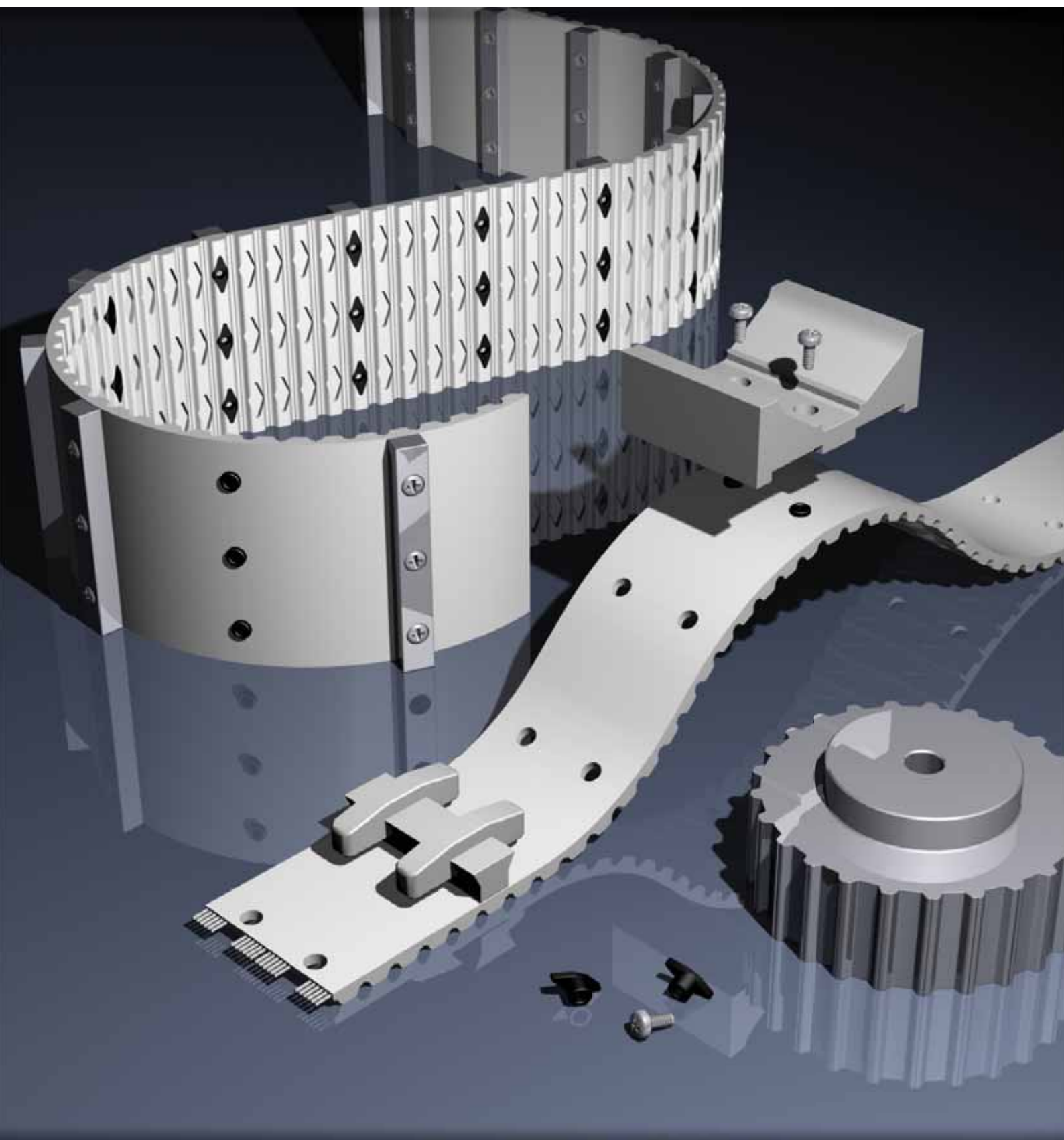


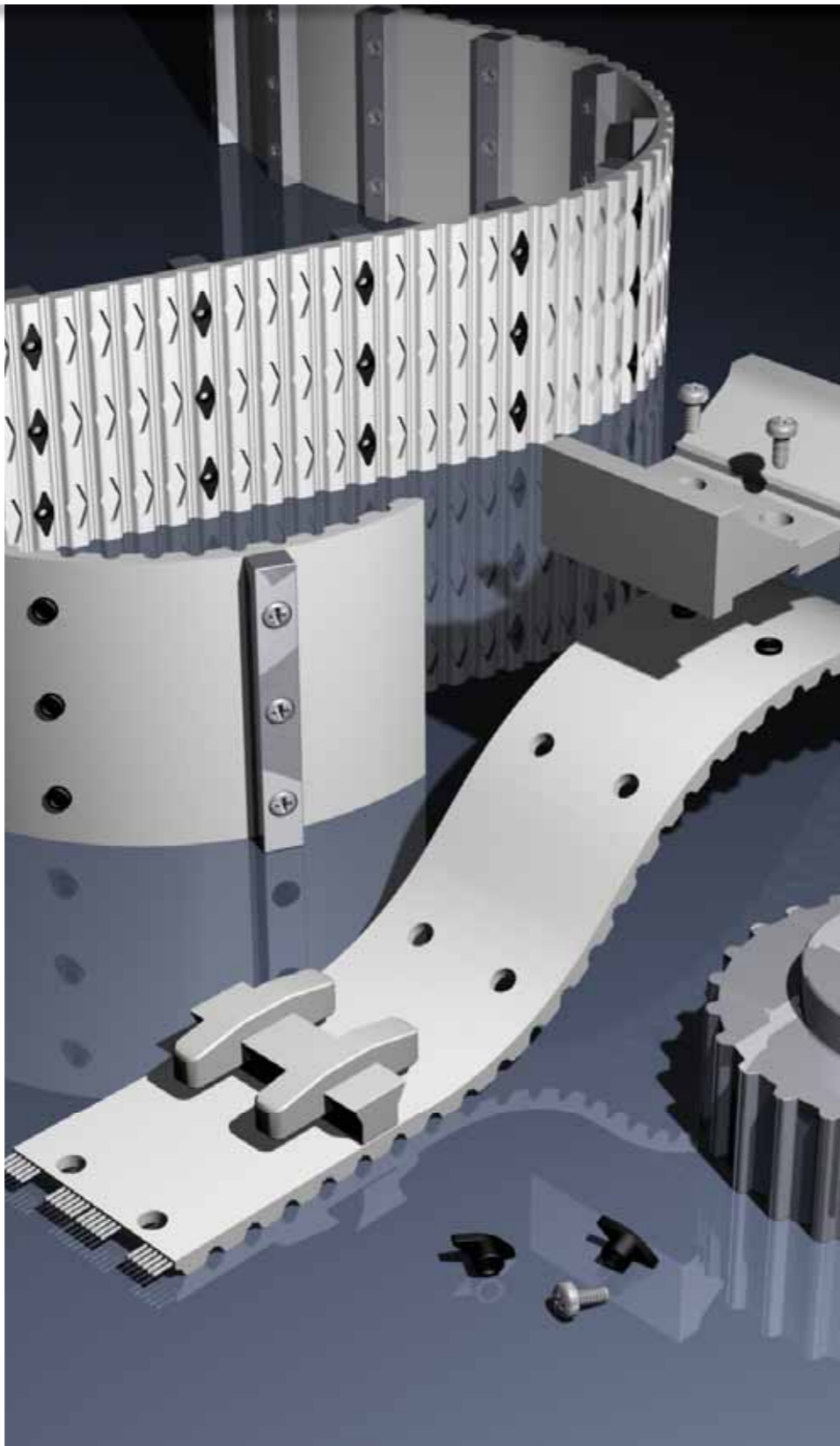
# BRECO® ATN system

Timing belts, pulleys and accessories



BRECO is a member of Mulco Europe EWIV





### Keeping things moving!

Innovation is our drive - this principle marks BRECO Antriebstechnik Breher GmbH & Co., manufacturer of BRECO® and BRECOFLEX® timing belts as the most innovative producer in the field of polyurethane timing belt technology worldwide. The basis for a high-quality and reliable product is provided by wear resistant polyurethane for the belt body and high tensile steel cord tension members.

The name BRECO became the synonym for polyurethane timing belts resulting from years of experience in the field of thermoplastic polyurethane, the development of BRECO® and BRECOFLEX® manufacturing processes and their further development. The BRECO® and BRECOFLEX® timing belts, the pulleys designed to match them perfectly, and other components supplied by BRECO reflect the breadth of experience gathered over decades by countless people who have used the products. We maintain a consistently high level of quality through our exclusive use of high-quality materials and by listening to feedback from our suppliers about the needs of our customers.

One strong point is the development and production of special belts for various application fields. The large number of belt coatings and the most varied shape of flights open up an extremely broad application field for BRECO®- and BRECOFLEX® timing belts. We stock a broad range of belt and tension cord materials to cater for applications in very cold or very hot environments.

In simple applications too, BRECO timing belts offer all the advantages and quality expected of a high-end branded product. Safety, durability, accuracy and availability are some of the benefits which ultimately have a positive impact on costs.

All our products conform to the European RoHS Directive which restricts the use of hazardous substances.

Staying safely on the move.



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## ATN - Flexibility as standard

### ATN - the transport timing belt with multiple possibilities

BRECO Antriebstechnik Breher GmbH & Co. KG, the manufacturer of the well-known BRECO® and BRECOFLEX® TIMING BELTS, is the most innovative producer in the field of timing belt technology. Polyurethane for the belt body and tension members made of steel, used for all BRECO® and BRECOFLEX® TIMING BELTS, form the basis for a high-quality and functionally reliable product.

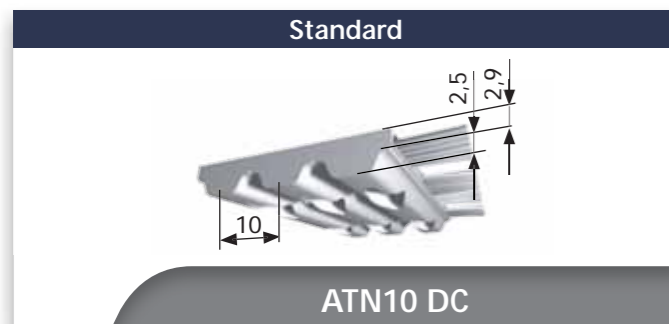
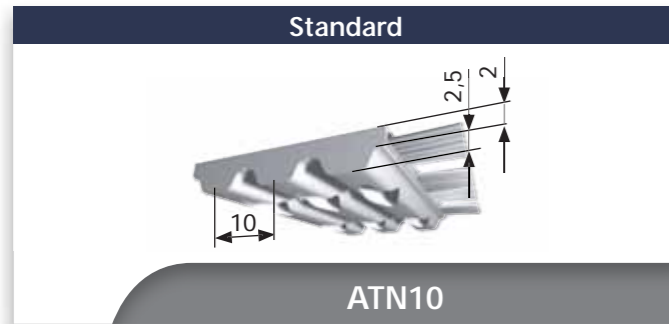
The ATN timing belt is especially designed for application in the transport technology. The exchangeable profile fastening system in the belt tooth permits fast fitting and replacement of the flights individually manufactured for the conveying application concerned.

This flexibility provides a great variety of application possibilities, not to be realised up to now, compared to other profile fastening systems, as e.g. welding. If required, it is possible to convey different types of goods in one transport system using the same timing belt, but equipped with different profiles.

### Convincing advantages

- The belt is part of a modular design consisting of the ATN timing belt, fastening elements, the ATN timing belt lock and flights/profiles
- Variable profile pitches with a high accuracy
- Application of various profile materials is possible (plastics, metal, ceramics, ...)
- High shearing forces
- Fast and easy profile change when the products to be transported are changed or the profiles are worn
- No belt deinstallation for profile changes
- Alternative to a chain with all advantages of a timing belt
- Self-alignment of the profiles during installation
- Application of standard pulleys
- High optical quality
- Various fastening possibilities
- Cost effective for the user:
  - Standard belt with a high availability and variability
  - Short machine shut-down times for profile changes
  - Low test costs because of changeability of the profiles (prototypes)
  - Low spare parts and mounting costs





	B	C <sub>min</sub>	Belt widths b [mm]			
ATN10	25	10	25	50	75	100
ATN10 DC	25	10	-	50	75	100
Number of shapes for inset parts per tooth <sup>1)</sup>			1	2	3	4

ATN10 / ATN10 DC (M/V)	Available lengths and versions
Standard delivery lengths (M)	rolls of 50 or 100 m
Cuts / lengths > 100 m	on request
Endless joined, minimum length (V)	880 mm
Standard material	TPUST1
Steel cord tension member (standard)	x
VA tension member	o
PAZ (white)	x
PAR (green)	x
PAZ-PAR (white / green)	x

- x available
- o request minimum purchase amount
- not available

**Available materials:**

- *TPUST1: Standard material, steel cord tension members*
- *TPUFD1: Material is suitable for contact with food, FDA conform, with VA tension members*
- *TPUKF1: Material flexible at low temperatures, application area from -25°C to +5°C, with steel cord tension members*

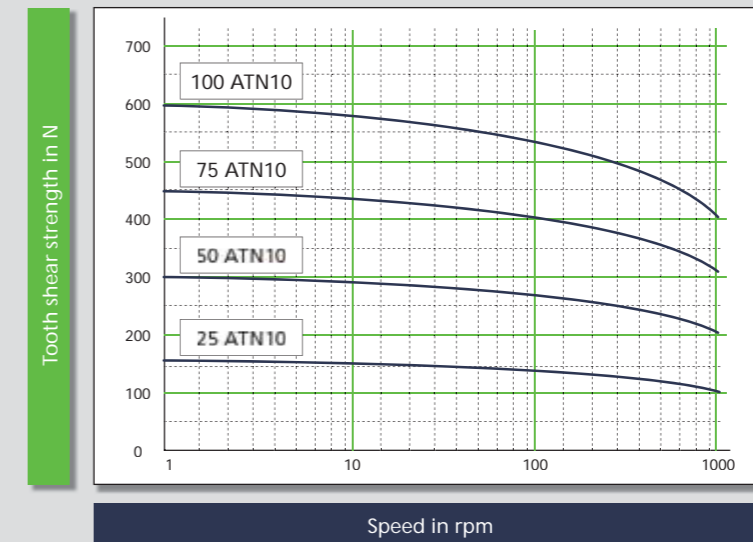
Further materials on request. Depending on the material and/or version, a minimum purchase is required, please request.

The shapes for the inset parts are factory sealed with an approx. 0.2 mm thick TPU skin. Open these shapes to inset the profile fastenings. If you want the timing belt pierced, please inform your responsible distribution partner about the required spacing C when ordering. The shortest longitudinal spacing of the shapes in the belt tooth corresponds with pitch.



**Technical data for the belt type / Belt width depend on the circumferential force load**

ATN10 / ATN10 DC - Tooth shear strength  $F_{Uspec}$  per belt tooth in mesh in N



BRECO® ATN10 / ATN10 DC (M/V)		Tension cord strengths $F_{Tadm}$ / Specific elasticities / Belt weights				
Belt width		b [mm]	25	50	75	100
M	Steel cord tension member	$F_{Tadm}$ [N]	3000	6000	9000	12000
	Specific elasticity (steel cord)	$C_{spec}$ [N]	$0,75 \cdot 10^6$	$1,5 \cdot 10^6$	$2,25 \cdot 10^6$	$3,0 \cdot 10^6$
	VA tension member	$F_{Tadm}$ [N]	2150	4300	6450	8600
	Specific elasticity (stainless steel)	$C_{spec}$ [N]	$0,54 \cdot 10^6$	$1,08 \cdot 10^6$	$1,61 \cdot 10^6$	$2,15 \cdot 10^6$
V	Steel cord tension member	$F_{Tadm}$ [N]	1000	2000	3000	4000
	VA tension member	$F_{Tadm}$ [N]	1000	2000	3000	4000
Belt weight <sup>1)</sup>	ATN10	[kg/m]	0,120	0,240	0,360	0,480
	ATN10 DC	[kg/m]	-	0,300	0,450	0,600

BRECO® ATN10 / ATN10 DC (M/V)		Flexibility (minimum numbers of teeth / minimum diameter)	
		Steel cord	VA stainless steel cord
	Without contra-flexure	$z_{min}$	25
		$d_{min}$ [mm]	80
			25
			80

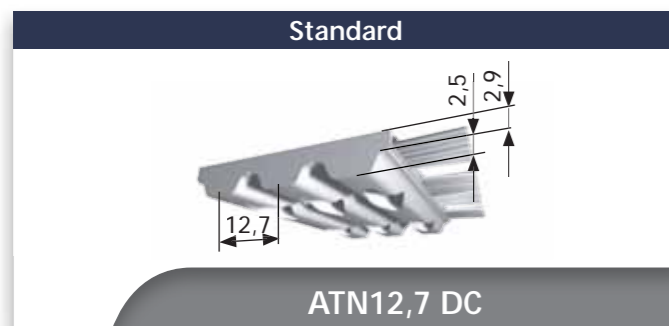
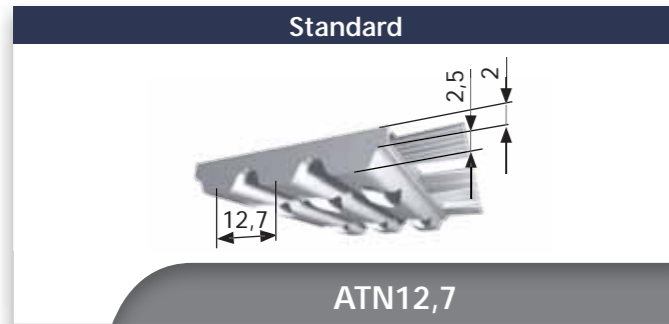
**Circumferential force  $F_U$**

The transmittable circumferential force  $F_U$  depends on the shear strength  $F_{Uspec}$  and the number of teeth in mesh  $z_e$  realised at the drive pulley, which should be  $z_{emin} = 6$  at least.

Max.  $z_{emax} = 6$  (welded belts) and  $z_{emax} = 12$  (open length) are used for the calculation.

$$F_U = F_{Uspec} \cdot z_e$$

<sup>1)</sup> The stated masses only refer to the extruded belt and are, for this reason, without inset parts, screws and profiles.



	B	C <sub>min</sub>	Belt widths b [mm]			
ATN12,7	25	12,7	25	50	75	100
ATN12,7 DC	25	12,7	-	50	75	100
Number of shapes for inset parts per tooth <sup>1)</sup>			1	2	3	4

ATN12,7 / ATN12,7 DC (M/V)	Available lengths and versions
Standard delivery lengths (M)	rolls of 50 or 100 m
Cuts / lengths > 100 m	on request
Endless joined, minimum length (V)	880 mm
Standard material	TPUST1
Steel cord tension member (standard)	x
VA tension member	o
PAZ (white)	x
PAR (green)	x
PAZ-PAR (white / green)	x

- x available
- o request minimum purchase amount
- not available

**Available materials:**

- TPUST1: Standard material, steel cord tension members
- TPUFD1: Material is suitable for contact with food, FDA conform, with VA tension members
- TPUKF1: Material flexible at low temperatures, application area from -25°C to +5°C, with steel cord tension members

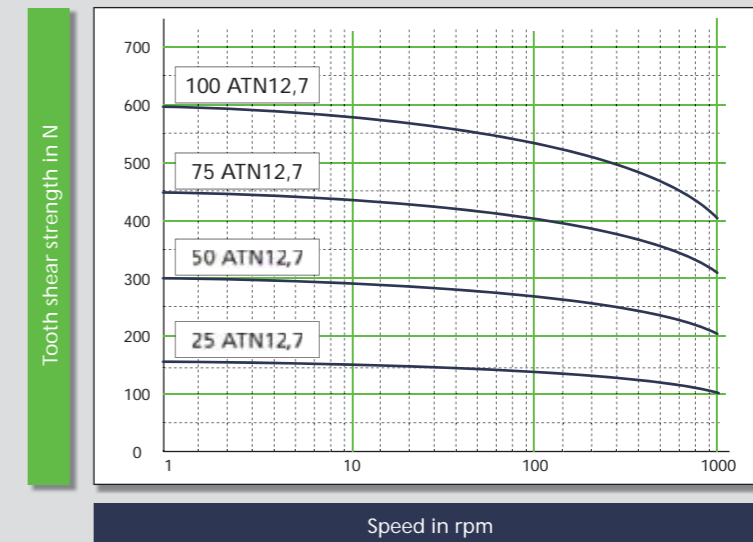
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The shapes for the inset parts are factory sealed with an approx. 0.2 mm thick TPU skin. Open these shapes to inset the profile fastenings. If you want the timing belt pierced, please inform your responsible distribution partner about the required spacing C when ordering. The shortest longitudinal spacing of the shapes in the belt tooth corresponds with pitch.



**Technical data for the belt type / Belt width depend on the circumferential force load**

ATN12,7 / ATN12,7 DC - Tooth shear strength  $F_{Uspec}$  per belt tooth in mesh in N



BRECO® ATN12,7 / ATN12,7 DC (M/V)		Tension cord strengths $F_{Tadm}$ / Specific elasticities / Belt weights				
Belt width		b [mm]	25	50	75	100
M	Steel cord tension member	$F_{Tadm}$ [N]	3000	6000	9000	12000
	Specific elasticity (steel cord)	$C_{spec}$ [N]	$0,75 \cdot 10^6$	$1,5 \cdot 10^6$	$2,25 \cdot 10^6$	$3,0 \cdot 10^6$
	VA tension member	$F_{Tadm}$ [N]	2150	4300	6450	8600
	Specific elasticity (stainless steel)	$C_{spec}$ [N]	$0,54 \cdot 10^6$	$1,08 \cdot 10^6$	$1,61 \cdot 10^6$	$2,15 \cdot 10^6$
V	Steel cord tension member	$F_{Tadm}$ [N]	1000	2000	3000	4000
	VA tension member	$F_{Tadm}$ [N]	1000	2000	3000	4000
Belt weight <sup>1)</sup>	ATN12,7	[kg/m]	0,111	0,222	0,333	0,444
	ATN12,7 DC	[kg/m]	-	0,282	0,423	0,564

BRECO® ATN12,7 / ATN12,7 DC (M/V)		Flexibility (minimum numbers of teeth / minimum diameter)	
		Steel cord	VA stainless steel cord
	Without contra-flexure	$z_{min}$	20
		$d_{min}$ [mm]	80

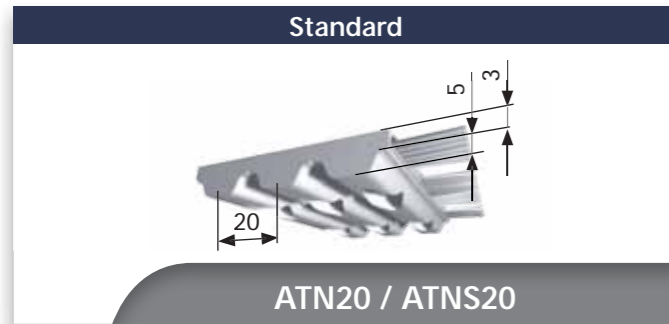
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The transmittable circumferential force  $F_U$  depends on the shear strength  $F_{Uspec}$  and the number of teeth in mesh  $z_e$  realised at the drive pulley, which should be  $z_{emin} = 6$  at least.

Max.  $z_{emax} = 6$  (welded belts) and  $z_{emax} = 12$  (open length) are used for the calculation.

$$F_U = F_{Uspec} \cdot z_e$$

<sup>1)</sup> The stated masses only refer to the extruded belt and are, for this reason, without inset parts, screws and profiles.



	B	C <sub>min</sub>	Belt widths b [mm]		
ATN20	25	20	50	75	100
ATNS20	25	20	50	75	-
Number of shapes for inset parts per tooth <sup>1)</sup>	ATN20		2	3	4
	ATNS20		2	2	-

ATN20 / ATNS20 (M/V)	Available lengths and versions
Standard delivery lengths (M)	rolls of 50 m
Cuts / lengths > 50 m	on request
Endless joined, minimum length (V)	1000
Standard material	TPUST1
Steel cord tension member (standard)	x
VA tension member	o
PAZ (white)	x
PAR (green)	x
PAZ-PAR (white / green)	x

- x available
- o request minimum purchase amount
- not available

**Available materials:**

- TPUST1: Standard material, steel cord tension members
- TPUFD1: Material is suitable for contact with food, FDA conform, with VA tension members
- TPUKF1: Material flexible at low temperatures, application area from -25°C to +5°C, with steel cord tension members

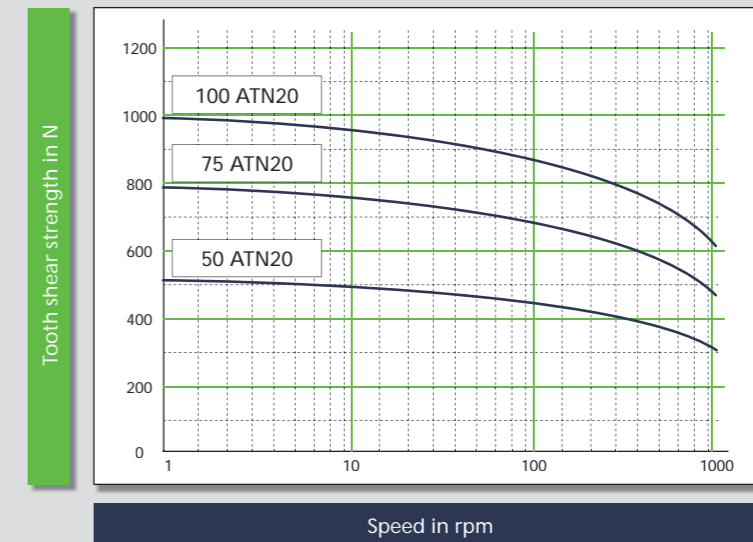
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The shapes for the inset parts are factory sealed with an approx. 0.2 mm thick TPU skin. Open these shapes to inset the profile fastenings. If you want the timing belt pierced, please inform your responsible distribution partner about the required spacing C when ordering. The shortest longitudinal spacing of the shapes in the belt tooth corresponds with pitch.



**Technical data for the belt type / Belt width depend on the circumferential force load**

ATN20 / ATNS20 - Tooth shear strength  $F_{Uspec}$  per belt tooth in mesh in N



BRECO® ATN20 / ATNS20 (M/V)		Tension cord strengths $F_{Tadm}$ / Specific elasticities / Belt weights				
Belt width		b [mm]	50	75	100	
M	Steel cord tension member	ATN20	$F_{Tadm}$ [N]	8000	12000	16000
	Specific elasticity (steel cord)		$C_{spez}$ [N]	2,0·10 <sup>6</sup>	3,0·10 <sup>6</sup>	4,0·10 <sup>6</sup>
	VA tension member		$F_{Tadm}$ [N]	7300	10950	14600
	Specific elasticity (stainless steel)	ATNS20	$C_{spez}$ [N]	1,83·10 <sup>6</sup>	2,73·10 <sup>6</sup>	3,65·10 <sup>6</sup>
	Steel cord tension member		$F_{Tadm}$ [N]	11200	19600	-
	VA tension member		$C_{spez}$ [N]	2,8·10 <sup>6</sup>	4,2·10 <sup>6</sup>	-
V	Steel cord tension member	ATN20	$F_{Tadm}$ [N]	2700	4000	5400
	VA tension member		$F_{Tadm}$ [N]	2700	4000	5400
	Steel cord tension member	ATNS20	$F_{Tadm}$ [N]	2700	4000	-
Belt weight <sup>1)</sup>		ATN20	[kg/m]	0,403	0,604	0,806
		ATNS20	[kg/m]	0,433	0,717	-

BRECO® ATN20 / ATNS20 (M/V)		Flexibility (minimum numbers of teeth / minimum diameter)			
		Steel cord	VA stainless steel cord		
	Without contra-flexure	ATN20	$z_{min}$	20	20
			$d_{min}$ [mm]	125	120
	ATNS20	$z_{min}$	25	-	
		$d_{min}$ [mm]	160	-	

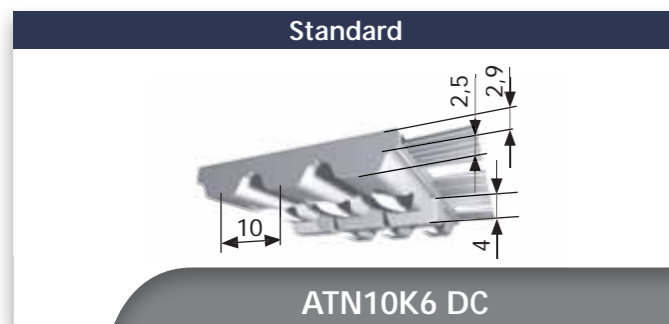
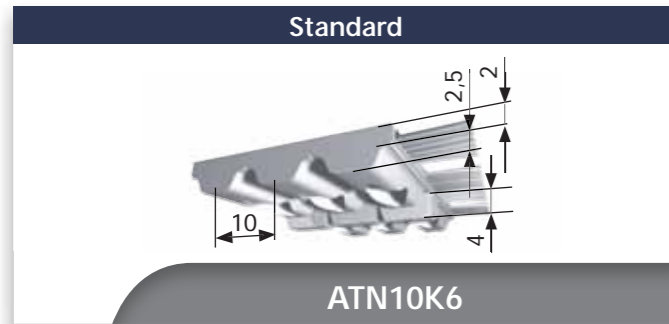
**Circumferential force  $F_U$**

The transmittable circumferential force  $F_U$  depends on the shear strength  $F_{Uspec}$  and the number of teeth in mesh  $z_e$  realised at the drive pulley, which should be  $z_{emin} = 6$  at least.

Max.  $z_{emax} = 6$  (welded belts) and  $z_{emax} = 12$  (open length) are used for the calculation.

$$F_U = F_{Uspec} \cdot z_e$$

<sup>1)</sup> The stated masses only refer to the extruded belt and are, for this reason, without inset parts, screws and profiles.



	B	C <sub>min</sub>	Belt widths b [mm]		
ATN10K6	25	10	50	75	100
ATN10K6 DC	25	10	50	75	100
Number of shapes for inset parts per tooth <sup>1)</sup>			2	3	4

ATN10K6 / ATN10K6 DC (M/V)	Available lengths and versions
Standard delivery lengths (M)	rolls of 50 or 100 m
Cuts / lengths > 50 m	on request
Endless joined, minimum length (V)	880
Standard material	TPUST1
Steel cord tension member (standard)	x
VA tension member	o
PAZ (white)	x
PAR (green)	x
PAZ-PAR (white / green)	x

V-groove location	Belt width [mm]		
	50	75	100
	symmetrical	asymmetrical	asymmetrical

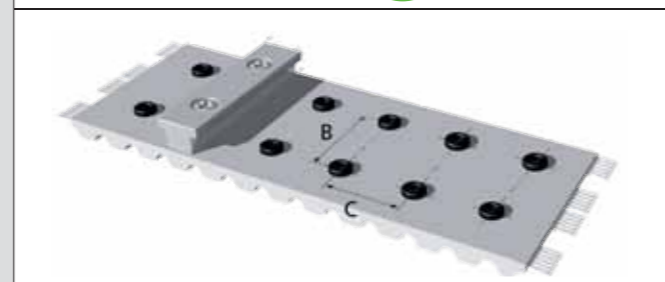
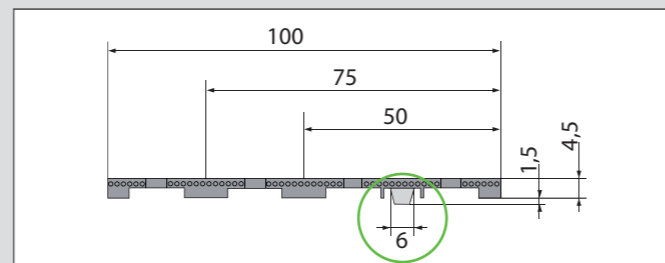
x available  
o request minimum purchase amount  
- not available

**Available materials:**

- **TPUST1:** Standard material, steel cord tension members
- **TPUFD1:** Material is suitable for contact with food, FDA conform, with VA tension members
- **TPUKF1:** Material flexible at low temperatures, application area from -25°C to +5°C, with steel cord tension members

Further materials on request. Depending on the material and/or version, a minimum purchase is required, please request

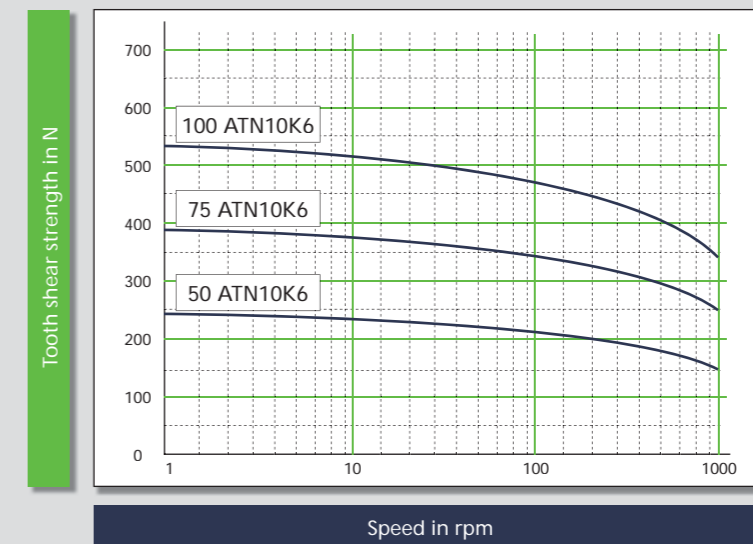
The location of the V-groove is only symmetrical in the 50 mm wide belt for technical production reasons. In the 75 and 100 mm wide belts it is located between the 1st and 2nd shape for the inset parts (see figure). Therefore, the location of the V-groove is to be considered when mounting the pulley and the flights.



The shapes for the inset parts are factory sealed with an approx. 0.2 mm thick TPU skin. Open these shapes to inset the profile fastenings. If you want the timing belt pierced, please inform your responsible distribution partner about the required spacing C when ordering. The shortest longitudinal spacing of the shapes in the belt tooth corresponds with pitch.

**Technical data for the belt type / Belt width depend on the circumferential force load**

ATN10K6 / ATN10K6 DC - Tooth shear strength  $F_{Uspec}$  per belt tooth in mesh in N



BRECO® ATN10K6 / ATN10K6 DC (M/V)		Tension cord strengths $F_{Tadm}$ / Specific elasticities / Belt weights			
Belt width		b [mm]	50	75	100
M	Steel cord tension member	$F_{Tadm}$ [N]	6000	9000	12000
	Specific elasticity (steel cord)	$C_{spec}$ [N]	$1,5 \cdot 10^6$	$2,25 \cdot 10^6$	$3,0 \cdot 10^6$
	VA tension member	$F_{Tadm}$ [N]	4300	6450	8600
	Specific elasticity (stainless steel)	$C_{spec}$ [N]	$1,08 \cdot 10^6$	$1,61 \cdot 10^6$	$2,15 \cdot 10^6$
V	Steel cord tension member	$F_{Tadm}$ [N]	2000	3000	4000
	VA tension member	$F_{Tadm}$ [N]	2000	3000	4000
Belt weight <sup>1)</sup>	ATN10K6	[kg/m]	0,245	0,367	0,490
	ATN10K6 DC	[kg/m]	0,305	0,457	0,610

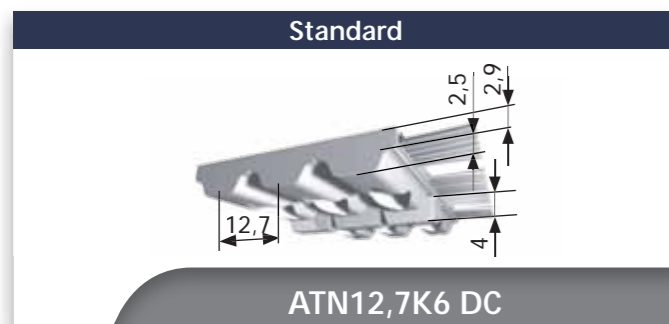
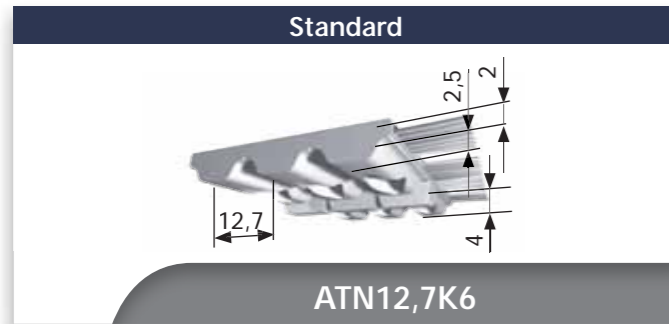
BRECO® ATN10 / ATN10 DC (M/V)		Flexibility (minimum numbers of teeth / minimum diameter)	
		Steel cord	VA stainless steel cord
Without contra-flexure	$z_{min}$	25	25
	$d_{min}$ [mm]	80	80

**Circumferential force  $F_U$**

The transmittable circumferential force  $F_U$  depends on the shear strength  $F_{Uspec}$  and the number of teeth in mesh  $z_e$  realised at the drive pulley, which should be  $z_{emin} = 6$  at least.  
Max.  $z_{emax} = 6$  (welded belts) and  $z_{emax} = 12$  (open length) are used for the calculation.

$$F_U = F_{Uspec} \cdot z_e$$

<sup>1)</sup> The stated masses only refer to the extruded belt and are, for this reason, without inset parts, screws and profiles.



	B	C <sub>min</sub>	Belt widths b [mm]		
ATN12,7K6	25	12,7	50	75	100
ATN12,7K6 DC	25	12,7	50	75	100
Number of shapes for inset parts per tooth <sup>1)</sup>			2	3	4

ATN12,7K6 / ATN12,7K6 DC (M/V)	Available lengths and versions
Standard delivery lengths (M)	rolls of 50 or 100 m
Cuts / lengths > 50 m	on request
Endless joined, minimum length (V)	880
Standard material	TPUST1
Steel cord tension member (standard)	x
VA tension member	o
PAZ (white)	x
PAR (green)	x
PAZ-PAR (white / green)	x

V-groove location	Belt width [mm]		
	50	75	100
	symmetrical	asymmetrical	asymmetrical

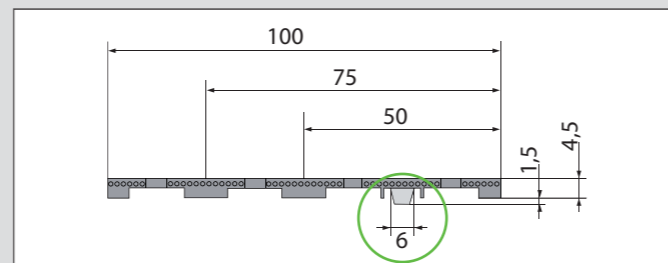
x available  
o request minimum purchase amount  
- not available

**Available materials:**

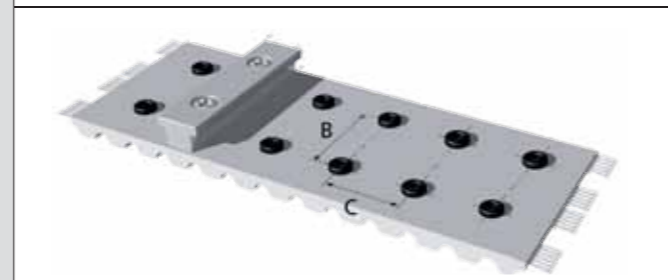
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- **TPUFD1:** Material is suitable for contact with food, FDA conform, with VA tension members
- **TPUKF1:** Material flexible at low temperatures, application area from -25°C to +5°C, with steel cord tension members

Further materials on request. Depending on the material and/or version, a minimum purchase is required, please request

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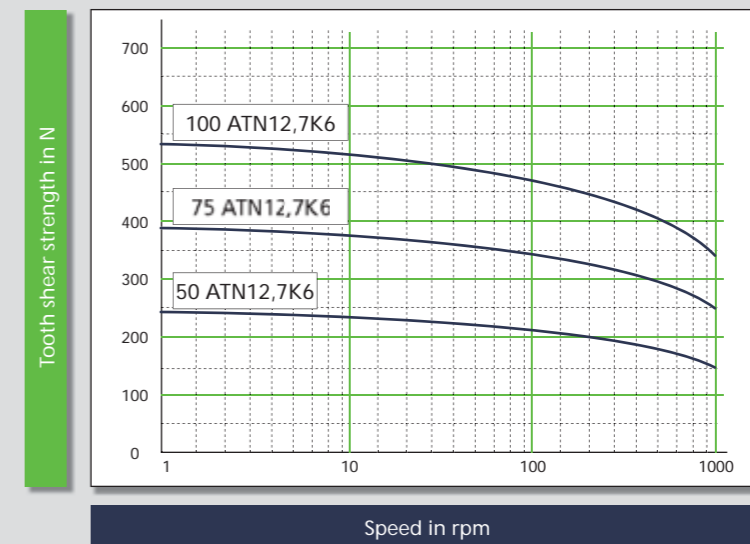


The shapes for the inset parts are factory sealed with an approx. 0.2 mm thick TPU skin. Open these shapes to inset the profile fastenings. If you want the timing belt pierced, please inform your responsible distribution partner about the required spacing C when ordering. The shortest longitudinal spacing of the shapes in the belt tooth corresponds with pitch.



**Technical data for the belt type / Belt width depend on the circumferential force load**

ATN12,7 / ATN12,7 DC - Tooth shear strength  $F_{Uspec}$  per belt tooth in mesh in N



BRECO® ATN12,7K6 / ATN12,7K6 DC (M/V)		Tension cord strengths $F_{Tadm}$ / Specific elasticities / Belt weights			
Belt width		b [mm]	50	75	100
M	Steel cord tension member	$F_{Tadm}$ [N]	6000	9000	12000
	Specific elasticity (steel cord)	$C_{spez}$ [N]	1,5·10 <sup>6</sup>	2,25·10 <sup>6</sup>	3,0·10 <sup>6</sup>
	VA tension member	$F_{Tadm}$ [N]	4300	6450	8600
	Specific elasticity (stainless steel)	$C_{spez}$ [N]	1,08·10 <sup>6</sup>	1,61·10 <sup>6</sup>	2,15·10 <sup>6</sup>
V	Steel cord tension member	$F_{Tadm}$ [N]	2000	3000	4000
	VA tension member	$F_{Tadm}$ [N]	2000	3000	4000
Belt weight <sup>1)</sup>	ATN12,7K6	[kg/m]	0,226	0,340	0,453
	ATN12,7K6 DC	[kg/m]	0,286	0,430	0,573

BRECO® ATN12,7K6 / ATN12,7K6 DC (M/V)		Flexibility (minimum numbers of teeth / minimum diameter)	
		Steel cord	VA stainless steel cord
Without contra-flexure	$z_{min}$	20	20
	$d_{min}$ [mm]	80	80

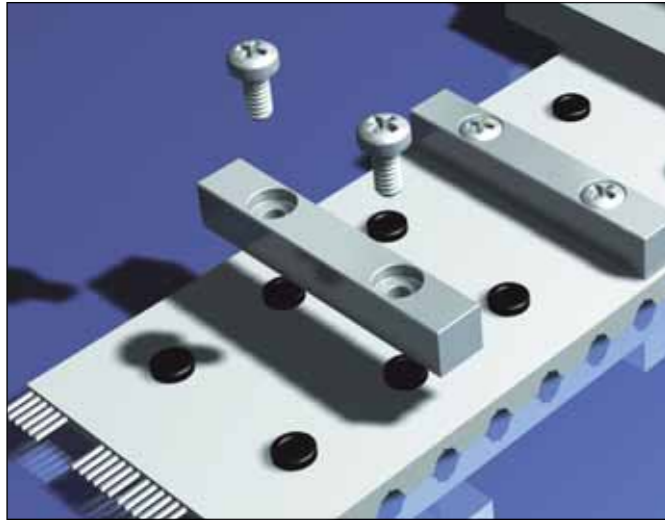
**Circumferential force  $F_U$**

The transmittable circumferential force  $F_U$  depends on the shear strength  $F_{Uspec}$  and the number of teeth in mesh  $z_e$  realised at the drive pulley, which should be  $z_{emin} = 6$  at least.  
Max.  $z_{emax} = 6$  (welded belts) and  $z_{emax} = 12$  (open length) are used for the calculation.

$$F_U = F_{Uspec} \cdot z_e$$

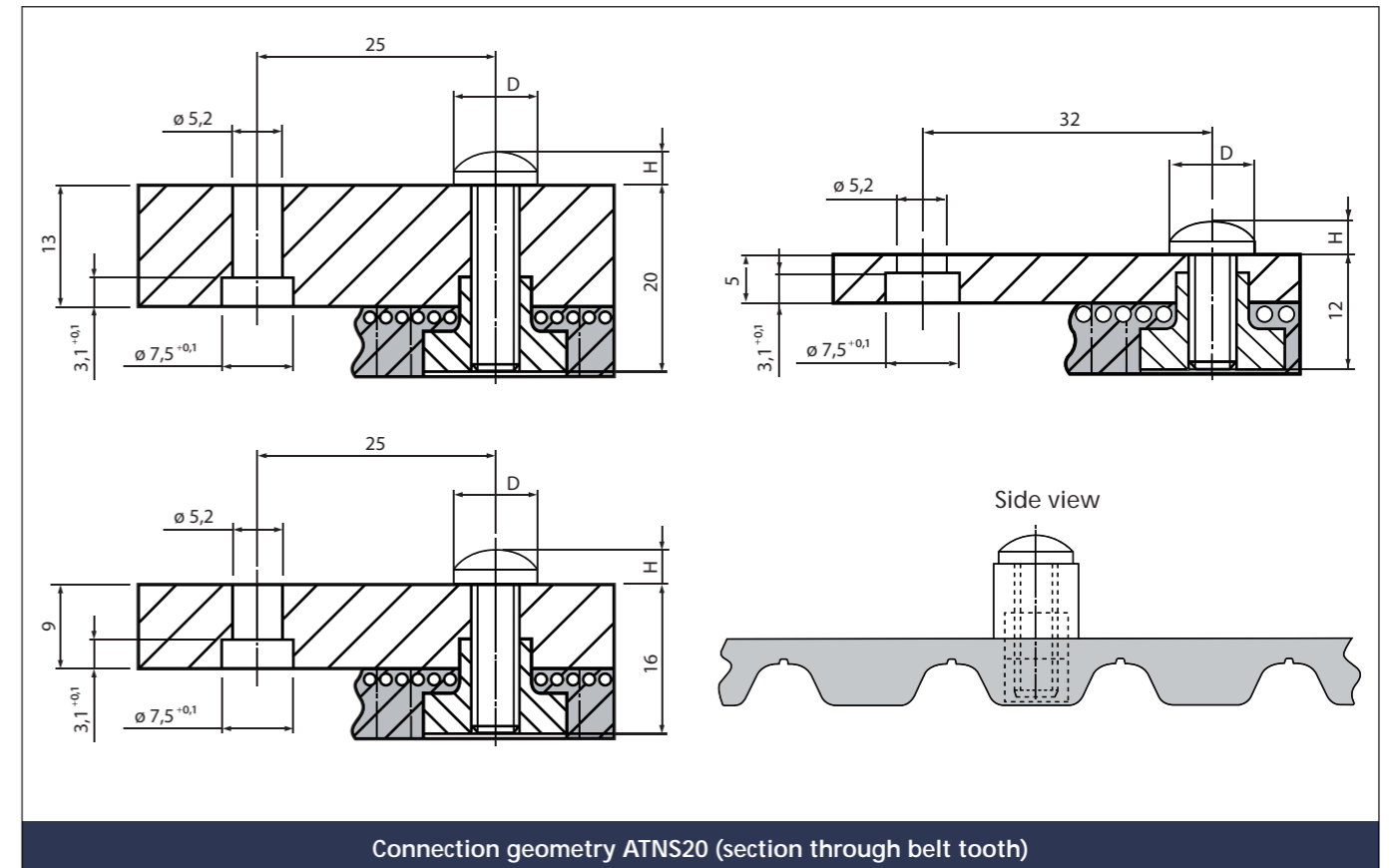
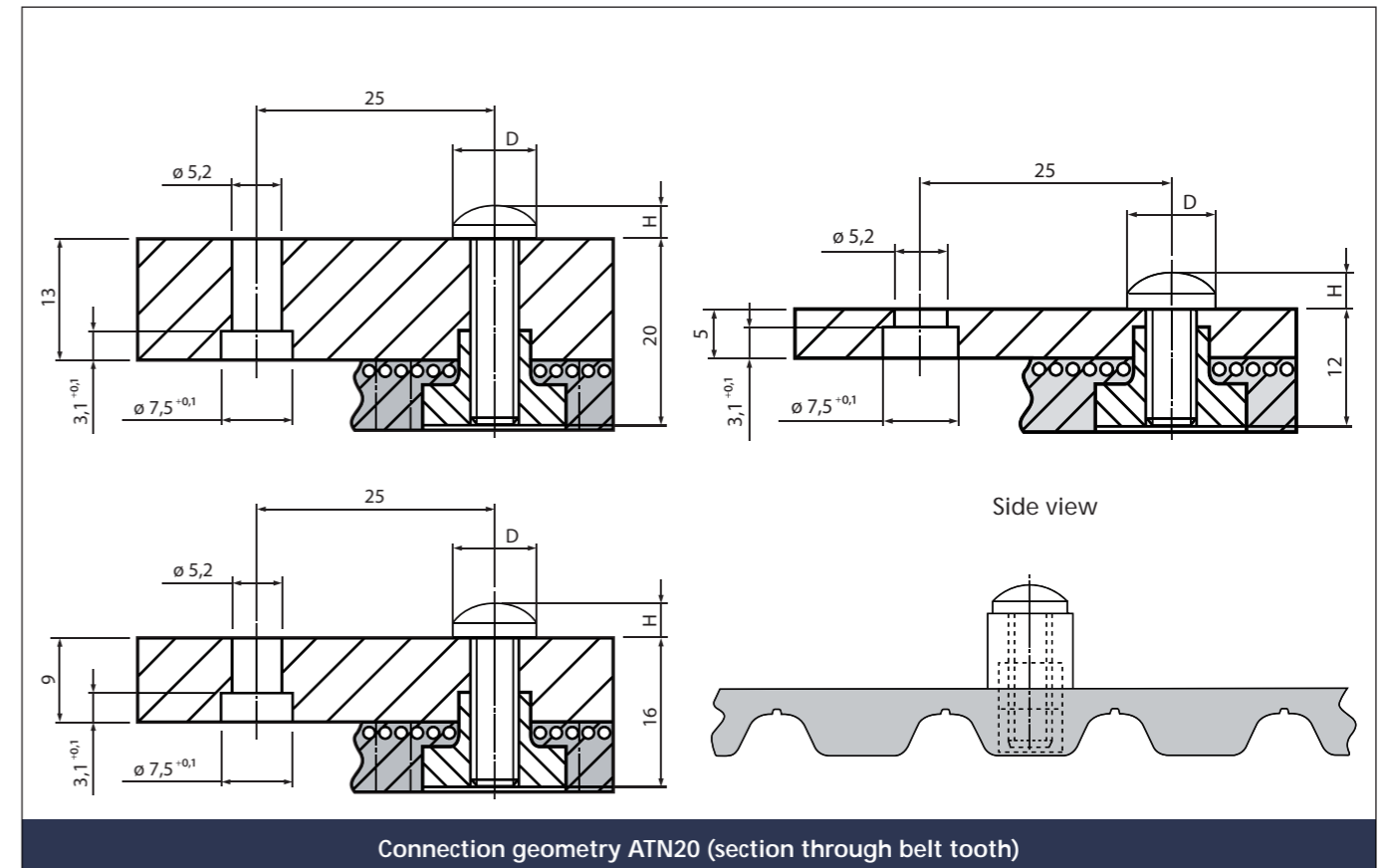
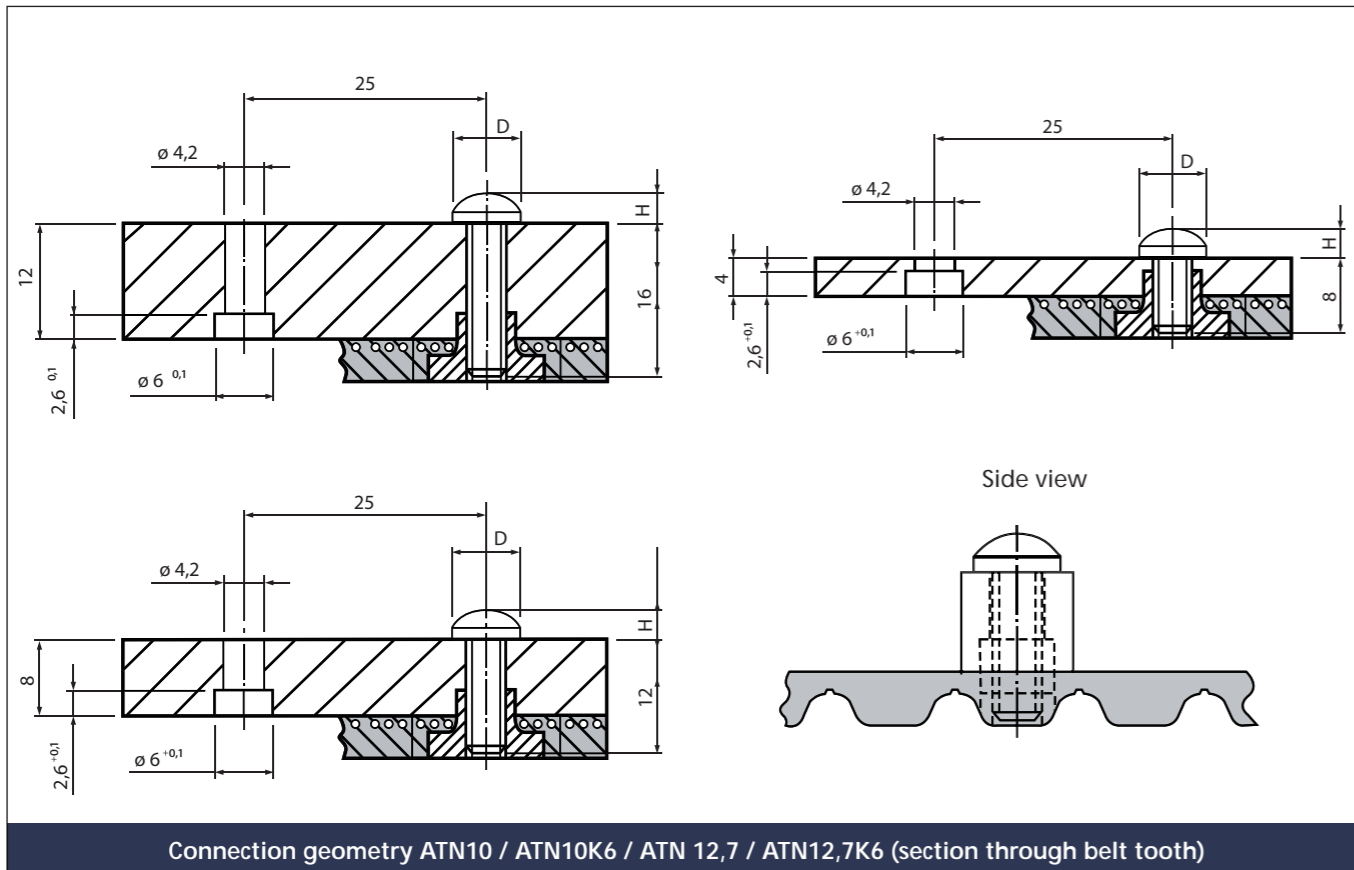
<sup>1)</sup> The stated masses only refer to the extruded belt and are, for this reason, without inset parts, screws and profiles.

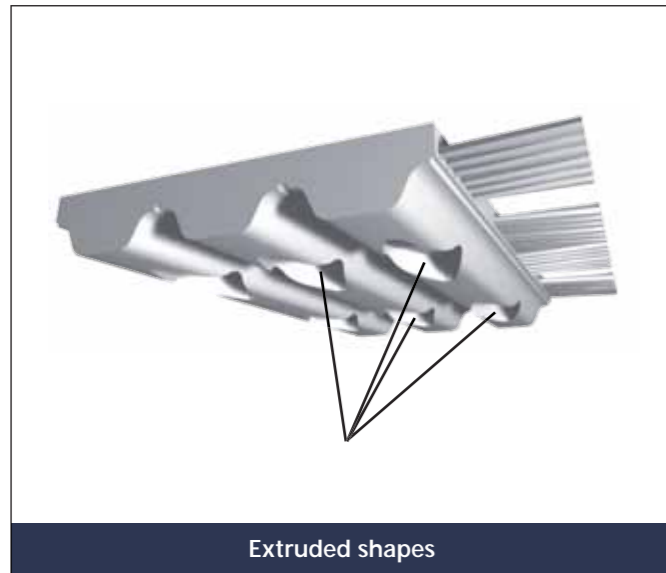




Connection geometries

Please, take the different screw lengths allocated to the stated connection dimensions into account for the profile and/or flight installation in your structure. Please refer to the tables on page 26 and 27 for the H and D screw dimensions.





Extruded shapes

**Shapes for the profile fastening**

Shapes to accommodate profile fastenings (inset parts) are designed in each tooth as standard for all ATN timing belts. For this reason, the extruded longitudinal spacing of the shapes corresponds with the timing belt pitch.

ATN10 / ATN10K6:	10 mm
ATN12,7 / ATN12,7K6:	12,7 mm
ATN20 / ATNS20:	20 mm

When adhering to particular conditions, larger longitudinal spaces can be extruded, i.e. only in each n tooth is a shape present.

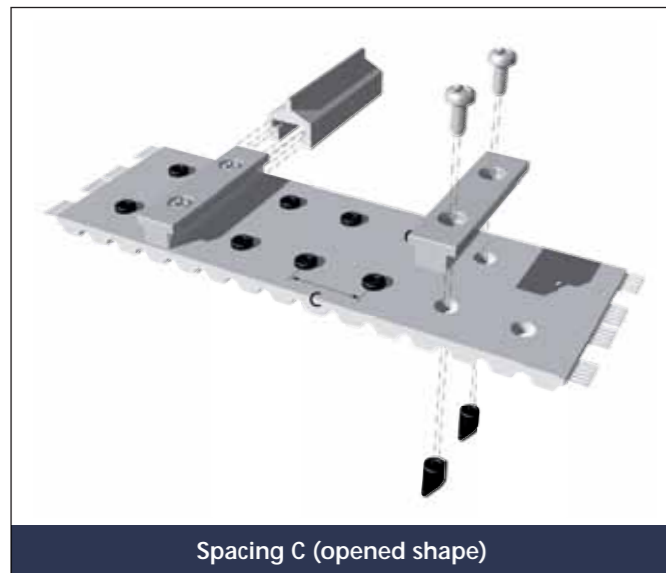
Check the following rules, if a shape is only required in each n tooth:

ATN10 / ATN10K6:	$120 / n \rightarrow$	integer
ATN12,7 / ATN12,7K6:	$96 / n \rightarrow$	integer
ATN20 / ATNS20:	$60 / n \rightarrow$	integer

**Example: ATN 10**

Shape only in each third tooth:  
 $120 / 3 = 40$  integer

Please ask for the minimum purchase quantity for these special versions.



Spacing C (opened shape)

BRECO® timing belt **50 ATN10 / 9600 V - 20**

Width in mm \_\_\_\_\_

Type / pitch \_\_\_\_\_

Length in mm \_\_\_\_\_

Welded \_\_\_\_\_

Spacing C (opened shape) \_\_\_\_\_

**Ordering example**

BRECO® timing belt **75 ATN20 / 8000 V - 80 - PAZ**

Width in mm \_\_\_\_\_

Type / pitch \_\_\_\_\_

Length in mm \_\_\_\_\_

Welded \_\_\_\_\_

Spacing C (opened shape) \_\_\_\_\_

Nylon tooth facing \_\_\_\_\_

**Ordering example**

BRECO® timing belt **75 ATN12,7 / 7620 V - 50,8 - TPUFD1**

Width in mm \_\_\_\_\_

Type / pitch \_\_\_\_\_

Length in mm \_\_\_\_\_

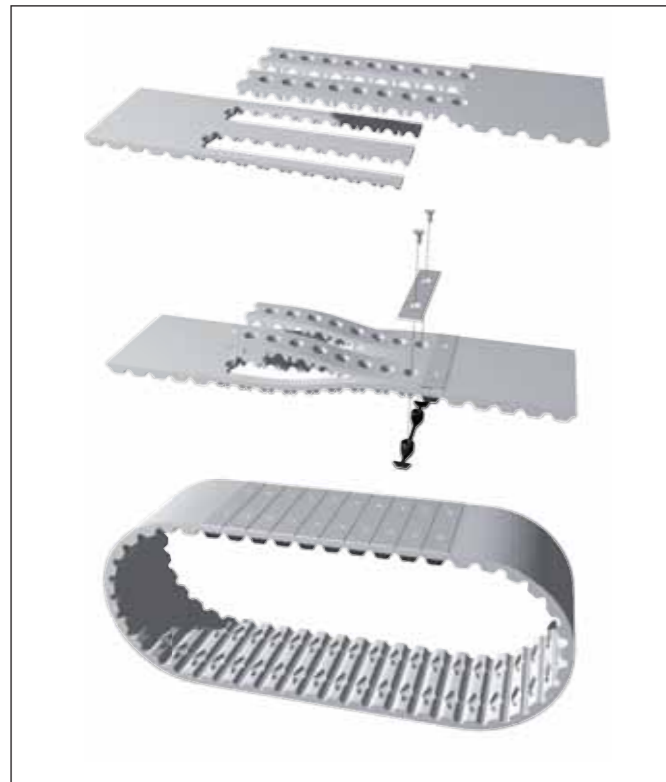
Welded \_\_\_\_\_

Spacing C (opened shape) \_\_\_\_\_

Belt material \_\_\_\_\_

**Ordering example**





ATN timing belt lock

**ATN timing belt lock**

The timing belt lock especially developed for the ATN is a detachable connection and is used where the ATN timing belt can, for constructional reasons, only be connected end-less once it is fitted into the transport line.

Connection elements made of high tensile polyamide and plates made of spring band steel guarantee a reliable connection of the belt ends. The user can select between three or two different versions depending on the belt type.

For lock version „C“ (Connection) for the timing belts ATN10, ATN12.7, ATN10K6, ATN12.7K6, the back plates are screwed on the belt backs. The belt is 0.9 mm higher in the lock area than the standard thickness of the ATN timing belts in the mentioned pitches due to the plates.

With the newly offered lock design „DC“ (Deep Connection) the thickness of the timing belt with the pitch 10 and 12.7 is adapted so that the back of the belt and the plates are flush.

The design „DC-PRO“ provides the possibility to fasten profiles in the lock area without the need to change the profile geometries.

An adaption of the back thickness is not necessary with the ATN20 and ATNS20. The geometry of the back of the belt is adapted through the plate height in the lock area.

The inset parts, screws, back plates and the connection elements for the profile assembly are offered by us as standard according to the lock design.



Lock elements

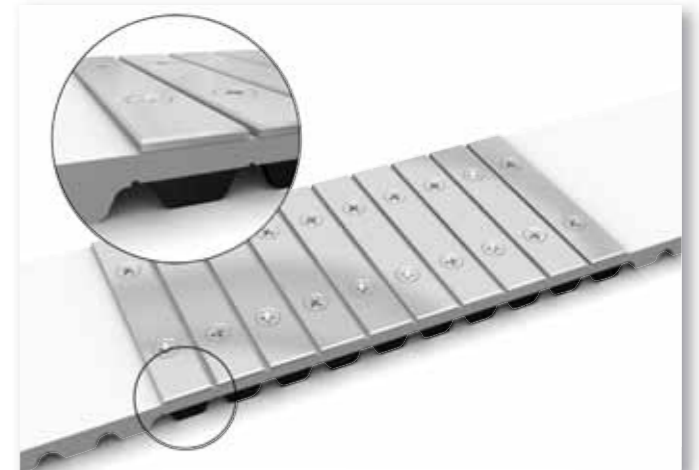
Available versions		
	Design „C“	Design „DC“ / „DC PRO“
ATN10	x	x
ATN12,7	x	x
ATN20	-	x
ATNS20	-	x
ATN10K6	x	x
ATN12,7K6	x	x

x available  
- not available

**Design „C“**

**Timing belt and lock description:**

- Total thickness of the ATN timing belts (without guide key): 4.5 mm (standard)
- Belt teeth prepared for connecting elements
- Lock length = 10 teeth = 9 pitches
- Back plates to screw on the back of the belt
- Profile installation in the lock area not provided for

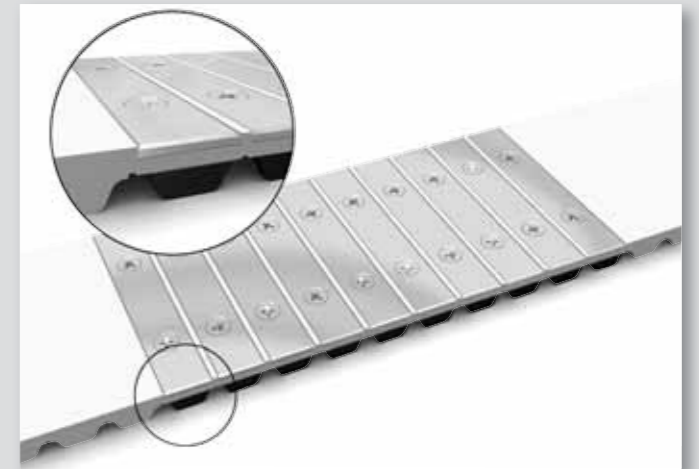


Lock design: 50 ATN10 / 12,7 C  
Timing belt: 50 ATN12,7 C

**Design „DC“**

**Timing belt and lock description:**

- Total thickness of the ATN timing belts (without guide key): 5,4 mm
- Belt teeth and back of the belt prepared for connecting elements and back plates
- Lock length = 10 teeth = 9 pitches
- Back plates embedded in the back of the belt
- Profile installation in the lock area not provided for
- Note: Inset parts with higher dome or shank required even outside the lock area



Lock design: 50 ATN10 / 12,7 DC  
Timing belt: 50 ATN10 DC

**Design „DC-PRO“**

**Timing belt and lock description:**

- Total thickness of the ATN timing belts (without guide key): 5,4 mm
- Belt teeth and back of the belt machined out for connecting elements and back plates
- Lock length = 10 teeth = 9 pitches
- Back plates embedded in the back of the belt
- To mount profiles in the lock area
- Note: Inset parts with higher dome or shank required even outside the lock area



Lock design: 50 ATN10 DC-PRO  
Timing belt: 50 ATN10 DC



**Design „DC“ (ATN20)**  
Timing belt and lock description

- Total thickness of the ATN timing belts: 8 mm
- Belt teeth and back of the belt prepared for connecting elements and back plates
- Lock length = 9 teeth = 8 pitches
- Back plates embedded in the back of the belt
- Profile installation in the lock area not provided for



**Design „DC“ (ATNS20)**  
Timing belt and lock description

- As ATN20
- Shape spacing in crosswise direction to the belt: 32 mm



**Design „DC-PRO“**  
Timing belt and lock description

- Total thickness of the ATN timing belts: 8 mm
- Belt teeth and back of the belt prepared for connecting elements and back plates
- Lock length = 9 teeth = 8 pitches
- Back plates embedded in the back of the belt
- Designed to mount profiles in the lock area

**Timing belt lock for ATN10 / ATN12.7 / ATN20 / ATNS20 and ATN10K6 / ATN12.7K6**

Material of connecting elements:	High tensile black polyamide		
Material of the connecting plates:	Spring band steel, hardened and polished		
Plate height:	0,9 mm		
Connecting screws	ATN10 / ATN12.7:	Countersunk head screws M 2.5	DIN 965
	ATN20 / ATNS20:	Countersunk head screws M 3	DIN 965
Minimum number of teeth of the pulley for:			
	ATN10:	$Z_{min} = 25$	
	ATN10K6:	$Z_{min} = 25$	
	ATN12,7:	$Z_{min} = 20$	
	ATN12,7K6:	$Z_{min} = 20$	
	ATN20:	$Z_{min} = 20$	
	ATNS20:	$Z_{min} = 25$	

**Admissible tensile forces [N] in the lock connection**

The admissible tensile forces for welded belts are reduced compared to the table on the pages of the timing belt types as shown in the following table:

Belt width b	Admissible tensile forces [N]		
	50 mm	75 mm	100 mm
ATN10 / ATN12,7 / ATN10K6 / ATN12,7K6	750	1150	1500
ATN20 / ATNS20	1000	1500	2000



How to proceed when selecting an ATN timing belt lock

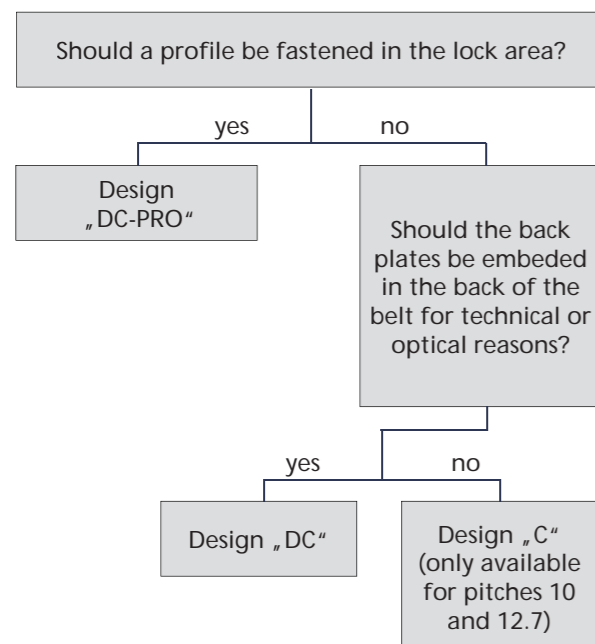
1. step:

Selection of the belt types and the width

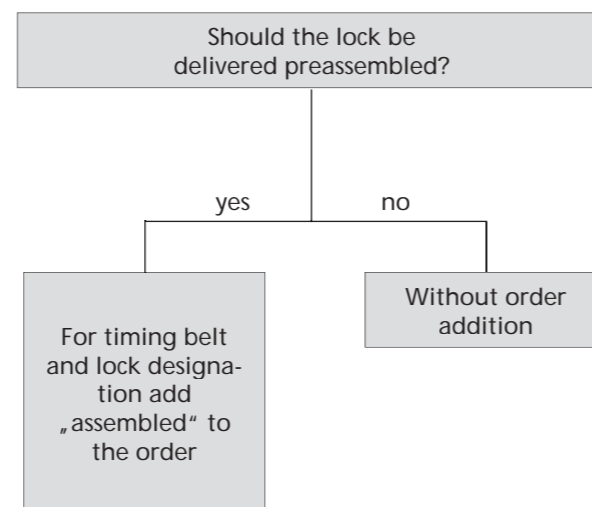
	50	75	100
ATN10 / ATN10K6	x	x	x
ATN12,7 / ATN12,7K6	x	x	x
ATN20 <sup>1)</sup>	x	x	x
ATNS20 <sup>1)</sup>	x	x	-

- x available
- not available
- <sup>1)</sup> not available in design „C“

2. step:



3. step:



Ordering information

When ordering an ATN timing belt with lock connection, the lock is not automatically included. The lock must be ordered with the corresponding ordering code in addition to the ATN timing belt order.

The lock is added to the timing belt and not preassembled as standard. If a preassembly is required, this must also be stated with the order. The order addition „assembled“ must be added to the belt designation and to the lock designation.

For the design „DC-PRO“ the addition „PRO“ must only be added to the lock designation. Special elements are required for the profile installation for the DC-PRO design. We deliver these elements and the respective screws in various lengths to fasten 5 profiles as standard.

Attention: For the lock design „DC“ and DC-PRO“ inset parts adapted to the timing belts ATN10 and ATN12.7 to fasten profiles are also required outside the lock area. Please take the ordering examples in chapter „Profile fastening“ into account.

Ordering examples

Design „C“

Ordering code for timing belt: 50 ATN 10 / 5400 C  
 Ordering code for lock: 50 ATN 10 / 12.7 C

Lock, preassembled:

Ordering code for timing belt: 50 ATN 10 / 5400 C assembled  
 Ordering code for lock: 50 ATN 10 / 12.7 C assembled

Design „DC“

Ordering code for timing belt: 75 ATN 12.7 / 12700 DC  
 Ordering code for lock: 75 ATN 10 / 12.7 DC

Lock, preassembled:

Ordering code for timing belt: 75 ATN 12,7 / 12700 DC assembled  
 Ordering code for lock: 75 ATN 10 / 12,7 DC assembled

Design „DC-PRO“

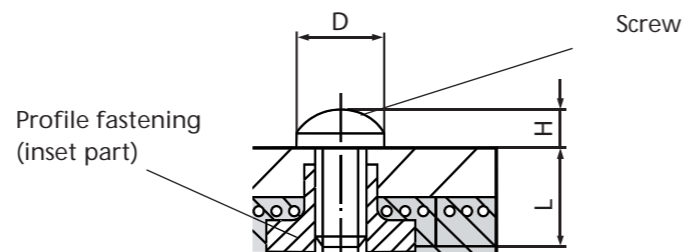
Ordering code for timing belt: 100 ATN 20 / 8000 DC  
 Ordering code for lock: 100 ATN 20 DC-PRO

Lock, preassembled:

Ordering code for timing belt: 100 ATN 20 / 8000 DC assembled  
 Ordering code for lock: 100 ATN 20 DC-PRO assembled

Inset parts and screw types

BRECO provides plastic, brass and VA steel inset parts and the respective screw types to fasten the profiles on the timing belts.



Belt type	Screw type	Screw length L	D	H
ATN10 / ATN12,7 / ATN10K6 / ATN12,7K6	Z40x8	8 mm	7,0	3,1
	Z40x12	12 mm	7,0	3,1
	Z40x16	16 mm	7,0	3,1
ATN20 / ATNS20	Z50x12	12 mm	8,8	3,5
	Z50x16	16 mm	8,8	3,5
	Z50x20	20 mm	8,8	3,5

**Screw types:**

EJOT Delta PT® screw made of tempering steel according to EJOT® WN 5461 part 2, with mushroom head and cross recess Z according to EJOT® WN 5411.

**Note:** For a high reliability of the screwed connection, BRECO recommends the exclusive application of original EJOT Delta PT® screws according to the above mentioned specification. These screw types were especially designed for thermoplastic components and provide the required safety and reliability during mounting and use both under static and dynamic load. All screws have a head with Z cross recess in size 2.

These screws are available from your distribution partner ex stock.

**Attention:** The Delta PT® screws have no metrical ISO coarse-pitch thread according to DIN 13, thus, they are only suitable for plastic inset parts.

Recommended maximum screw-in torques for the connection				
Inset part	Belt	Flight material		
		Polyamide	Metal	TPUST1
Plastic	ATN10 / 12,7	70 Ncm	70 Ncm	50 Ncm
	ATN20	100 Ncm	100 Ncm	80 Ncm

**Ordering example:**

Inset parts made of polyamide: ET-PA-ATN10 / 12,7 or ET-PA-ATN20  
 Inset parts made of polyamide for ATN timing belts with the pitch 10 and 12.7 in design „DC“: ET-PA-ATN10 / 12,7 DC

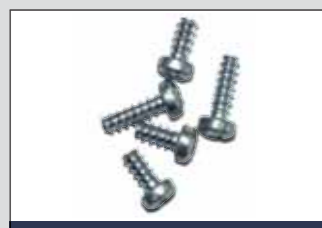
**Ordering example:**

EJOT Delta PT® screw: ATN10 / 12,7 screws Z40x8

Screw connection with black polyamide inset part



Polyamide inset parts



EJOT Delta PT® screw

Screw types

Cheese head screws according to DIN 7984 (zinc-plated) with hexagon socket and pressed head.

Belt type	Screw type	Screw length L	D	H
ATN10 / ATN12,7 / ATN10K6 / ATN12,7K6	M4x8	8 mm	7,0	2,8
	M4x12	12 mm	7,0	2,8
	M4x16	16 mm	7,0	2,8
ATN20 / ATNS20	M5x12	12 mm	8,5	3,5
	M5x16	16 mm	8,5	3,5
	M5x20	20 mm	8,5	3,5

**Screw types:**

Cheese head screws according to DIN 7984 (VA, material number 1.4301) with hexagon socket and pressed head.

Belt type	Screw type	Screw length L	D	H
ATN10 / ATN12,7 / ATN10K6 / ATN12,7K6	VA M4x8	8 mm	7,0	2,8
	VA M4x12	12 mm	7,0	2,8
	VA M4x16	16 mm	7,0	2,8
ATN20 / ATNS20	VA M5x12	12 mm	8,5	3,5
	VA M5x16	16 mm	8,5	3,5
	VA M5x20	20 mm	8,5	3,5

**Attention:** These screws are exclusively designed for the application in brass and VA inset parts. They are not selfthreading and insufficient for plastic inset parts.

Recommended maximum screw-in torques for the connection			
Inset part	Belt type	Flight material	
		Polyamide	Metal
Brass / VA	ATN10 / 12,7	100 Ncm	100 Ncm
	ATN20	150 Ncm	150 Ncm

**Ordering example:**

Inset parts made of brass or VA: ET-MS-ATN10 / 12,7 or ET-VA-ATN10 / 12,7  
 Inset parts made of brass for ATN timing belts with the pitch 10 and 12.7 in design „DC“: ET-MS-ATN10 / 12,7 DC

**Ordering example:**

Cheese head screw: ATN20 screws M5x16  
 Cheese head screw (VA): ATN10 / 12,7 VA screws M4x12

Screw connection with brass inset part



Brass inset parts



Cheese head screws

Screw connection with VA inset part



VA inset parts



VA cheese head screws



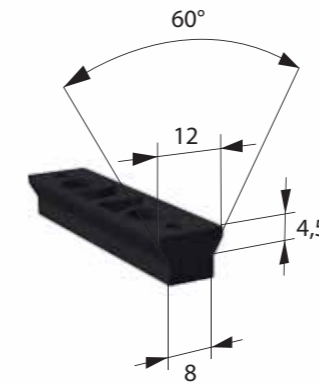
R profile, material PAN1, black

**ATN adapter profiles**

Two possibilities to fasten the ATN profiles are offered. The profile can be directly screwed to the back of the belt or pushed on an adapter. Pushing can be required when the profile shape does not allow the profile to be screwed on.

The adapters manufactured by BRECO guarantee a reliable fastening with the respective profiles. This manner allows the profiles to be easily and quickly changed.

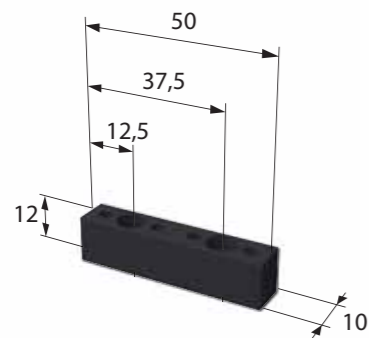
It is not required to replace inset parts because the adapters need not to be loosened during profile changes. Furthermore, longer screws are not required for fastening different profile heights.



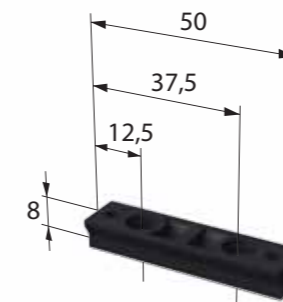
Y profile, material PAN1, black



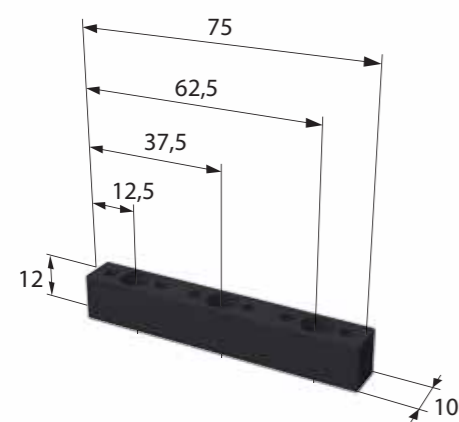
Y profile



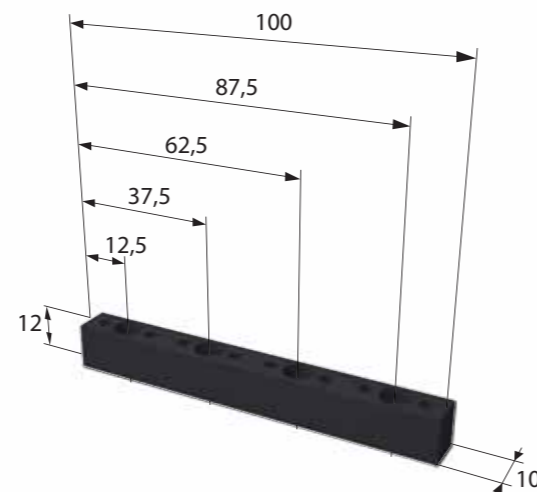
Width 50 mm, profile no.: 1.001.008



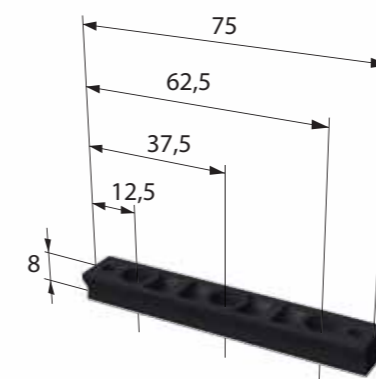
Width 50 mm, profile no.: 1.001.002



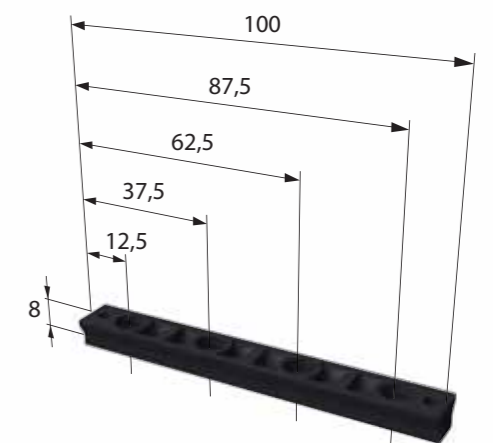
Width 75 mm, profile no.: 1.001.009



Width 100 mm, profile no.: 1.001.010



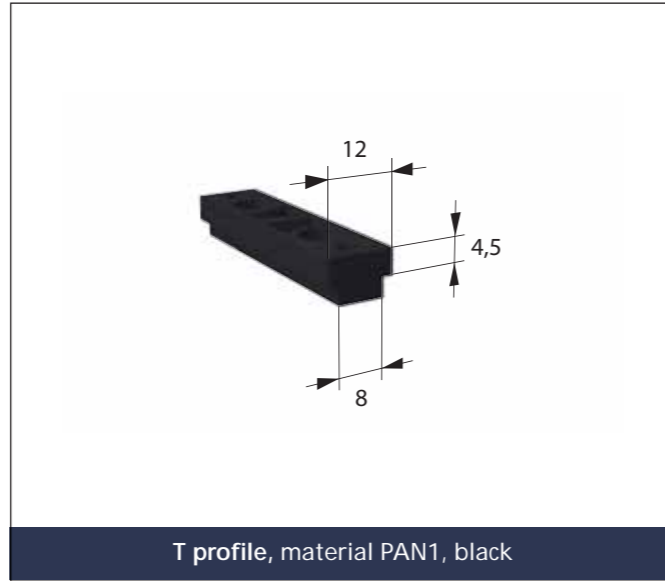
Width 75 mm, profile no.: 1.001.003



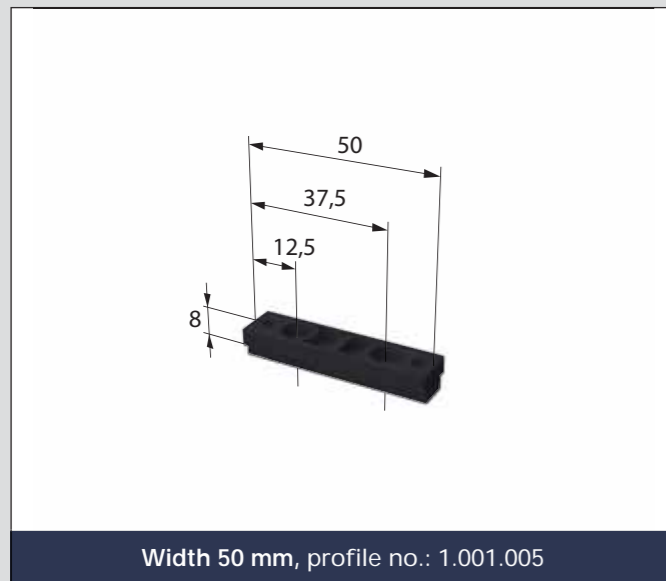
Width 100 mm, profile no.: 1.001.004



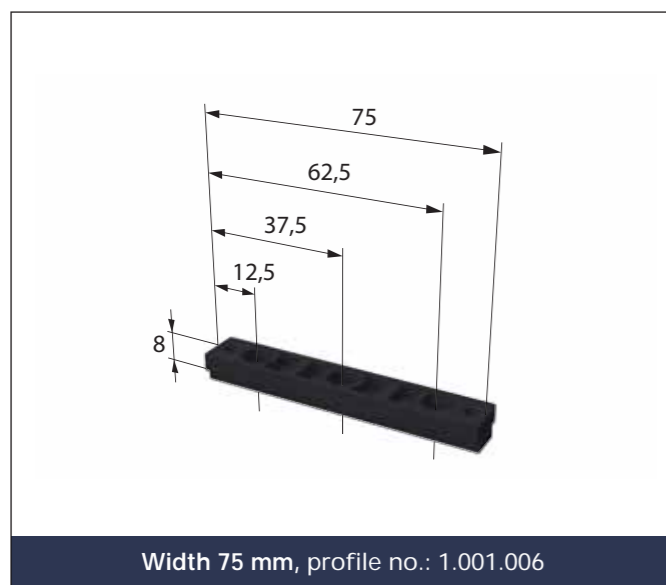
T profile



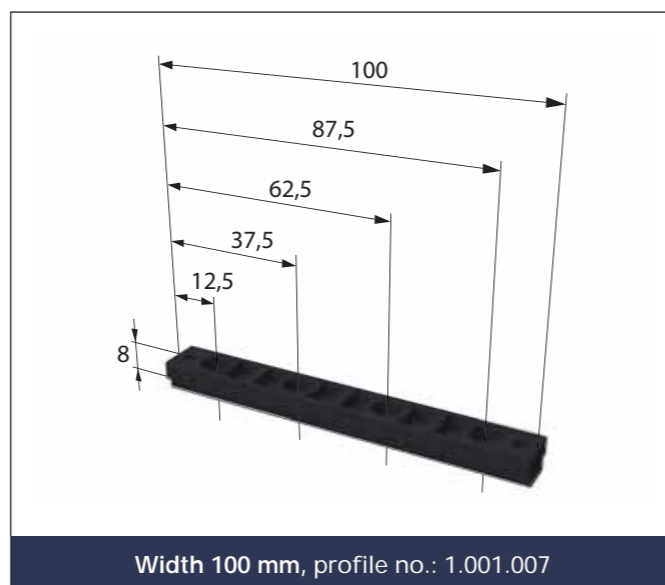
T profile, material PAN1, black



Width 50 mm, profile no.: 1.001.005



Width 75 mm, profile no.: 1.001.006



Width 100 mm, profile no.: 1.001.007

**ATN profiles**

BRECO manufactures individually adapted ATN profiles to be screwed or pushed on using ATN adapters for the transport of the most varied products. The material used by BRECO made of polyamide has proven itself in numerous applications and guarantees a reliable accommodation of your products to be transported. The material is suitable for the application in a temperature range of 0°C to 80°C. A temporary contact temperature of 120°C is possible

For a reliable profile fastening only use the profile fastenings recommended by BRECO according to the information on page 26.



**Examples of ATN profiles**

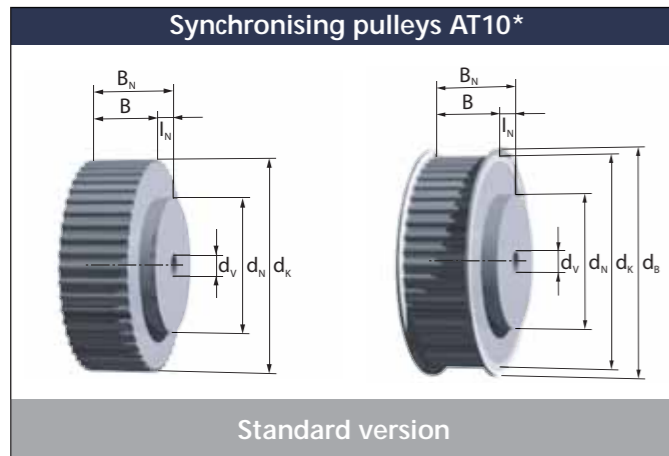
The displayed profiles are a small selection of shapes already realised. BRECO designs and manufactures the respective shape in its own tool manufacture according to your data. For this reason, a swift order processing, the function of the product and a reliable delivery is guaranteed.

The ATN assembly groups offer you the optimum solution for your transport system from one source.

BRECO's distribution partner would be pleased to provide you with further information.







Type	Belt width b [mm]	Tooth width B [mm]	Total width B <sub>N</sub> [mm]
AT10	25	32	42
	50	60	70
	75	85	95
	100	110	120

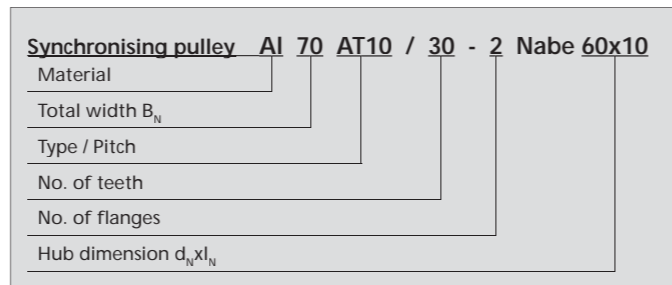
The stock pulleys with standard dimensioning are grey marked. Stock pulleys up to z=44 are with flanges, over z=48 without flanges.

- z = Number of teeth
- d<sub>0</sub> = Pitch circle diameter
- d<sub>k</sub> = Crown diameter
- d<sub>B</sub> = Flange diameter
- d<sub>v</sub> = Diameter of pre-bore
- d<sub>max</sub> = Max. drilling diameter without feather key groove for synchronising pulleys with flanges, hub is not required with maximum pre-bore

\* The ATN timing belt with pitch 10 runs on standard AT10 pulleys. We recommend, however, a product selection from our pulley range due to the function reliability.

z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	d <sub>B</sub> [mm]	Hub d <sub>N</sub> xl <sub>N</sub> [mm]	Pre-Bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
25	77,76	79,58	84	60x10	12H7	66
26	80,94	82,76	86	60x10	12H7	68
27	84,12	85,94	90	60x10	12H7	72
28	87,31	89,13	93	60x10	12H7	76
29	90,49	92,31	96	60x10	12H7	78
30	93,67	95,49	99	60x10	12H7	82
31	96,86	98,68	102	60x10	12H7	84
32	100,04	101,86	106	65x10	12H7	88
33	103,22	105,04	109	65x10	12H7	88
34	106,41	108,23	112	65x10	12H7	92
35	109,59	111,41	115	65x10	12H7	96
36	112,77	114,59	118	70x10	16H7	98
37	115,95	117,77	121	70x10	16H7	101
38	119,14	120,96	125	70x10	16H7	104
39	122,32	124,14	128	70x10	16H7	106
40	125,50	127,32	131	80x10	16H7	110
41	128,69	130,51	134	80x10	16H7	110
42	131,87	133,69	137	80x10	16H7	112
43	135,05	136,87	140	80x10	16H7	114
44	138,24	140,06	144	90x10	16H7	118
45	141,42	143,24	147	90x10	16H7	120
46	144,60	146,42	150	90x10	16H7	122
47	147,79	149,61	153	90x10	16H7	122
48	150,97	152,79	156	95x10	16H7	124
49	154,15	155,97	160	95x10	16H7	126
50	157,33	159,15	163	95x10	16H7	130
51	160,52	162,34	166	95x10	16H7	134
52	163,70	165,52	169	110x10	16H7	136
53	166,88	168,70	172	110x10	16H7	140
54	170,07	171,89	176	110x10	16H7	144

z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	d <sub>B</sub> [mm]	Hub d <sub>N</sub> xl <sub>N</sub> [mm]	Pre-Bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
55	173,25	175,07	179	110x10	16H7	146
56	176,43	178,25	182	110x10	16H7	150
57	179,62	181,44	185	110x10	16H7	152
58	182,80	184,62	188	110x10	16H7	156
59	185,98	187,80	191	110x10	16H7	160
60	189,17	190,99	195	110x10	16H7	162
61	192,35	194,17	198	110x10	16H7	164
62	195,53	197,35	201	110x10	16H7	166
63	198,72	200,54	204	140x10	16H7	170
64	201,90	203,72	207	140x10	16H7	171
65	205,08	206,90	210	140x10	16H7	174
66	208,26	210,08	214	140x10	16H7	175
67	211,45	213,27	217	140x10	16H7	177
68	214,63	216,45	220	140x10	16H7	181
69	217,81	219,63	223	140x10	16H7	185
70	221,00	222,82	226	140x10	16H7	187
71	224,18	226,00	230	140x10	16H7	191
72	227,36	229,18	233	140x10	20H7	193

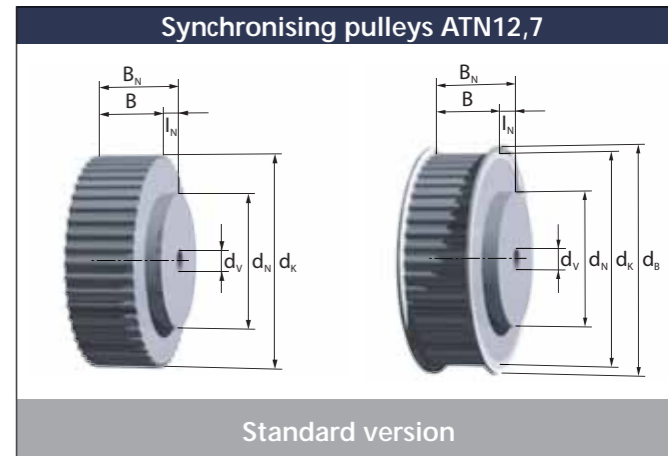


Other hub dimensions are possible

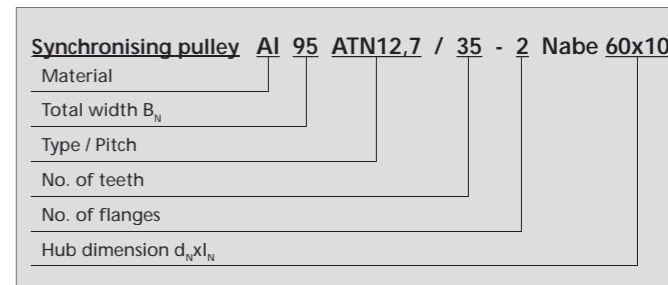
Type	Belt width b [mm]	Tooth width B [mm]	Total width BN [mm]
ATN12,7	25	32	42
	50	60	70
	75	85	95
	100	110	120

- z = Number of teeth
- d<sub>0</sub> = Pitch circle diameter
- d<sub>k</sub> = Crown diameter
- d<sub>B</sub> = Flange diameter
- d<sub>v</sub> = Diameter of pre-bore
- d<sub>max</sub> = Max. drilling diameter without feather key groove for synchronising pulleys with flanges, hub is not required with maximum pre-bore

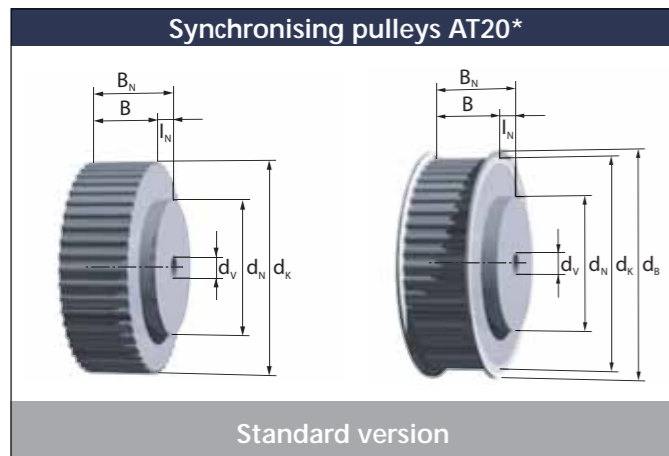
z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	d <sub>B</sub> [mm]	Hub d <sub>N</sub> xl <sub>N</sub> [mm]	Pre-bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
20	79,03	80,85	86	46x10	12H7	67
21	83,07	84,89	90	46x10	12H7	71
22	87,12	88,94	93	46x10	12H7	75
23	91,16	92,98	96	50x10	12H7	79
24	95,20	97,02	102	58x10	12H7	83
25	99,24	101,06	105	58x10	12H7	87
26	103,29	105,11	110	58x10	12H7	91
27	107,33	109,15	113	58x10	12H7	95
28	111,37	113,19	117	60x10	12H7	99
29	115,41	117,23	121	60x10	12H7	103
30	119,46	121,28	126	60x10	12H7	107
31	123,50	125,32	129	60x10	12H7	111
32	127,54	129,36	134	60x10	12H7	116
33	131,58	133,40	137	60x10	12H7	120
34	135,63	137,45	142	60x10	12H7	124
35	139,67	141,49	145	60x10	12H7	128
36	143,71	145,53	150	60x10	16H7	132
37	147,75	149,57	153	60x10	16H7	134
38	151,80	153,62	158	60x10	16H7	136
39	155,84	157,66	161	60x10	16H7	140
40	159,88	161,70	166	60x10	16H7	146
41	163,92	165,74	171	60x10	16H7	152
42	167,97	169,79	174	60x10	16H7	154
43	172,01	173,83	179	60x10	16H7	158
44	176,05	177,87	182	60x10	16H7	162
45	180,09	181,91	185	90x10	16H7	164
46	184,14	185,96	191	90x10	16H7	170
47	188,18	190,00	195	90x10	16H7	174
48	192,22	194,04	198	110x10	16H7	178
49	196,26	198,08	201	110x10	16H7	180
50	200,31	202,13	207	110x10	16H7	186
51	204,35	206,17	210	110x10	16H7	190
52	208,39	210,21	214	110x10	16H7	194



z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	d <sub>B</sub> [mm]	Hub d <sub>N</sub> xl <sub>N</sub> [mm]	Pre-bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
53	212,43	214,25	217	110x10	16H7	196
54	216,48	218,30	223	110x10	16H7	200
55	220,52	222,34	226	110x10	16H7	204
56	224,56	226,38	230	110x10	16H7	208
57	228,60	230,42	236	110x10	16H7	214
58	232,65	234,47	239	110x10	16H7	217
59	236,69	238,51	242	110x10	16H7	220
60	240,73	242,55	245	110x10	16H7	223
61	244,77	246,59	252	110x10	16H7	231
62	248,82	250,64	255	110x10	16H7	233
63	252,86	254,68	258	110x10	16H7	236
64	256,90	258,72	261	110x10	16H7	239
65	260,94	262,76	268	110x10	16H7	246
66	264,99	266,81	271	110x10	16H7	249
67	269,03	270,85	274	110x10	16H7	252
68	273,07	274,89	280	110x10	16H7	258
69	277,11	278,93	284	110x10	16H7	262
70	281,16	282,98	287	110x10	16H7	265
71	285,20	287,02	290	110x10	16H7	268
72	289,24	291,06	296	110x10	16H7	261



Other hub dimensions are possible



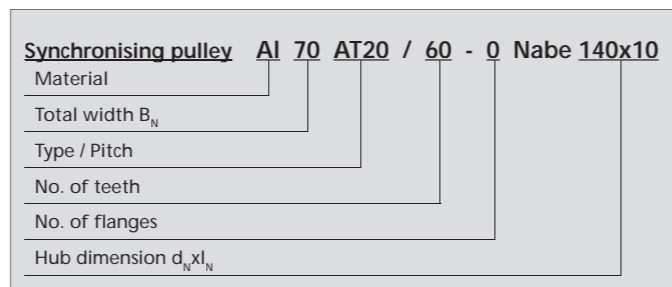
Type	Belt width b [mm]	Tooth width B [mm]	Total width B <sub>N</sub> [mm]
AT20	50	60	70
	75	85	95
	100	110	120

z = Number of teeth  
 d<sub>0</sub> = Pitch circle diameter  
 d<sub>k</sub> = Crown diameter  
 d<sub>B</sub> = Flange diameter  
 d<sub>v</sub> = Diameter of pre-bore  
 d<sub>max</sub> = Max. drilling diameter without feather key groove for synchronising pulleys with flanges, hub is not required with maximum pre-bore

\* The ATN timing belt with pitch 20 runs on standard AT20 pulleys. We recommend, however, a product selection from our pulley range due to the function reliability.

z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	d <sub>B</sub> [mm]	Hub d <sub>N</sub> xI <sub>N</sub> [mm]	Pre-bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
20	124,50	127,32	134	90x10	16H7	100
21	130,87	133,69	140	90x10	16H7	105
22	137,24	140,06	147	90x10	16H7	112
23	143,60	146,42	153	90x10	16H7	118
24	149,97	152,79	160	95x10	16H7	125
25	156,33	159,15	166	95x10	16H7	131
26	162,70	165,52	172	95x10	16H7	137
27	169,07	171,89	179	110x10	16H7	144
28	175,43	178,25	185	110x10	16H7	150
29	181,80	184,62	192	110x10	16H7	156
30	188,17	190,99	198	110x10	16H7	163
31	194,53	197,35	204	110x10	16H7	169
32	200,90	203,72	210	110x10	16H7	175
33	207,26	210,08	217	110x10	16H7	182
34	213,63	216,45	223	110x10	16H7	188
35	220,00	222,82	229	110x10	16H7	195
36	226,36	229,18	236	110x10	18H7	201
37	232,73	235,55	242	110x10	18H7	207
38	239,10	241,92	249	110x10	18H7	214
39	245,46	248,28	255	110x10	18H7	220
40	251,83	254,65	261	110x10	18H7	226
41	258,19	261,01	268	130x10	18H7	233
42	264,56	267,38	274	130x10	18H7	239
43	270,93	273,75	280	130x10	18H7	245
44	277,29	280,11	287	130x10	18H7	252
45	283,66	286,48	293	130x10	18H7	258
46	290,03	292,85	300	130x10	18H7	265
47	296,39	299,21	306	130x10	18H7	271
48	302,76	305,58	312	130x10	18H7	278
49	309,12	311,94	319	140x10	20H7	284

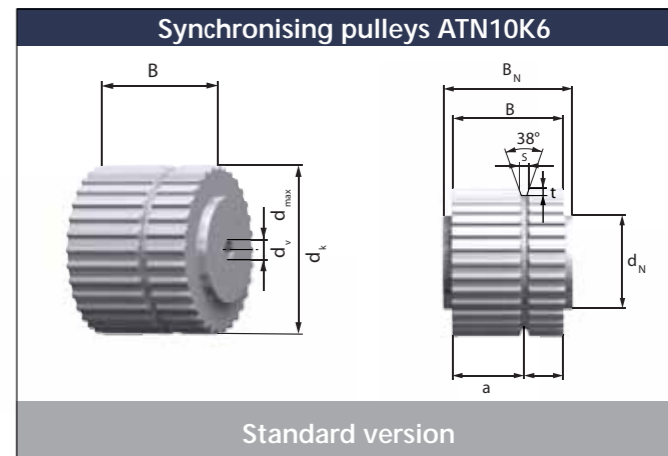
z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	d <sub>B</sub> [mm]	Hub d <sub>N</sub> xI <sub>N</sub> [mm]	Pre-bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
50	315,49	318,31	325	140x10	20H7	290
51	322,86	324,68	331	140x10	20H7	296
52	328,22	331,04	338	140x10	20H7	303
53	334,59	337,41	344	140x10	20H7	310
54	340,95	343,77	350	140x10	20H7	315
55	347,32	350,14	357	140x10	20H7	322
56	353,69	356,51	363	140x10	20H7	328
57	360,05	362,87	370	140x10	20H7	335
58	366,42	369,24	376	140x10	20H7	341
59	372,79	375,61	382	140x10	20H7	347
60	379,15	381,97	389	140x10	20H7	354
61	385,52	388,34	395	140x10	20H7	360
62	391,88	394,70	401	140x10	20H7	366
63	398,25	401,07	408	140x10	20H7	373
64	404,62	407,44	414	140x10	20H7	379
65	410,98	413,80	420	140x10	20H7	385
66	417,35	420,17	427	140x10	20H7	392
67	423,72	426,54	433	140x10	20H7	398
68	430,08	432,90	440	140x10	20H7	405
69	436,45	439,27	446	140x10	20H7	406
70	442,81	445,63	452	140x10	20H7	412
71	449,18	452,00	459	140x10	20H7	419
72	455,55	458,37	465	140x10	20H7	425



Other hub dimensions are possible

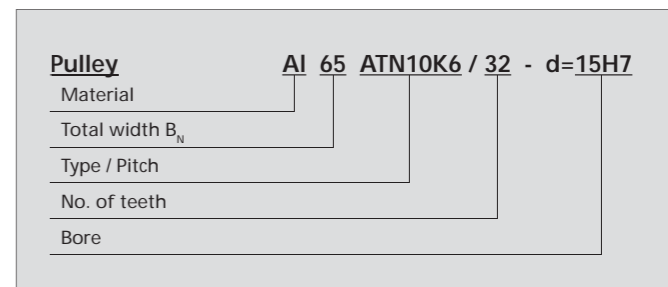
Type	Belt width b [mm]	Pulley width B [mm]	Total width B <sub>N</sub> [mm]	Tooth width a [mm]
ATN10K6	50	55	65	27,5
	75	80	90	52,5
	100	105	115	77,5

z = Number of teeth  
 d<sub>0</sub> = Pitch circle diameter  
 d<sub>k</sub> = Crown diameter  
 d<sub>v</sub> = Diameter of pre-bore  
 d<sub>max</sub> = Max. drilling diameter without feather key groove, hub is not required with maximum pre-bore

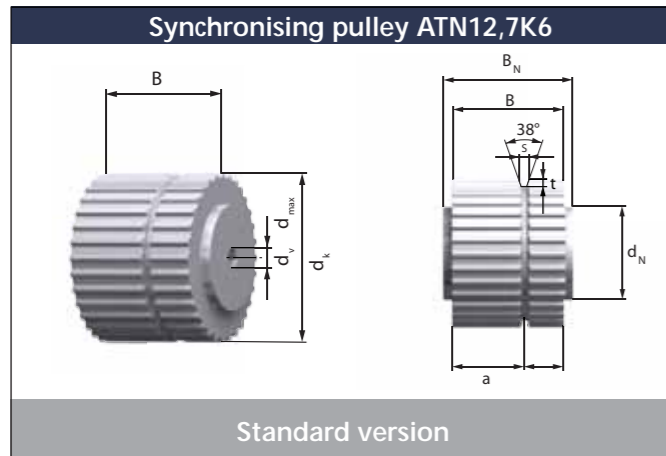


z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	s [mm]	t [mm]	Hub d <sub>N</sub> xI <sub>N</sub> [mm]	Pre-bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
20	61,84	63,66	6,5	5	46x5	12H7	44
21	65,03	66,85	6,5	5	46x5	12H7	47
22	68,21	70,03	6,5	5	50x5	12H7	51
23	71,39	73,21	6,5	5	50x5	12H7	53
24	74,57	76,39	6,5	5	58x5	12H7	56
25	77,76	79,58	6,5	5	60x5	12H7	59
26	80,94	82,76	6,5	5	60x5	12H7	62
27	84,12	85,94	6,5	5	60x5	12H7	66
28	87,31	89,13	6,5	5	60x5	12H7	69
29	90,49	92,31	6,5	5	60x5	12H7	72
30	93,67	95,49	6,5	5	60x5	12H7	75
31	96,86	98,68	6,5	5	60x5	12H7	78
32	100,04	101,86	6,5	5	65x5	12H7	82
33	103,22	105,04	6,5	5	65x5	12H7	85
34	106,41	108,23	6,5	5	65x5	12H7	88
35	109,59	111,41	6,5	5	65x5	12H7	91
36	112,77	114,59	6,5	5	70x5	16H7	94
37	115,95	117,77	6,5	5	70x5	16H7	98
38	119,14	120,96	6,5	5	70x5	16H7	101
39	122,32	124,14	6,5	5	70x5	16H7	104
40	125,50	127,32	6,5	5	80x5	16H7	109
41	128,69	130,51	6,5	5	80x5	16H7	112
42	131,87	133,69	6,5	5	80x5	16H7	115
43	135,05	136,87	6,5	5	80x5	16H7	118
44	138,24	140,06	6,5	5	90x5	16H7	122
45	141,42	143,24	6,5	5	90x5	16H7	123
46	144,60	146,42	6,5	5	90x5	16H7	126
47	147,79	149,61	6,5	5	90x5	16H7	129
48	150,97	152,79	6,5	5	95x5	16H7	132
49	154,15	155,97	6,5	5	95x5	16H7	136
50	157,33	159,15	6,5	5	95x5	16H7	139
51	160,52	162,34	6,5	5	95x5	16H7	142
52	163,70	165,52	6,5	5	110x5	16H7	145

z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	s [mm]	t [mm]	Hub d <sub>N</sub> xI <sub>N</sub> [mm]	Pre-bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
53	166,88	168,70	6,5	5	110x5	16H7	148
54	170,07	171,89	6,5	5	110x5	16H7	152
55	173,25	175,07	6,5	5	110x5	16H7	155
56	176,43	178,25	6,5	5	110x5	16H7	158
57	179,62	181,44	6,5	5	110x5	16H7	161
58	182,80	184,62	6,5	5	110x5	16H7	164
59	185,98	187,80	6,5	5	110x5	16H7	167
60	189,17	190,99	6,5	5	110x5	16H7	171
61	192,35	194,17	6,5	5	110x5	16H7	174
62	195,53	197,35	6,5	5	110x5	16H7	177
63	198,72	200,54	6,5	5	140x5	16H7	181
64	201,90	203,72	6,5	5	140x5	16H7	183
65	205,08	206,90	6,5	5	140x5	16H7	187
66	208,26	210,08	6,5	5	140x5	16H7	190
67	211,45	213,27	6,5	5	140x5	16H7	193
68	214,63	216,45	6,5	5	140x5	16H7	196
69	217,81	219,63	6,5	5	140x5	16H7	201
70	221,00	222,82	6,5	5	140x5	16H7	203
71	224,18	226,00	6,5	5	140x5	16H7	206
72	227,36	229,18	6,5	5	140x5	20H7	209



Other hub dimensions are possible



Type	Belt width b [mm]	Pulley width B [mm]	Total width B <sub>N</sub> [mm]	Tooth width a [mm]
ATN12,7K6	50	55	65	27,5
	75	80	90	52,5
	100	105	115	77,5

z = Number of teeth  
 d<sub>0</sub> = Pitch circle diameter  
 d<sub>k</sub> = Crown diameter  
 d<sub>v</sub> = Diameter of pre-bore  
 d<sub>max</sub> = Max. drilling diameter without feather key groove, hub is not required with maximum pre-bore

z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	s [mm]	t [mm]	Hub d <sub>N</sub> xI <sub>N</sub> [mm]	Pre-bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
20	79,03	80,85	6,5	5	46x5	12H7	67
21	83,07	84,89	6,5	5	46x5	12H7	71
22	87,12	88,94	6,5	5	46x5	12H7	75
23	91,16	92,98	6,5	5	50x5	12H7	79
24	95,20	97,02	6,5	5	58x5	12H7	83
25	99,24	101,06	6,5	5	58x5	12H7	87
26	103,29	105,11	6,5	5	58x5	12H7	91
27	107,33	109,15	6,5	5	58x5	12H7	95
28	111,37	113,19	6,5	5	60x5	12H7	99
29	115,41	117,23	6,5	5	60x5	12H7	103
30	119,46	121,28	6,5	5	60x5	12H7	107
31	123,50	125,32	6,5	5	60x5	12H7	111
32	127,54	129,36	6,5	5	60x5	12H7	116
33	131,58	133,40	6,5	5	60x5	12H7	120
34	135,63	137,45	6,5	5	60x5	12H7	124
35	139,67	141,49	6,5	5	60x5	12H7	128
36	143,71	145,53	6,5	5	60x5	16H7	132
37	147,75	149,57	6,5	5	60x5	16H7	134
38	151,80	153,62	6,5	5	60x5	16H7	136
39	155,84	157,66	6,5	5	60x5	16H7	140
40	159,88	161,70	6,5	5	60x5	16H7	146
41	163,92	165,74	6,5	5	60x5	16H7	152
42	167,97	169,79	6,5	5	60x5	16H7	154
43	172,01	173,83	6,5	5	60x5	16H7	158
44	176,05	177,87	6,5	5	60x5	16H7	162
45	180,09	181,91	6,5	5	90x5	16H7	164
46	184,14	185,96	6,5	5	90x5	16H7	170
47	188,18	190,00	6,5	5	90x5	16H7	174
48	192,22	194,04	6,5	5	110x5	16H7	178
49	196,26	198,08	6,5	5	110x5	16H7	180
50	200,31	202,13	6,5	5	110x5	16H7	186
51	204,35	206,17	6,5	5	110x5	16H7	190

z	d <sub>k</sub> [mm]	d <sub>0</sub> [mm]	s [mm]	t [mm]	Hub d <sub>N</sub> xI <sub>N</sub> [mm]	Pre-bore d <sub>v</sub>	Bore d <sub>max</sub> [mm]
52	208,39	210,21	6,5	5	110x5	16H7	194
53	212,43	214,25	6,5	5	110x5	16H7	196
54	216,48	218,30	6,5	5	110x5	16H7	200
55	220,52	222,34	6,5	5	110x5	16H7	204
56	224,56	226,38	6,5	5	110x5	16H7	208
57	228,60	230,42	6,5	5	110x5	16H7	214
58	232,65	234,47	6,5	5	110x5	16H7	217
59	236,69	238,51	6,5	5	110x5	16H7	220
60	240,73	242,55	6,5	5	110x5	16H7	223
61	244,77	246,59	6,5	5	110x5	16H7	231
62	248,82	250,64	6,5	5	110x5	16H7	233
63	252,86	254,68	6,5	5	110x5	16H7	236
64	256,90	258,72	6,5	5	110x5	16H7	239
65	260,94	262,76	6,5	5	110x5	16H7	246
66	264,99	266,81	6,5	5	110x5	16H7	249
67	269,03	270,85	6,5	5	110x5	16H7	252
68	273,07	274,89	6,5	5	110x5	16H7	258
69	277,11	278,93	6,5	5	110x5	16H7	262
70	281,16	282,98	6,5	5	110x5	16H7	265
71	285,20	287,02	6,5	5	110x5	16H7	268
72	289,24	291,06	6,5	5	110x5	16H7	261

<b>Pulley</b>	AI 65 ATN12,7K6 / 32 - d=15H7
Material	
Total width B <sub>N</sub>	
Type / Pitch	
No. of teeth	
Bore	

Other hub dimensions are possible

Guide rails for BRECO® ATN timing belts

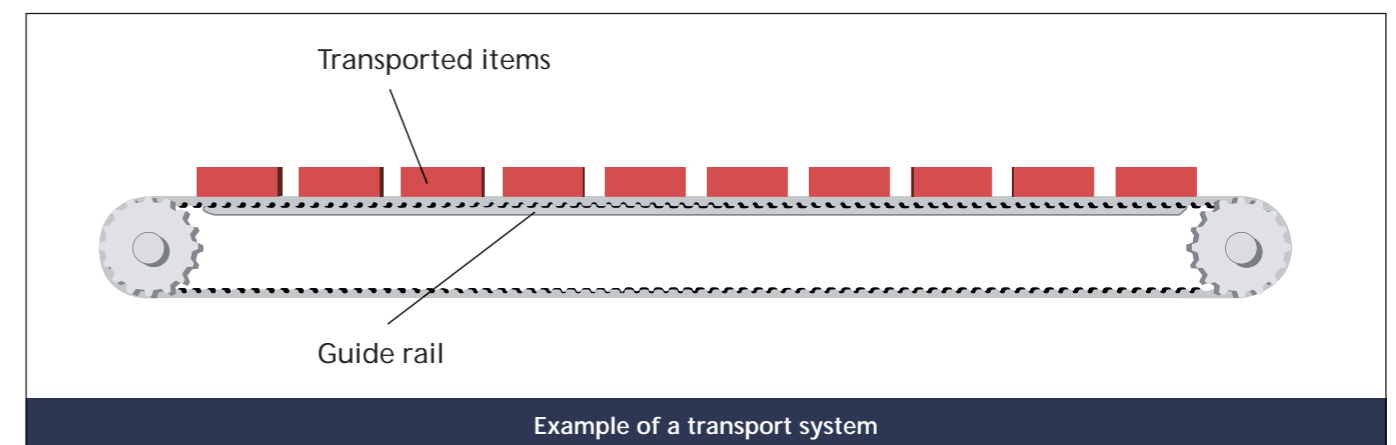
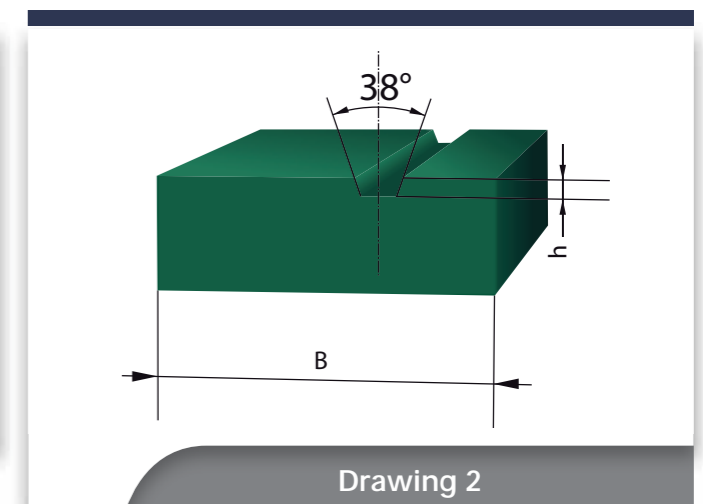
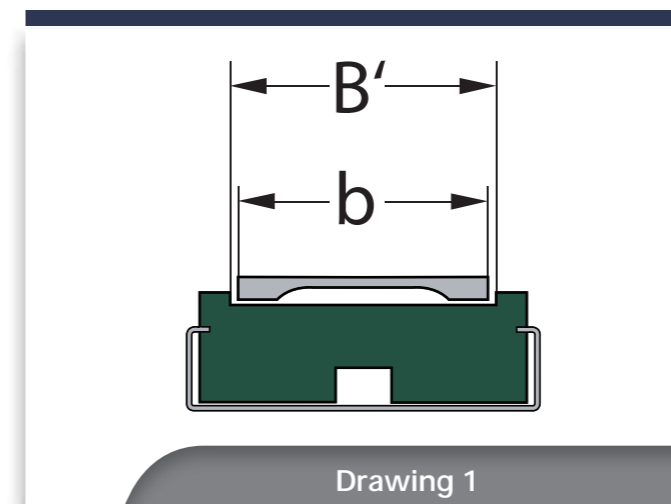
The ATN system is especially designed for application in transport technology. Use guide rails to ensure the timing belt is reliable guided (see picture below).

BRECO provides guide rails with and without guide channels for ATN timing belts without guide V-groove. Versions G, GC, F and FC can be used (see drawing 1).

For the BRECO® timing belts ATN10K6 and ATN12.7K6 guide rails version K6, K6C, ATNK6 and ATNK6 C are available (see drawing 2).

Material

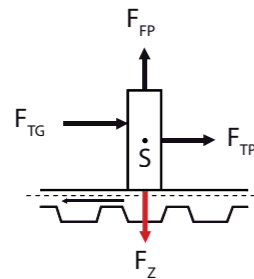
Low-pressure polyethylene is used as material. This material has a low friction coefficient and is wear resistant. The sliding friction value between standard polyurethane and low-pressure polyethylene is μ≈0,3.



**Load at the ATN profile joint**

In addition to the belt type and/or width selection according to the circumferential force load, as described on the pages of timing belt types, the selection can also be based on the profile joint load.

- Pushing force  $F_{TG}$  of the product to be transported
- Inertial forces  $F_{TP}$  (product to be transported and profile)
- Centrifugal force  $F_{FP}$  of the profile (incl. attachment parts)
- Pre-tension and tensile strength ( $F_z$ ) of the screw connection



**Pushing force in the linear movement of the product to be transported**

If the product to be transported (TG) is pushed by the profiles and it slides on an anti-friction rail or similar, the pushing force is mainly the friction force. In cycle operation the inertial force of the product to be transported is also to be taken into account.

**Centrifugal force**

Here, the occurring centrifugal forces are considered. The portion of the product to be transported must only be considered when the TG is actually circling. The centrifugal force is generally low compared to the inertial force.

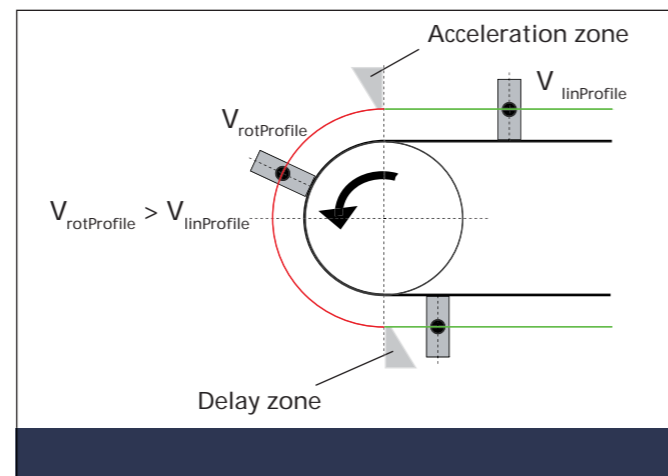
**Additional inertial force when changing into and out of the circular movement**

Each profile fastened to the belt is subject to a very high acceleration when changing from the linear movement into or out of the circular movement. This is due to the different rotational speeds  $v_{rot}$  of timing belt and profiles in the angle of wrap. While the speed  $v$  in the neutrale belt fibre does not change, even during rotation,  $v_{rot} = v_{lin}$ , the profile itself in this area is subject to a notably higher speed than in the linear movement,  $v_{rotProfile} > v_{linProfile}$ . The distance of the centre of gravity of the profile  $h_{sp}$  from the neutrale fibre and the mass of the profile  $m_p$  are of decisive importance. With these and further parameters the admissible height of the centre of gravity of the profile can be determined using the diagrams on page 49.

If the product to be transported additionally runs around the pulley and the guide rollers, the product, too, is subject to the high acceleration. In this case, use the „ATN-CONNECT“ calculation program to calculate the profile joint resistance.

**Pre-tension force of the screw connection**

The pre-tension force of the screw connection is a direct part of the tensile load on the inset parts. For this reason, it is taken into account for the admissible tensile strengths of the inset parts.



**Profile joint resistance**

Two ways are available to calculate the profile joint resistance. On one hand, the admissible height of the centre of gravity of the flight can be roughly determined depending on the profile mass and other parameters (page 47). Then, this value serves as a guide value for the profile design. On the other hand, the „ATN-CONNECT“ PC calculation program can be used to recalculate the strength and thus optimise the joint based on several geometrical, kinematic and material parameters. Please ask your responsible distribution partner.

**ATN-CONNECT calculation program**

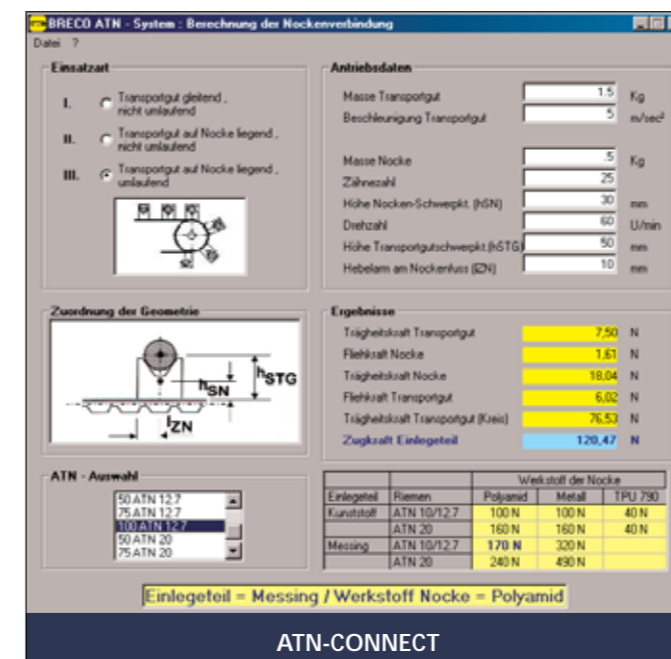
The ATN-Connect calculation program provides the possibility of optimising the ATN profile joint after a preselection of various geometrical and kinematic parameters.

For instance, take masses, speed and acceleration from the planned application. In addition, select belt pitch and width, pulley diameter and a profile geometry. The program proposes a possible joint type, e.g. brass inset part with polyamide profile, on the basis of this default values.

You can either print or save the results.

The program is available in the Internet for downloading under [www.breco.de](http://www.breco.de).

Alternative you can carry out your calculation according to the following pages.



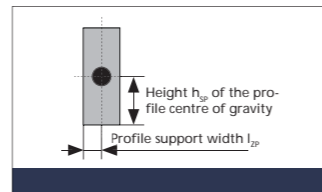
Admissible profile center of gravity height

How to determine the admissible height of the centre of gravity of the profile

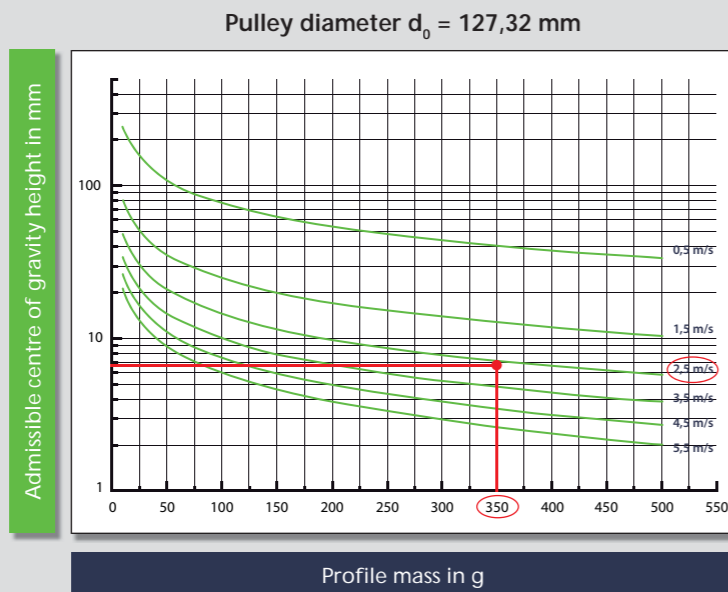
Starting point for the determination are the preselected values for belt pitch and width, pulley and/or roller diameter, transport speed and profile geometry as well as its mass. The diagrams contain the admissible heights for the profile centre of gravity depending on the determined pulley diameter, transport speed and profile masses. The conversion to other parameters is made based on the interrelation stated on page 50. For pulley diameters not contained in the diagrams, a respective approximation or interpolation is required.

Example: Belt type:  
Pulley diameter:  
Displacement speed:  
Profile mass:  
Profile support width:  
Plastic inset part with  
Metal profile

50 ATN 10  
 $d_o = 127.32$  mm  
 $v = 2.5$  m/s  
 $m_p = 350$  g  
 $l_{zP} = 10$  mm



Take the value for  $h_{spadm}$  approx. 7 mm for the admissible centre of gravity height from the adjacent graphics.

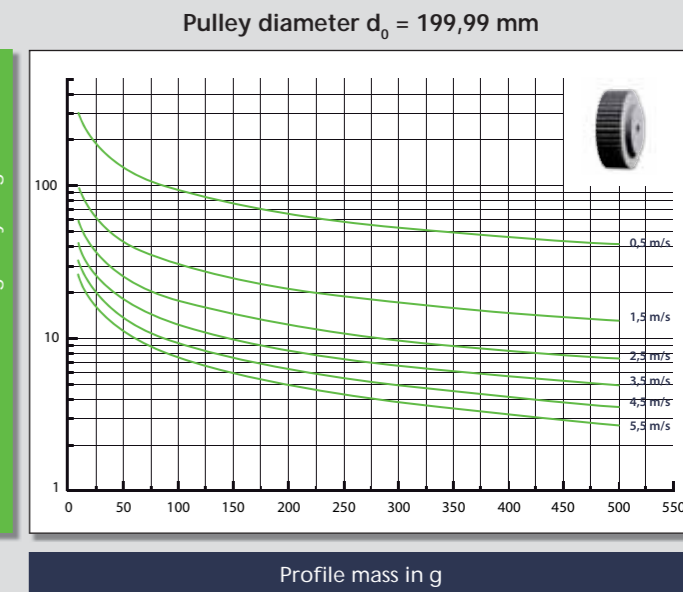
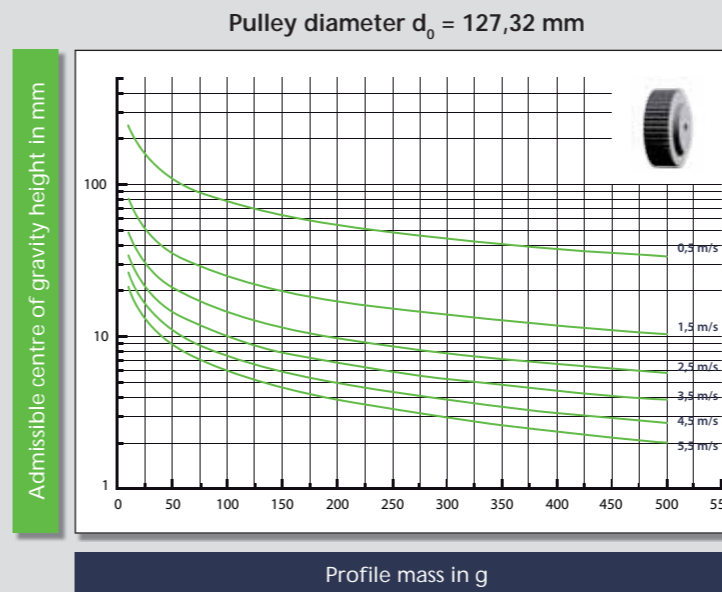
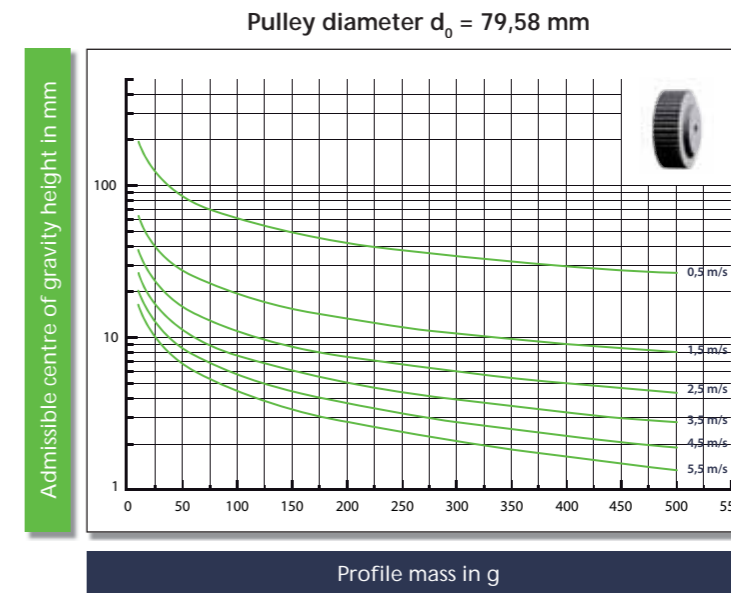


Admissible profile center of gravity height

Parameter:

The displayed curves are only valid for the stated parameters. The product to be transported running around is not considered. The conversion to other parameters is made based on the interrelation stated on page 50.

- Belt type 50 ATN 10 / 12.7
- Profile support width  $l_{zN}$  (symmetrical) = 10 mm
- Plastic inset parts and polyamide or metal profile



**Admissible profile center of gravity height**

**Belt width:**

- For 25 mm: = Curve value · 0,7
- For 75 mm: = Curve value · 1,2
- For 100 mm: = Curve value · 1,4

**For variable profile support width:**

$$= \text{Curve value} \cdot \sqrt{\frac{0,1 \cdot I_{zP}}{\text{mm}}}$$

**ATN10 / 12.7 with various inset parts**

- For plastic inset parts with TPU profile = Curve value · 0,6
- For brass inset parts with polyamide profile = Curve value · 1,3
- For brass inset part with metal profile = Curve value · 1,8

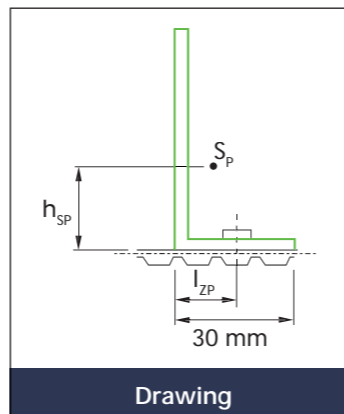
**ATN 20 with various inset parts**

- For plastic inset part with polyamide or metal profile = Curve value · 1,3
- For brass inset parts with polyamide profile = Curve value · 1,5
- For brass inset part with metal profile = Curve value · 2,2

**Calculation example**

Metal brackets are to be fastened on a 50 ATN 10 timing belt to push the products to be transported (see drawing).

- Given:**
- Brass inset part with metal profile
  - Belt type: 50 ATN10
  - Pulley diameter:  $d_0 = 133,69$  mm
  - Speed:  $v = 2$  m/s
  - Profile mass (angle mass):  $m_p = 325$  g
  - Profile support width:  $l_{zP} = 15$  mm



**Required:** Admissible centre of gravity height for the metal bracket

- Solution:**
1. The admissible centre of gravity height is determined using the diagram on page 46. Refer to page 45 for the procedure. For the pulley diameter  $d_0 = 133,69$  (z=42) mm select the diagram with the closest diameter ( $d_0 = 127,32$  mm). For  $v = 2$  m/s and  $m_p = 325$  g this results in:  $h_{sp} = 10$  mm.
  2. Adapting the parameters of page 46 to the example calculation (calculation equation, see above).

- Profile support width from 10 mm to 15 mm:

$$h_{sp} = 10 \text{ mm} \cdot \sqrt{\frac{0,1 \cdot 15 \text{ mm}}{\text{mm}}} = 12,2 \text{ mm}$$

- From plastic inset part with polyamide or metal profile to brass inset part with metal profile:

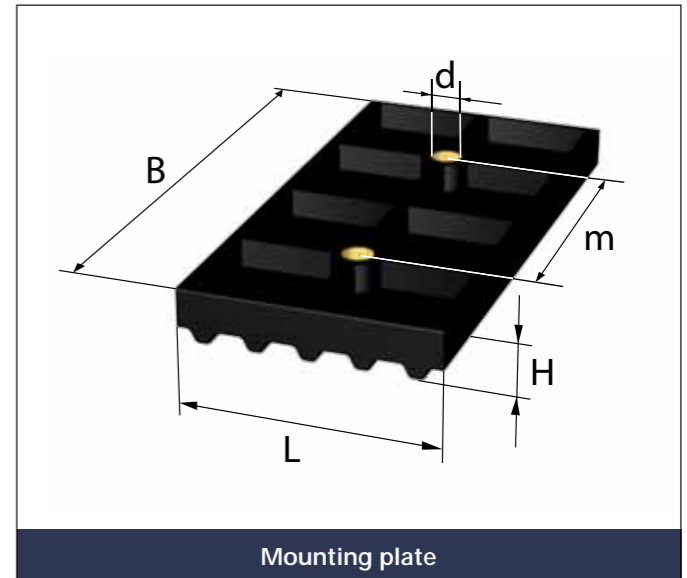
$$h_{spadm} = 12,2 \text{ mm} \cdot 1,8 = 22 \text{ mm}$$

**Attention:** The current value in the calculation order is always valid as curve value to be used. Here, 12.2 mm from the calculation of the profile support width.

**Result:** The admissible centre of gravity height for the parameters stated in the example is:  $h_{spadm} = 22$  mm. With this the profile joint resistance is guaranteed.

**Information on profile installation**

To prevent the inset parts from being twisted during profile installation, the belt should be inserted into a toothed plate with the respective pitch. The offered mounting plate made of plastic (see left picture) can be fastened to a worktop to permit reliable installation of the profiles. For this purpose, the mounting plate is equipped with a threaded insert, size M5.



Take the respectively recommended screw-in torque into consideration when tightening the screw connection for profile fastening (see table on pages 26 and 27).

If the threads of the plastic inset parts are overtightened when tighten the screws, replace the affected inset parts.

Mounting plate dimensions					
Belt type	L [mm]	B [mm]	H [mm]	m [mm]	d
ATN10	50	100	12	50	M5
ATN12,7	63,5	100	12	50	M5
ATN20	100	100	14	50	M5

**Piercing tool**

The shapes for the inset parts are factory sealed with an approx. 0.2 mm thick PU skin to avoid small dirt particles from falling through. Open these shapes to inset the profile fastenings. For this purpose, we offer a simple piercing tool. If you want the timing belt delivered pierced, please inform your responsible distribution partner when ordering.



**Information on the ATN timing belt system application**

Ensure that the centre of gravity of the profiles and possible attachment parts and the products to be transported are as close as possible to the back of the belt. When using pulleys with flanges take into account that the flange height could protrude from the back of the belt. Consider the position of the product to be transported and the profile width accordingly.

If possible, avoid large profile masses with high centres of gravity when operating at higher running speeds. However, at least, a calculation of the load to be expected should be made.

Select a profile foot as wide as possible for heavy profiles.

To avoid strong variations of large and heavy profiles, ensure that they are not located on the angle of wrap during a start-stop process.

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BRECO insists on high quality not only in its manufacturing processes but also in the standard of its advice and service in everything to do with polyurethane timing belt technology. Our distribution partners are all specialists in this field who themselves offer first-class customer service.

BRECO is a member of Mulco Europe EWIV, a European Economic Interest Grouping (EEIG). All the members of this group are considered pioneers in the field of polyurethane timing belt technology. The trust which has evolved over many years and the intensive cooperation have been and will continue to be the basis for innovative power transmission solutions in mechanical engineering in general.

**BRECO® and BRECOFLEX® timing belts - staying safely on the move.**

## Available product catalogues - for every application the right product

**BRECO® and BRECOFLEX® timing belts**

- General information (Application and calculation notes)
- Endless timing belts (BRECOFLEX®)
- Open length timing belts (BRECO® M)
- Endless joined timing belts (BRECO® V)
- Timing belt lock for AT10 / T10

**ATN-System - BRECO® timing belts for transport technology**

- ATN timing belts
- ATN timing belt lock
- ATN standard profile connection
- ATN profiles
- ATN components
- Application and calculation notes

**BRECO® and BRECOFLEX® flat belts**

- General information
- Endless flat belts (BRECOFLEX®)
- Open length flat belts (BRECO® M)
- Endless joined flat belts (BRECO® V)

**Finishing of timing belts**

- Coatings for polyurethane timing belts
- Mechanical rework of coatings
- Mechanical rework of timing belts
- High strength profile connection
- Welded-on profiles

**BRECO® und BRECOFLEX®-Components**

- General information
- Pulleys
- Synchronising shafts
- Synchronising pulleys with tensioners
- Tension rollers
- BRECO® fix clamping elements

**Warranty**

All information was compiled with utmost care according current knowledge. We wish to stress that the technical data is subject to tolerances and not intended to be understood as a delivery specification. We further emphasise the fact that the section 'Calculations' and their application implies development risks. No claims can be derived from possible errors or false application interpretation. All rights for technical modifications are withheld.



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BRECO Antriebstechnik Breher GmbH & Co. KG,  
manufacturer of BRECO® and BRECOFLEX® timing belts,  
with new great challenges, which are accepted with pleasure.

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