≤ 116	2	Angled	Screwed
Z > 116	2	Straight at 15°	Screwed

Comments

- Larger number of teeth possible.
- Standard flanges: steel, see *page 9*
- d_{max}: max. mum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on *page 8*
- Special flanges on request

We recommend the use of HR (7075) aluminium to avoid deformation of the keyways in high-performance transmissions (CONTI®SYNCHROCHAIN).

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	40	CTD 8M/24	2	E : 45 x 10	12H7

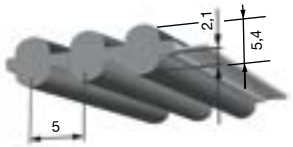
DELIVERY TIMES	
Pulleys acc. to drawing	Consult us

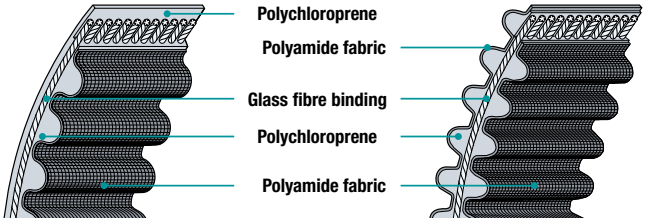
Z	d_K	d_N	Bore d (H7) standard	Bore d (H7) max.	d_B	d_{if} Rolled flanges
CTD C8M						
16	39.14		8	21	43	31
17	41.69		8	23	45	33
18	44.24		8	26	48	36
19	46.78		8	28	50	38
20	49.33		8	26	56	42
21	51.88		8	26	55	43
22	54.42	43	12	29	58	46
23	56.97		12	32	63	48
24	59.52	45	12	34	66	52
25	62.06		12	34	66	52
26	64.61	50	12	35	72	58
27	67.15		12	39	74	60
28	69.70	50	15	42	74	60
29	72.25		15	47	80	66
30	74.79	55	15	47	82	68
31	77.34		15	48	84	70
32	79.89	60	15	51	86	72
33	82.43		15	57	86	72
34	84.98	70	15	57	90	76
35	87.53		15	58	93	79
36	90.07	70	15	63	97	83
37	92.62		15	64	97	83
38	95.17	75	15	56	99	85
39	97.71		15	67	103	87
40	100.26	75	15	72	105	91
41	102.81		15	66	110	96
42	105.35		15	66	110	96
43	107.90		15	80	115	95
44	110.45	75	15	83	115	95
45	112.99		15	83	118	104
46	115.54		15	89	123	107
47	118.08		15	89	123	107
48	120.63	75	15	93	127	111
49	123.18		15	96	131	117
50	125.72		15	96	131	117
51	128.27		15	99	135	119
52	130.82		15	102	135	119
53	133.36		15	106	140	123
54	135.91		15	109	143	127
55	138.46		15	109	143	127
56	141.00	80	15	114	148	131
64	161.37	80	15	133	168	148
72	181.75	80	15	153	188	161
80	202.12	90	15	172	207	187
CTD C14M						
18	77.41				91	59
19	81.87				91	59
20	86.33				91	59
21	90.78				100	66
22	95.24				102	58
23	99.70				106	73
24	104.15				115	70
25	108.61				115	70
26	113.06				121	77
27	117.52				123	91
28	121.98	100	24		128	83
29	126.43				134	89
30	130.89	100	24		140	96
31	135.35				147	102
32	139.80	100	24		147	102
33	144.26				153	109
34	148.72	100	24		160	115
35	153.17				160	115
36	157.63	100	24		166	121
37	162.08				172	128
38	166.54	120	24		172	128
39	171.00				179	134
40	175.45	120	24		185	140
41	179.91				192	147
42	184.37				192	147
43	188.82				198	153
44	193.28	120	24		204	159
45	197.74				204	159
46	202.19				210	166
47	206.65				217	172
48	211.10	135	28		223	179
49	215.56				223	179
50	220.02				229	185
51	224.47				236	191
52	228.93				236	191
53	233.39				242	198
54	237.84				249	204
55	242.30				249	204
56	246.75	135	28		256	213
57	251.21				261	217
58	255.67				268	223
59	260.12				268	223
60	264.58				274	229
61	269.04				280	236
62	273.49				280	236
63	277.95				287	242
64	282.41	135	28		293	249
65	286.86				300	255
66	291.32				300	255
67	295.77				306	273
68	300.23				312	268
69	304.69				312	268
70	309.14				319	274

TIMING BELTS

CONTI® SYNCHROFORCE® HTD 5M

CONTI® SYNCHROTWIN® DHTD 5M





HTD 5M belt

DHTD 5M belt

$P_{(N)}$ transmittable for belt of 9 mm width

CONTI® SYNCHROFORCE CXP

Speed of small pulley n = rpm	No. of teeth on small pulley														
	14	16	18	20	24	28	32	36	40	44	48	56	64	72	80
	Pitch diameter d_0 in mm														
	22.28	25.46	28.65	31.83	38.20	44.56	50.93	57.30	63.66	70.03	76.39	89.13	101.86	114.59	127.32
20	0.02	0.02	0.02	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.11	0.12	0.14
40	0.03	0.04	0.05	0.05	0.06	0.08	0.09	0.10	0.12	0.13	0.15	0.17	0.20	0.23	0.26
60	0.05	0.06	0.06	0.07	0.09	0.11	0.13	0.15	0.17	0.19	0.21	0.25	0.29	0.33	0.38
100	0.07	0.09	0.10	0.12	0.15	0.18	0.21	0.24	0.27	0.30	0.33	0.40	0.46	0.53	0.60
200	0.13	0.16	0.19	0.21	0.27	0.33	0.38	0.44	0.50	0.56	0.62	0.74	0.86	0.98	1.11
300	0.18	0.22	0.27	0.31	0.39	0.47	0.55	0.63	0.71	0.80	0.88	1.05	1.23	1.40	1.58
400	0.23	0.29	0.34	0.39	0.49	0.60	0.70	0.81	0.92	1.02	1.13	1.35	1.57	1.79	2.02
500	0.28	0.35	0.41	0.47	0.60	0.72	0.85	0.98	1.11	1.24	1.37	1.63	1.90	2.17	2.43
600	0.32	0.40	0.48	0.55	0.70	0.85	0.99	1.14	1.29	1.45	1.60	1.91	2.21	2.52	2.83
700	**0.37**	**0.46**	**0.54**	**0.63**	**0.79**	**0.96**	**1.13**	**1.30**	**1.47**	**1.65**	**1.82**	**2.17**	**2.51**	**2.86**	**3.20**
800	0.41	0.51	0.61	0.70	0.89	1.08	1.27	1.46	1.65	1.84	2.03	2.42	2.80	3.18	3.56
900	0.45	0.56	0.67	0.77	0.98	1.19	1.39	1.60	1.81	2.02	2.24	2.66	3.08	3.49	3.90
950	**0.47**	**0.59**	**0.70**	**0.81**	**1.02**	**1.24**	**1.46**	**1.68**	**1.90**	**2.12**	**2.34**	**2.77**	**3.21**	**3.64**	**4.07**
1000	0.49	0.61	0.73	0.84	1.07	1.29	1.52	1.75	1.98	2.21	2.43	2.89	3.34	3.79	4.23
1200	0.56	0.71	0.84	0.98	1.24	1.50	1.76	2.02	2.29	2.55	2.81	3.33	3.84	4.34	4.84
1400	0.63	0.80	0.95	1.10	1.40	1.70	1.99	2.29	2.58	2.87	3.17	3.74	4.30	4.85	5.39
1450	**0.65**	**0.82**	**0.98**	**1.13**	**1.44**	**1.74**	**2.05**	**2.35**	**2.65**	**2.95**	**3.25**	**3.84**	**4.41**	**4.97**	**5.52**
1600	0.70	0.89	1.06	1.23	1.56	1.88	2.21	2.54	2.86	3.18	3.50	4.12	4.73	5.32	5.89
1800	0.76	0.97	1.16	1.34	1.71	2.06	2.42	2.77	3.12	3.47	3.81	4.48	5.13	5.75	6.34
2000	0.83	1.05	1.26	1.46	1.85	2.24	2.62	3.00	3.38	3.75	4.11	4.82	5.49	6.13	6.74
2400	0.95	1.21	1.44	1.67	2.12	2.56	3.00	3.42	3.84	4.25	4.65	5.41	6.13	6.80	7.41
2850	**1.07**	**1.37**	**1.64**	**1.90**	**2.40**	**2.90**	**3.38**	**3.85**	**4.31**	**4.75**	**5.18**	**5.99**	**6.72**	**7.38**	**7.96**
3200	1.16	1.48	1.78	2.06	2.61	3.14	3.65	4.15	4.63	5.10	5.54	6.36	7.09	7.71	8.24
3600	1.26	1.61	1.93	2.24	2.83	3.40	3.94	4.47	4.97	5.45	5.90	6.71	7.41	7.98	8.41
4000	1.35	1.73	2.08	2.40	3.03	3.63	4.21	4.75	5.27	5.75	6.20	6.99	7.64	8.12	8.44
5000	1.55	2.00	2.40	2.78	3.48	4.15	4.76	5.33	5.85	6.32	6.73	7.39	7.80	7.96	7.85
6000	1.73	2.24	2.68	3.09	3.86	4.56	5.19	5.75	6.23	6.64	6.97	7.37	7.42	7.11	
7000	1.88	2.44	2.92	3.36	4.17	4.88	5.49	6.01	6.42	6.73	6.92	6.97			
8000	2.01	2.62	3.13	3.59	4.41	5.11	5.68	6.12	6.42	6.59	6.61				
10000	2.23	2.89	3.44	3.92	4.73	5.33	5.74	5.94	5.93	5.69	5.23				
12000	2.38	3.09	3.65	4.12	4.83	5.26	5.41	5.26	4.79	4.01					
14000	2.48	3.20	3.75	4.18	4.75	4.93	4.72	4.10	3.07						

Width factor c_6

Belt widths	6	9	12	15	20	25	30
Factor c_6	0.58	1	1.42	1.85	2.55	3.25	3.96

Tangential force transmittable by the tension members

Belt widths	b (mm)	6	9	12	15	20	25	30
CONTI® SYNCHROFORCE HTD 5M • DHTD 5M belt								
F_N glass fibre binding	(N)	185	290	395	500	675	840	1000
Weight	(kg/m)	0.02	0.03	0.04	0.05	0.068	0.085	0.102

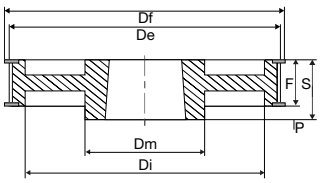
Length	No. of teeth	CONTI® SYNCHROFORCE HTD 5M CXP	CONTI® SYNCHROTWIN DHTD 5M CXP
HTD 5M / 200	40	o	
HTD 5M / 225	45	o	
HTD 5M / 265	53	o	
HTD 5M / 275	55	o	
HTD 5M / 285	57	o	
HTD 5M / 295	59	o	
HTD 5M / 300	60	o	
HTD 5M / 330	66	o	
HTD 5M / 350	70	o	
HTD 5M / 375	75	o	
HTD 5M / 385	77	o	
HTD 5M / 400	80	o	
HTD 5M / 405	81	o	
HTD 5M / 425	85	o	
HTD 5M / 450	90	o	
HTD 5M / 460	92	o	
HTD 5M / 475	95	o	
HTD 5M / 500	100	o	
HTD 5M / 525	105	o	
HTD 5M / 535	107	o	
HTD 5M / 550	110	o	
HTD 5M / 565	113	o	o
HTD 5M / 600	120	o	o
HTD 5M / 615	123	o	o
HTD 5M / 620	124	o	o
HTD 5M / 630	126	o	o
HTD 5M / 635	127	o	o
HTD 5M / 665	133	o	o
HTD 5M / 700	140	o	o
HTD 5M / 710	142	o	o
HTD 5M / 740	148	o	o
HTD 5M / 755	151	o	o
HTD 5M / 800	160	o	o
HTD 5M / 835	167	o	o
HTD 5M / 840	168	o	o
HTD 5M / 860	172	o	o
HTD 5M / 890	178	o	o
HTD 5M / 900	180	o	o
HTD 5M / 925	185	o	o
HTD 5M / 950	190	o	o
HTD 5M / 1 000	200	o	o
HTD 5M / 1 050	210	o	o
HTD 5M / 1 125	225	o	o
HTD 5M / 1 200	240	o	o
HTD 5M / 1 270	254	o	o
HTD 5M / 1 420	284	o	o
HTD 5M / 1 500	300	o	o
HTD 5M / 1 595	319	o	o
HTD 5M / 1 690	338	o	o
HTD 5M / 2 000	400	o	o

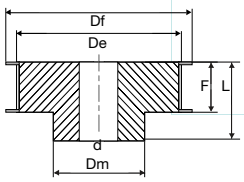
DELIVERY TIMES		
Standard belts	o	4 weeks

BELT ORDERING EXAMPLES			
Designation	Width	Profile / Length	Particular specification
CONTI SYNCHROFORCE timing belt	12	HTD 5M/525	CXP
CONTI SYNCHROTWIN timing belt	9	DHTD 5M/615	CXP

HTD 5M belt scale 1

DHTD 5M belt scale 1





Reference			General data				TYPE HT pulleys with taper hubs								TYPE HP pulleys, rough bore					
Z	Pitch	Belt width	Flanges	De	Df	F	Stock	Version	Hub	Dm	Di	S	P	Mat.	Stock	Version	d	Dm	L	Mat.
12	5M	9	2	17.96	23	14.5									o	1F	4	13	20	St.
12	5M	15	2	17.96	23	20.5									o	1F		13	26	St.
12	5M	25	2	17.96	23	30.5									o	1F		13	36	St.
14	5M	9	2	21.14	25	14.5									o	1F	6	13	20	St.
14	5M	15	2	21.14	25	20.5									o	1F	6	13	26	St.
14	5M	25	2	21.14	25	30.5									o	1F	6	13	36	St.
15	5M	9	2	22.73	28	14.5									o	1F	6	16	20	St.
15	5M	15	2	22.73	28	20.5									o	1F	6	16	26	St.
15	5M	25	2	22.73	28	30.5									o	1F	6	16	36	St.
16	5M	9	2	24.32	28	14.5									o	1F	6	16.5	20	St.
16	5M	15	2	24.32	28	20.5									o	1F	6	16.5	26	St.
16	5M	25	2	24.32	28	30.5									o	1F	6	16.5	36	St.
18	5M	9	2	27.51	32	14.5									o	1F	6	20	20	St.
18	5M	15	2	27.51	32	20.5									o	1F	6	20	26	St.
18	5M	25	2	27.51	32	30.5									o	1F	6	20	36	St.
20	5M	9	2	30.69	36	14.5									o	1F	6	23	22.5	St.
20	5M	15	2	30.69	36	20.5									o	1F	6	23	26	St.
20	5M	25	2	30.69	36	30.5									o	1F	6	23	36	St.
21	5M	9	2	32.28	38	14.5									o	1F	6	24	22.5	St.
21	5M	15	2	32.28	38	20.5									o	1F	6	24	26	St.
21	5M	25	2	32.28	38	30.5									o	1F	6	24	38	St.
22	5M	9	2	33.87	39	14.5									o	1F	6	25.5	22.5	St.
22	5M	15	2	33.87	39	20.5									o	1F	6	25.5	26	St.
22	5M	25	2	33.87	39	30.5									o	1F	6	25.5	38	St.
24	5M	9	2	37.06	42	14.5									o	1F	6	27	22.5	St.
24	5M	15	2	37.06	42	20.5									o	1F	6	27	28	St.
24	5M	25	2	37.06	42	30.5									o	1F	6	27	38	St.
26	5M	9	2	40.24	44	14.5									o	1F	6	30	22.5	St.
26	5M	15	2	40.24	44	20.5									o	1F	6	30	28	St.
26	5M	25	2	40.24	44	30.5									o	1F	6	30	38	St.
28	5M	9	2	43.42	48	14.5									o	1F	6	30.5	22.5	St.
28	5M	15	2	43.42	48	20.5									o	1F	6	30.5	28	St.
28	5M	25	2	43.42	48	30.5									o	1F	6	30.5	38	St.
30	5M	9	2	46.60	51	14.5									o	1F	6	35	22.5	St.
30	5M	15	2	46.60	51	20.5									o	1F	6	35	28	St.
30	5M	25	2	46.60	51	30.5									o	1F	6	35	38	St.
32	5M	9	2	49.79	54	14.5									o	1F	8	38	22.5	St.
32	5M	15	2	49.79	54	20.5									o	1F	8	38	28	St.
32	5M	25	2	49.79	54	30.5									o	1F	8	38	38	St.
34	5M	15	2	52.97	57	22	o	1F	1008			22		St.						
36	5M	9	2	56.16	60	14.5									o	1F	8	38	22.5	St.
36	5M	15	2	56.16	60	20.5									o	1F	8	38	28	St.
36	5M	15	2	56.16	60	22	o	1F	1108			22		St.						
36	5M	25	2	56.16	60	30.5									o	1F	8	38	38	St.
38	5M	15	2	59.34	66	22	o	1F	1108			22		St.						
40	5M	9	2	62.52	71	14.5									o	1F	8	38	22.5	St.
40	5M	15	2	62.52	71	20.5									o	1F	8	38	28	St.
40	5M	15	2	62.52	70	22	o	1F	1108			22		St.						
40	5M	25	2	62.52	71	30.5									o	1F	8	38	38	St.
44	5M	9		68.89		14.5									o	3	8	38	25.5	Al.
44	5M	15		68.89		20.5									o	3	8	38	30	Al.
44	5M	15	2	68.89	75	22	o	1F	1108			22		St.						
44	5M	25		68.89		30.5									o	3	8	38	40	Al.
48	5M	9		75.25		14.5									o	3	8	45	25.5	Al.
48	5M	15		75.25		20.5									o	3	8	38	30	Al.
48	5M	15	2	75.25	83	22	o	5F	1210	59		25	3	St.						
48	5M	25		75.25		30.5									o	3	8	38	40	Al.
56	5M	15	2	87.39	93	22	o	5F	1210	70		25	3	St.						
60	5M	9		94.35		14.5									o	3	8	45	25.5	Al.
60	5M	15		94.35		20.5									o	3	8	50	30	Al.
60	5M	25		94.35		30.5									o	3	8	50	40	Al.
64	5M	15	2	100.72	106	22	o	5F	1210	80		25	3	St.						
72	5M	9		113.45		14.5									o	3	8	45	25.5	Al.
72	5M	15		113.45		20.5									o	3	8	50	30	Al.
72	5M	15		113.45		22	o	5	1610	92		25	3	St.						
72	5M	25		113.45		30.5									o	3	8	50	40	Al.
80	5M	15		126.18		22	o	5	1610	92		25	3	St.						
90	5M	15		142.1		22	o	5	1610	92		25	3	St.						
112	5M	15		177.11		20	o	5	2012	110		32	12	St.						
136	5M	15		215.31		20	o	13	2012	110	199	32	6	St.						

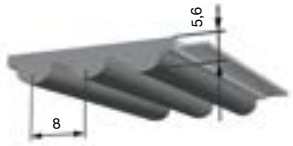
St. : Steel - Al. : aluminium

PULLEY ORDERING EXAMPLES						
Designation	Type	Reference	Flanges	Version	Hub/Bore	Material
Aratron tooth pulley	HP	28-5M-15	2	1F	d : 12H7	St.
Aratron tooth pulley	HT	56- 5M -15	F	5F	1210	St.

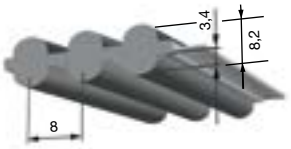
DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in factory stock	o	2 weeks
Special pulleys		*page 39*

TIMING BELTS

CONTI® SYNCHROFORCE® HTD 8M



CONTI® SYNCHROTWIN® DHTD 8M



$P_{(N)}$ transmittable for belt of 20 mm width

CONTI® SYNCHROFORCE CXP

Speed of small pulley n = rpm	No. of teeth on small pulley															
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72
	Pitch diameter d_0 in mm															
	56.02	61.12	66.12	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	132.42	142.60	162.97	183.35
10	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.18	0.20	0.23	0.25	0.30	0.35
40	0.25	0.28	0.31	0.34	0.38	0.41	0.45	0.48	0.52	0.55	0.63	0.71	0.79	0.87	1.04	1.22
50	0.30	0.34	0.38	0.42	0.46	0.50	0.54	0.59	0.63	0.68	0.77	0.87	0.96	1.07	1.28	1.49
100	0.56	0.63	0.71	0.78	0.86	0.93	1.01	1.10	1.18	1.26	1.44	1.61	1.80	1.99	2.38	2.79
200	1.05	1.18	1.32	1.45	1.60	1.74	1.89	2.04	2.19	2.35	2.67	3.01	3.35	3.70	4.43	5.19
300	1.51	1.70	1.89	2.09	2.30	2.51	2.72	2.94	3.16	3.38	3.85	4.33	4.82	5.32	6.37	7.47
400	1.96	2.20	2.45	2.71	2.97	3.24	3.52	3.80	4.09	4.38	4.98	5.60	6.24	6.89	8.25	9.67
500	2.39	2.69	3.00	3.31	3.63	3.96	4.30	4.65	5.00	5.35	6.09	6.84	7.62	8.42	10.08	11.81
600	2.82	3.17	3.53	3.90	4.28	4.67	5.07	5.47	5.88	6.31	7.17	8.06	8.98	9.92	11.87	13.91
700	**3.24**	**3.64**	**4.05**	**4.48**	**4.92**	**5.36**	**5.82**	**6.28**	**6.76**	**7.24**	**8.23**	**9.26**	**10.31**	**11.39**	**13.64**	**15.98**
800	3.65	4.10	4.57	5.05	5.54	6.05	6.56	7.08	7.62	8.16	9.28	10.44	11.62	12.84	15.37	18.01
950	**4.26**	**4.79**	**5.33**	**5.89**	**6.47**	**7.05**	**7.65**	**8.27**	**8.89**	**9.53**	**10.83**	**12.18**	**13.56**	**14.99**	**17.94**	**21.02**
1000	4.46	5.01	5.58	6.17	6.77	7.39	8.01	8.66	9.31	9.97	11.34	12.75	14.20	15.69	18.78	22.01
1200	5.25	5.91	6.58	7.27	7.98	8.70	9.44	10.19	10.96	11.75	13.36	15.02	16.73	18.48	22.12	25.92
1450	**6.23**	**7.00**	**7.80**	**8.61**	**9.45**	**10.31**	**11.19**	**12.08**	**12.99**	**13.92**	**15.83**	**17.80**	**19.82**	**21.90**	**26.22**	**30.72**
1600	6.80	7.65	8.52	9.41	10.33	11.26	12.22	13.20	14.20	15.21	17.29	19.44	21.66	23.93	28.64	33.56
1800	7.56	8.50	9.47	10.46	11.48	12.52	13.58	14.67	15.78	16.91	19.22	21.61	24.07	26.60	31.84	37.31
2000	8.31	9.34	10.40	11.50	12.62	13.76	14.93	16.13	17.34	18.58	21.13	23.76	26.46	29.24	34.99	41.01
2200	9.05	10.18	11.33	12.52	13.74	14.99	16.27	17.57	18.89	20.24	23.02	25.88	28.82	31.85	38.12	44.67
2500	10.15	11.41	12.71	14.05	15.41	16.81	18.24	19.70	21.19	22.71	25.82	29.02	32.33	35.72	42.76	50.10
2850	**11.42**	**12.84**	**14.30**	**15.80**	**17.34**	**18.91**	**20.52**	**22.16**	**23.84**	**25.54**	**29.04**	**32.65**	**36.36**	**40.18**	**48.09**	**56.36**
3000	11.96	13.44	14.97	16.54	18.16	19.80	21.49	23.21	24.96	26.74	30.41	34.19	38.08	42.07	50.36	59.01
3500	13.73	15.44	17.20	19.00	20.85	22.74	24.68	26.65	28.66	30.71	34.92	39.26	43.73	48.32	57.83	67.77
4000	15.48	17.41	19.39	21.42	23.51	25.64	27.82	30.05	32.31	34.63	39.37	44.26	49.30	54.47	65.20	76.41
4500	17.21	19.35	21.55	23.81	26.13	28.50	30.92	33.40	35.92	38.49	43.76	49.20	54.80	60.55	72.47	84.93
5000	18.91	21.27	23.69	26.17	28.72	31.33	33.99	36.71	39.48	42.31	48.10	54.08	60.23	66.55	79.66	93.35
5500	20.60	23.17	25.80	28.51	31.28	34.12	37.03	39.99	43.01	46.08	52.40	58.91	65.61	72.50	86.78	101.69
6000	22.28	25.05	27.90	30.83	33.83	36.90	40.04	43.24	46.50	49.83	56.65	63.69	70.94	78.39	93.83	109.95

CONTI® SYNCHROFORCE CXA

Speed of small pulley n = rpm	No. of teeth on small pulley															
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72
	Pitch diameter d_0 in mm															
	56.02	61.12	66.12	71.30	76.39	81.49	86.58	91.67	96.77	101.86	112.05	122.23	132.42	142.60	162.97	183.35
20	0.23	0.26	0.29	0.33	0.36	0.40	0.43	0.47	0.50	0.53	0.60	0.67	0.73	0.78	0.87	0.93
50	0.52	0.60	0.67	0.75	0.83	0.91	1.00	1.08	1.16	1.24	1.40	1.55	1.69	1.82	2.04	2.17
100	0.96	1.11	1.25	1.40	1.55	1.71	1.86	2.02	2.17	2.33	2.63	2.92	3.19	3.43	3.84	4.08
200	1.77	2.03	2.31	2.59	2.87	3.16	3.45	3.74	4.03	4.32	4.88	5.42	5.92	6.38	7.12	7.57
300	2.50	2.88	3.27	3.67	4.08	4.49	4.91	5.32	5.74	6.15	6.95	7.71	8.42	9.07	10.10	10.72
400	3.19	3.68	4.18	4.70	5.22	5.74	6.27	6.80	7.33	7.85	8.87	9.84	10.74	11.55	12.85	13.59
500	3.84	4.43	5.04	5.66	6.29	6.93	7.56	8.20	8.84	9.46	10.68	11.84	12.90	13.86	15.37	16.22
600	4.46	5.15	5.86	6.58	7.31	8.05	8.79	9.52	10.26	10.98	12.38	13.71	14.92	16.01	17.70	18.61
700	**5.05**	**5.83**	**6.63**	**7.45**	**8.28**	**9.11**	**9.95**	**10.78**	**11.60**	**12.41**	**13.98**	**15.46**	**16.81**	**18.01**	**19.84**	**20.79**
800	5.61	6.49	7.38	8.29	9.21	10.13	11.05	11.97	12.88	13.77	15.49	17.10	18.57	19.86	21.81	22.76
950	**6.42**	**7.42**	**8.44**	**9.47**	**10.52**	**11.57**	**12.61**	**13.65**	**14.67**	**15.67**	**17.59**	**19.38**	**20.98**	**22.38**	**24.44**	**25.34**
1000	6.68	7.72	8.78	9.85	10.94	12.02	13.11	14.18	15.23	16.27	18.25	20.09	21.73	23.16	25.23	26.11
1200	7.66	8.85	10.06	11.29	12.52	13.75	14.97	16.17	17.35	18.50	20.69	22.69	24.45	25.95	28.01	28.69
1450	**8.80**	**10.16**	**11.53**	**12.92**	**14.31**	**15.69**	**17.05**	**18.39**	**19.69**	**20.95**	**23.31**	**25.43**	**27.26**	**28.75**	**30.63**	**30.89**
1600	9.43	10.88	12.35	13.82	15.29	16.75	18.18	19.58	20.93	22.24	24.67	26.82	28.63	30.08	31.75	31.69
1800	10.22	11.78	13.36	14.93	16.50	18.04	19.55	21.01	22.42	23.76	26.24	28.38	30.13	31.46	32.75	32.14
2000	10.95	12.62	14.29	15.95	17.59	19.20	20.76	22.27	23.71	25.07	27.54	29.62	31.25	32.40	33.18	31.92
2200	11.63	13.39	15.14	16.87	18.58	20.23	21.83	23.36	24.81	26.17	28.59	30.55	32.00	32.91	33.07	31.04
2500	12.56	14.43	16.28	18.09	19.86	21.56	23.18	24.71	26.13	27.44	29.68	31.36	32.44	32.89	31.89	
2850	**13.52**	**15.48**	**17.41**	**19.28**	**21.07**	**22.78**	**24.37**	**25.84**	**27.18**	**28.37**	**30.27**	**31.48**	**31.96**	**31.70**		
3000	13.88	15.88	17.83	19.71	21.51	23.19	24.76	26.19	27.47	28.58	30.29	31.25	31.43			
3500	14.93	17.00	18.97	20.84	22.57	24.15	25.55	26.76	27.77	28.56	29.44	29.36				
4000	15.74	17.80	19.74	21.51	23.09	24.46	25.59	26.47	27.08	27.41						
4500	16.31	18.32	20.14	21.74	23.08	24.15	24.90	25.34	25.43							
5000	16.66	18.55	20.20	21.55	22.57	23.23	23.52									
6000	16.73	18.23	19.32	19.96												

Width factor c_6

Belt widths	20	30	40	50	65	85
Factor c_6	1	1.58	2.16	2.73	3.6	4.76

Tangential force transmittable by the tension member

Belt widths	b (mm)	20	30	40	50	65	85
Courroie CONTI® SYNCHROFORCE HTD 8M CXP							
F_N Glass fibre tension member	(N)	1150	1800	2450	3100	4000	5300
Weight	(kg/m)	0.114	0.171	0.228	0.285	0.37	0.485
Courroie CONTI® SYNCHROFORCE HTD 8M CXA							
F_N Kevlar tension member	(N)	1900	2900	3900	4900	6300	8300
Weight	(kg/m)	0.083	0.124	0.165	0.206	0.267	0.351

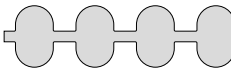
DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 weeks

Length	No. of teeth	HTD 8M CXP	HTD 8M CXA	DHTD 8M CXP	STD 8M CXP	STD 8M CXA	DSTD 8M CXP
288	36	○	○				
304	38	○	○				
352	44	○	○				
376	47	○	○				
400	50		○				
416	52	○	○				
424	53	○	○				
440	55				○	○	
472	59	○	○				
480	60	○	○		○	○	
528	66				○	○	
560	70	○	○		○	○	
600	75	○	○	○	○	○	○
624	78	○	○	○			
632	79				○	○	
640	80	○	○	○	○	○	○
656	82	○	○		○	○	○
672	84				○	○	
688	86				○	○	
696	87				○	○	
712	89				○	○	
720	90	○	○	○	○	○	○
728	91				○	○	
736	92				○	○	
760	95				○	○	○
768	96				○	○	
776	97	○	○	○			
784	98	○	○	○	○	○	
792	99				○	○	
800	100	○	○	○	○	○	○
824	103				○	○	
848	106				○	○	○
864	108				○	○	○
880	110	○	○	○	○	○	○
912	114	○	○	○	○	○	
920	115	○	○	○	○	○	
944	118				○	○	
960	120	○	○	○	○	○	○
992	124	○			○	○	
1000	125				○	○	○
1 008	126	○			○		
1 040	130	○	○	○			
1 056	132				○	○	○
1 064	133				○	○	
1 072	134				○	○	○
1 120	140	○	○	○	○	○	○
1 136	142				○	○	○
1 160	145	○	○		○	○	○
1 168	146				○	○	○
1 176	147				○	○	○
1 184	148				○	○	○
1 200	150	○	○	○	○	○	○
1 216	152				○	○	○
1 240	155				○	○	○
1 256	157				○	○	○
1 264	158				○	○	○
1 280	160	○	○	○	○	○	○
1 296	162				○	○	○
1 304	163	○	○	○	○	○	○
1 312	164				○	○	○
1 328	166	○	○	○			
1 344	168				○	○	○
1 360	170	○	○	○			
1 368	171				○	○	○
1 400	175				○	○	○
1 408	176				○	○	○
1 424	178	○	○	○			
1 440	180	○	○	○	○	○	○
1 480	185				○	○	○
1 512	189				○	○	○
1 520	190	○	○				
1 552	194				○	○	○
1 600	200	○	○	○	○	○	○
1 624	203				○	○	○
1 760	220	○	○	○	○	○	○
1 776	222				○	○	○
1 800	225	○	○	○	○	○	○
1 816	227				○	○	
1 912	239				○	○	○
2 000	250	○	○	○			○
2 240	280				○	○	○
2 248	281	○	○	○		○	
2 392	299				○	○	○
2 400	300	○	○	○			
2 800	350	○	○	○	○	○	
2 848	356				○	○	
3 008	376	○	○				
3 408	426	○	○				
3 808	476	○	○				

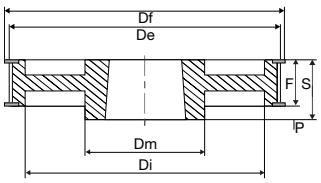
SD: single sided. DL: double sided.

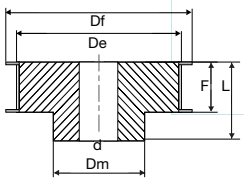
BELT ORDERING EXAMPLES			
Designation	Width	Profile / Length	Particular specification
CONTI SYNCHROFORCE timing belt	30	HTD 8M/1200	CXA
CONTI SYNCHROTWIN timing belt	50	DSTD S8M/1440	CXP

HTD 8M belt scale 1



DHTD 8M belt scale 1





Reference			General data				TYPE HT pulleys with taper hubs								TYPE HP pulleys. rough bore					
Z	Pitch	Belt width	Flanges	De	Df	F	Stock	Version	Hub	Dm	Di	S	P	Mat.	stock	Version	d	Dm	L	Mat.
22	8M	20	2	54.65	60	28	o	2F	1008		37	22	6	St.	o	1F	12	43	38	St.
22	8M	30	2	54.65	60	38	o	2F	1008		37	22	16	St.	o	1F	12	43	48	St.
22	8M	50	2	54.65	60	60									o	1F		43	70	St.
22	8M	85	2	54.65	60	95									o	1F		43	105	St.
24	8M	20	2	59.75	66	28	o	2F	1108		44	22	6	St.	o	1F	12	45	38	St.
24	8M	30	2	59.75	66	38	o	2F	1108		44	22	16	St.	o	1F	12	45	48	St.
24	8M	50	2	59.75	66	60									o	1F		45	70	St.
24	8M	85	2	59.75	66	95									o	1F		45	105	St.
26	8M	20	2	64.85	70	28	o	2F	1108		45	22	6	St.	o	1F	12	48	38	St.
26	8M	30	2	64.85	70	38	o	2F	1108		44	22	16	St.	o	1F	12	48	48	St.
26	8M	50	2	64.85	70	60									o	1F		48	70	St.
26	8M	85	2	64.85	70	95									o	1F		48	105	St.
28	8M	20	2	70.08	75	28	o	2F	1108		50	22	6	St.	o	1F	15	50	38	St.
28	8M	30	2	70.08	75	38	o	2F	1210		50	25	13	St.	o	1F	15	50	48	St.
28	8M	50	2	70.08	75	60	o	2F	1210		50	25	35	St.	o	1F		50	70	St.
28	8M	85	2	70.08	75	95									o	1F		50	105	St.
30	8M	20	2	75.13	83	28	o	2F	1108		58	22	6	St.	o	1F	15	55	38	St.
30	8M	30	2	75.13	83	38	o	1F	1615			38		St.	o	1F	15	55	48	St.
30	8M	50	2	75.13	83	60	o	2F	1615		58	38	22	St.	o	1F		55	70	St.
30	8M	85	2	75.13	83	95									o	1F		55	105	St.
32	8M	20	2	80.16	87	28	o	2F	1610		63	25	3	St.	o	1F	15	60	38	St.
32	8M	30	2	80.16	87	38	o	1F	1615			38		St.	o	1F	15	60	48	St.
32	8M	50	2	80.16	87	60	o	2F	1615		63	38	22	St.	o	1F		60	70	St.
32	8M	85	2	80.16	87	95									o	1F		60	105	St.
34	8M	20	2	85.22	91	28	o	2F	1610		64	25	3	St.	o	1F	15	66	38	St.
34	8M	30	2	85.22	91	38	o	1F	1615			38		St.	o	1F	15	66	48	St.
34	8M	50	2	85.22	91	60	o	2F	1615		65	38	22	St.	o	1F		66	70	St.
34	8M	85	2	85.22	91	95	o	3F	1615		65	38	28.5	St.	o	1F		66	105	St.
36	8M	20	2	90.30	97	28	o	2F	1610		68	25	3	St.	o	1F	15	70	38	St.
36	8M	30	2	90.30	97	38	o	1F	1615			38		St.	o	1F	15	70	48	St.
36	8M	50	2	90.30	97	60	o	2F	1615		68	38	22	St.	o	1F		70	70	St.
36	8M	85	2	90.30	97	95	o	3F	1615		68	38	28.5	St.	o	1F		70	105	St.
38	8M	20	2	95.39	102	28	o	2F	1610		72	25	3	St.	o	1F	15	75	38	St.
38	8M	30	2	95.39	102	38	o	1F	1615			38		St.	o	1F	15	75	48	St.
38	8M	50	2	95.39	102	60	o	2F	1615		72	38	22	St.	o	1F		75	70	St.
38	8M	85	2	95.39	102	95	o	3F	1615		72	38	28.5	St.	o	1F		75	105	St.
40	8M	20	2	100.49	106	28	o	2F	1610		76	25	3	St.	o	1F	15	75	38	St.
40	8M	30	2	100.49	106	38	o	1F	1615			38		St.	o	1F	15	75	48	St.
40	8M	50	2	100.49	106	60	o	3F	2012		80	32	14	St.	o	1F		75	70	St.
40	8M	85	2	100.49	106	95	o	3F	2012		80	32	31.5	St.	o	1F		75	105	St.
44	8M	20	2	110.67	120	28	o	5F	2012	92		32	4	St.	o	1F	15	75	38	St.
44	8M	30	2	110.67	120	38	o	2F	2012		86	32	6	St.	o	1F	15	75	48	St.
44	8M	50	2	110.67	120	60	o	3F	2012		86	32	14	St.	o	1F		75	70	St.
44	8M	85	2	110.67	120	95	o	3F	2012		86	32	31.5	St.	o	1F		75	105	St.
48	8M	20	2	120.86	128	28	o	5F	2012	96		32	4	St.	o	1F	15	75	38	St.
48	8M	30	2	120.86	128	38	o	2F	2012		90	32	6	St.	o	1F	15	75	48	St.
48	8M	50	2	120.86	128	60	o	3F	2012		95	32	14	St.	o	1F		80	70	St.
48	8M	85	2	120.86	128	95	o	3F	2517		97	45	25	St.	o	1F		80	105	St.
56	8M	20	2	141.23	150	28	o	5F	2012	110		32	4	St.	o	2F	15	80	38	St.
56	8M	30	2	141.23	150	38	o	2F	2012		110	32	6	St.	o	2F	15	90	48	St.
56	8M	50	2	141.23	150	60	o	3F	2517		116	45	7.5	St.	o	6F	18	90	60	St.
56	8M	85	2	141.23	150	95	o	3F	2517		116	45	25	St.	o	1F	20	90	105	St.
64	8M	20	2	161.60	168	28	o	6F	2012	110	137	32	4	St.	o	2F	15	80	38	St.
64	8M	30	2	161.60	168	38	o	5F	2517	125		45	7	St.	o	2F	15	90	48	St.
64	8M	50	2	161.60	168	60	o	3F	2517		136	45	7.5	St.	o	6F	18	100	60	St.
64	8M	85	2	161.60	168	95	o	3F	2517		136	45	25	St.	o	6F	20	100	95	St.
72	8M	20	2	181.97	192	28	o	6F	2012	110	158	32	4	C.I.	o	2F	15	80	38	St.
72	8M	30	2	181.97	192	38	o	6F	2517	125	158	45	7	C.I.	o	2F	15	95	48	St.
72	8M	50	2	181.97	192	60	o	10F	2517	125	158	45	7.5	C.I.	o	6F	18	100	60	St.
72	8M	85	2	181.97	192	95	o	3F	3020		150	51	22	C.I.	o	6F	20	100	95	St.
80	8M	20		202.35		28	o	7	2012	110	180	32	4	C.I.	o	3	15	90	38	C.I.
80	8M	30		202.35		38	o	7	2517	125	180	45	7	C.I.	o	3	15	100	48	C.I.
80	8M	50		202.35		60	o	4	3020		180	51	4.5	C.I.	o	7	18	110	60	C.I.
80	8M	85		202.35		95	o	4	3020		180	51	22	C.I.	o	5	20	180	95	C.I.
90	8M	20		227.81		28	o	7	2012	110	204	32	4	C.I.	o	3	15	90	38	C.I.
90	8M	30		227.81		38	o	7	2517	125	204	45	7	C.I.	o	3	15	100	48	C.I.
90	8M	50		227.81		60	o	11	3020	160	204	51	4.5	C.I.	o	7	18	110	60	C.I.
90	8M	85		227.81		95	o	4	3020		204	51	22	C.I.	o	5	20	204	95	C.I.
112	8M	20		283.83		28									o	4	18	90	38	C.I.
112	8M	30		283.83		38	o	7	2517	125	254	45	7	C.I.	o	4	18	100	48	C.I.
112	8M	50		283.83		60	o	11	3020	170	254	51	4.5	C.I.	o	5	18	110	60	C.I.
112	8M	85		283.83		95	o	11	3020	170	254	51	22	C.I.	o	5	24	254	95	C.I.
144	8M	20		365.32		28	o	13	2517	125	336	45	4	C.I.	o	4	20	90	38	C.I.
144	8M	30		365.32		38	o	8	2517	125	336	45	7	C.I.	o	4	20	100	48	C.I.
144	8M	50		365.32		60	o	12	3020	170	336	51	4.5	C.I.	o	5	20	110	60	C.I.
144	8M	85		365.32		95	o	11	3525	198	336	65	15	C.I.	o	5	24	336	95	C.I.
168	8M	20		426.44		28									o	4	20	100	38	C.I.
168	8M	30		426.44		38									o	4	20	100	48	C.I.
168	8M	50		426.44		60	o	13	3525	198	395	65	2.5	C.I.	o	5	20	120	60	C.I.
168	8M	85		426.44		95	o	12	3525	198	395	65	15	C.I.	o	5	24	400	95	C.I.
192	8M	20		487.55		28									o	4	20	100	38	C.I.
192	8M	30		487.55		38									o	4	20	100	48	C.I.
192	8M	50		487.55		60	o	13	3525	198	455	65	2.5	C.I.	o	5	20	190	60	C.I.
192	8M	85		487.55		95	o	12	3525	198	455	65	15	C.I.	o	5	24	460	95	C.I.

St. : Steel - C.I. : Grey cast iron

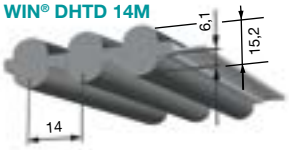
PULLEY ORDERING EXAMPLES						
Designation	Type	Reference	Flanges	Version	Hub/Bore	Material
Aratron tooth pulley	HT	72-8M 30	F	6F	2517	St
Aratron tooth pulley	HP	90-8M 50		7	d : 18H7	C.I.

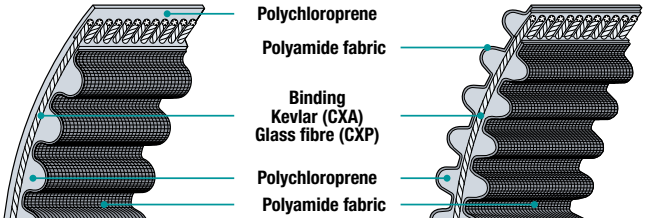
DELIVERY TIMES		
Pulleys in factory stock	o	2 weeks
Special pulleys		page 41

TIMING BELTS

CONTI® SYNCHROFORCE® HTD 14M

CONTI® SYNCHROTWIN® DHTD 14M





HTD 14M belt

DHTD 14M belt

$P_{(N)}$ transmittable for belt of 40 mm width

CONTI® SYNCHROFORCE CXP

Speed of small pulley n = rpm	No. of teeth on small pulley															
	28	29	30	32	34	36	38	40	42	44	46	48	52	56	64	72
	Pitch diameter d_0 in mm															
	124.78	129.23	133.69	142.60	151.52	160.43	169.34	178.25	187.17	196.08	204.99	213.90	231.73	249.55	285.21	320.86
10	0.49	0.52	0.55	0.60	0.66	0.71	0.76	0.81	0.86	0.91	0.96	1.01	1.11	1.21	1.42	1.62
20	0.93	1.00	1.05	1.16	1.26	1.37	1.46	1.56	1.66	1.76	1.86	1.95	2.15	2.34	2.73	3.12
40	1.78	1.90	2.01	2.22	2.42	2.62	2.81	3.00	3.19	3.37	3.56	3.75	4.12	4.50	5.24	6.00
60	2.59	2.77	2.93	3.24	3.53	3.82	4.10	4.38	4.65	4.93	5.20	5.48	6.02	6.57	7.66	8.76
100	4.15	4.43	4.70	5.20	5.67	6.13	6.59	7.03	7.48	7.92	8.36	8.80	9.67	10.55	12.29	14.04
200	7.80	8.34	8.85	9.80	10.70	11.57	12.42	13.26	14.10	14.93	15.75	16.57	18.20	19.82	23.04	26.24
300	11.21	12.00	12.73	14.10	15.40	16.65	17.87	19.07	20.26	21.44	22.61	23.77	26.07	28.36	32.87	37.31
400	14.44	15.46	16.41	18.18	19.84	21.45	23.01	24.54	26.06	27.55	29.04	30.50	33.41	36.28	41.91	47.41
500	17.52	18.77	19.92	22.06	24.07	26.00	27.88	29.72	31.53	33.31	35.08	36.82	40.27	43.65	50.24	56.62
600	20.47	21.93	23.27	25.76	28.10	30.33	32.50	34.62	36.70	38.75	40.77	42.76	46.67	50.50	57.90	64.98
700	**23.30**	**24.96**	**26.49**	**29.31**	**31.94**	**34.46**	**36.90**	**39.27**	**41.60**	**43.88**	**46.13**	**48.33**	**52.66**	**56.86**	**64.92**	**72.53**
800	26.01	27.86	29.56	32.70	35.61	38.39	41.08	43.68	46.23	48.72	51.16	53.56	58.23	62.75	71.32	79.30
950	**29.89**	**32.01**	**33.95**	**37.51**	**40.81**	**43.95**	**46.95**	**49.87**	**52.70**	**55.45**	**58.14**	**60.77**	**65.86**	**70.72**	**79.80**	**88.03**
1000	31.13	33.33	35.35	39.05	42.47	45.71	48.81	51.82	54.73	57.56	60.32	63.02	68.21	73.16	82.34	90.57
1200	35.85	38.37	40.67	44.86	48.71	52.32	55.77	59.08	62.26	65.34	68.32	71.20	76.69	81.82	91.05	98.91
1450	**41.24**	**44.11**	**46.71**	**51.41**	**55.68**	**59.66**	**63.42**	**66.99**	**70.39**	**73.64**	**76.74**	**79.71**	**85.25**	**90.28**	**98.81**	**105.32**
1600	44.22	47.27	50.02	54.98	59.45	63.59	67.47	71.13	74.59	77.88	80.99	83.93	89.34	94.12	101.84	107.09
1800	47.89	51.15	54.09	59.32	64.00	68.29	72.26	75.97	79.44	82.69	85.72	88.55	93.59	97.85	104.01	107.05
2000	51.24	54.69	57.76	63.21	68.02	72.38	76.38	80.06	83.45	86.57	89.42	92.03	96.50	99.99	104.09	104.32
2200	54.28	57.87	61.06	66.65	71.53	75.89	79.83	83.39	86.62	89.52	92.11	94.40	98.08	100.58	102.10	98.93
2400	57.02	60.72	63.98	69.65	74.53	78.82	82.62	86.00	88.97	91.57	93.80	95.67	98.35	99.64	98.07	90.92
2600	59.46	63.24	66.55	72.23	77.03	81.18	84.78	87.88	90.52	92.72	94.50	95.85	97.34	97.19	92.02	
2850	**62.10**	**65.94**	**69.26**	**74.86**	**79.48**	**83.35**	**86.58**	**89.23**	**91.34**	**92.92**	**94.01**	**94.59**	**94.28**	**92.02**	**81.65**	
3000	63.47	67.32	70.62	76.13	80.59	84.23	87.19	89.51	91.24	92.39	92.99	93.04	91.50	87.80		
3500	66.91	70.65	73.77	78.71	82.36	84.99	86.73	87.65	87.77	87.13	85.75	83.63				
4000	68.65	72.10	74.84	78.81	81.25	82.44	82.51	81.54	79.56	76.60	72.68					

CONTI® SYNCHROFORCE CXA

Speed of small pulley n = rpm	No. of teeth on small pulley															
	22	24	26	28	30	32	34	36	38	40	44	48	52	56	64	72
	Pitch diameter d_0 in mm															
	124.78	129.23	133.69	142.60	151.52	160.43	169.34	178.25	187.17	196.08	204.99	213.90	231.73	249.55	285.21	320.86
20	1.68	1.76	1.84	2.01	2.17	2.34	2.51	2.68	2.85	3.03	3.21	3.39	3.75	4.12	4.87	5.64
40	3.14	3.30	3.45	3.76	4.07	4.39	4.71	5.04	5.37	5.70	6.04	6.38	7.07	7.77	9.20	10.66
60	4.52	4.74	4.96	5.41	5.86	6.33	6.79	7.27	7.75	8.23	8.72	9.21	10.21	11.22	13.28	15.39
100	7.10	7.45	7.80	8.52	9.24	9.97	10.71	11.46	12.22	12.98	13.75	14.53	16.11	17.70	20.95	24.26
200	12.96	13.60	14.25	15.56	16.89	18.23	19.58	20.95	22.33	23.72	25.12	26.53	29.38	32.25	38.05	43.92
300	18.24	19.15	20.06	21.90	23.76	25.63	27.53	29.44	31.36	33.29	35.23	37.17	41.09	45.02	52.91	60.78
400	23.10	24.24	25.39	27.70	30.04	32.39	34.76	37.13	39.52	41.92	44.32	46.72	51.53	56.33	65.87	75.26
500	27.59	28.95	30.31	33.05	35.81	38.58	41.37	44.16	46.95	49.74	52.53	55.31	60.85	66.34	77.13	87.58
600	31.77	33.33	34.88	38.00	41.14	44.28	47.43	50.57	53.70	56.82	59.93	63.02	69.14	75.16	86.82	97.88
700	**35.68**	**37.40**	**39.13**	**42.59**	**46.06**	**49.52**	**52.97**	**56.41**	**59.83**	**63.22**	**66.58**	**69.91**	**76.46**	**82.84**	**95.00**	**106.25**
800	39.32	41.20	43.08	46.84	50.60	54.33	58.04	61.72	65.37	68.97	72.52	76.02	82.86	89.44	101.74	112.76
950	**44.32**	**46.41**	**48.49**	**52.63**	**56.73**	**60.79**	**64.80**	**68.75**	**72.63**	**76.44**	**80.16**	**83.80**	**90.80**	**97.40**	**109.27**	**119.17**
1000	45.88	48.02	50.16	54.41	58.61	62.76	66.84	70.85	74.78	78.63	82.38	86.04	93.03	99.56	111.10	120.43
1200	51.57	53.90	56.22	60.81	65.30	69.69	73.96	78.11	82.12	85.99	89.71	93.26	99.87	105.75	115.18	121.23
1450	**57.54**	**60.04**	**62.49**	**67.30**	**71.94**	**76.40**	**80.66**	**84.71**	**88.54**	**92.14**	**95.49**	**98.59**	**103.98**	**108.25**	**113.18**	**112.95**
1600	60.57	63.11	65.60	70.43	75.05	79.43	83.56	87.42	90.99	94.27	97.24	99.88	104.17	107.05	108.30	
1800	63.97	66.52	69.01	73.77	78.23	82.37	86.18	89.62	92.68	95.36	97.62	99.47	101.84	102.38		
2000	66.691	69.195	71.613	76.173	80.343	84.096	87.409	90.26	92.629	94.497	95.848	96.664	96.635			
2200	68.755	71.158	73.449	77.682	81.421	84.636	87.299	89.387	90.875	91.743	91.97	91.537				

Length	No. of teeth	HTD 14M		DHTD 14M
		CXP	CXA	CXP
HTD 14M / 966	69	o	o	o
HTD 14M / 1 050	75	o	o	
HTD 14M / 1 190	85	o	o	o
HTD 14M / 1 400	100	o	o	o
HTD 14M / 1 610	115	o	o	o
HTD 14M / 1 778	127	o	o	o
HTD 14M / 1 890	135	o	o	o
HTD 14M / 2 100	150	o	o	o
HTD 14M / 2 310	165	o	o	o
HTD 14M / 2 450	175	o	o	
HTD 14M / 2 590	185	o	o	
HTD 14M / 2 800	200	o	o	
HTD 14M / 3 150	225	o	o	
HTD 14M / 3 360	240	o	o	
HTD 14M / 3 500	250	o	o	
HTD 14M / 3 668	262	o	o	
HTD 14M / 3 850	275	o	o	
HTD 14M / 4 326	309	o	o	
HTD 14M / 4 578	327	o	o	

Width factor c_6

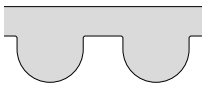
Belt widths	40	55	85	115	170
Factor c_6	1	1.44	2.31	3.18	4.78

Tangential force transmittable by the tension member

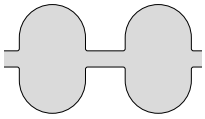
Belt widths	b (mm)	40	55	85	115	170
Courroie CONTI® SYNCHROFORCE HTD 14M CXP						
F_N Glass fibre tension member	(N)	3550	4900	7600	10200	15000
Weight	(kg/m)	0.412	0.566	0.875	1.184	1.75
Courroie CONTI® SYNCHROFORCE HTD 14M CXA						
F_N Kevlar tension member	(N)	5800	8100	12650	17000	25000
Weight	(kg/m)	0.326	0.449	0.693	0.938	1.387

DELIVERY TIMES		
Standard belts	o	4 weeks

BELT ORDERING EXAMPLES			
Designation	Width	Profile / Length	Particular specification
CONTI SYNCHROFORCE timing belt	40	HTD 14M/1890	CXP
CONTI SYNCHROFORCE timing belt	55	HTD 14M/2590	CXA

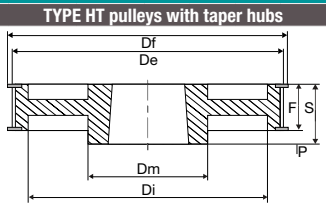


HTD 14M belt scale 1

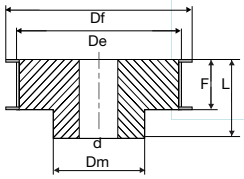


DHTD 14M belt scale 1

TYPE HT pulleys with taper hubs



TYPE HP pulleys. rough bore



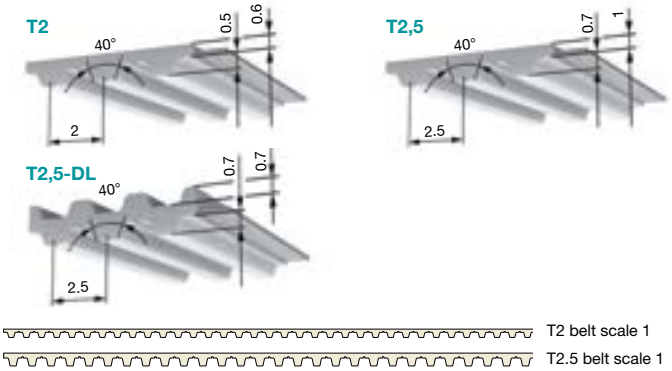
Reference			General data				TYPE HT pulleys with taper hubs								TYPE HP pulleys. rough bore					
Z	Pitch	Belt width	Flanges	De	Df	F	Stock	Version	Hub	Dm	Di	S	P	Mat.	stock	Version	d	Dm	L	Mat.
28	14 M	40	2	122.12	128	54	o	3F	2012		94	32	11	St.	o	1F	24	100	69	St.
28	14 M	55	2	122.12	128	70	o	3F	2012		94	32	19	St.	o	1F	24	100	85	St.
28	14 M	85	2	122.12	128	102	o	3F	2517		98	45	28.5	St.	o	1F		100	117	St.
28	14 M	115	2	122.12	128	133	o	3F	2517		98	45	44	St.	o	1F		100	148	St.
28	14 M	170	2	122.12	128	187									o	1F		100	202	St.
29	14 M	40	2	126.57	138	54	o	3F	2012		98	32	11	St.	o	1F	24	100	69	St.
29	14 M	55	2	126.57	138	70	o	3F	2012		100	32	19	St.	o	1F	24	100	85	St.
29	14 M	85	2	126.57	138	102	o	3F	2517		100	45	28.5	St.	o	1F		100	117	St.
29	14 M	115	2	126.57	138	133	o	3F	2517		100	45	44	St.	o	1F		100	148	St.
29	14 M	170	2	126.57	138	187									o	1F		100	202	St.
30	14 M	40	2	130.99	138	54	o	3F	2012		98	32	11	St.	o	1F	24	100	69	St.
30	14 M	55	2	130.99	138	70	o	3F	2517		100	45	12.5	St.	o	1F	24	100	85	St.
30	14 M	85	2	130.99	138	102	o	3F	2517		100	45	28.5	St.	o	1F		100	117	St.
30	14 M	115	2	130.99	138	133	o	3F	2517		100	45	44	St.	o	1F		100	148	St.
30	14 M	170	2	130.99	138	187									o	1F		100	202	St.
32	14 M	40	2	139.88	154	54	o	3F	2012		108	32	11	St.	o	1F	24	100	69	St.
32	14 M	55	2	139.88	154	70	o	3F	2517		108	45	12.5	St.	o	1F	24	100	85	St.
32	14 M	85	2	139.88	154	102	o	3F	2517		108	45	28.5	St.	o	1F		100	117	St.
32	14 M	115	2	139.88	154	133	o	3F	2517		108	45	44	St.	o	1F		100	148	St.
32	14 M	170	2	139.88	154	187									o	1F		100	202	St.
34	14 M	40	2	148.79	160	54	o	3F	2517		110	45	4.5	St.	o	1F	24	100	69	St.
34	14 M	55	2	148.79	160	70	o	3F	2517		110	45	12.5	St.	o	1F	24	100	85	St.
34	14 M	85	2	148.79	160	102	o	3F	2517		110	45	28.5	St.	o	1F		100	117	St.
34	14 M	115	2	148.79	160	133	o	3F	2517		110	45	44	St.	o	1F		100	148	St.
34	14 M	170	2	148.79	160	187									o	1F		100	202	St.
36	14 M	40	2	157.68	168	54	o	3F	2517		120	45	4.5	St.	o	1F	24	100	69	St.
36	14 M	55	2	157.68	168	70	o	3F	2517		120	45	12.5	St.	o	1F	24	100	85	St.
36	14 M	85	2	157.68	168	102	o	3F	3020		125	51	25.5	St.	o	1F		100	117	St.
36	14 M	115	2	157.68	168	133	o	3F	3020		125	51	41	St.	o	1F		120	148	St.
36	14 M	170	2	157.68	168	187									o	1F		120	202	St.
38	14 M	40	2	166.60	183	54	o	3F	2517		130	45	4.5	St.	o	1F	24	120	69	St.
38	14 M	55	2	166.60	183	70	o	3F	2517		130	45	12.5	St.	o	1F	24	120	85	St.
38	14 M	85	2	166.60	183	102	o	3F	3020		130	51	25.5	St.	o	1F		120	117	St.
38	14 M	115	2	166.60	183	133	o	3F	3020		130	51	41	St.	o	1F		120	148	St.
38	14 M	170	2	166.60	183	187	o	3F	3030		130	76	55.5	St.	o	1F		135	202	St.
40	14 M	40	2	175.49	188	54	o	3F	2517		138	45	4.5	St.	o	1F	24	120	69	St.
40	14 M	55	2	175.49	188	70	o	3F	2517		138	45	12.5	St.	o	1F	24	120	85	St.
40	14 M	85	2	175.49	188	102	o	3F	3020		138	51	25.5	St.	o	1F		135	117	St.
40	14 M	115	2	175.49	188	133	o	3F	3020		138	51	41	St.	o	1F		135	148	St.
40	14 M	170	2	175.49	188	187	o	3F	3030		138	76	55.5	St.	o	1F		140	202	St.
44	14 M	40	2	193.28	211	54	o	3F	3020		155	51	1.5	St.	o	1F	24	120	69	St.
44	14 M	55	2	193.28	211	70	o	3F	3020		155	51	9.5	St.	o	1F	24	120	85	St.
44	14 M	85	2	193.28	211	102	o	3F	3020		153	51	25.5	St.	o	1F		135	117	St.
44	14 M	115	2	193.28	211	133	o	3F	3030		155	76	28.5	St.	o	1F		140	148	St.
44	14 M	170	2	193.28	211	187	o	3F	3535		155	89	49	St.	o	1F		160	202	St.
48	14 M	40	2	211.11	226	54	o	3F	3020		170	51	1.5	St.	o	2F	24	135	69	St.
48	14 M	55	2	211.11	226	70	o	3F	3020		170	51	9.5	St.	o	6F	24	135	70	St.
48	14 M	85	2	211.11	226	102	o	3F	3020		171	51	25.5	St.	o	1F		150	117	St.
48	14 M	115	2	211.11	226	133	o	3F	3030		170	76	28.5	St.	o	1F		150	148	St.
48	14 M	170	2	211.11	226	187	o	3F	3535		175	89	49	St.	o	1F		160	202	St.
56	14 M	40	2	246.76	256	54	o	3F	3020		208	51	1.5	St.	o	2F	28	135	69	St.
56	14 M	55	2	246.76	256	70	o	3F	3020		208	51	9.5	St.	o	6F	28	135	70	St.
56	14 M	85	2	246.76	256	102	o	3F	3525		210	65	18.5	St.	o	6F	32	150	102	St.
56	14 M	115	2	246.76	256	133	o	3F	3535		210	89	22	St.	o	1F		150	148	St.
56	14 M	170	2	246.76	256	187	o	3F	3535		210	89	49	St.	o	1F		160	202	St.
64	14 M	40	2	282.41	296	54	o	10F	3020	170	240	51	1.5	C.I.	o	2F	28	135	69	St.
64	14 M	55	2	282.41	296	70	o	10F	3020	170	240	51	9.5	St.	o	6F	28	135	70	St.
64	14 M	85	2	282.41	296	102	o	10F	3525	190	240	65	18.5	C.I.	o	6F	32	150	102	St.
64	14 M	115	2	282.41	296	133	o	10F	3535	190	240	89	22	St.	o	6F	32	150	133	St.
64	14 M	170	2	282.41	296	187	o	3F	4040		240	102	42.5	St.	o	1F		180	202	St.
72	14 M	40		318.06		54	o	11	3020	170	280	51	1.5	C.I.	o	4	28	135	69	C.I.
72	14 M	55		318.06		70	o	11	3020	170	280	51	9.5	C.I.	o	5	28	135	70	C.I.
72	14 M	85		318.06		102	o	11	3525	190	280	65	18.5	C.I.	o	5	32	150	102	C.I.
72	14 M	115		318.06		133	o	11	3535	190	280	89	22	C.I.	o	5	32	150	133	C.I.
72	14 M	170		318.06		187	o	11	4040	230	280	102	42.5	C.I.	o	7	32	180	187	C.I.
80	14 M	40		353.71		54	o	12	3020	170	315	51	1.5	C.I.	o	4	28	135	69	C.I.
80	14 M	55		353.71		70	o	12	3020	170	315	51	9.5	C.I.	o	5	28	135	70	C.I.
80	14 M	85		353.71		102	o	12	3525	190	315	65	18.5	C.I.	o	5	32	150	102	C.I.
80	14 M	115		353.71		133	o	12	3535	190	315	89	22	C.I.	o	5	32	150	133	C.I.
80	14 M	170		353.71		187	o	11	4040	230	315	102	42.5	C.I.	o	7	32	180	187	C.I.
90	14 M	40		398.28		54	o	12	3020	170	360	51	1.5	C.I.	o	4	28	135	69	C.I.
90	14 M	55		398.28		70	o	12	3020	170	360	51	9.5	C.I.	o	5	28	135	70	C.I.
90	14 M	85		398.28		102	o	12	3525	190	360	65	18.5	C.I.	o	5	32	150	102	C.I.
90	14 M	115		398.28		133	o	12	3535	190	360	89	22	C.I.	o	5	32	150	133	C.I.
90	14 M	170		398.28		187	o	12	4040	230	360	102	42.5	C.I.	o	5	38	180	187	C.I.
112	14 M	40		496.32		54	o	12	3020	170	457	51	1.5	C.I.	o	4	28	135	69	C.I.
112	14 M	55		496.32		70	o	12	3020	170	457	51	9.5	C.I.	o	5	28	135	70	C.I.
112	14 M	85		496.32		102	o	12	3525	190	457	65	18.5	C.I.	o	5	32	150	102	C.I.
112	14 M	115		496.32		133	o	12	3535	190	457	89	22	C.I.	o	5	32	150	133	C.I.
112	14 M	170		496.32		187	o	12	5050	265	457	127	30	C.I.	o	5	38	200	187	C.I.
144	14 M	40		638.92		54	o	12	3020	170	600	51	1.5	C.I.	o	4	28	135	69	C.I.
144	14 M	55		638.92		70	o	12	3020	170	600	51	9.5	C.I.	o	5	28	135	70	C.I.
144	14 M	85		638.92		102	o	12	3525	190	600	65	18.5	C.I.	o	5	32	150	102	C.I.
144	14 M	115		638.92		133	o	12	4040	230	600	102	15.5	C.I.	o	5	32	165	133	C.I.
144	14 M	170		638.92		187	o	12	5050	265	600	127	30	C.I.	o	5	38	220	187	C.I.
168	14 M	40		745.87		54	o	12	3020	170	706	51	1.5	C.I.	o	4	28	135	69	C.I.
168	14 M	55		745.87		70	o	12	3020	170	706	51	9.5	C.I.	o	5	28	135	70	C.I.
168	14 M	85		745.87		102	o	12	3525	190	706	65	18.5	C.I.	o	5	32	150	102	C.I.
168	14 M	115		745.87		133	o	12	4040	230	706	102	15.5	C.I.	o	5	32	165	133	C.I.
168	14 M	170		745.87		187	o	12	5050	265	706	127	30	C.I.	o	5	38	220	187	C.I.
192	14 M	40		852.82		54	o	12	3020	170	813	51	1.5	C.I.	o	4	28	135	69	C.I.
192	14 M	55		852.82		70	o	12	3020	170	813	51	9.5	C.I.	o	5	28	135	70	C.I.
192	14 M	85		852.82		102	o	9	4040	230	813	102		C.I.	o	5	32	165	102	C.I.
192	14 M	115		852.82		133	o	12	4040	230	813	102	15.5	C.I.	o	5	32	165	133	C.I.
192	14 M	170		852.82		187	o	12	5050	265	813	127	30	C.I.	o	5	38	220	187	C.I.

St. : Steel - C.I. : Grey cast iron

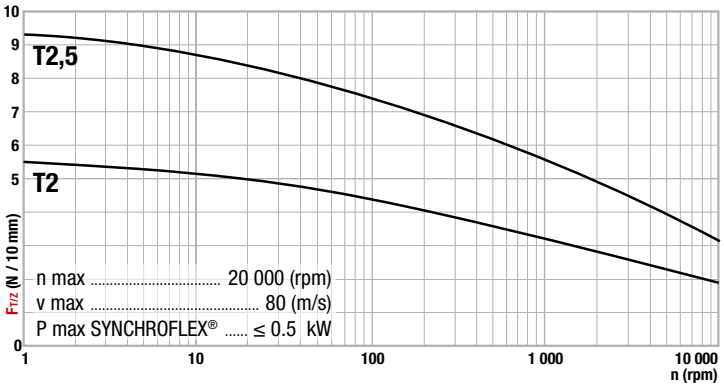
PULLEY ORDERING EXAMPLES						
Designation	Type	Reference	Flanges	Version	Hub/Bore	Material
Aratron tooth pulley	HT	64-14M 55	F	10F	3020	St
Aratron tooth pulley	HP	90-14M 115		12	d : 32H7	C.I.

DELIVERY TIMES		
Pulleys in factory stock	o	4 weeks
Special pulleys		*page 43*

TIMING BELTS



Tangential force transmittable by the teeth



Tangential force transmittable by the tension member

Belt widths	b (mm)	4	6	8	10	12	16	25	32
SYNCHROFLEX® T2 belt									
F_N standard tension members	(N)	39	65	85	117	140	195	312	403
Weight SYNCHROFLEX®	(kg/m)	0.004	0.007	0.009	0.011	0.013	0.018	0.028	0.035
SYNCHROFLEX® T2.5 belt									
F_N standard tension members	(N)	39	65	85	117	140	195	312	403
Weight SYNCHROFLEX®	(kg/m)	0.006	0.009	0.012	0.015	0.018	0.024	0.038	0.048
Weight SYNCHROFLEX® DL	(kg/m)	0.006	0.009	0.013	0.016	0.019	0.025	0.040	0.051

Manufacturing capacities

	SYNCHROFLEX®
Lengths	Lengths standard only
Polyurethanes[1]	DEDU 8600
Winding	Monofilar
Tension member[2]	Steel

1. Other polyurethanes (see table "Characteristics of materials" *page 5*)
2. Other tension member: Kevlar, see *page 6*

} Consult us

Lengths standard profil / mm	No. of teeth	SD	DL
SYNCHROFLEX® T2			
T2 / 68	34	○	
T2 / 90	45	○	
T2 / 108	54	○	
T2 / 118	59	○	
T2 / 120	60	○	
T2 / 138	69	○	
T2 / 140	70	○	
T2 / 144	72	○	
T2 / 150	75	○	
T2 / 160	80	○	
T2 / 180	90	○	
T2 / 200	100	○	
T2 / 220	110	○	
T2 / 240	120	○	
T2 / 256	128	○	
T2 / 262	131	○	
T2 / 280	140	○	
T2 / 292	146	○	
T2 / 320	160	○	
T2 / 360	180	○	
T2 / 600	300	○	
T2 / 710	355	○	
T2 / 1296	648 FA		
SYNCHROFLEX® T2.5			
T2.5 / 55	22 FA		
T2.5 / 120	48	●	
T2.5 / 145	58	●	
T2.5 / 160	64	●	
T2.5 / 177.5	71	●	
T2.5 / 180	72	●	
T2.5 / 182.5	73	●	
T2.5 / 200	80	●	
T2.5 / 210	84 FA		
T2.5 / 225	90	●	
T2.5 / 230	92	●	
T2.5 / 245	98	●	
T2.5 / 250	100	●	
T2.5 / 265	106	●	
T2.5 / 285	114	●	
T2.5 / 290	116	●	
T2.5 / 305	122	●	
T2.5 / 317.5	127	●	●
T2.5 / 330	132	●	
T2.5 / 380	152	●	
T2.5 / 395	158	●	
T2.5 / 400	160 FA		
T2.5 / 415	166		○
T2.5 / 420	168	●	
T2.5 / 457.5	183		●
T2.5 / 480	192	●	
T2.5 / 500	200	●	
T2.5 / 540	216	●	
T2.5 / 600	240 FA	●	
T2.5 / 620	248	●	
T2.5 / 650	260	●	
T2.5 / 780	312	●	
T2.5 / 950	380	●	
T2.5 / 1300	520	●	
T2.5 / 1350	540 FA	○	
T2.5 / 1475	590 FA	●	

FA : Belt with thicker. SD: single sided. DL: double sided.

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability

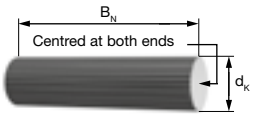
Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
SYNCHROFLEX timing belt	16	T2.5/250	SYN	

TOOTHED PULLEYS

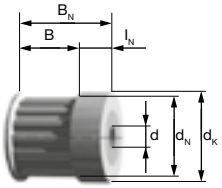
Pulleys acc. to drawing see page 8

Bars



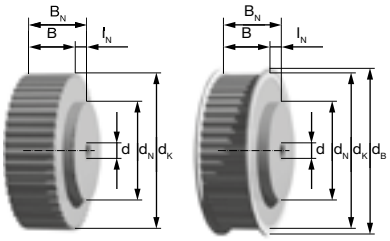
Standard pulleys

Version 2:
Stock from Z = 12 to Z = 15



Version 2 (with flanges):
Stock from Z = 18 to Z = 40

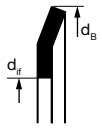
Version 0 (without flanges) :
stock from Z = 48



	Belt widths T2	b	4	6	8	10	12	16	25	32
Pulley widths	Pulley without hub	B	8	10	12	14	16	20	29	36
	Pulley with hub	B_N	14	16	18	20	22	26	35	42

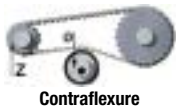
	Belt widths T2.5	b	6	8	10	12	16	25	32
Pulley widths	Pulley without hub	B	10	12	14	16	20	29	36
	Pulley with hub	B_N	16		20	22	26		

The pulleys in stock all have a hub. **Standard width in stock in green.**



Angled

	Flanges		
	Thickness	Shape	Mounting
T2	1	Angled	Rolled
T2.5	1	Angled	Rolled

Kinematics	Tension member type		SYNCHROFLEX®
 Monoflexure	Steel tension members	Z min.	10
		ø min (mm)	15
 Contraflexure	Steel tension members	Z min.	18
		ø min (mm)	15

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8
- Flange: galvanised steel, see page 9
- d_{max} : max. mum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	10	T2/20-	0		5h7
Aratron tooth pulley	AL	16	T2.5/32-	2	E : 16 X 6	6H7

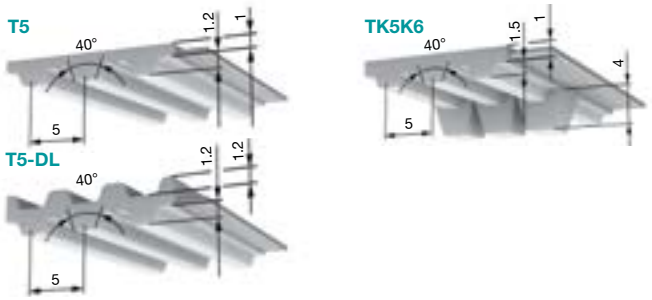
DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in factory stock	o	2 weeks

Z	d_K	Flanges d_B	Flanges d_{IF}
T2			
10	5.82	8	4
11	6.45	8	4
12	7.09	10	5
13	7.73	10	5
14	8.36	12	6
15	9.00	13	7
16	9.64	13	7
17	10.27	14	8
18	10.91	14	8
19	11.55	15	9
20	12.18	15	9
21	12.82	16	10
22	13.46	16	10
23	14.09	18	12
24	14.73	18	12
25	15.37	19	13
26	16.00	19	13
27	16.64	20	14
28	17.28	20	14
29	17.91	22	15
30	18.55	22	15
31	19.19	22	15
32	19.82	24	16
33	20.46	24	16
34	21.10	24	16
35	21.73	25	17
36	22.37	26	18
37	23.00	26	18
38	23.64	28	20
39	24.28	28	20
40	24.91	28	20
42	26.19	30	21
45	28.10	32	22
48	30.01	35	25
50	31.28	35	25
55	34.46	40	30
60	37.65	42	30
65	40.83	45	33
70	44.01	50	38
72	45.29	50	38
80	50.38	55	43
90	56.75	62	50
100	63.11	68	56

Width B_N 16	Width B_N 20	Z	d_K	d_N	Bore min. stock	Flanges d_B	Flanges d_{IF}
		T2.5					
•	o	10	7.45	10	3	10	5
		11	8.25			12	6
•	o	12	9.00	12	3	12	6
		13	9.80			13	7
•	o	14	10.60	14	3	14	8
•	o	15	11.40	15	3	15	9
•	o	16	12.20	16	4	16	10
		17	13.00			16	10
•	o	18	13.80	10	4	17	11
•	o	19	14.60	10	4	18	12
•	o	20	15.40	12	4	19	13
		21	16.20			20	14
		22	17.00			20	14
		23	17.80			21	14
	o	24	18.55	14	4	22	15
	o	25	19.35	14	4	23	15
		26	20.15			23	15
		27	20.95			24	16
		28	21.75			25	17
		29	22.55			26	18
•	o	30	23.35	16	6	28	20
		31	24.15			28	20
•	o	32	24.95	16	6	28	20
		33	25.75			30	21
		34	26.55			30	21
		35	27.35			32	22
•	o	36	28.15	20	6	32	22
		37	28.90			32	22
		38	29.70			34	24
		39	30.50			34	24
•	o	40	31.30	22	6	35	25
		42	32.90			36	26
		45	35.30			39	29
•	o	48	37.70	26	6	42	30
		50	39.25			43	31
		55	43.25			47	35
•	o	60	47.25	34	8	52	40
		65	51.20			55	43
		70	55.20			60	48
		72	56.80			60	48
		80	63.15			68	54
		90	71.10			75	61
		100	79.05			84	70

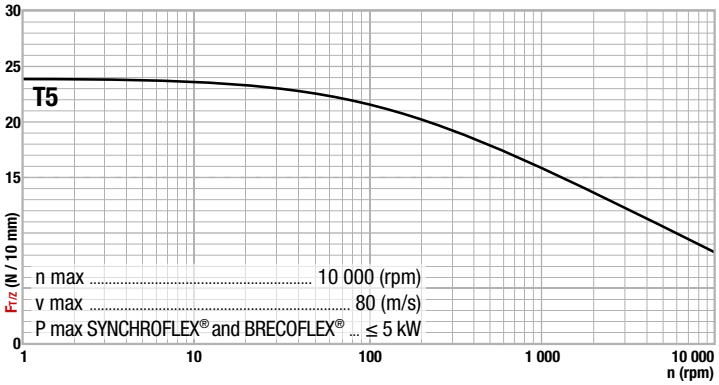
Z: number of teeth.

TIMING BELTS



T5 belt scale 1

Tangential force transmittable by the teeth



Tangential force transmittable by the tension member

Belt widths	b (mm)	6	10	12	16	25	32	50	75	100
SYNCHROFLEX® T5 belts										
F_N standard tension members	(N)	180	330	420	570	930	1200	1920	2940	3930
Weight SYNCHROFLEX®	(kg/m)	0.014	0.024	0.028	0.038	0.060	0.077	0.120	0.180	0.240
Weight SYNCHROFLEX® DL	(kg/m)	0.016	0.027	0.030	0.043	0.067	0.086	0.135	0.203	0.270
BRECOFLEX® T5 belts										
F_N standard tension members	(N)	180	330	420	570	390	1200	1920	2940	3930
F_N stainless steel tension members	(N)		250	320	435	710	910	1460	2235	2990
Weight BRECOFLEX®	(kg/m)	0.140	0.022	0.027	0.034	0.052	0.067	0.105	0.163	0.210
Weight BRECOFLEX® DL	(kg/m)	0.016	0.028	0.033	0.045	0.072	0.099	0.141	0.212	0.283
BRECOFLEX® TK5K6 belts										
F_N standard tension members	(N)							1920		3930
F_N stainless steel tension members	(N)							1460		2990
Weight BRECOFLEX®	(kg/m)							0.123		0.232

Standard widths in green.

Manufacturing capacities

	SYNCHROFLEX®	BRECOFLEX® T5 - T5 PAZ	BRECOFLEX® TK5K6 - TK5K6 PAZ
Lengths up to 700 mm	Standard length only	Standard length only	
Lengths from 720 to 15 000 mm		All intermediate lengths can be produced[1]	
Versions DL and DL/PAZ[4]	Standard length only without PAZ	All intermediate lengths can be produced[1]	
Polyurethanes[2]	DEDU 8600	Lengths smaller than 700 mm TPUST3 Lengths greater than 720 mm TPU ST1	TPU ST1
Winding	Monofilar	Lengths from 720 to 15 000 mm: bifilar	Lengths from 1075 to 15 000 mm: bifilar
Tension member[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (Kevlar, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" *page 56*

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*. General tolerances: see *page 81*
General information: see *page 4*

Lengths standard profile / mm	No. of teeth	SYNCHROFLEX® SD	SYNCHROFLEX® DL	BRECOFLEX® SD	BRECOFLEX® DL	BRECOFLEX® ATK5 K6
T5 / 100	20	●				
T5 / 150	30	●	●			
T5 / 165	33	●				
T5 / 180	36	●				
T5 / 185	37	●				
T5 / 200	40	●		○		
T5 / 210	42	●				
T5 / 215	43	●		○		
T5 / 220	44	●		○		
T5 / 225	45	●		○		
T5 / 240	48			○		
T5 / 245	49	●		○		
T5 / 250	50	●				
T5 / 255	51	●		○		
T5 / 260	52	●	●	○		
T5 / 270	54	●		○		
T5 / 280	56	●		○		
T5 / 295	59	●		○		
T5 / 300	60		●			
T5 / 305	61	●		○		
T5 / 330	66	●		○		
T5 / 340	68	●		○		
T5 / 355	71	●		○		
T5 / 365	73	●		●		
T5 / 370	74			○		
T5 / 390	78	●		○		
T5 / 400	80	●		○		
T5 / 410	82	●	●	○		
T5 / 420	84	○		○		
T5 / 435	87			●		
T5 / 455	91	●		○		
T5 / 460	92	●	●			
T5 / 480	96	●		○		
T5 / 500	100	●		○		
T5 / 505	101	●				
T5 / 510	102	●		○		
T5 / 515	103		●			
T5 / 525	105	●	●	○		
T5 / 545	109	●		○		
T5 / 550	110	●				
T5 / 560	112	●		○		
T5 / 575	115	●		○		
T5 / 590	118	●	●			
T5 / 610	122	●		○		
T5 / 620	124	●	●	○		
T5 / 625	125		●			
T5 / 630	126	●		○		
T5 / 650	130	●				
T5 / 660	132			●		
T5 / 665	133			○		
T5 / 690	138	●		○		
T5 / 700	140	●				
T5 / 720	144	●		○		○
T5 / 725	145	●				
T5 / 750	150	●	●	○		○
T5 / 755	151			○		○
T5 / 765	153	●		●		
T5 / 780	156	●		○		○
T5 / 800	160	●		○		○
T5 / 815	163	●	●	○		○
T5 / 840	168	●		○		○
T5 / 850	170			○		○
T5 / 860	172		●	○		○
T5 / 900	180	●		○	○	○
T5 / 910	182			○	○	○
T5 / 920	184	●		○	○	○
T5 / 925	185	●				
T5 / 940	188	●	●			
T5 / 945	189			○	○	○
T5 / 980	196				○	
T5 / 990	198	●		○	○	○
T5 / 1000	200				○	
T5 / 1040	208			○	○	○
T5 / 1075	215	●		○	○	○
T5 / 1100	220	●	●	○	○	○
T5 / 1150						○
T5 / 1160	232	●				
T5 / 1215	243	●		○	○	○
T5 / 1315	263	●				
T5 / 1320	264			○		○
T5 / 1325	265		●			
T5 / 1380	276	●		○	○	○
T5 / 1400	280			○	○	○
T5 / 1500	300	●		○	○	○
T5 / 1600	320			○	○	○
T5 / 1700	340			○	○	○
T5 / 1800	360			○	○	○
T5 / 1900	380			○	○	○
T5 / 2000	400			○	○	○
T5 / 2120	424			○	○	○
T5 / 2240	448			○	○	○
T5 / 2360	472			○	○	○
T5 / 2500	500			○	○	○
T5 / 2650	530			○	○	○
T5 / 2800	560			○	○	○
T5 / 3000	600			○	○	○
T5 / 3150	630			○	○	○
T5 / 3350	670			○	○	○
T5 / 3550	710			○	○	○
T5 / 3750	750			○	○	○
T5 / 4000	800			○	○	○
T5 / 4250	850			○	○	○
T5 / 4500	900			○	○	○
T5 / 4750	950			○	○	○
T5 / 5000	1000			○	○	○
T5 / 5300	1060			○	○	○
T5 / 5600	1120			○	○	○
T5 / 6000	1200			○	○	○
T5 / 6300	1260			○	○	○
T5 / 6700	1340			○	○	○
T5 / 7100	1420			○	○	○
T5 / 7500	1500			○	○	○

Width max. = 100 mm

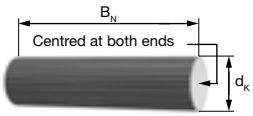
SD: single sided. DL: double sided.

BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
BRECOFLEX timing belt	25	TK5K6F/1600	BFX	PAZ

TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

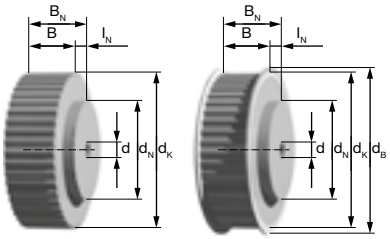
Bars



Standard pulleys

Version 2 (with flanges):
stock up to Z = 40

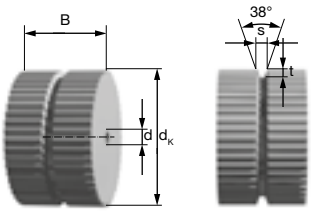
Version 0 (without flanges) :
stock from Z = 48



Self-guiding pulleys

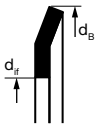
Pulleys on request
and only
from Z = 20

K6	
s	t
6.5	5



	Belt widthss T5	b	6	8	10	12	16	20	25	32	50	75	100
Pulley widths	Pulley without hub	B	11	13	15	17	21	25	30	37	55	80	105
	Pulley with hub	B_N			21		27		36				
	Self-guiding pulley without hub	B_N							30	37	55	80	105

The pulleys in stock all have a hub. **Standard width in stock in green.**



Angled

Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 63	1	Angled	Rolled
Z > 63	1.5	Angled	Rolled

Kinematics	Tension member type		SYNCHROFLEX®	BRECOFLEX® SD	BRECOFLEX® DL	BRECOFLEX® ATK5 K6
 Monoflexure	Steel tension members	Z min.	10	10	15	25
		ø min (mm)	30	30	30	40
	E tension members*	Z min.		10	12	25
		ø min (mm)		18	30	40
	Stainless steel tension members*	Z min.		18	36	25
		ø min (mm)		30	60	40
 Contraflexure	Steel tension members	Z min.	15	15	15	25
		ø min (mm)		30	30	60
	E tension members*	Z min.		12	12	25
		ø min (mm)		18	30	60
	Stainless steel tension members*	Z min.		36	36	36
		ø min (mm)		60	60	60

*Special manufacture: minimum quantity

Comments

- Larger number of teeth possible
- Standard material 6026 conforming to RoHS, see page 8
- Flange: galvanised steel, see page 9
- d_{max} : max. mum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

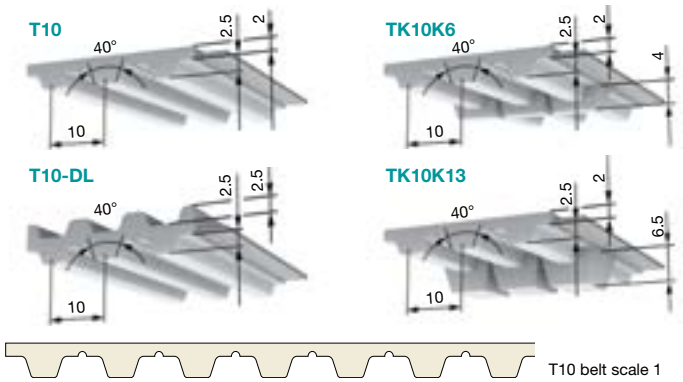
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	36	T5/48 -	0	E : 50 X 6	8H7

DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability

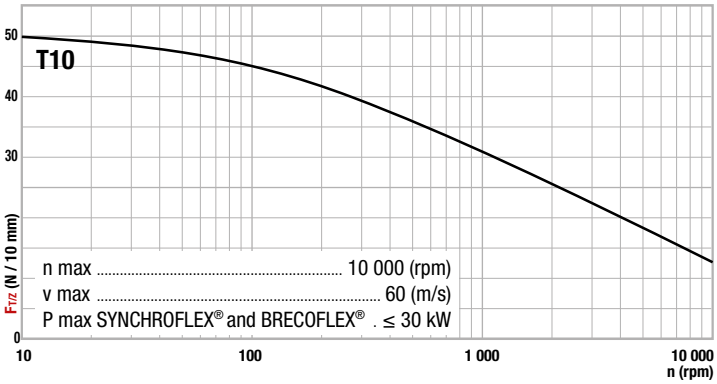
Width B_N			Z	d_K	d_N	Bore	Flanges	
21	27	36				min. stock	d_B	d_{IF}
●	○	●	10	15.05	8	4 *	20	12
			11	16.65			22	14
●	●	●	12	18.25	12	4 *	23	15
			13	19.85			25	17
●	●	●	14	21.45	14	6	26	18
●	●	●	15	23.05	16	6	28	20
●	●	●	16	24.60	18	6	30	21
			17	26.20			32	22
●	●	●	18	27.80	20	6	34	24
●	●	●	19	29.40	22	6	35	25
●	●	●	20	31.00	24	6	36	26
			21	32.60			37	27
			22	34.15			39	29
			23	35.75			40	30
●	●	●	24	37.35	26	6	42	30
●	●	●	25	38.95	26	6	43	31
			26	40.55			45	33
●	●	●	27	42.15	30	8	47	35
			28	43.75			48	36
			29	45.30			50	38
●	●	●	30	46.90	34	8	52	40
			31	48.50			53	41
●	●	●	32	50.10	38	8	55	43
			33	51.70			56	44
			34	53.30			58	46
			35	54.85			60	48
●	●	●	36	56.45	38	8	61	49
			37	58.05			62	50
			38	59.65			64	52
			39	61.25			66	52
●	●	●	40	62.85	40	8	68	54
			41	64.40			70	56
			42	66.00			72	58
			43	67.60			72	58
			44	69.20			74	60
			45	70.80			75	61
			46	72.40			76	62
			47	73.95			78	64
●	●	●	48	75.55	50	8	80	66
			49	77.15			82	68
			50	78.75			84	70
			51	80.35			86	72
			52	81.95			86	72
			53	83.55			88	74
			54	85.10			90	76
			55	86.70			91	77
			56	88.30			93	79
			57	89.90			94	80
			58	91.50			96	82
			59	93.10			99	85
●	●	●	60	94.65	65	8	99	85
			61	96.25			100	86
			62	97.85			102	88
			63	99.45			104	90
			64	101.05			105	91
			65	102.65			107	93
			66	104.20			109	95
			67	105.80			112	98
			68	107.40			112	98
			69	109.00			115	101
			70	110.60			115	101
			71	112.20			117	103
			72	113.75			118	104
			73	115.35			121	107
			74	116.95			121	107
			75	118.55			123	109
			76	120.15			125	111
			77	121.75			128	114
			78	123.35			128	114
			79	124.90			131	117
			80	126.50			131	117
			81	128.10			134	120
			82	129.70			134	120
			83	131.30			137	123
			84	132.90			137	123
			85	134.45			140	126
			86	136.05			142	128
			87	137.65			142	128
			88	139.25			144	130
			89	140.85			147	133
			90	142.45			147	133
			91	144.00			150	136
			92	145.60			150	136
			93	147.20			153	139
			94	148.80			153	139
			95	150.40			156	142
			96	152.00			156	142
			97	153.55			158	144
			98	155.15			160	146
			99	156.75			163	149
			100	158.35			163	149

Z: number of teeth.
*6 for 36 mm wide pulleys.

TIMING BELTS



Tangential force transmittable by the teeth



Tangential force transmittable by the tension member

Belt widths	b (mm)	10	12	16	20	25	32	50	75	100
SYNCHROFLEX® and BRECOFLEX® belts										
F_N standard tension members	(N)	600	750	1000	1400	1800	2300	3800	5800	7800
F_N stainless steel tension members	(N)	500	600	800	1100	1440	1840	3040	4640	6240
Weight SYNCHROFLEX® et BRECOFLEX® T10	(kg/m)	0.042	0.051	0.068	0.112	0.140	0.145	0.227	0.341	0.454
Weight BRECOFLEX® T10 DL	(kg/m)	0.056	0.068	0.090	0.115	0.143	0.183	0.288	0.432	0.577
Weight BRECOFLEX® TK10K6	(kg/m)							0.235		0.458
Weight BRECOFLEX® TK10K13	(kg/m)							0.283		

Standard widths in green.

Manufacturing capacities

	SYNCHROFLEX®	BRECOFLEX® T10 - T10 PAZ	BRECOFLEX® T10K6 - T10K6 PAZ	BRECOFLEX® T10K13 - T10K13 PAZ
Lengths up to 700 mm	Standard length only	Standard length only		
Lengths from 720 to 22 000 mm		All intermediate lengths can be produced[1]		All intermediate lengths can be produced from 1 500 mm[1]
Versions DL and DL/PAZ[4]	Standard length only without PAZ	All intermediate lengths can be produced[1]		
Polyurethanes[2]	DEDU 8600	Lengths smaller than 700 mm TPU ST3 Lengths greater than 720 mm TPU ST1	TPU ST1	TPU ST1
Winding	Monofilar	Lengths from 720 to 22 000 mm: bifilar		Lengths from 1200 to 22 000 mm: bifilar
Tension member[3]	Steel	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (Kevlar, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" *page 56*

Lengths standard profil / mm	No. of teeth	SYNCHROFLEX® SD	SYNCHROFLEX® DL	BRECOFLEX® SD	BRECOFLEX® DL	BRECOFLEX® TK10K6	BRECOFLEX® TK10K13
T10 / 260	26	●	○				
T10 / 350	35	●					
T10 / 370	37	●					
T10 / 400	40	○					
T10 / 410	41	●					
T10 / 440	44	●					
T10 / 450	45	●					
T10 / 500	50	●		○			
T10 / 530	53	●	●	○			
T10 / 560	56	●		○			
T10 / 600	60	●		○			
T10 / 610	61	●		○			
T10 / 630	63	●	●	○			
T10 / 660	66	●	●	○			
T10 / 680	68	●					
T10 / 690	69	●		○			
T10 / 700	70	●		○			
T10 / 720	72	●	●	○			
T10 / 730	73	●					
T10 / 750	75	●					
T10 / 760	76	●					
T10 / 780	78	●		○			
T10 / 810	81	●		○			
T10 / 840	84	●	●	○			
T10 / 850	85	●					
T10 / 880	88	●		○			
T10 / 890	89	●		○			
T10 / 900	90			○	○	○	
T10 / 920	92	●		○	○	○	
T10 / 960	96	●		○	○	○	
T10 / 970	97	●		○	○	○	
T10 / 980	98	●	●	○	○	○	
T10 / 990	99			○	○	○	
T10 / 1010	101	●		○	○	○	
T10 / 1050	105					○	
T10 / 1080	108	●		○	○	○	
T10 / 1110	111	●		○			
T10 / 1140	114	●					
T10 / 1150	115	●		○	○	○	
T10 / 1210	121	●	●	○	○	○	○
T10 / 1240	124	●	●	○	○	○	
T10 / 1250	125	●	●	○	○	○	
T10 / 1300	130	●					
T10 / 1320	132	●	●	○	○	○	
T10 / 1350	135	●	●	○	○	○	
T10 / 1390	139	●		○	○	○	
T10 / 1400	140	●		○	○	○	
T10 / 1420	142	●	●	○	○	○	
T10 / 1450	145	●					
T10 / 1460	146	●		○	○	○	
T10 / 1500	150	●		○	○	○	○
T10 / 1560	156	●		○	○	○	○
T10 / 1610	161	●	●	○	○	○	○
T10 / 1750	175	●		○	○	○	○
T10 / 1780	178	●		○	○	○	○
T10 / 1880	188	●	●	○	○	○	○
T10 / 1960	196	●		○	○	○	○
T10 / 2250	225	●		○	○	○	○
T10 / 2360	236			○	○	○	○
T10 / 2500	250			○	○	○	○
T10 / 2650	265			○	○	○	○
T10 / 2800	280			○	○	○	○
T10 / 3000	300			○	○	○	○
T10 / 3100	310	○		○	○	○	○
T10 / 3150	315			○	○	○	○
T10 / 3350	335			○	○	○	○
T10 / 3750	375			○	○	○	○
T10 / 4000	400			○	○	○	○
T10 / 4250	425			○	○	○	○
T10 / 4500	450			○	○	○	○
T10 / 4750	475			○	○	○	○
T10 / 4780	478	○	○		○		
T10 / 5000	500			○	○	○	○
T10 / 5300	530			○	○	○	○
T10 / 5600	560			○	○	○	○
T10 / 6000	600			○	○	○	○
T10 / 6300	630			○	○	○	○
T10 / 6700	670			○	○	○	○
T10 / 7100	710			○	○	○	○
T10 / 7500	750			○	○	○	○
T10 / 8000	800			○	○	○	○
T10 / 9000	900			○	○	○	○

Width max. = 100 mm
Width max. = 150 mm
Width max. = 100 mm
Width max. = 150 mm
Width = 50 mm

SD: single sided. DL: double sided.
* Correction of toothing, consult us.

DELIVERY TIMES		
Belts in stock	●	3 days acc. to availability
Standard belts	○	4 weeks
Special belts		Consult us

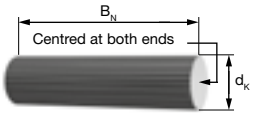
Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
SYNCHROFLEX timing belt	25	T10/1500	SYN	
BRECOFLEX timing belt	50	TK10K6/2230	BFX	PAZ

TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

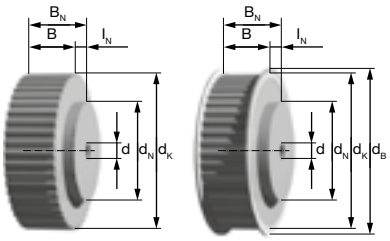
Bars



Standard pulleys

Version 2 (with flanges):
stock up to Z = 40

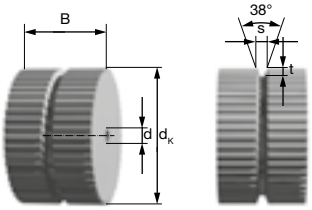
Version 0 (without flanges) :
stock from Z = 48



Self-guiding pulleys

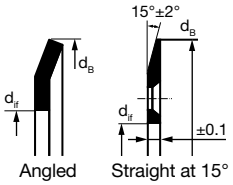
Pulleys on request and only from Z = 20

K6		K13	
s	t	s	t
6.5	5	13.5	7.5

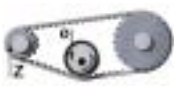


	Belt widthss T10	b	10	12	16	25	32	50	75	100	150
Pulley widths	Pulley without hub	B	16	17	21	30	40	56	81	108	158
	Pulley with hub	B_N			31	40	50	66			
	Self-guiding pulley without hub	B_N				30	37	55	80	105	155

The pulleys in stock all have a hub. **Standard width in stock in green.**



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 32	1	Angled	Rolled
32 < Z ≤ 93	1.5	Angled	Rolled
B_N ≥ 66 and Z ≤ 93	2	Angled	Screwed
Z > 93	2	Straight at 15°	Screwed

Kinematics	Tension member type		SYNCHROFLEX®	BRECOFLEX® T10	TK10K6	TK10K13
 Monoflexure	Steel tension members	Z min.	12	12	20	25
		ø min (mm)	60	60	60	80
	E tension members*	Z min.		10	20	25
		ø min (mm)		50	60	80
	Stainless steel tension members*	Z min.		25	25	25
		ø min (mm)		80	80	80
 Contraflexure	Steel tension members	Z min.	20	20	25	25
		ø min (mm)	60	60	80	120
	E tension members*	Z min.		12	25	25
		ø min (mm)		50	80	120
	Stainless steel tension members*	Z min.		40	40	40
		ø min (mm)		130	130	130

*Special manufacture: minimum quantity.

Comments

- Larger number of teeth possible,
- Standard material 6026 conforming to RoHS, see page 8
- Flange: galvanised steel, see page 9
- d_{max}: max. mum bore without keyway for flanged pulley

Options
- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

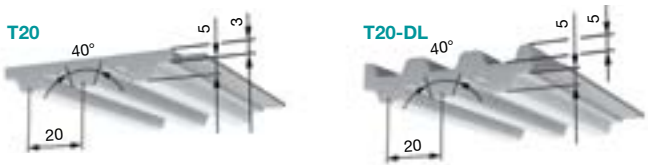
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	66	T10/36 -	2	E : 46 X 10	8H7

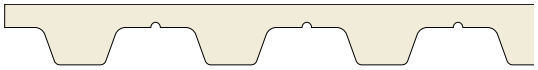
DELIVERY TIMES		
Pulleys in stock	●	3 days acc. to availability
Pulleys in facotry stock	○	2 weeks

Width B_N					Z	d_K	d_N	Bore d (H7)		Rolled flanges	
31	40	50	66	Bar 180				min. stock	max.	d_B	d_{IF}
●	●				12	36.35	28	6	24	42	30
					13	39.55			26	45	33
●	●				14	42.70	32	8	30	48	36
●	●				15	45.90	32	8	34	52	40
●	●				16	49.10	35	8	36	55	43
					17	52.25			40	58	46
●	●	○	○		18	55.45	40	8 (10*)	44	61	49
●	●	○	○		19	58.65	44	8 (10*)	46	64	52
●	●	○	○		20	61.80	46	8 (12*)	50	68	54
		○	○		21	65.00			52	72	58
		○	○		22	68.20			56	74	60
		○	○		23	71.35			60	76	62
●	●	○	○		24	74.55	58	8 (12*)	62	80	66
●	●	○	○		25	77.75	60	8 (12*)	66	84	70
		○	○		26	80.90			68	86	72
●	●	○	○		27	84.10	60	8 (12*)	72	90	76
		○	○		28	87.25			76	93	79
		○	○		29	90.45			78	96	82
●	●	○	○		30	93.65	60	8 (12*)	82	99	85
		○	○		31	96.80			84	102	88
●	●	○	○		32	100.00	65	10 (12*)	88	106	92
		○	○		33	103.20			88	109	95
		○	○		34	106.35			92	112	98
		○	○		35	109.55			96	115	101
●	●	○	○		36	112.75	70	10 (16*)	98	118	104
		○	○		37	115.90			101	121	107
		○	○		38	119.10			104	125	111
		○	○		39	122.30			106	128	114
●	●	○	○		40	125.45	80	10 (16*)	110	131	117
		○	○		41	128.65			110	134	120
		○	○		42	131.85			112	137	123
		○	○		43	135.00			114	140	126
		○	○		44	138.20			118	144	130
		○	○		45	141.40			120	147	133
		○	○		46	144.55			122	150	136
		○	○		47	147.75			122	153	139
●	●	○	○		48	150.95	95	16	124	156	142
		○	○		49	154.10			126	160	146
			○		50	157.30			130	163	149
			○		51	160.50			134	166	152
					52	163.65			136	169	155
					53	166.85			140	172	158
					54	170.05			144	176	162
					55	173.20			146	179	165
					56	176.40			150	182	168
					57	179.60			152	185	171
					58	182.75			156	188	174
					59	185.95			160	191	177
					60	189.15	110	16	162	195	181
					61	192.30			164	198	184
					62	195.50			166	201	187
					63	198.70			170	204	190
					64	201.85			171	207	193
					65	205.05			174	210	196
					66	208.25			175	214	200
					67	211.40			177	217	203
					68	214.60			181	220	206
					69	217.80			185	223	209
					70	220.95			187	226	212
					71	224.15			191	230	216
					72	227.35			193	233	219
					73	230.50			197	236	222
					74	233.70			201	239	225
					75	236.90			203	242	228
					76	240.05			207	246	232
					77	243.25			209	249	235
					78	246.40			213	252	238
					79	249.60			215	255	241
					80	252.80			219	258	244
					81	255.95			223	262	248
					82	259.15			225	265	251
					83	262.35			229	268	254
					84	265.50			231	271	257
					85	268.70			235	274	260
					86	271.90			239	277	263
					87	275.05			241	281	267
					88	278.25			245	284	270
					89	281.45			247	287	273
					90	284.60			251	290	276
					91	287.80			255	293	279
					92	291.00			257	296	282
					93	294.15			261	300	285

Z: number of teeth. Larger number of teeth possible.
* for B_N = 50 and 66.

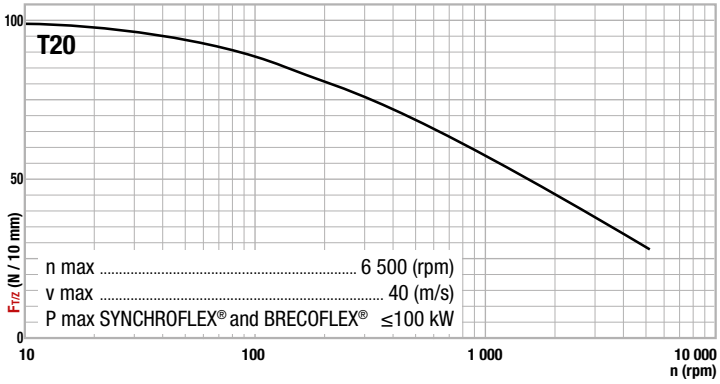
TIMING BELTS





T20 belt scale 1

Tangential force transmittable by the teeth



Tangential force transmittable by the tension member

Belt widths	b (mm)	16	20	25	32	50	75	100	150
SYNCHROFLEX® and BRECOFLEX® BELTS									
F_N standard tension members	(N)	2320	2900	3700	4750	7750	12000	16000	24500
F_N stainless steel tension members	(N)	1680	2100	2650	3420	5580	8640	11520	17640
Weight SYNCHROFLEX® and BRECOFLEX® T20	(kg/m)	0.117	0.147	0.184	0.236	0.368	0.552	0.736	1.095
Weight BRECOFLEX® T20 DL	(kg/m)	0.159	0.199	0.249	0.319	0.499	0.753	1.004	

Manufacturing capacities

	SYNCHROFLEX®	BRECOFLEX® T20 - T20 PAZ
Lengths from 1 100 to 22 000 mm	Standard length only	All intermediate lengths can be produced[1]
Versions DL and DL/PAZ[4]	Standard length only without PAZ	
Polyurethanes[2]	DEDU 8600	TPU ST1
Winding	Monofilar	Lengths from 1 500 to 22 000 mm: bifilar
Tension member[3]	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (Kevlar, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" *page 56*

Lengths standard profile / mm	No. of teeth	SYNCHROFLEX® SD	SYNCHROFLEX® DL	BRECOFLEX® SD	BRECOFLEX® DL
T20 / 1100	55				
T20 / 1260	63	o			
T20 / 1460	73	o			
T20 / 1500	75			o	o
T20 / 1600	80			o	o
T20 / 1700	85			o	o
T20 / 1780	89	o			
T20 / 1800	90			o	o
T20 / 1880	94	o			
T20 / 1900	95			o	o
T20 / 2000	100			o	o
T20 / 2120	106			o	o
T20 / 2240	112			o	o
T20 / 2360	118	o		o	o
T20 / 2500	125			o	o
T20 / 2600	130	o	o		o
T20 / 2660	133			o	o
T20 / 2800	140			o	o
T20 / 3000	150			o	o
T20 / 3100	155	o			
T20 / 3160	158			o	o
T20 / 3360	168			o	o
T20 / 3560	178			o	o
T20 / 3620	181	o			o
T20 / 3760	188			o	o
T20 / 4000	200			o	o
T20 / 4260	213			o	o
T20 / 4500	225			o	o
T20 / 4760	238			o	o
T20 / 5000	250			o	o
T20 / 5300	265			o	o
T20 / 5600	280			o	o
T20 / 6000	300			o	o
T20 / 6300	315			o	o
T20 / 6700	335			o	o
T20 / 7100	355			o	o
T20 / 7500	375			o	o
T20 / 8000	400			o	o
T20 / 8500	425			o	o
T20 / 9000	450			o	o

Width max. = 100 mm

Width max. = 150 mm

SD: single sided. DL: double sided.
* Correction of toothing, consult us.

DELIVERY TIMES		
Standard belts	o	4 weeks
Special belts		Consult us

Recommended pre-tension: see *page 124*
General tolerances: see *page 81*
General information: see *page 4*

BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
SYNCHROFLEX timing belt	50	T20/3620	SYN	
BRECOFLEX timing belt	75	T20/4820	BFX	

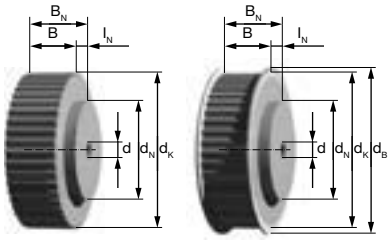
TOOTHED PULLEYS

Pulleys acc. to drawing see page 8

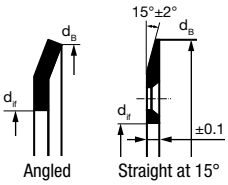
Pulleys

Version 2 (with flanges)

Version 0 (without flanges)



Belt widths T20	b	20	25	32	50	75	100	150
Widths of pulleys without hub	B	27	32	40	60	85	110	160



Flanges			
Z	Thickness	Shape	Mounting
Z ≤ 46	2	Angled	Screwed
Z > 46	2	Straight at 15°	Screwed

Kinematics	Tension member type		SYNCHROFLEX®	BRECOFLEX®
 Monoflexure	Steel tension members	Z min.	15	15
		ø min (mm)	120	120
	E tension members*	Z min.		12
		ø min (mm)		100
	Stainless steel tension members*	Z min.		20
		ø min (mm)		130
 Contraflexure	Steel tension members	Z min.	25	25
		ø min (mm)	120	120
	E tension members*	Z min.		22
		ø min (mm)		120
	Stainless steel tension members*	Z min.		30
		ø min (mm)		180

*Special manufacture: minimum quantity

Comments

- Larger number of teeth possible,
- Standard material 6026 conforming to RoHS, see page 8
- Flange: galvanised steel, see page 9
- d_{max}: max.mum bore without keyway for flanged pulley

Options

- The different materials such as steel and stainless steel and the surface treatment are shown on page 8
- Special flanges on request
- Special toothforms (zero or reduced backlash), see page 8

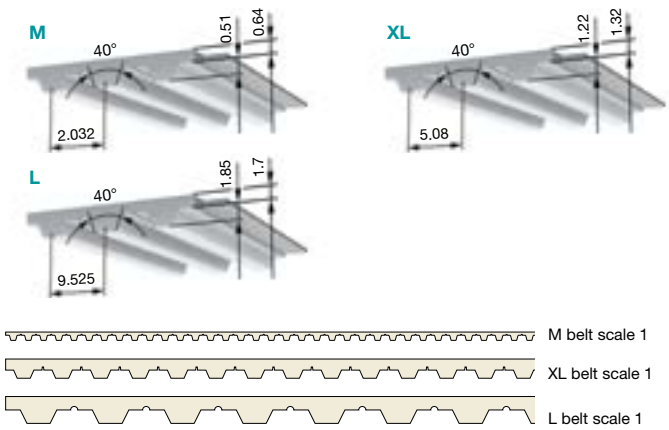
PULLEY ORDERING EXAMPLES						
Designation	Material	Width	Type/No. of teeth	Flanges	Hub	Dia. d
Aratron tooth pulley	AL	50	T20/27-	2	E : 120 X 10	40H7

DELIVERY TIMES	
Pulleys acc. to drawing	Consult us

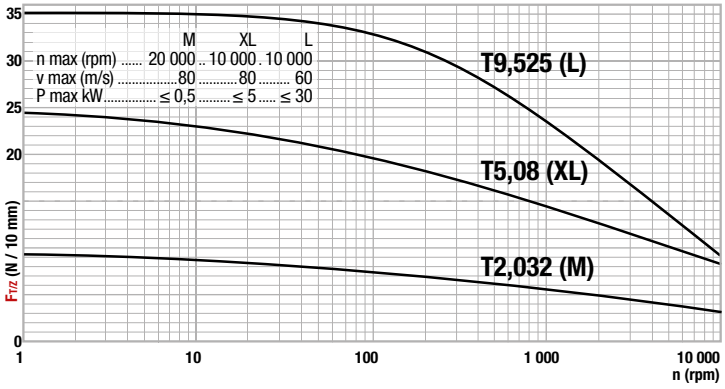
Z	d_K	$d_{max.}$	Screwed flanges	
			d_B	d_{iF}
15	92.65	67	102	58
16	99.00	74	109	64
17	105.35	80	115	70
18	111.75	86	121	77
19	118.10	93	128	83
20	124.45	100	134	89
21	130.85	105	140	96
22	137.20	112	147	102
23	143.55	118	153	109
24	149.95	125	160	115
25	156.30	131	166	121
26	162.65	137	172	128
27	169.05	144	179	134
28	175.40	150	185	140
29	181.75	156	192	147
30	188.15	163	198	153
31	194.50	169	204	159
32	200.85	175	210	166
33	207.25	182	217	172
34	213.60	188	223	179
35	219.95	195	229	185
36	226.35	201	236	191
37	232.70	207	242	198
38	239.05	214	249	204
39	245.40	220	255	210
40	251.80	226	261	217
41	258.15	233	268	223
42	264.50	239	274	229
43	270.90	245	280	236
44	277.25	252	287	242
45	283.60	258	293	249
46	290.00	265	300	255
47	296.35	271	306	261
48	302.70	278	312	268
49	309.10	284	319	274
50	315.45	290	325	280
51	321.80	296	331	287
52	328.20	303	338	293
53	334.55	310	344	299
54	340.90	315	350	306
55	347.30	322	357	312
56	353.65	328	363	319
57	360.00	335	370	325
58	366.40	341	376	331
59	372.75	347	382	338
60	379.10	354	389	344
61	385.50	360	395	350
62	391.85	366	401	357
63	398.20	373	408	363
64	404.55	379	414	370
65	410.95	385	420	376
66	417.30	392	427	382
67	423.65	398	433	389
68	430.05	405	440	395
69	436.40	406	446	401
70	442.75	412	452	408
71	449.15	419	459	414
72	455.50	425	465	420
73	461.85	431	471	427
74	468.25	438	478	433
75	474.60	444	484	440
76	480.95	450	490	446
77	487.35	457	497	452
78	493.70	463	503	459
79	500.05	470	510	465
80	506.45	476	516	471
81	512.80	482	522	478
82	519.15	489	529	484
83	525.55	495	535	490
84	531.90	501	541	497
85	538.25	503	548	503
86	544.60	509	554	510
87	551.00	516	561	516
88	557.35	522	567	522
89	563.70	528	573	529
90	570.10	535	580	535
91	576.45	541	586	541
92	582.85	548	592	548
93	589.20	554	599	554
94	595.55	560	605	561
95	601.90	566	611	567
96	608.30	573	618	573
97	614.65	579	624	580

Z: number of teeth.

TIMING BELTS



Tangential force transmittable by the teeth



Available widths (mm)

M	4	6	10	16	25	32			
XL	6.35	7.94	9.53	12.7	19.1	25.4			
L			9.53	12.7	19.1	25.4	50.8	76.2	101.6
CODE	025	031	037	050	075	100	200	300	400

Manufacturing capacities

	SYNCHROFLEX®	BRECOFLEX® M - M PAZ	BRECOFLEX® L - L PAZ
Standard lengths	Length acc. to standard table only	Length acc. to standard table only, Width max. 101.6 mm	Length from 314.33 to 685.80 mm = one sleeve minimum All intermediate lengths can be produced from 723.9 mm to 14 992.35 mm [1]
Polyurethanes[2]	DEDU 8600	TPU ST3	Lengths smaller than 685.8 TPU ST3 Lengths greater than 723.9 TPU ST1
Winding	Monofilar	Bifilar	Lengths from 723,9 to 14 992,35 mm: bifilar
Tension member[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" page 5)
3. Other tension members (Kevlar, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" page 56

Pulleys: see page 8

DELIVERY TIMES		
Standard belts	o	4 weeks

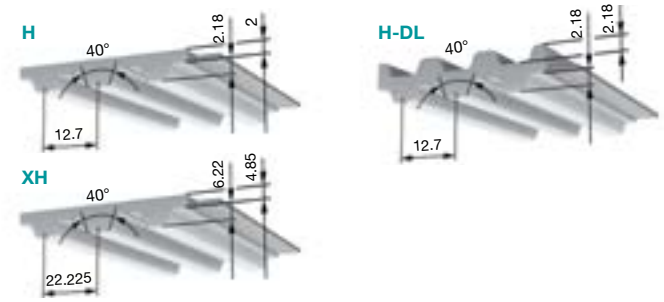
Standard lengths profile / mm	No. of teeth	SYNCHROFLEX® SD	BRECOFLEX® SD
	M T2.032		
111 M / 111.76	55	o	
113 M / 113.79	56	o	
121 M / 121.92	60	o	
132 M / 132.08	65	o	
142 M / 142.24	70	o	
144 M / 144.27	71	o	
162 M / 162.56	80	o	
182 M / 182.88	90	o	
197 M / 197.10	97	o	
203 M / 203.20	100	o	
209 M / 209.30	103	o	
213 M / 213.36	105	o	
243 M / 243.84	120	o	
256 M / 256.03	126	o	
264 M / 264.16	130	o	
284 M / 284.48	140	o	
304 M / 304.80	150	o	
355 M / 355.60	175	o	
373 M / 373.89	184	o	
449 M / 449.07	221	o	
520 M / 520.19	256	o	
599 M / 599.44	295	o	
1178 M / 1178.56	580	o	
	XL T5.08		
60 XL / 152.40	30		o
70 XL / 177.80	35	o	o
80 XL / 203.20	40	o	o
90 XL / 228.60	45	o	o
92 XL / 233.68	46	o	
100 XL / 254.00	50		o
110 XL / 279.40	55		o
112 XL / 284.50	56		
120 XL / 304.80	60	o	o
130 XL / 330.20	65		o
140 XL / 355.60	70		o
150 XL / 381.00	75	o	o
160 XL / 406.40	80	o	o
170 XL / 431.80	85		o
180 XL / 457.20	90		o
190 XL / 482.60	95		o
200 XL / 508.00	100	o	o
210 XL / 533.40	105		o
220 XL / 558.80	110		o
230 XL / 584.20	115		o
240 XL / 609.60	120	o	o
250 XL / 635.00	125		o
260 XL / 660.40	130		o
787 XL / 787.40	155		o
432 XL / 1097.28	216	o	
434 XL / 1102.36	217		
464 XL / 1178.56	232		
624 XL / 1585.00	312		
	L T9.525		
124 L / 314.33	33		o
150 L / 381.00	40		o
172 L / 438.00	46	o	
187 L / 476.25	50		o
202 L / 514.35	54		o
210 L / 533.40	56		o
225 L / 571.50	60	o	o
240 L / 609.60	64		o
255 L / 647.70	68		o
270 L / 685.80	72		o
285 L / 723.90	76		o
300 L / 762.00	80		o
322 L / 819.15	86		o
345 L / 876.30	92		o
367 L / 933.45	98		o
382 L / 971.55	102	o	
390 L / 990.60	104	o	o
394 L / 1000.13	105	o	
405 L / 1028.70	108	o	
420 L / 1066.80	112		o
435 L / 1104.90	116	o	
450 L / 1143.00	120		o
454 L / 1152.50	121	o	
480 L / 1219.20	128		o
495 L / 1257.30	132	o	
540 L / 1371.60	144		o
547 L / 1390.65	146	o	
570 L / 1447.80	152		o
600 L / 1524.00	160		o
630 L / 1600.20	168		o
660 L / 1676.40	176		o
705 L / 1790.70	188		o
750 L / 1905.00	200		o
803 L / 2038.35	214		o
855 L / 2171.70	228		o
900 L / 2286.00	240		o
997 L / 2533.65	266		o
1102 L / 2800.35	294		o
1252 L / 3181.35	334		o
1402 L / 3562.35	374		o
1702 L / 4324.35	454		o
2002 L / 5086.35	534		o
2302 L / 5848.35	614		o
2602 L / 6610.35	694		o
3000 L / 7620.00	800		o

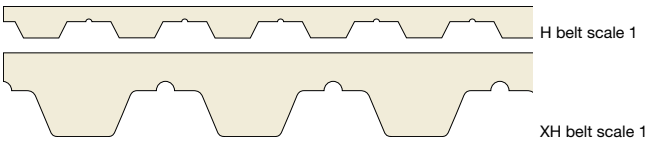
Width max. = 101,6 mm

Width max. = 101,6 mm

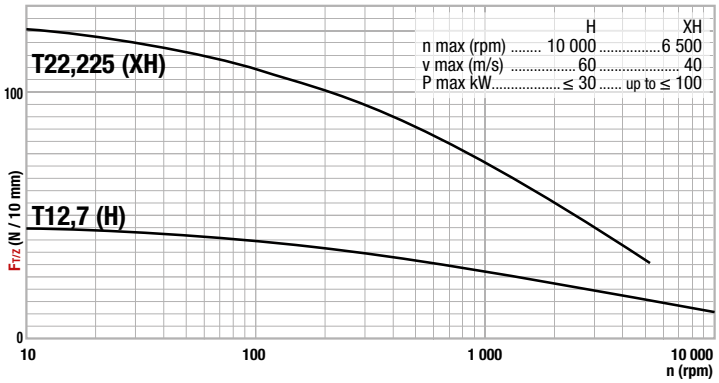
BELT ORDERING EXAMPLES				
Designation	Width	Profile / Length	Type	Particular specification
SYNCHROFLEX timing belt	6	M/182	SYN	
BRECOFLEX timing belt	25.4	T5.08/ 889	BFX	PAZ

TIMING BELTS





Tangential force transmittable by the teeth



Available widths (mm)

H	12.7	19.1	25.4	38.1	50.8	76.2	101.4
XH		19.1	25.4	38.1	50.8	76.2	101.4
CODE	050	075	100	150	200	300	400

Manufacturing capacities

	SYNCHROFLEX®	BRECOFLEX® H - H PAZ	BRECOFLEX® XH - XH PAZ
Standard lengths	Length acc. to standard table only	All intermediate lengths can be produced from 723.9 mm to 16 002 mm[1]	Length from 314.33 to 685.80 mm = one sleeve minimum All intermediate lengths can be produced from 1 422.4 mm to 16 002 mm [1]
Types DL and DL/PAZ[4]		All intermediate lengths possible from 901,7 mm[1]	
Polyurethanes[2]	DEDU 8600	TPU ST1	TPU ST1
Winding	Monofilar	Bifilar	Bifilar
Tension member[3]	Steel	Steel	Steel

1. Minimum order
2. Other polyurethanes (see table "Characteristics of materials" *page 5*)
3. Other tension members (Kevlar, high-flexibility tension members, stainless steel)

} Consult us

4. See "Coatings" *page 56*

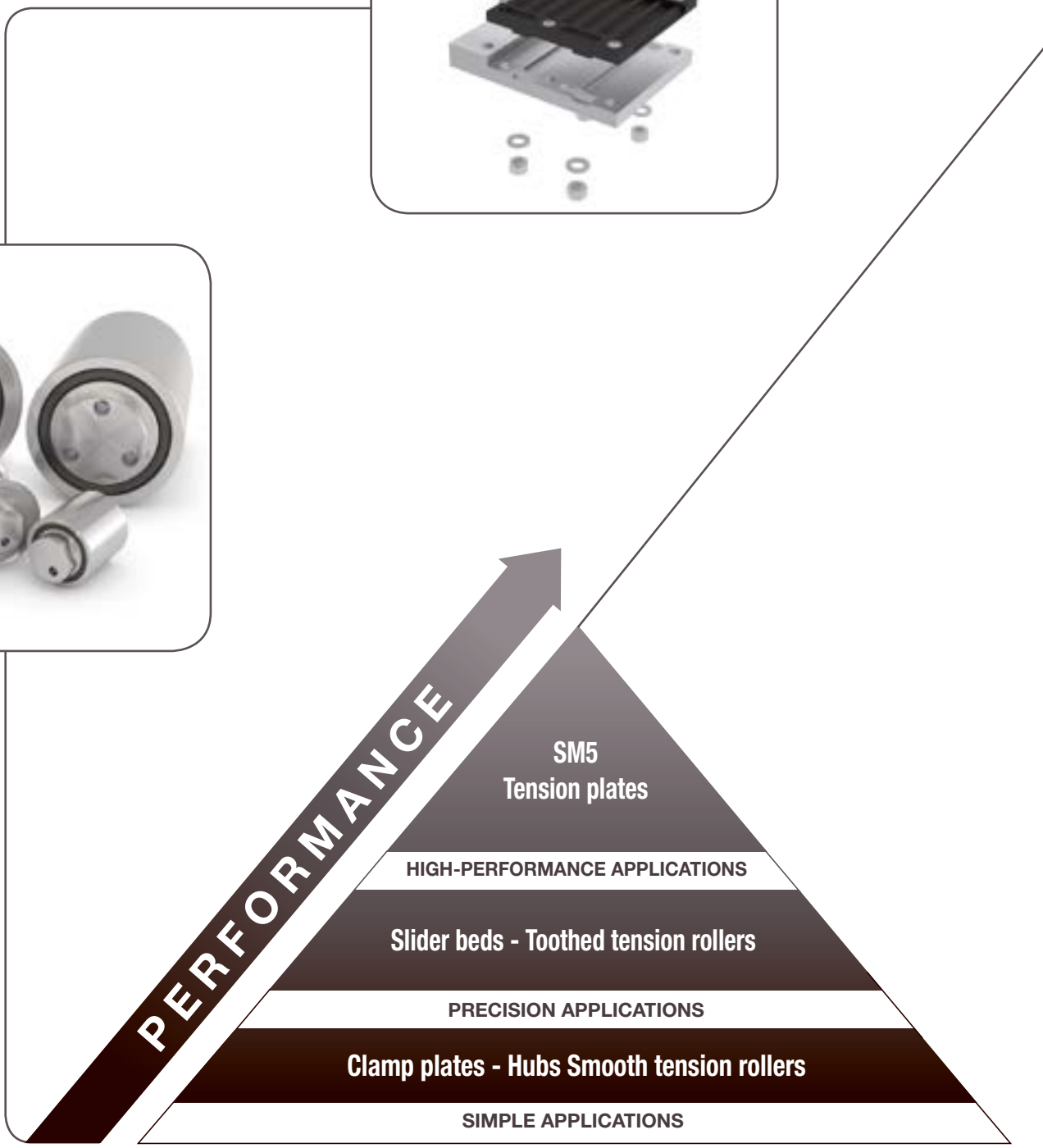
Standard lengths profile / mm	No. of teeth	SYNCHROFLEX® SD	BRECOFLEX® SD	BRECOFLEX® DL
H T12.7				
285 H / 723.90	57		o	
300 H / 762.00	60		o	
315 H / 800.10	63		o	
330 H / 838.20	66		o	
345 H / 876.30	69		o	
360 H / 914.40	72	o	o	o
375 H / 952.50	75		o	o
390 H / 990.60	78		o	o
405 H / 1028.70	81		o	o
420 H / 1066.80	84		o	o
450 H / 1143.00	90		o	o
480 H / 1219.20	96		o	o
500 H / 1270.00	100	o		
510 H / 1295.40	102		o	o
540 H / 1371.60	108		o	o
570 H / 1447.80	114		o	o
600 H / 1524.00	120		o	o
630 H / 1600.20	126		o	o
660 H / 1676.40	132		o	o
700 H / 1778.00	140	o	o	o
750 H / 1905.00	150		o	o
800 H / 2032.00	160		o	o
850 H / 2159.00	170		o	o
900 H / 2286.00	180		o	o
1000 H / 2540.00	200		o	o
1100 H / 2794.00	220		o	o
1250 H / 3175.00	250		o	o
1400 H / 3556.00	280		o	o
1700 H / 4318.00	340		o	o
2000 H / 5080.00	400		o	o
2300 H / 5842.00	460		o	o
2600 H / 6604.00	520		o	o
3000 H / 7620.00	600		o	o
XH T22.225				
560 XH / 1422.40	64		o	o
630 XH / 1600.20	72		o	o
700 XH / 1778.00	80		o	o
770 XH / 1955.80	88		o	o
840 XH / 2133.60	96		o	o
980 XH / 2489.20	112		o	o
1120 XH / 2844.80	128		o	o
1260 XH / 3200.40	144		o	o
1400 XH / 3556.00	160		o	o
1540 XH / 3911.60	176		o	o
1750 XH / 4445.00	200		o	o
1960 XH / 4978.40	224		o	o
2275 XH / 5778.50	260		o	o
2450 XH / 6223.00	280		o	o
3500 XH / 8890.00	400		o	o

Width max. = 101,6 mm

Pulleys: see *page 8*

DELIVERY TIMES		
Standard belts	o	4 weeks

BELT ORDERING EXAMPLES				
Designation	Type	Width	Profile / Length	Particular specifications
BRECOFLEX timing belt	BFX	25.4	T12.7/ 1778	PAZ


PERFORMANCE
SM5
Tension plates
HIGH-PERFORMANCE APPLICATIONS
Slider beds - Toothed tension rollers
PRECISION APPLICATIONS
Clamp plates - Hubs Smooth tension rollers
SIMPLE APPLICATIONS

■ ACCESSORIES

The operation of a toothed belt is very much influenced by the quality of the flanged pulleys and accessories which are used in the application.

These accessories have been specifically designed to be used with our belts. The choice of materials together with the manufacturing technologies used ensure that your transmission has an optimum service life.

SM5: The tension meter enables the user to measure reliably the pre-tension force to be applied to the belt. This device is essential to the correct operation of the belt over time in that it:

- ensures good meshing
- prolongs the service life (belt, roller bearings)
- improves efficiency
- prevents tooth jumping
- prevents overloading on the bearings
- reduces noise

Slider beds: Belt-supporting slider beds have been specially designed for our belts to ensure a good distribution of loads and a low friction coefficient.

Tension plates: Tension plates have been developed to provide optimum safety. In effect, the variants recommended for the different belts have been laboratory-tested to bear the load at rupture of the belts.

Rollers: Tension rollers with eccentric shafts smoothly apply the pre-tension force and, based on the position, improve the belt wrap.
Fixed rollers, designed to bear the dynamic and static loads applied to the belt, are basically adapted to multiple-pulley transmissions.

They can be used in a variety of applications:

- **Linear applications:**
  SM5 - Fixed and tension rollers - Clamp and tension plates
- **Power applications:**
  SM5 - Tension rollers
- **Conveying applications:**
  SM5 - Slider beds

The SM5 is a device for monitoring and measuring the installation tension for all types of belts. Maintaining control of the pre-tension is essential to ensuring the correction operation of a transmission.

1 / Advantages

Good pre-tension:
- prolongs the service life of the belt and the bearings,
- improves the quality of meshing and positioning,
- limits the noise level,
- improves efficiency, and yet limits power consumption.

It can also be used to check the parallelism of the pulleys by taking a comparative measurement of the two sides of the belt.

2 / / Specific details

- Compatible with all belt types,
- Practical and easy to use for fitters and maintenance personnel,
- Highly convenient: very good readings, backlit display, battery wear indicator,
- Excellent price/performance ratio.

3 / SM5 features

- Two versions: integrated sensor (standard), separate sensor (on request),
- Measuring range: 7 to 450 Hz,
- Accuracy: ± 5 Hz,
- Supplied with 9V long-life battery (6LR61),
- Complies with the CE standard.

4 / Working principle

The SM5 measures the natural vibration frequency of a taut belt between two pulleys and enables the installation pre-tension F_{pt} to be calculated. Simply press and hold down the button for a few seconds to turn on the meter.
The activation of the meter is verified by a beep and the backlit display lighting up.
The display indicates 0 Hertz, the battery charge state and the message "Ready"; it is now ready for use:
- Aim the light beam at a distance of 1 to 3 cm from the back of the belt,
- Tap the belt to generate vibration: a beep and the backlit display indicate that the belt vibration frequency is being measured,
- Wait a few seconds and for "Ready" to be displayed to perform another measurement.

Turn off the device by pressing and holding down the button for a few seconds.

5 / Formulae

$$F_{pt\,(N)} = \frac{K \times b_{(mm)} \cdot L^2_{(m)} \cdot f^2_{(Hz)}}{100}$$

$$f_{(Hz)} = \sqrt{\frac{100 \cdot F_{pt\,(N)}}{K \times b_{(mm)} \cdot L^2_{(m)}}}$$

$$K = \frac{400 \cdot m_{(kg/m)}}{b_{(mm)}}$$

m = belt weight in kg/m

6 / Determining F_{pt}

> Torque known

Linear transmission (fig. 1)

Length of spans	Installation tension
Any position	$F_{pt} = F_t$

Simple two-pulley transmission (fig. 2)

Number of belt teeth Z_b	Installation tension
$Z_b < 60$	$F_{pt} = 1/3\ F_t$
$60 < Z_b < 150$	$F_{pt} = 1/2\ F_t$
$150 < Z_b$	$F_{pt} = 2/3\ F_t$

Multiple-pulley transmission (fig. 3)

Length of spans	Installation tension
Driving span ≤ free span	$F_{pt} = F_t$
Driving span > free span	$F_{pt} > F_t$

> Torque not known

Take arbitrarily the pre-tension force equal to 20 % of the permissible nominal force through the belt tension member.
Example: A 25 T10 (25 mm wide) belt bears a permissible force of 720 N/10 mm wide, i.e. 2.5 x 720 = 1800 N for 25 mm.
Take 20 % of the max. force: i.e. 1800 x 20/100 = 360 N
If the free span measures 250 mm, thanks to the formula (2), the following is obtained:

$$f = \sqrt{\frac{100 \times 360}{1{,}9 \times 25 \times (0{,}25)^2}} = 110\ \text{Hz}$$

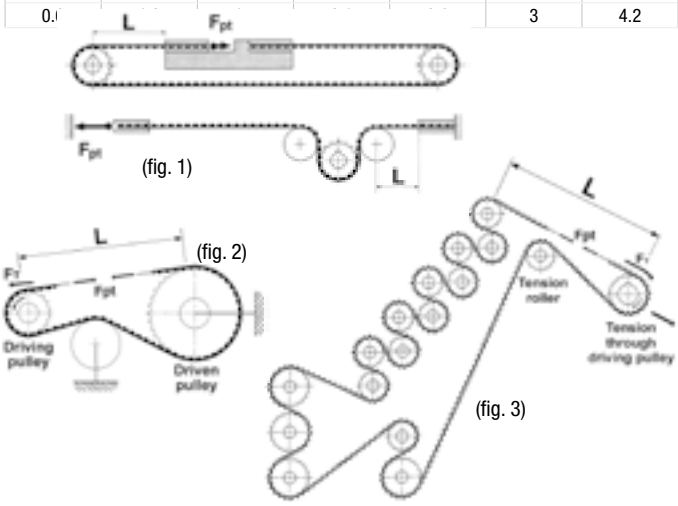
7 / Constants K

Profile / pitch	BRECO® (M)	BRECOFLEX®	SYNCHROFLEX®	SYNCHROFLEX® GEN III	BRECOFLEX® DL
AT profile belts					
AT3	0.9	0.9	0.9	1	
AT5	1.3	1.2	1.3	1.4	1.6
ATL5	1.5				
ATK5K6	1.4	1.3			
AT10	2.3	2.5	2.5	3	3
ATL10	2.7				
ATK10K6	2.4	2.3			3
ATK10K13	2.5				
ATS15	4	3.5			4.7
AT15 BLUE	3.1				
AT20	3.8	3.8	4.2	4.6	4.6
ATL20	4.4				
ATK20	4				
ATP10			2.25	2.7	2.5
ATP15		3.2	3.2		3.5
BAT10 / BATK10	2.4	2.3			
BAT15 / BATK15	3.4	3.4			
SFAT10	2.3	2.3			
SFAT15		3.5			
SFAT20	3.8	3.8			
T profile belts					
T2			0.4		
T2.5	0.6		0.6		0.6
T5	0.8		0.9		1.2
TK5K6	1	1			
T10	1.8		1.9		2.3
TK10K6	1.9	1.9			
T20	3		3		4
T5.08	0.9		1		
T9.525	1.32	1.32	1.5		
T12.7	1.7	1.7	1.8		1.9
T22.225	4.2	4.2	4.2		
Trapezoidal belts					
K13	3	3.0			
K17	5.2	5.2			
K20	5	5.0			
K30	7.7	7.7			
K32	9.4	9.4			

CONTI® SYNCHRODRIVE HTD profile belts					CONTI® SYNCHROCHAIN
Profile / pitch	HTD HF STD HF	HTD HP STD HP	HDT HS STD HS	HTD XHP	CTD
14	4.1	4.5	4.6	5.6	3.12
8	2.2	2.5	2.9		1.8
5	1.3	1.6	1.9		

CONTI® SYNCHROFORCE belts					
Profile / pitch	HTD CXP	DHTD CXP	HTD CXA	STD CXP	DSTD CXP
14	4	4.9	3.5		
8	1.35	1.68			
5	2.2	2.8	1.9	2	2.5

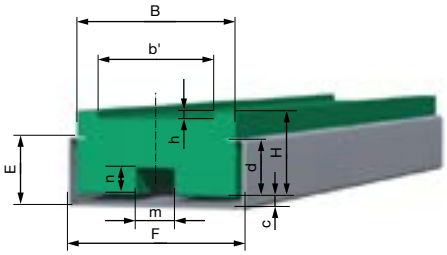
Flat belts						
F1	F2	F2.2	F2.5	F3	F6	XHS
0.[illegible]					3	4.2



(fig. 1)
(fig. 2)
(fig. 3)

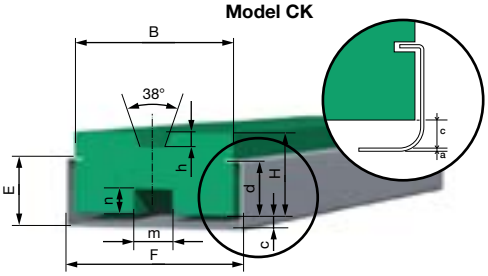
Slider bed profiles

Model CB



With guide edges

Model CK

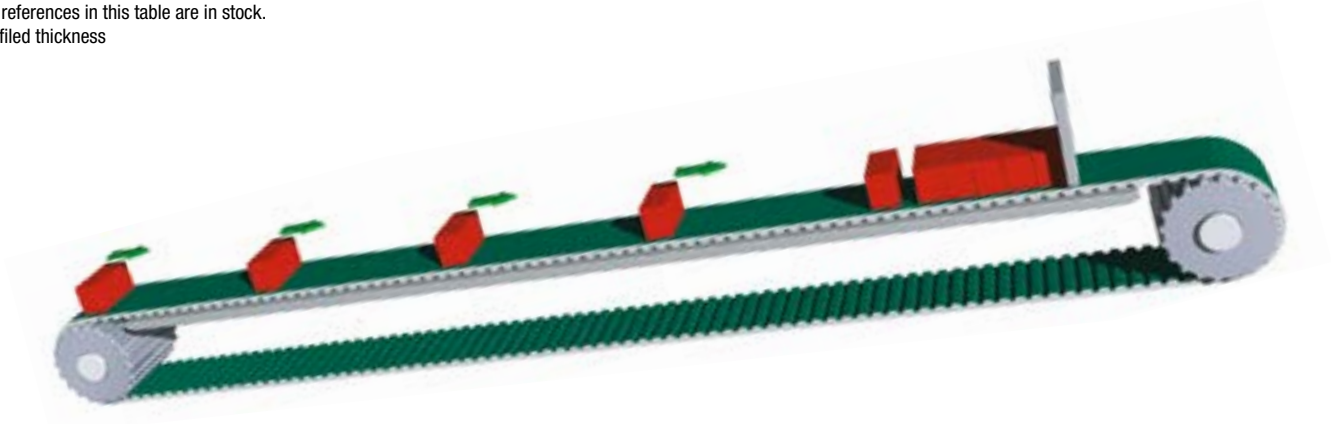


With central guide profile K

Slider bed dimensions (mm)

Designation	Width of belt	b' 0/+0,5	h	B	H	E	F	a*	c	d	m	n
CB25-T5/AT5-2000	25	26	2	34	15	16	28	2	6	5		
CB32-T5/AT5-2000	32	33	2	43	20	18	38	2.5	6	7		
CB50-T5/AT5-2000	50	51	2	61	20	20	60	2.5	8	7		
CB75-T5/AT5-2000	75	76	2	86	20	20	60	2.5	8	7		
CB100-T5/AT5-2000	100	101	2	115	20	10	80	2	1	5	12	6
CB25-T10/AT10-2000	25	26	4	34	20	16	28	2.5	6	5		
CB32-T10/AT10-2000	32	33	4	43	20	18	38	2.5	7	6		
CB50-T10/AT10-2000	50	51	4	65	25	20	60	2.5	7	8		
CB75-T10/AT10-2000	75	76	4	90	25	20	60	2.5	7	8		
CB100-T10/AT10-2000	100	101	4	115	20	10	80	2	1	5	12	6
CB50T20/AT20-2000	50	51	7	65	25	20	60	2.5	7	8	12	2
CB75T20/AT20-2000	75	76	7	90	30	20	60	2.5	7	8	12	2
CB100T20/AT20-2000	100	101	7	115	25	10	80	2	1	5	12	8
CK6-32TK5/ATK5-2000	32		4	43	20	18	38	2.5	6	7		
CK6-50TK5/ATK5-2000	50		4	61	20	20	60	2.5	8	7		
CK13-32TK10/ATK10-2000	32		4.5	43	20	18	38	2.5	7	6		
CK13-50TK10/ATK10-2000	50		4.5	65	25	20	60	2.5	7	8		
CK13-75TK10/ATK10-2000	75		4.5	80	25	20	60	2.5	7	8		
CK13-100TK10/ATK10-2000	100		4.5	110	20	10	80	2	1	5	12	6
CK13-50TK20/ATK20-2000	50		2	61	25	20	60	2.5	6	9	12	3
CK13-75TK20/ATK20-2000	75		2	80	25	20	60	2.5	6	9	12	3
CK13-100TK20/ATK20-2000	100		4.5	110	20	10	80	2	1	5	12	8

All the references in this table are in stock.
*a: profiled thickness



Features

- This slider profile, adapted specially to Breco belts, is made of green high-density polyethylene (PEHD).
- These properties increase the performance and improve the efficiency of conveying systems.
- Its resistance to wear is well established.
- Its friction coefficient with our belts is particularly low (around 0.3) and is improved with the PAZ.
- The C section profile is made of galvanised steel or (on request) stainless steel. It can be secured with screws. Once C section profile has been secured it is sufficient to slide the PEHD profile.
- The interior space between the slider profile and the C section profile or the release groove in the same place allow retaining screws to be inserted.

The belts can be guided by slider profiles fitted with edges - version CB - or by a central trapezoidal groove- version CK.
There are 2 trapezoidal guide grooves : K6 (6 mm base) and K13 (13 mm base).
All the standard stock slider beds are offered at a length of 2 m.

Our factory is very flexible in being able to offer solutions with profiles adapted to your specific drawing-based needs.

Comments

- The coefficient of expansion of the PEHD material is high, with a profile elongation of 0.2 mm/m per °C having to be taken into account. To this end the profile will be able to expand freely in its steel support.
- The maximum temperature of use is limited to 80°C. The friction coefficient increases with temperature.

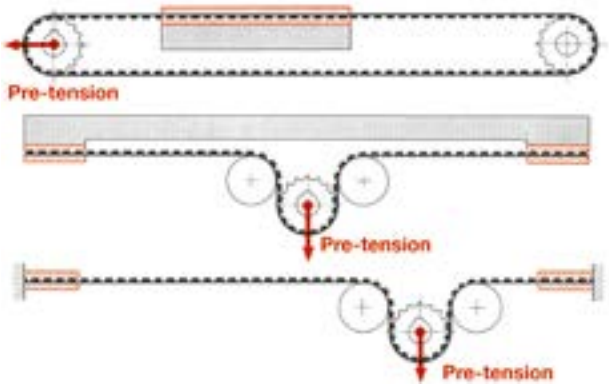
PULLEY ORDERING EXAMPLES		
Designation	Type	Model
Guide profile	GLI	CK6-32TK5-2000

Slider profiles in stock	2–3 weeks
C section profiles in stock	2–3 weeks
Slider and C profiles acc. to drawing	Consult us

Features

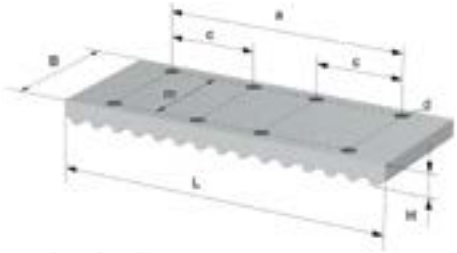
These clamp plates are used for all linear drive applications.
They are supplied without a counter-plate. They are used to:
- secure a carriage to a linear belt,
- secure the ends of a belt to a machine frame.

These clamp plates can be machined according to customer drawings (please consult us with your drawing).



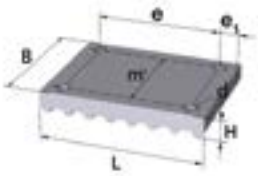
Types of plates

Clamp plate with bore holes

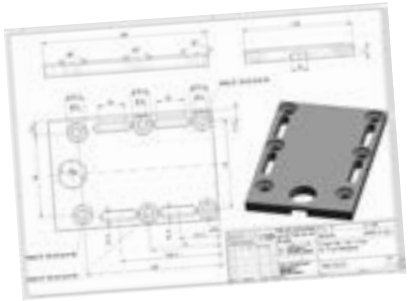


Clamp plate without bore holes

Clamp half-plate with bore holes



Clamp plates according to drawing



Example of customer drawing: Be sure to highlight all dimensions or details that differ from our standard manufacturing tolerances.

CLAMP PLATE ORDERING EXAMPLE				
Designation	Material	W x L	Pitch	without or with bore holes
BRECO Clamp plate	Al	50 x 160	AT10	SP

DELIVERY TIMES		
Standard plates	●	3 days
Factory stock plates	○	3 weeks
Plates acc. to drawing		Consult us

The plates held in stock do not have bore holes.

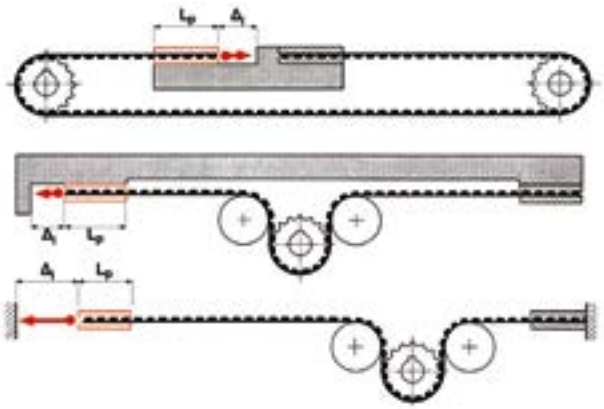
Belt width (mm)	B×L Plates	B×L Half-plates	Type / Pitch	d (mm)	m (mm)	m' (mm)	a (mm)	c (mm)	e (mm)	e_1 (mm)	H (mm)	Stock
AT profile												
10	30×75		AT3	5,5	20		50	12,5			8	
20	50×75		AT3	5,5	30		50	12,5			8	
25	60×75		AT3	5,5	38		50	12,5			8	
25	50×120	50×58	AT5	5,5	38	35	80	20	30	15	10	●
32	60×120	60×58	AT5	5,5	46	42	80	20	30	15	10	●
50	75×120	75×58	AT5	5,5	62	60	80	20	30	15	10	●
75	110×120	110×58	AT5	5,5	94	90	80	20	30	15	10	
25	50×160	50×78	AT10	6,5	38	35	110	30	40	20	10	●
25	50×160	50×78	BAT10	6,5	38	35	110	30	40	20	10	
32	60×160	60×78	AT10	6,5	46	42	110	30	40	20	10	●
32	60×160	60×78	BAT10 BATK10	6,5	46	42	110	30	40	20	10	
50	75×160	75×78	AT10	6,5	62	60	110	30	40	20	10	●
50	75×160	75×78	BAT10 BATK10	6,5	62	60	110	30	40	20	10	
75	110×160	110×78	AT10	6,5	94	90	110	30	40	20	10	●
75	110×160	110×78	BAT10 BATK10	6,5	94	90	110	30	40	20	10	
25	50×180	50×88	AT15 protect ATS15	9	38	35	140	50	50	20	20	
32	60×180	60×88	AT15 protect ATS15	9	46	42	140	50	50	20	20	
50	75×180	75×88	AT15 protect ATS15 BAT15 BATK15	9	62	60	140	50	50	20	20	
75	110×180	110×88	AT15 protect ATS15 BAT15 BATK15	9	94	90	140	50	50	20	20	
25	50×200	50×98	AT20	9	38	35	160	60	60	20	20	
32	60×200	60×98	AT20	9	46	42	160	60	60	20	20	
50	75×200	75×98	AT20	9	62	60	160	60	60	20	20	
75	110×200	110×98	AT20	9	94	90	160	60	60	20	20	
T profile												
10	30X50		T2.5*	5,5	20		30	15			6	
20	40X60		T2.5*	5,5	20		30	15			6	
25	50×120	50×58	T5	5,5	38	35	80	20	30	15	10	
32	60×120	60×58	T5	5,5	46	42	80	20	30	15	10	
50	75×120	75×58	T5	5,5	62	60	80	20	30	15	10	
75	110×120	110×58	T5	5,5	94	90	80	20	30	15	10	
25	50×160	50×78	T10	6,5	38	35	110	30	40	20	10	
32	60×160	60×78	T10	6,5	46	42	110	30	40	20	10	
50	75×160	75×78	T10	6,5	62	60	110	30	40	20	10	
75	110×160	110×78	T10	6,5	94	90	110	30	40	20	10	
25	50×200	50×98	T20	6,5	38	35	160	60	60	20	20	
32	60×200	60×98	T20	6,5	46	42	160	60	60	20	20	
50	75×200	75×98	T20	6,5	62	60	160	60	60	20	20	
75	110×200	110×98	T20	6,5	94	90	160	60	60	20	20	
Pas en pouces												
25,4	50×120		T1/5"	5,5	38		80	20			10	
38,1	60×120		T1/5"	5,5	46		80	20			10	
50,8	75×120		T1/5"	5,5	62		80	20			10	
76,2	110×120		T1/5"	5,5	94		80	20			10	
25,4	50×160		T3/8"	6,5	38		110	30			10	
38,1	60×160		T3/8"	6,5	46		110	30			10	
50,8	75×160		T3/8"	6,5	62		110	30			10	
76,2	110×160		T3/8"	6,5	94		110	30			10	
25,4	50×160		T1/2"	6,5	38		110	30			10	
38,1	60×160		T1/2"	6,5	46		110	30			10	
50,8	75×160		T1/2"	6,5	62		110	30			10	
76,2	110×160		T1/2"	6,5	94		110	30			10	
101,6	140×160		T1/2"	6,5	124		110	30			10	
25,4	50×200		T7/8"	6,5	38		160	60			20	
38,1	60×200		T7/8"	6,5	46		160	60			20	
50,8	75×200		T7/8"	6,5	62		160	60			20	
76,2	110×200		T7/8"	6,5	94		160	60			20	
HTD profile												
10		28×41,8	5M	5,5	16	16			25		8	
15		34×41,8	5M	5,5	22	22			25		8	
25		44×41,8	5M	5,5	32	32			25		8	
20		45×66	8M	9	29	29			40		15	
30		55×66	8M	9	39	39			40		15	
50		75×66	8M	9	59	59			40		15	
85		110×66	8M	9	94	94			40		15	
40		71×116	14M	11	51	51			70		22	
55		86×116	14M	11	66	66			70		22	
85		116×116	14M	11	96	96			70		22	

Material: Al.
*in T2.5 = 6 holes instead of 8.

SELECTION TABLE FOR TENSIONERS

BRECO®-fix tensioners enable the user to establish the pre-tension and secure the ends of a BRECO® linear belt on a linear drive.
They have been designed so that the connections between frames and belts are effective, precise and secure.

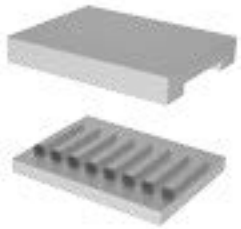
Steps to follow for implementation:
1. Place the end of the belt on the toothed part of the plate.
2. Place the top plate on the bottom plate of the system and pre-tighten with Assembly screws to mount the plates together.
   The system will now consist of a block of plates with the belt.
3. For plates with long holes.
   - Pre-tighten the assembled plate on the machine using the indicated fastening screws (screws as shown in the tables).
   - The plate must be able to slide slightly under these fastening screws so that the belt pre-tension can be easily effected.
   - The pre-tension can be easily checked with the SM5 meter (see page 124).
4. Then complete the final tightening of the fastening screws and Assembly screws in the plates.



Pitch	Belt type	Belt widths (mm)											
					32			50			75	100	150
5	T5	Variant A			Variant A			Variant A					
		Type 1	Type 2	Type 3	Type 1	Type 2	Type 3	Type 1	Type 2	Type 3			
	AT5/ATL5	Variant A			Variant A			Variant A					
		Type 1	Type 2	Type 3	Type 1	Type 2	Type 3	Type 1	Type 2	Type 3			
10	T10	Variant A			Variant A			Variant A					
		Type 1	Type 2	Type 3	Type 1	Type 2	Type 3	Type 1	Type 2	Type 3			
	AT10	Variant A			Variant A			Variant A			Variant B Type 2	Variant B Type 2	Variant C
		Type 1	Type 2	Type 3	Type 1	Type 2	Type 3	Type 1	Type 2	Type 3			
	BATK10				Variant A			Variant A			Variant B Type 2	Variant B Type 2	
					Type 1	Type 2	Type 3	Type 1	Type 2	Type 3			
	ATL10	Variant A			Variant A			Variant B Type 1			Variant B Type 2	Variant B Type 2	
		Type 1	Type 2	Type 3	Type 1	Type 2	Type 3						
15	ATS15							Variant B Type 1			Variant B Type 2	Variant B Type 2	Variant C
	BATK15							Variant B Type 1			Variant B Type 2	Variant B Type 2	
20	T20							Variant B Type 1			Variant B Type 2	Variant B Type 2	Variant C
	AT20							Variant B Type 1			Variant B Type 2	Variant B Type 2	Variant C
	ATL20							Variant B Type 1			Variant B Type 2	Variant B Type 2	

Variant A - type 1

Top plate in - Al 2017A
Bottom plate - AlHR (7075)



Variant A - type 2

Top plate in - Al 2017A
Bottom plate - AlHR (7075)

Variant A - type 3

Top plate in - Al 2017A
Bottom plate - AlHR (7075)

Variant B - type 1

AlHR (7075)
Toothed plate - glass fibre reinforced polyamide

Variant B - type 2

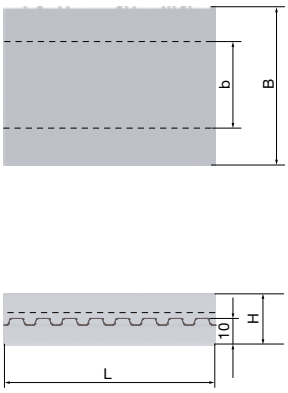
Top plate in - STEEL S235
Bottom plate - AlHR (7075)
Toothed plate - glass fibre reinforced polyamide

Variant C

STEEL S235

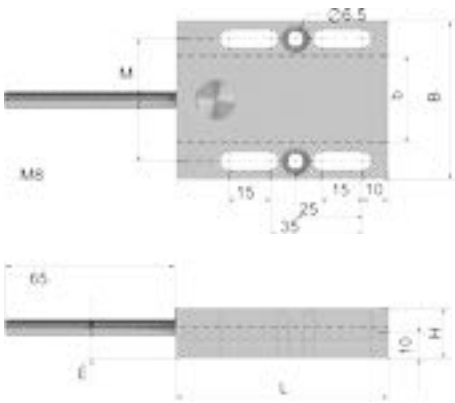
VARIANT A

Variant A - type 1



Dimensions	Types 1. 2 and 3			Types 2 and 3	
Belt widths and type	B (mm)	L (mm)	H (mm)	M (mm)	m (mm)
25 T5	50	80	18.5	38	10.25
32 T5	60	80	18.5	46	10.25
50 T5	75	80	18.5	62	10.25
25 T10	50	80	19.5	38	11.25
32 T10	60	80	19.5	46	11.25
50 T10	75	80	19.5	62	11.25
25 AT5	50	80	19	38	10.75
32 AT5	60	80	19	46	10.75
50 AT5	75	80	19	62	10.75
25 ATL5	50	80	19	38	10.75
32 ATL5	60	80	19	46	10.75
50 ATL5	75	80	19	62	10.75
25 AT10	50	80	19.5	38	11.25
32 AT10	60	80	19.5	46	11.25
50 AT10	75	80	19.5	62	11.25
25 ATL10	50	80	19.5	38	11
32 ATL10	60	80	19.5	46	11
32 BATK10	60	80	19.5	46	11.25
50 BATK10	75	80	19.5	62	11.25

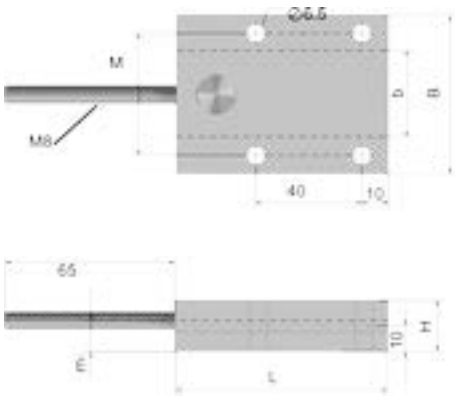
Variant A - type 2



Installation instructions

	BELT WIDTHS	25	32	50
Type2	Assembly screws	Screws FHC ISO 10642 2 x M5 8.8 galvanised (HC3)	Screws FHC ISO 10642 2 x M5 8.8 galvanised (HC3)	Screws FHC ISO 10642 2 x M5 8.8 galvanised (HC3)
	Recommended tightening torque for assembly screw	6 Nm	6 Nm	6 Nm
	Fastening screws	Screws CHC ISO 4762 4 x M6 8.8 galvanised (HC 5)	Screws CHC ISO 4762 4 x M6 8.8 galvanised (HC 5)	Screws CHC ISO 4762 4 x M6 8.8 galvanised (HC 5)
	Recommended tightening torque for fastening screw	10 Nm	10 Nm	10 Nm
	Tightening torque for immobilising the belt	10 Nm	10 Nm	10 Nm
	Max. permissible nominal force	22 400 N	28 800 N	34 000 N
Type 3	Fastening screws	Screws CHC ISO 4762 4 x M6 8.8 galvanised (HC 5)	Screws CHC ISO 4762 4 x M6 8.8 galvanised (HC 5)	Screws CHC ISO 4762 4 x M6 8.8 galvanised (HC 5)
	Recommended tightening torque for fastening screw	10 Nm	10 Nm	10 Nm
	Tightening torque for immobilising the belt	10 Nm	10 Nm	10 Nm
	Max. permissible nominal force	22 400 N	28 800 N	34 000 N

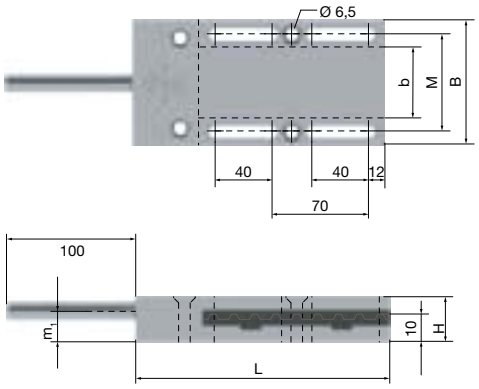
Variant A - type 3



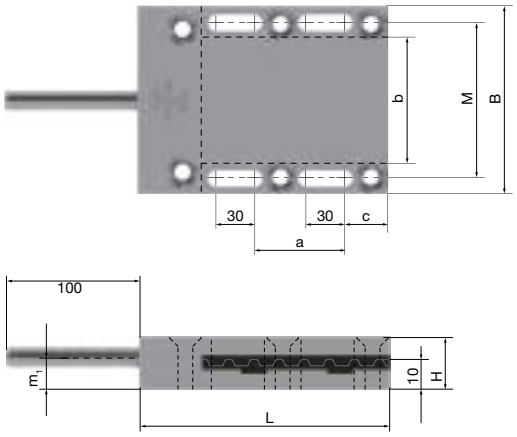
TENSION PLATE ORDERING EXAMPLE				
Designation	Width x Length	Pitch	Variant	Type
BRECO®-fix plate	60 x 80	AT5	Var A	Type 1
BRECO®-fix plate	60 x 80	AT10	Var A	Type 2
BRECO®-fix plate	50 x 80	AT5	Var A	Type 3

VARIANT B

Variant B - type 1



Variant B - type 2

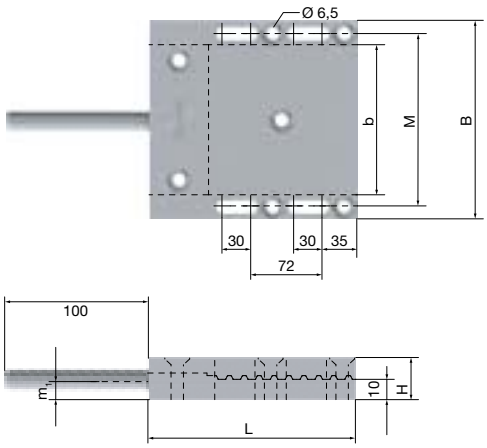


Dimensions Belt widths and type	B (mm)	L (mm)	M (mm)	m_1 (mm)	a (mm)	c (mm)	h (mm)	H (mm)
Variant B Type 1								
50 ATL10	90	180	70	20.5			19.80	32
50 ATS15	90	180	70	20.5			19.38	32
50 BAT15	90	180	70	20.5			19.58	32
50 T20	90	180	70	20.5			19.80	32
50 AT20	90	180	70	20.5			19.80	32
50 ATL20	90	180	70	20.5			18.68	32
Variant B Type 2								
75 AT10	120	180	97	19.5	65	29.5	19.09	33
100 AT10	150	200	124	25.5	72	35	25.09	42
75 BATK10	120	180	97	19.5	65	29.5	19.09	33
100 BATK10	150	200	124	25.5	72	35	25.09	42
75 ATL10	120	180	97	19.5	65	29.5	18.80	33
100 ATL10	150	200	124	25.5	72	35	24.80	42
75 ATS15	120	180	97	19.5	65	29.5	18.38	33
100 ATS15	150	200	124	25.5	72	35	24.38	42
75 BATK15	120	180	97	19.5	65	29.5	18.58	33
100 BATK15	150	200	124	25.5	72	35	24.58	42
75 T20	120	180	97	19.5	65	29.5	18.08	33
100 T20	150	200	124	25.5	72	35	24.08	42
75 AT20	120	180	97	19.5	65	29.5	18.08	33
100 AT20	150	200	124	25.5	72	35	24.08	42
75 ATL20	120	180	97	19.5	65	29.5	17.68	33
100 ATL20	150	200	124	25.5	72	35	23.68	42
Variant C								
150 AT10	200	210	174	25.5			25.05	42
150 ATS15	200	210	174	25.5			24.25	42
150 T20	200	210	174	25.5			24.20	42
150 AT20	200	210	174	25.5			23.85	42

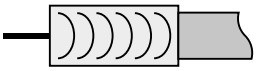
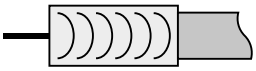
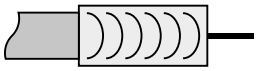
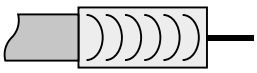
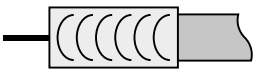
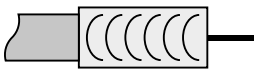
Installation instructions

VARIANT	VARIANT B TYPE 1	VARIANT B TYPE 2		VARIANT C
BELT WIDTHS	50	75	100	150
Assembly screws	Screws FHC ISO 10642 2 x M8 8.8 galvanised (HC5) and 2 M10 8.8 (HC6)	Screws FHC ISO 10642 6 x M10 8.8 (HC6)	Screws FHC ISO 10642 6 x M12 8.8 (HC8)	Screws FHC ISO 10642 7 x M12 8.8 (HC8) and an additional screw in the middle of the belt
Recommended tightening torque for assembly screw	8 Nm for M8 17 Nm for M10	18 Nm	28 Nm	42 Nm
Fastening screws	Screws CHC ISO 4762 4 x M6 8.8 (HC 6)	Screws CHC ISO 4762 4 x M10 8.8 (HC 6)	Screws CHC ISO 4762 4 x M12 8.8 (HC 10)	Screws CHC ISO 4762 4 x M12 8.8 (HC 6)
Recommended tightening torque for fastening screw	34 Nm	45 Nm	70 Nm	105 Nm
Tightening torque for immobilising the belt	34 Nm in the CHC screw in the elongated hole	64 Nm in the FHC screw	114 Nm in the FHC screw	122 Nm in the FHC screw
Max. permissible nominal force	61 600 N	95 200 N	126 200 N	190 400 N

VARIANT C



Installation information, BAT belt

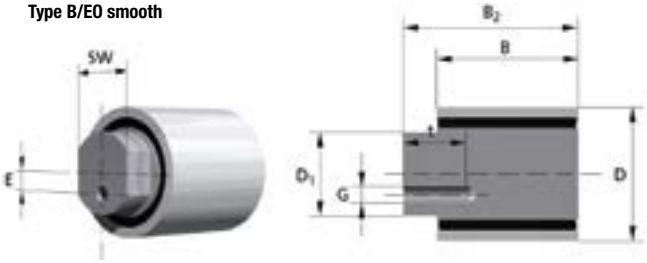
VARIANT B TYPE 1	VARIANT B TYPE 2	
The toothed plate for BAT15 belts can be used on both the right and the left	For BATK10 and BATK15, the toothed plate is oriented along the direction of the teeth of the belt	
Curve oriented to the right 	Orientation to the right 	Orientation to the left 
Curve oriented to the left 	Orientation to the right 	Orientation to the left 

TENSION PLATE ORDERING EXAMPLE					
Designation	Width x Length	Pitch	Variant	Type	Version
BRECO®-fix plate	90 x 180	ATL10	Var B	Type 1	without tension element
BRECO®-fix plate	120 x 180	BAT15	Var B	Type 2	Teeth oriented to the left
BRECO®-fix plate	200 x 210	AT10	Var C	without assembly element	

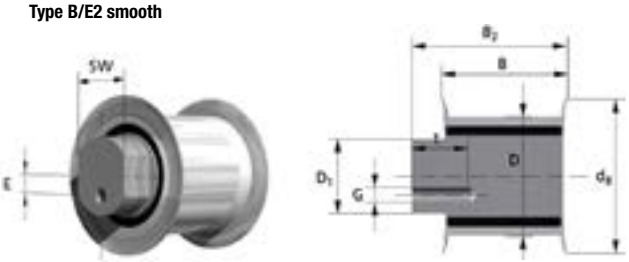
SMOOTH TENSION ROLLERS

Rollers with eccentric shaft

Type B/EO smooth

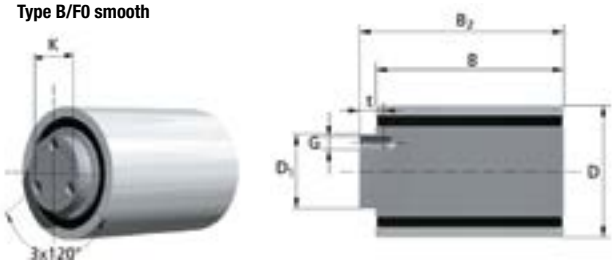


Type B/E2 smooth

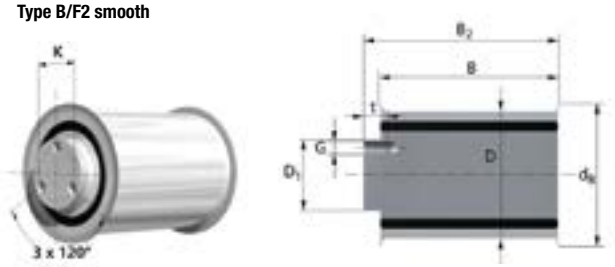


Fixed rollers

Type B/FO smooth



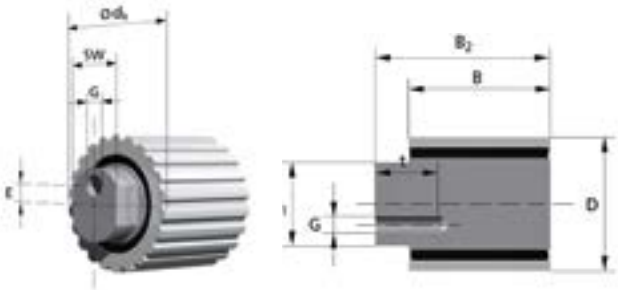
Type B/F2 smooth



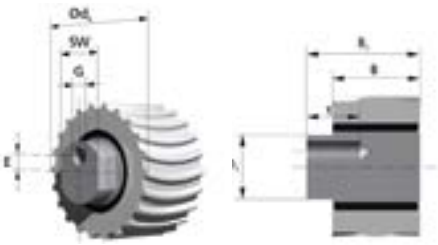
Designation	Type	Material	Stock	B (mm)	D (mm)	No. of flanges	Max. belt width (mm)	dB (mm)	B2 (mm)	E (mm)	k	G	t (mm)	SW (mm)	D1 (mm)	Load		Speed max. n (min-1)
																Cdyn. (N)	Cstat. (N)	
B/EOAl34/32-0	B/EO	Al	●	34	32	0	25	-	42	5		M6	10	17	20	7950	3920	10000
B/E2Al34/32-2	B/E2	Al	o	34	32	2	25	41.5	42	5		M6	10	17	20	7950	3920	10000
B/EOAl40/60-0	B/EO	Al	o	40	60	0	32	-	50	5		M12	20	27	30	19300	13100	5000
B/E2Al40/60-2	B/E2	Al	o	40	60	2	32	71	50	5		M12	20	27	30	19300	13100	5000
B/EOAl64/60-0	B/EO	Al	o	64	60	0	50	-	74	5		M12	20	27	30	19300	13100	5000
B/E2Al64/60-2	B/E2	Al	o	64	60	2	50	71	74	5		M12	20	27	30	19300	13100	5000
B/F0Al114/60-0	B/F0	Al	o	114	60	0	100	-	124		34	M8 (3×)	15		45	19300	13100	5000
B/F2Al114/60-2	B/F2	Al	o	114	60	2	100	71	124		34	M8 (3×)	15		45	19300	13100	5000
B/EOAl40/80-0	B/EO	Al	o	40	80	0	32	-	50	5		M12	20	27	30	19300	13100	5000
B/E2Al40/80-2	B/E2	Al	o	40	80	2	32	91	50	5		M12	20	27	30	19300	13100	5000
B/EOAl64/80-0	B/EO	Al	o	64	80	0	50	-	74	5		M12	20	27	30	19300	13100	5000
B/E2Al64/80-2	B/E2	Al	o	64	80	2	50	91	74	5		M12	20	27	30	19300	13100	5000
B/EOAl90/80-0	B/EO	Al	o	90	80	0	75	-	110	5		M20	32	36	45	48000	38000	5000
B/E2Al90/80-2	B/E2	Al	o	90	80	2	75	91	110	5		M20	32	36	45	48000	38000	5000
B/F0Al114/80-0	B/F0	Al	o	114	80	0	100	-	124		34	M8 (3×)	15		45	19300	13100	5000
B/F2Al114/80-2	B/F2	Al	o	114	80	2	100	91	124		34	M8 (3×)	15		45	19300	13100	5000
B/EOAl40/120-0	B/EO	Al	o	40	120	0	32	-	50	5		M12	20	27	30	19300	13100	5000
B/E2Al40/120-2	B/E2	Al	o	40	120	2	32	132	50	5		M12	20	27	30	19300	13100	5000
B/EOAl64/120-0	B/EO	Al	o	64	120	0	50	-	74	5		M12	20	27	30	19300	13100	5000
B/E2Al64/120-2	B/E2	Al	o	64	120	2	50	132	74	5		M12	20	27	30	19300	13100	5000
B/EOAl70/120-0	B/EO	Al	o	70	120	0	50	-	85	5		M20	30	36	45	70500	48000	5000
B/E2Al70/120-2	B/E2	Al	o	70	120	2	50	137	85	5		M20	30	36	45	70500	48000	5000
B/F0Al70/120-0	B/F0	Al	o	70	120	0	50	-	85		65	M12 (3×)	24		85	70500	48000	5000
B/F2Al70/120-2	B/F2	Al	o	70	120	2	50	137	85		65	M12 (3×)	24		85	70500	48000	5000
B/EOAl90/120-0	B/EO	Al	o	90	120	0	75	-	110	5		M20	32	36	45	48000	38000	5000
B/E2Al90/120-2	B/E2	Al	o	90	120	2	75	137	110	5		M20	32	36	45	48000	38000	5000
B/F0Al90/120-0	B/F0	Al	o	90	120	0	75	-	110		65	M12 (3×)	24		85	70500	48000	5000
B/F2Al90/120-2	B/F2	Al	o	90	120	2	75	137	110		65	M12 (3×)	24		85	70500	48000	5000
B/F0Al117/120-0	B/F0	Al	o	117	120	0	100	-	131		65	M12 (3×)	24		85	70500	48000	5000
B/F2Al117/120-2	B/F2	Al	o	117	120	2	100	137	131		65	M12 (3×)	24		85	70500	48000	5000
B/EOAl40/150-0	B/EO	Al	o	40	150	0	32	-	50	5		M12	20	27	30	19300	13100	5000
B/E2Al40/150-2	B/E2	Al	o	40	150	2	32	162	50	5		M12	20	27	30	19300	13100	5000
B/EOAl64/150-0	B/EO	Al	o	64	150	0	50	-	74	5		M12	20	27	30	19300	13100	5000
B/E2Al64/150-2	B/E2	Al	o	64	150	2	50	162	74	5		M12	20	27	30	19300	13100	5000
B/EOAl90/150-0	B/EO	Al	o	90	150	0	75	-	110	5		M20	32	36	45	48000	38000	5000
B/E2Al90/150-2	B/E2	Al	o	90	150	2	75	162	110	5		M20	32	36	45	48000	38000	5000
B/F0Al70/180-0	B/F0	Al	o	70	180	0	50	-	85		65	M12 (3×)	25		106	70500	48000	5000
B/F2Al70/180-2	B/F2	Al	o	70	180	2	50	204	85		65	M12 (3×)	25		106	70500	48000	5000
B/F0Al90/180-0	B/F0	Al	o	90	180	0	75	-	110		80	M16 (3×)	25		106	106000	76000	5000
B/F2Al90/180-2	B/F2	Al	o	90	180	2	75	204	110		80	M16 (3×)	25		106	106000	76000	5000
B/F0Al117/180-0	B/F0	Al	o	117	180	0	100	-	131		80	M16 (3×)	25		106	106000	76000	5000
B/F2Al117/180-2	B/F2	Al	o	117	180	2	100	204	131		80	M16 (3×)	25		106	106000	76000	5000

TOOTHED TENSION ROLLERS

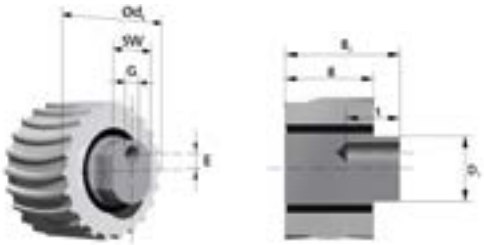
Type B/EO toothed



Type B/EO toothed for BAT - view from left



Type B/EO toothed for BAT - view from right



Designation	Type	Material	Stock	B (mm)	Pitch	No. of teeth	No. of flanges	Max. belt width (mm)	dk (mm)	B2 (mm)	E (mm)	G	t (mm)	D1 (mm)	SW (mm)	Load		Speed max. n (min-1)
																Cdyn. (N)	Cstat. (N)	
B/EO AL 34 T5 / 22 - 0	B/EO	Al	o	34	T5	22	0	25	34.15	42	5	M6	10	20	17	7950	3920	30000
B/EO AL 40 T10 / 20 - 0	B/EO	Al	o	40	T10	20	0	32	61.80	50	5	M12	20	30	27	19300	13100	30000
B/EO AL 64 T10 / 20 - 0	B/EO	Al	o	64	T10	20	0	50	61.80	74	5	M12	20	30	27	19300	13100	15000
B/EO AL 34 AT5 / 22 - 0	B/EO	Al	o	34	AT5	22	0	25	33.79	42	5	M6	10	20	17	7950	3920	15000
B/EO AL 40 AT10 / 20 - 0	B/EO	Al	o	40	AT10	20	0	32	61.84	50	5	M12	20	30	27	19300	13100	15000
B/EO AL 64 AT10 / 20 - 0	B/EO	Al	o	64	AT10	20	0	50	61.84	74	5	M12	20	30	27	19300	13100	15000
B/EO AL 40 BAT10 / 20* - 0	B/EO	Al	o	40	BAT10	20*	0	32	61.84	50	5	M12	20	30	27	19300	13100	15000
B/EO AL 64 BAT10 / 20* - 0	B/EO	Al	o	64	BAT10	20*	0	50	61.84	74	5	M12	20	30	27	19300	13100	15000
B/EO AL 40 BATK10 / 24 - 0	B/EO	Al	o	40	BATK10	24	0	32	74.57	50	5	M12	20	30	27	19300	13100	15000
B/EO AL 64 BATK10 / 24 - 0	B/EO	Al	o	64	BATK10	24	0	50	74.57	74	5	M12	20	30	27	19300	13100	15000

* Important: minimum diameter

Installation instruction:
Tension the belt while turning the roller with eccentric.

Comments

Material:
- Shaft: steel (St)
- Roller: aluminium (Al)
- Flanges: aluminium (Al)

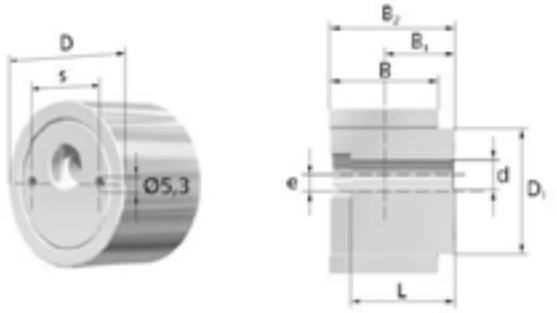
TENSION ROLLER ORDERING EXAMPLE				
Designation	Type	Material	Width B x diameter D or Width - Pitch / No. of teeth	No. of flanges
BRECO smooth roller	B/F2	AL	70 x 180	2
BRECO toothed roller	B/EO	AL	34 T5/22-	0

DELIVERY TIMES		
Rollers in stock	●	3 days
Standard rollers	o	2 weeks

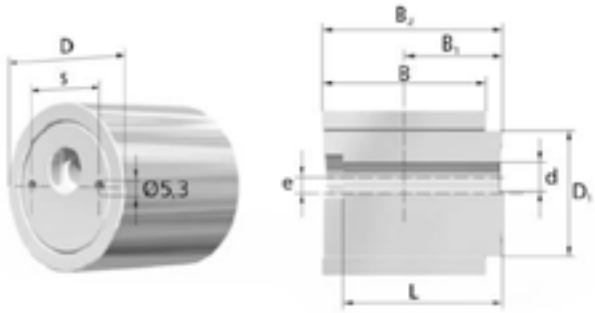
TENSION ROLLERS

Stock Program

Type M heavy series, eccentric



1 groove



2 groove

The Type M Mulco tensioner is available in 7 standard sizes. The tensioners feature a rigid and vibration-resistant support structure and the belt loads are resisted by the generously sized base diameter D1. The race and the sup-port structures are made from AlCu4MgSi. The tensioners are mounted on the machine frame and the eccentric mount allows for easy adjustment of the belt pre-tension. For adjusting the mounting shaft, the pin spanner (pictured right) can be used.

The tensioners are fitted with high-quality ball bearings and pre-lubricated for life with lithium grease. They are short-time temperature resistant up to 120 °C and permanent temperatures from 70 °C and above will lead to a lower grease life than expected. The stated load ratings are based on the total tensioner where a central belt load is assumed.

Socket-head screws to DIN 6912 can be used for moun-ting to the machine frame. The screw length is dependant on proper construction in accordance with the mounting options and the associated environment. The thread sizes in the table use the recommended strength class of the screws provided.

Special sizes and tensioners with flanges on request.

Order code			Weight		Dimensions									Bearing type
			kg		B (mm)	B_1 (mm)	B_2 (mm)	D (mm)	D_1 (mm)	L (mm)	e (mm)	s (mm)	d (mm)	1 groove 2 groove
Tensioner	BSR	71-100		0.06	14	16	23	28	17.5	-	-	-	-	1
Tensioner	BSR	73-100		0.1	27	26	39.5	28	17.5	-	-	-	-	2
Mulco tensioner	M	40/60-0	approx.	0.4	40	26	46	60	46	37.5	6	35	11	1
Mulco tensioner	M	60/60-0	approx.	0.5	60	36	66	60	46	57.5	6	35	11	2
Mulco tensioner	M	110/60-0	approx.	0.8	110	61	116	60	46	106.5	5	35	13	2
Mulco tensioner	M	60/120-0	approx.	2.4	60	35	70	120	94	57.5	17	70	17	2
Mulco tensioner	M	110/120-0	approx.	3.9	110	60	120	120	94	107.5	17	70	17	2
Mulco tensioner	M	85/180-0	approx.	7.0	85	45	95	180	137	78.5	30	70	26	2
Mulco tensioner	M	160/180-0	approx.	10.8	160	83	170	180	137	153.5	30	70	26	2

TENSION ROLLERS

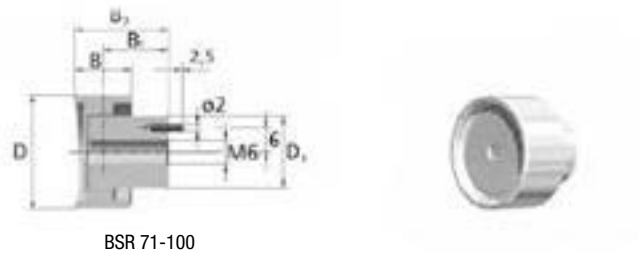
Stock Program

Type BSR light series, non-eccentric

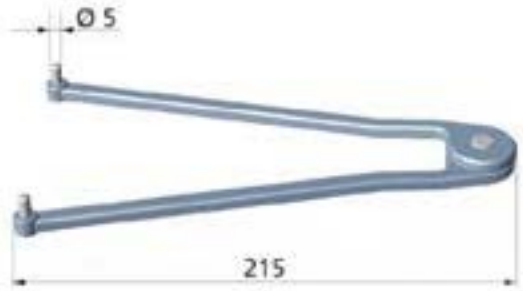
BSR71-100 and BSR73-100 tensioners are available in single and double row bearing versions, pre-lubricated to DIN 51852-K3K.

They are suitable as deflection and tension pulleys for light belt drives such as T 2.5 and T 5.

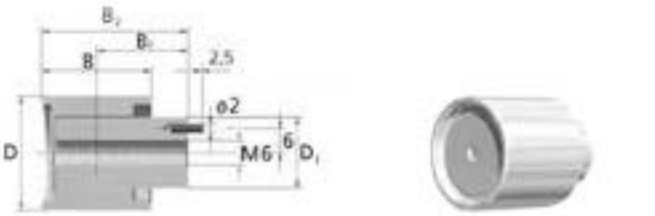
Mounting instruction: counter-clockwise tensioning!



BSR 71-100



Pin spanner, Type 40 758



BSR 73-100

Loadbearing parameters		Rotational speed	Socket-head screw DIN 6912					Application recommendation*	
C_0 dym. (N)	C_0 Stat. (N)	N_{max} (min^{-1})	Size		Strength class	Torque (Nm)	max. belt width (mm)	Tension roller running on back of the belt	Tension roller running on back of the belt
4050	1710	8000	M	6	8.8	10	10	T2.5/T5	T2.5/T5/AT5
6200	3450	15000	M	6	8.8	10	25	T2.5/T5	T2.5/T5/AT5
11200	5600	15000	M	10	8.8	49	32	AT5/T10	AT10/T10
19300	11200	15000	M	10	10.9	69	50	AT5/T10	AT10/ATP10/T10
19300	11200	15000	M	12	12.9	145	100	AT5/T10	AT10/ATP10/T10
51000	36600	6700	M	16	8.8	210	50	AT10/ATP10/T20	AT20/ATP15
51000	36600	6700	M	16	12.9	355	100	AT10/ATP10/T20	AT20/ATP15
100000	78000	4800	M	24	8.8	710	75	AT20/ATP15	T20
100000	78000	4800	M	24	12.9	1200	150	AT20/ATP15	T20

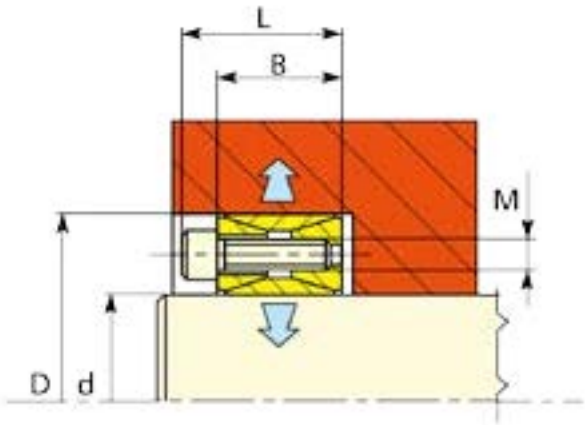
* For use with CONTI® SYNCHROCHAIN timing belts please ask our advice!

CONEX A

stock	d mm	D mm	B mm	L mm	M mm	T_s Nm	T Nm	F kN	P N/mm²
○	17	47	20	26	M6	16	260	31	104
○	18	47	20	26	M6	16	280	31	104
○	19	47	20	26	M6	16	290	31	104
●	20	47	20	26	M6	16	310	31	104
●	22	47	20	26	M6	16	340	31	104
●	24	50	20	26	M6	16	370	31	98
●	25	50	20	26	M6	16	390	31	98
●	28	55	20	26	M6	16	650	46	133
●	30	55	20	26	M6	16	700	47	133
●	32	60	20	26	M6	16	750	47	122
●	35	60	20	26	M6	16	820	47	122
○	38	65	20	26	M6	16	1100	58	141
○	40	65	20	26	M6	16	1170	59	141
○	42	75	24	32	M8	40	1670	80	145
○	45	75	24	32	M8	40	1790	80	145
○	48	80	24	32	M8	40	1900	79	136
○	50	80	24	32	M8	40	1990	80	136
○	55	85	24	32	M8	40	2740	100	160
○	60	90	24	32	M8	40	2990	100	151
○	65	95	24	32	M8	40	3240	100	143
○	70	110	28	38	M10	78	550	159	160
○	75	115	28	38	M10	78	5950	159	153
○	80	120	28	38	M10	78	6350	159	146
○	85	125	28	38	M10	78	6740	159	140
○	90	130	28	38	M10	78	7140	159	135
○	95	135	28	38	M10	78	9000	189	156
○	100	145	32	44	M12	135	11600	232	164

T_s (Nm)	Screws tightening torque
T(Nm) **F (kN)**	Transmissible pick torque or axial force with screws tightening torque T_s
p (N/mm2)	Hub surface pressure

Larger sizes upon request

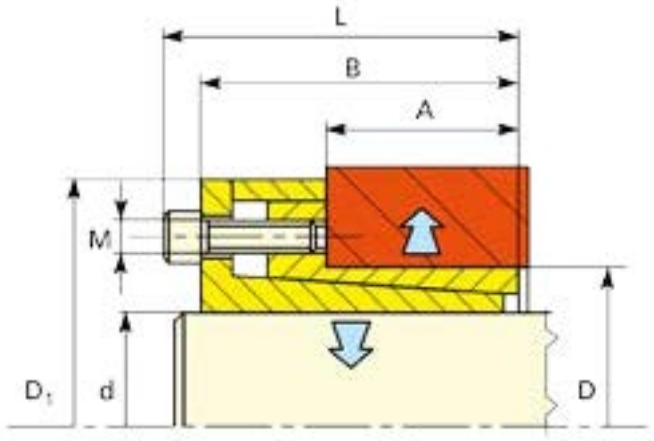


Not self centering medium-high torques

CONEX B

stock	d mm	D mm	D_1 mm	A mm	B mm	L mm	M mm	T_s Nm	T Nm	F kN	P N/mm²
○	6	14	25	10	21,5	24,5	M3	2,6	11	3,8	68
○	8	15	27	11,5	25	29	M4	5,6	26	6,5	98
○	9	16	28	14	26	30	M4	5,6	37	8	98
○	9,525	16	29	14	26	30	M4	5,6	39	8	98
●	10	16	29	14	26	30	M4	5,6	42	8	98
○	11	18	32	13,5	26	30	M4	5,6	50	9	100
●	12	18	32	13,5	26	30	M4	5,6	55	9	100
●	14	23	38	14	26	30	M4	5,6	100	14	120
●	15	24	44	16	36	42	M6	15	145	19	130
●	16	24	44	16	36	42	M6	15	155	19	130
●	17	25	45	16	36	42	M6	15	162	19	125
○	17	26	47	18	38	44	M6	17	180	23	122
○	18	26	47	18	38	44	M6	17	200	23	120
●	19	27	48	18	38	44	M6	17	210	23	120
●	20	28	49	18	38	44	M6	17	220	23	120
○	22	32	54	25	45	51	M6	17	250	23	70
●	24	34	56	25	45	51	M6	17	270	23	70
●	25	34	56	25	45	51	M6	17	280	23	70
●	28	39	61	25	45	51	M6	17	480	34	90
●	30	41	62	25	45	51	M6	17	510	34	84
●	32	43	65	25	45	51	M6	17	730	46	115
●	35	47	69	30	50	56	M6	17	800	46	81
○	38	50	72	30	50	56	M6	17	860	46	76
●	40	53	75	30	50	56	M6	17	900	46	72
○	42	55	78	32	57	65	M8	41	1800	84	125
○	45	59	85	40	65	73	M8	41	1900	84	89
○	48	62	87	45	70	78	M8	41	2000	84	75
○	50	65	92	45	70	78	M8	41	2600	105	90
○	55	71	98	50	75	83	M8	41	2900	105	70
○	60	77	104	50	75	83	M8	41	3100	105	70
○	65	84	111	50	75	83	M8	41	3400	105	60
○	70	90	119	60	91	101	M10	83	5800	170	80
○	75	95	126	60	91	101	M10	83	6200	170	70
○	80	100	131	65	96	106	M10	83	8000	200	80
○	85	106	137	65	96	106	M10	83	8500	200	70
○	90	112	143	65	96	106	M10	83	11200	250	90
○	95	120	153	65	96	106	M10	83	11800	250	80
○	100	125	162	65	102	114	M12	145	14600	300	95
○	110	140	180	90	128	140	M12	145	16000	300	61
○	120	155	198	90	128	140	M12	145	17400	300	55
○	130	165	208	90	128	140	M12	145	25000	398	69

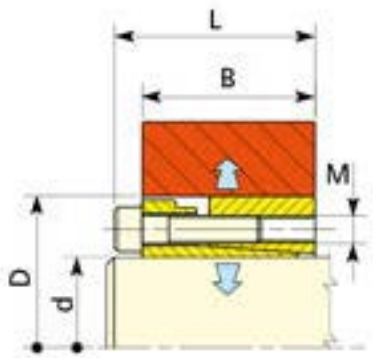
Conex B from d = 6 up to d = 14 can transmit the full transmissible torque only oiling the conical surfaces and the screws with oils with high pressure additives (M_0S_2).



Self centering for Thin walled hubs

CONEX D

stock	d mm	D mm	D_1 mm	A mm	B mm	L mm	M mm	T_s Nm	T Nm	F kN	P N/mm²
●	20	47	53	31	42	48	M6	17	530	52	110
●	22	47	53	31	42	48	M6	17	580	52	110
●	24	50	56	31	42	48	M6	17	630	52	100
●	25	50	56	31	42	48	M6	17	660	52	100
●	28	55	61	31	42	48	M6	17	740	52	100
●	30	55	61	31	42	48	M6	17	790	52	100
●	32	60	66	31	42	48	M6	17	1150	70	120
●	35	60	66	31	42	48	M6	17	1300	70	120
●	38	65	71	31	42	48	M6	17	1300	70	110
●	40	65	71	31	42	48	M6	17	1400	70	110
●	42	75	81	35	51	59	M8	41	2000	100	120
●	45	75	81	35	51	59	M8	41	2200	100	120
●	48	80	86	35	51	59	M8	41	3200	130	150
●	50	80	86	35	51	59	M8	41	3300	130	150
○	55	85	91	35	51	59	M8	41	3600	130	140
○	60	90	96	35	51	59	M8	41	3900	130	130
○	65	95	101	35	51	59	M8	41	4300	130	120
○	70	110	119	46	61	71	M10	83	7500	210	130
○	75	115	124	46	61	71	M10	83	8000	210	130
○	80	120	129	46	61	71	M10	83	8500	210	120
○	85	125	134	46	61	71	M10	83	11400	270	150
○	90	130	139	46	61	71	M10	83	12000	270	140
○	95	135	144	46	61	71	M10	83	12600	280	135
○	100	145	155	52	68	80	M12	145	15000	300	130
○	110	155	165	52	68	80	M12	145	16500	300	120
○	120	165	175	52	68	80	M12	145	22500	370	140
○	130	180	188	52	68	80	M12	145	29000	450	150
○	140	190	199	58	76	90	M14	210	32000	460	130
○	150	200	209	58	76	90	M14	210	41000	550	150
○	160	210	219	58	76	90	M14	210	44000	550	140
○	170	225	234	58	76	90	M14	210	54500	640	160
○	180	235	244	58	76	90	M14	210	57500	640	150
○	190	250	259	58	76	90	M14	210	65000	689	146
○	200	260	269	58	76	90	M14	210	68000	689	141
○	220	285	294	72	98	114	M16	325	82000	747	109



Conex D

Self centering - high transmissible torque. During the clamping the hub can axially displace.

SPLICING BELTS

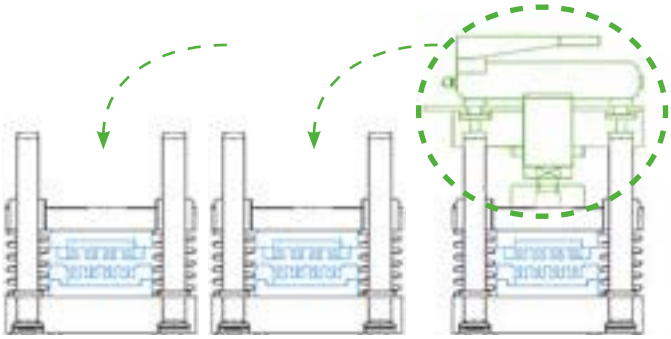
Cutting equipment

We recommend the use of a mobile manual hydraulic press to cut the ends of the polyurethane timing belt into mortise tenons so that they can be spliced by glueing or welding.

The cutting equipment consists of three elements.
- Stand and guide (shown in black in the illustration)
- Mortising tool, specific to each belt type (shown in blue in the illustration)
- Stand and hydraulic system (shown in green in the illustration)

The system is designed to be modular: in effect the stand and guide section and the cutting tool can be supplied in a number of copies and are interchangeable.

A single stand / hydraulic system groups can be used for a number of stand / guide assemblies.



Splicing tools

The belts can be spliced by glueing or by welding. The two methods guarantee the same properties of mechanical strength.

Splicing by gluing

Splicing by welding

SERVICES

Pre-splicing of belts

The belts can be supplied pre-cut at our facility in Solna to the desired length.

Marking of belts and pulleys

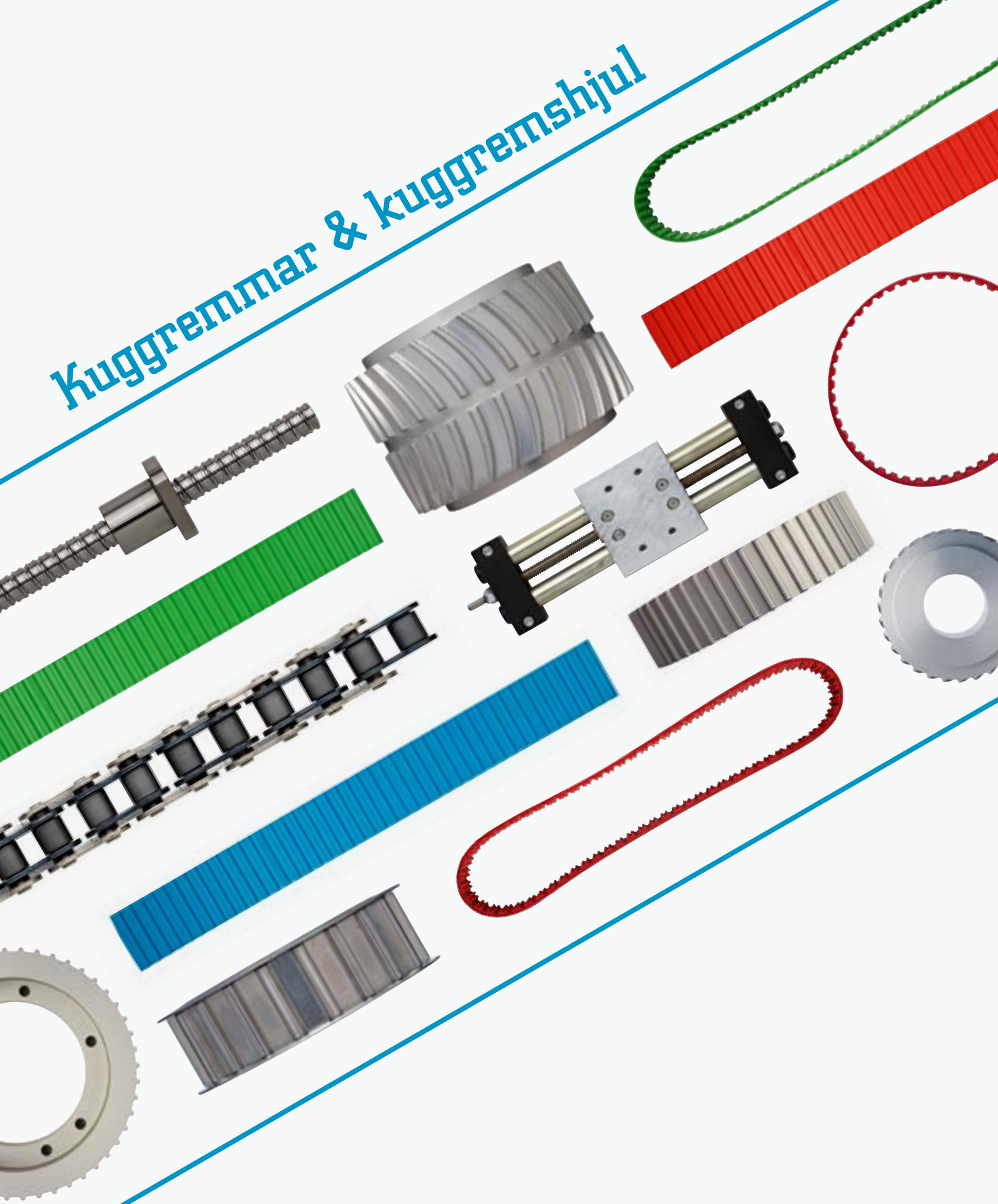
We can mark belts by inkjet and engrave or by fiber laser pulleys to ensure that they can be traced and identified.

RESERVATIONS

All the dimensions in this catalogue are given in millimetres.
In the interests of technical improvement **Aratron** reserves the right to modify, without prior notice, the products presented in this catalogue. All the details in this documentation are provided for information only. Any guarantee relating to the products presented is only valid after prior written agreement.

Notes

Kuggremmar & kuggremshjul



Aratron

Sätt dina tankar i rörelse

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