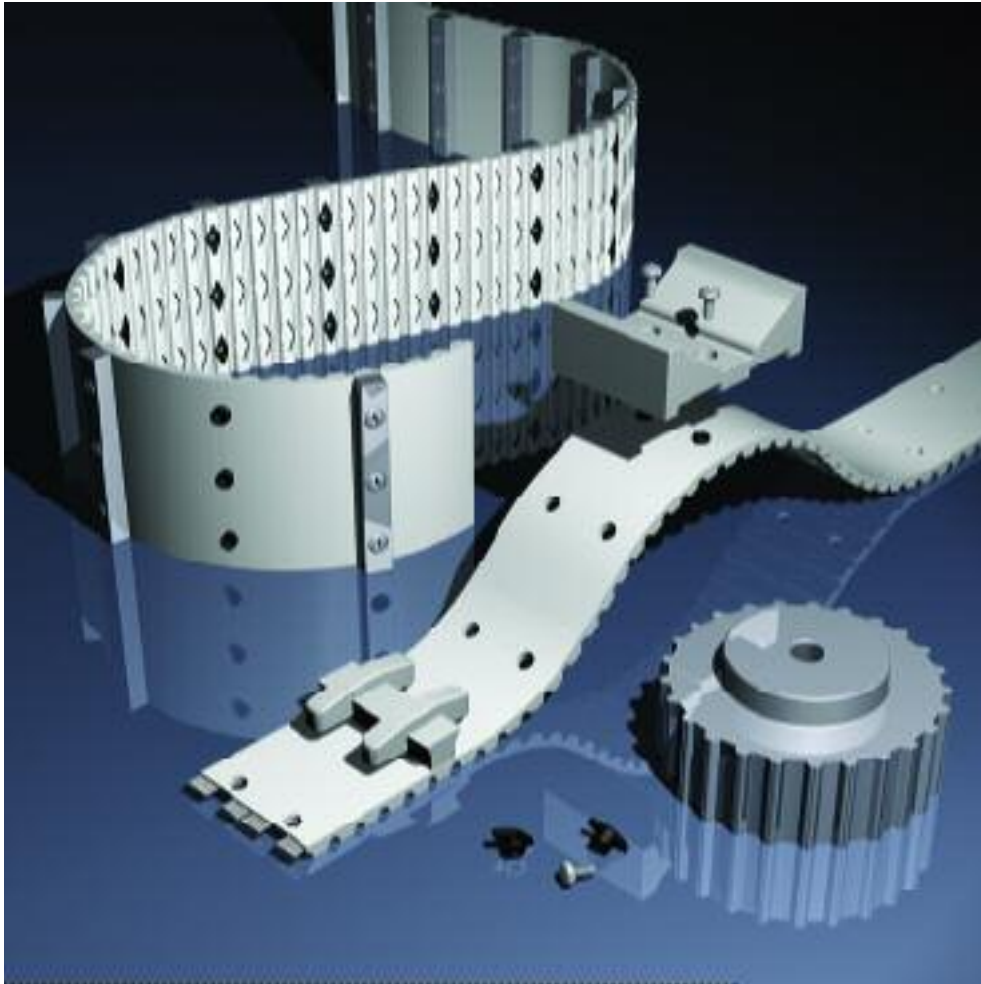


BRECO® ATN system

Timing belts, pulleys and accessories



® registered trademark of BRECO Antriebstechnik Breher GmbH & Co.

BRECO® -, BRECOFLEX® - TIMING BELTS
BRECO® - PULLEYS



ATN - *Flexibility as standard*

ATN - the transport timing belt with multiple possibilities

BRECO Antriebstechnik Breher GmbH & Co., 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.

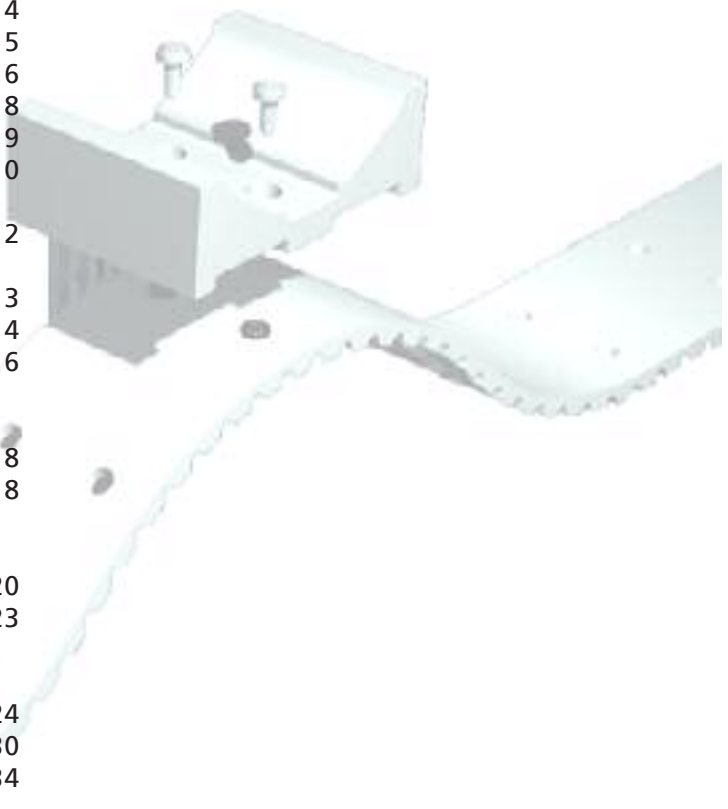
This flexibility provides a great variety of application possibilities, not to be realised up to now, compared to other profile fastening systems, as e.g. welding. If required, it is possible to convey different types of goods in one transport system using the same timing belt, but equipped with different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

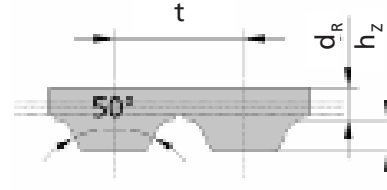


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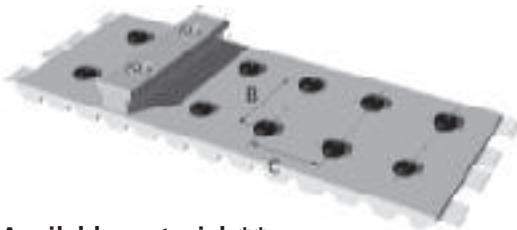
ATN timing belt product range (M/V)

ATN



	Profile	Pitch t [mm]	Belt back thickness d_r [mm]	Tooth height h_z [mm]	Spacing*		Belt width b [mm]				
					B [mm]	C_{min} [mm]					
ATN10	AT	10	2	2,5	25	10	25	50	75	100	
ATN10 DC	AT	10	2,9	2,5	25	10	-	50	75	100	
ATN12.7	AT	12,7	2	2,5	25	12,7	25	50	75	100	
ATN12.7 DC	AT	12,7	2,9	2,5	25	12,7	-	50	75	100	
ATN20	AT	20	3	5	25	20	-	50	75	100	
Number of shapes for inset parts per tooth								1	2	3	4
ATNS20	AT	20	3	5	32	20	-	50	75	-	
Number of shapes for inset parts per tooth								-	2	2	-

* 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 Mulco partner about the required spacing C when ordering. The longitudinal spacing of the shapes in the belt tooth corresponds with pitch t.



Available materials**:

- **Standard material:** TPUST1, 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

Available versions**:

- **PAZ:** Nylon tooth facing (white)
- **PAR:** Nylon facing on the back of the belt (green)
- **PAZ-PAR:** Nylon facing on both sides (white/green)
- **DC:** Used for timing belt lock DC or DC-PRO (only ATN10 and ATN12.7)

Preferred delivery:

ATN10, ATN10 DC, ATN12,7, ATN12,7 DC:

- in rolls of 50 or 100 m
- separately notify of shorter dimensions (cuts) or lengths over 100 m
- Endless joined, minimum length: 880 mm

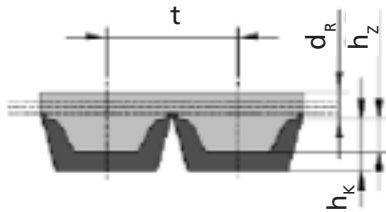
Preferred delivery:

ATN20, ATNS20:

- in rolls of 50 m
- separately notify of shorter dimensions (cuts) or lengths over 50 m
- Endless joined, minimum length: 1000 mm

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

ATN with V-groove

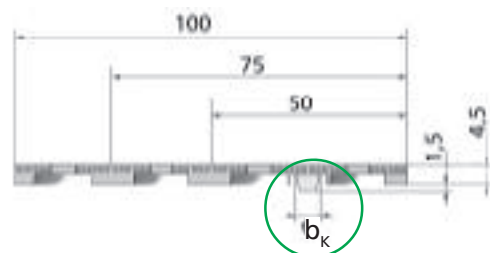


	Profile	Pitch t [mm]	Belt back thickness d _R [mm]	Tooth height h _z [mm]	Spacing*		V-groove		Belt width b [mm]
					B [mm]	C _{min} [mm]	h _k [mm]	b _k [mm]	
ATN 10 K6	AT	10	2	2,5	25	10	4	6	50 75 100
ATN 10 K6 DC	AT	10	2,9	2,5	25	10	4	6	50 75 100
ATN 12.7 K6	AT	12,7	2	2,5	25	12,7	4	6	50 75 100
ATN 12.7 K6 DC	AT	12,7	2,9	2,5	25	12,7	4	6	50 75 100
Number of shapes for inset parts per tooth									2 3 4

* 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 Mulco partner about the required spacing C when ordering. The longitudinal spacing of the shapes in the belt tooth corresponds with pitch t.

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.

V-groove location	Belt width		
	50	75	100
	symmetrical	asymmetrical	asymmetrical



Available materials**:

- **Standard material:** TPUST1, 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

Available versions**:

- **PAZ:** Nylon tooth facing (white)
- **PAR:** Nylon facing on the back of the belt (green)
- **PAZ-PAR:** Nylon facing on both sides (white/green)
- **DC:** Used for timing belt lock DC or DC-PRO (only ATN 10 K6 and ATN12.7 K6)

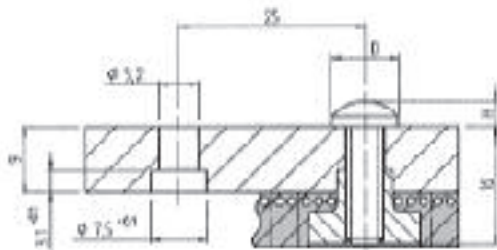
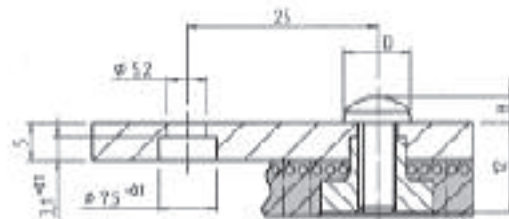
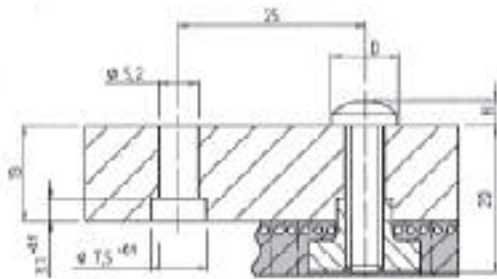
Preferred delivery:

ATN10 K6, ATN10 K6 DC, ATN12.7 K6, ATN12.7 K6 DC:

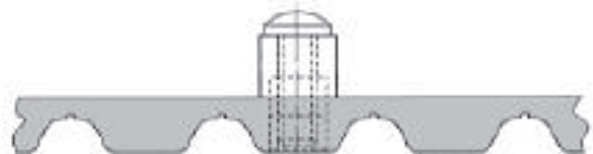
- in rolls of 50 or 100 m
- separately notify of shorter dimensions (cuts) or lengths over 100 m
- Endless joined, minimum length: 880 mm

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

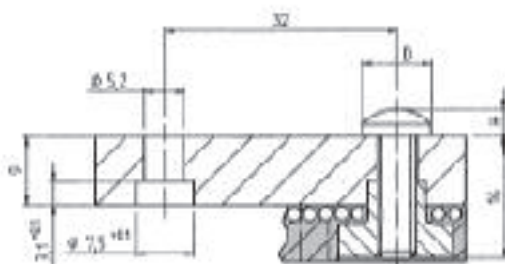
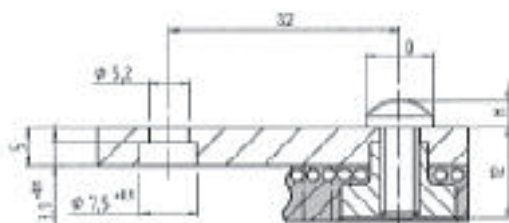
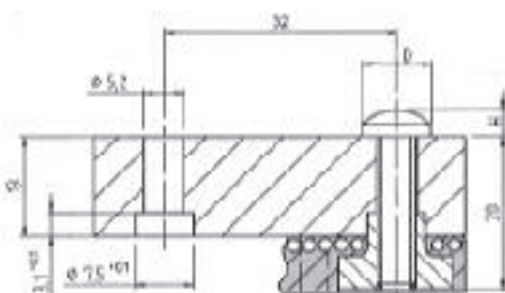
ATN 20 connection geometry
(section through belt tooth)



Side view



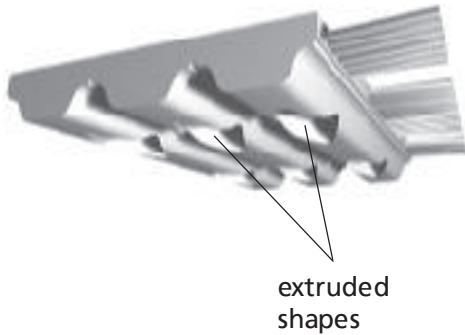
ATNS 20 connection geometry
(section through belt tooth)



Side view



Extrudable shape distances



Shapes for the profile fastenting

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:

$$120 / 3 = 40 \rightarrow \text{integer}$$

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

Ordering example

BRECO® TIMING BELTS 50 ATN 10 / 9600 V - 20

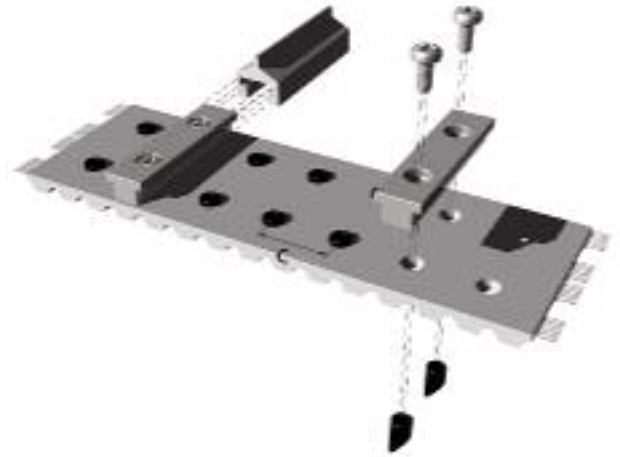
Width in mm _____

Type / pitch _____

Length in mm _____

Welded _____

Spacing C (opened shape) _____



Ordering example

BRECO® TIMING BELTS 75 ATN12.7 / 7620 V - 50.8 - TPUFD1

Width in mm _____

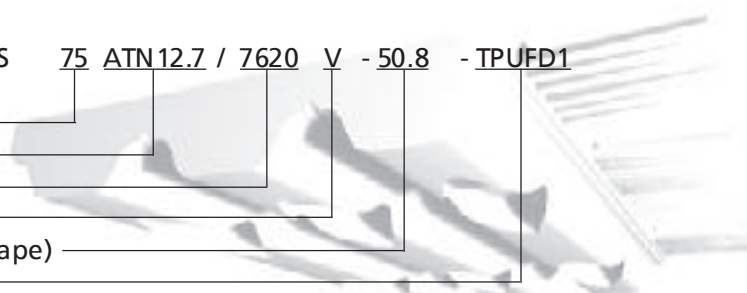
Type / pitch _____

Length in mm _____

Welded _____

Spacing C (opened shape) _____

Belt material _____



Ordering example

BRECO® TIMING BELTS 75 ATN20 / 8000 V - 80 - PAZ

Width in mm _____

Type / pitch _____

Length in mm _____

Welded _____

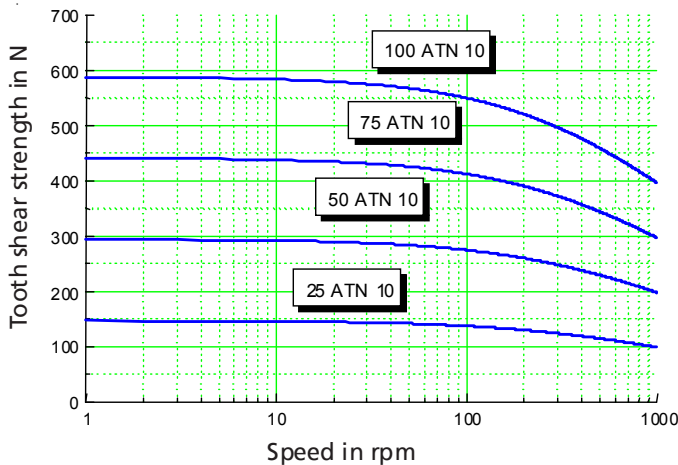
Spacing C (opened shape) _____

Nylon tooth facing _____

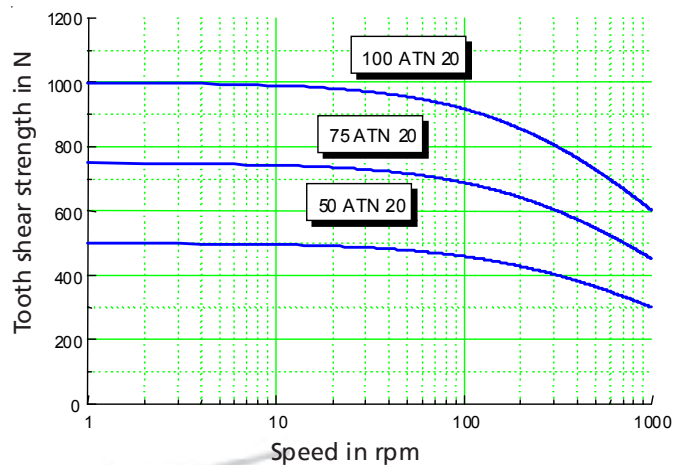
Technical Data

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

ATN 10, ATN 12.7 - tooth shear strength $F_{U\text{spec}}$ per belt tooth in mesh in N



ATN 20 / ATNS 20 - tooth shear strength $F_{U\text{spec}}$ per belt tooth in mesh in N



ATN10K6 / ATN12.7K6 - reduction of the shear strength per belt tooth in mesh

Type	$F_{U\text{spec}}$ compared with ATN 10	Type	$F_{U\text{spec}}$ compared with ATN 12,7
50 ATN10 K6	- 20%	50 ATN12.7 K6	- 20%
75 ATN10 K6	- 13%	75 ATN12.7 K6	- 13%
100 ATN10 K6	- 10%	100 ATN12.7 K6	- 10%

Circumferential force F_U

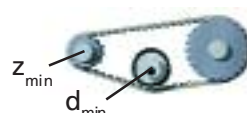
The transmittable circumferential force F_U depends on the shear strength $F_{U\text{spec}}$ and the number of teeth in mesh z_e realised at the drive pulley, which should be $z_{e\text{min}} = 6$ at least.
Max. $z_{e\text{max}} = 6$ (welded belts) and $z_{e\text{max}} = 12$ (open length) are used for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

$$F_U = F_{U\text{spec}} \cdot z_e$$

Minimum numbers of teeth, minimum diameter

Type	z_{min}	d_{min}
ATN10	25	80
ATN10K6	25	80
ATN12,7	20	80
ATN12,7K6	20	80
ATN20	20	125
ATNS20	25	160

Drive type:
without contraflexure



Tension cord strengths [N], specific elasticities [N], belt weights [kg/m] (welded (V), open length (M))

ATN10, ATN 10 DC, ATN10K6, ATN10K6 DC
 ATN12.7, ATN12.7 DC, ATN 12.7K6, ATN12.7K6 DC

Belt width b	25		50		75		100	
	V	M	V	M	V	M	V	M
F_{Tadm} [N] (steel cord)	1000	3000	2000	6000	3000	9000	4000	12000
spec. elasticity c_{spec} [N]	-	$0,75 \cdot 10^6$	-	$1,5 \cdot 10^6$	-	$2,25 \cdot 10^6$	-	$3,0 \cdot 10^6$
F_{Tadm} [N] (stainless steel)	1000	2150	2000	4300	3000	6450	4000	8600
spec. elasticity c_{spec} [N]	-	$0,54 \cdot 10^6$	-	$1,08 \cdot 10^6$	-	$1,61 \cdot 10^6$	-	$2,15 \cdot 10^6$
Belt weight [kg/m]								
ATN 10	0,120		0,240		0,360		0,480	
ATN 10 DC	-		0,300		0,450		0,600	
ATN 10K6	-		0,245		0,367		0,490	
ATN 10K6 DC	-		0,305		0,457		0,610	
ATN 12,7	0,111		0,222		0,333		0,444	
ATN 12,7 DC	-		0,282		0,423		0,564	
ATN 12,7K6	-		0,226		0,340		0,453	
ATN 12,7K6 DC	-		0,286		0,430		0,573	

ATN20

Belt width b	50		75		100	
	V	M	V	M	V	M
F_{Tadm} [N] (steel cord)	2700	8000	4000	12000	5400	16000
spec. elasticity c_{spec} [N]	-	$2,0 \cdot 10^6$	-	$3,0 \cdot 10^6$	-	$4,0 \cdot 10^6$
F_{Tadm} [N] (stainless steel)	2700	7300	4000	10950	5400	14600
spec. elasticity c_{spec} [N]	-	$1,83 \cdot 10^6$	-	$2,73 \cdot 10^6$	-	$3,65 \cdot 10^6$
Belt weight [kg/m]						
ATN20	0,403		0,604		0,806	

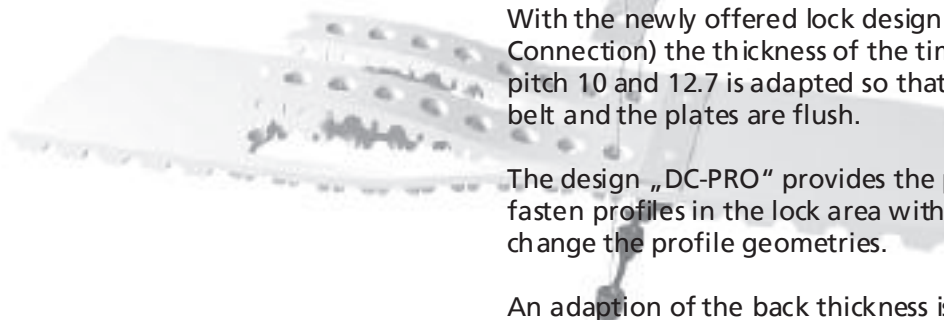
ATNS20

Belt width b	50		75	
	V	M	V	M
Tension cord strength F_{Tadm} [N]	2700	11200	4000	19600
spec. elasticity c_{spec} [N]	-	$2,8 \cdot 10^6$	-	$4,2 \cdot 10^6$
Belt weight [kg/m]				
ATNS20	0,433		0,717	

Information

The stated masses only refer to the extruded belt and are, for this reason, without inset parts, screws and profiles.

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 endless 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 ATN 10, ATN 12.7, ATN 10 K6, ATN 12.7 K6, 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 ATN 20 and ATNS 20. 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.

Available versions

	Design C	Design DC / DC-PRO
ATN 10	●	●
ATN 12.7	●	●
ATN 20	-	●
ATNS 20	-	●
ATN 10 K6	●	●
ATN 12.7 K6	●	●

- available
- not available



**ATN 10; ATN 10 K6;
ATN 12,7; ATN 12,7 K6**

Design „C“

Belt, 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 ATN 10/12.7 C
Timing belts: 50 ATN 12.7 C

Design „DC“

Belt, 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 ATN 10/12.7 DC
Timing belts: 50 ATN 10 DC

Design „DC-PRO“

Belt, 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 ATN 10 DC-PRO
Timing belts: 50 ATN 10 DC

Lock description

ATN 20; ATNS 20



Lock design: 50 ATN 20 DC
Timing belts: 50 ATN 20 DC



Lock design: 50 ATNS 20 DC
Timing belts: 50 ATNS 20 DC



Lock design: 50 ATN 20 DC-PRO
Timing belts: 50 ATN 20 DC

Design „DC“ (ATN20)

Belt, 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)

Belt, lock description

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

Design „DC-PRO“

Belt, lock description

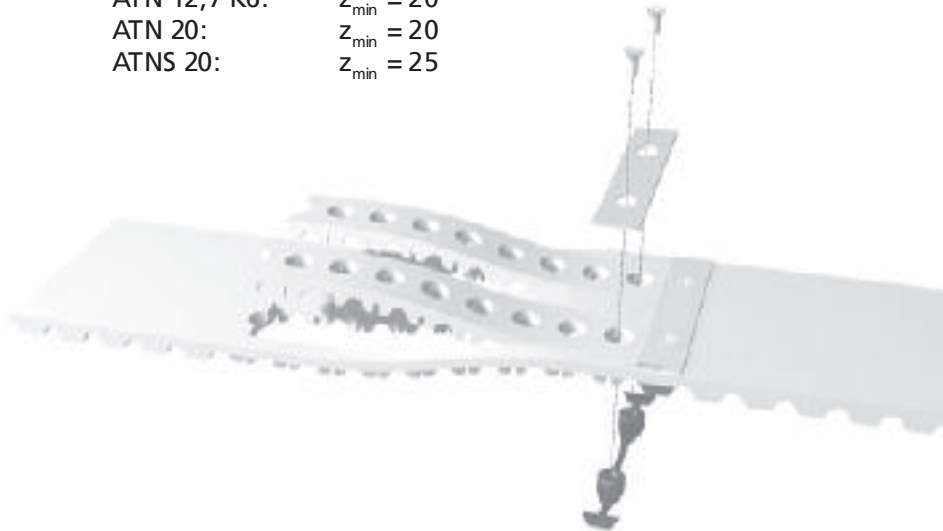
- Total thickness of the ATN timing belts: 8 mm
- Belt teeth and back of the belt prepared for connecting elements and back plates
- Lock length = 9 teeth = 8 pitches
- Back plates embedded in the back of the belt
- designed to mount profiles in the lock area

Timing belt lock for ATN10, ATN12.7, ATN20, ATNS20 and ATN 10K6, ATN 12.7K6

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:

ATN 10:	$Z_{min} = 25$
ATN 10 K6:	$Z_{min} = 25$
ATN 12,7:	$Z_{min} = 20$
ATN 12,7 K6:	$Z_{min} = 20$
ATN 20:	$Z_{min} = 20$
ATNS 20:	$Z_{min} = 25$



Admissible tensile forces [N] in the lock connection

The admissible tensile forces for welded belts are reduced compared to the table on the top of page 11 as shown in the following table:

Belt width:	50	75	100
Tensile forces [N] ATN10, ATN12.7, ATN10K6, ATN12.7K6	750	1150	1500
Tensile forces [N] ATN20, ATNS20	1000	1500	2000

Information

How to proceed when selecting an ATN timing belt lock

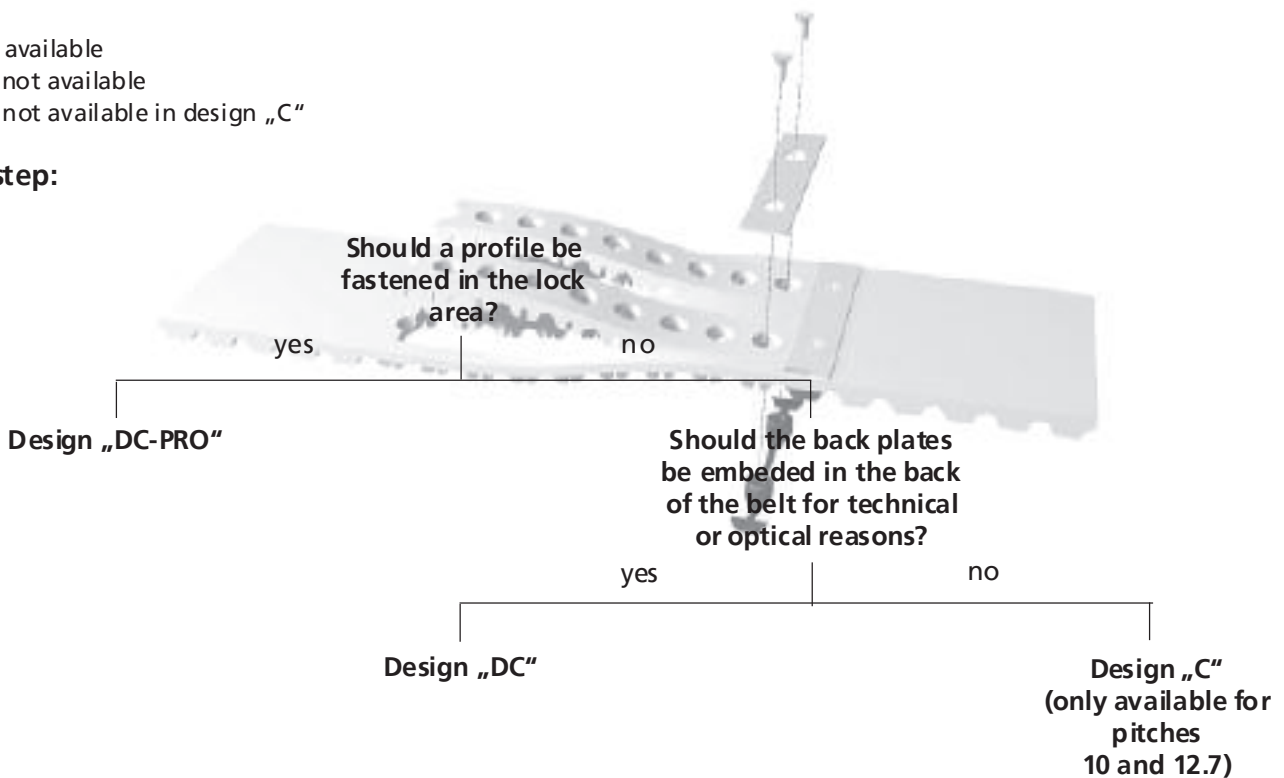
1. step:

Selection of the belt types and the width

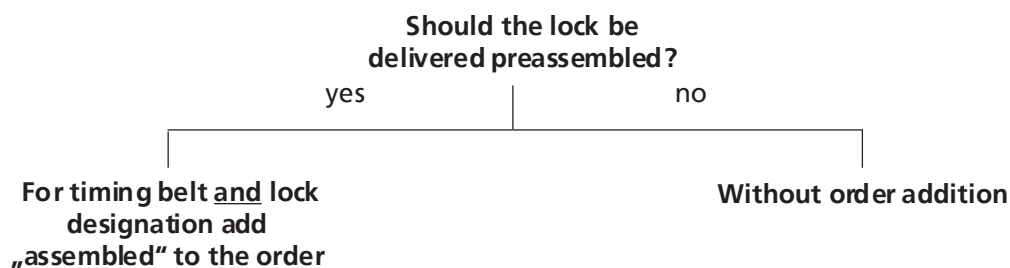
	available lock widths		
	50	75	100
ATN 10, ATN 10 K6	●	●	●
ATN 12,7, ATN 12,7 K6	●	●	●
ATN 20*	●	●	●
ATNS 20*	●	●	-

- available
- not available
- * 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 ATN 10 and ATN 12.7 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:

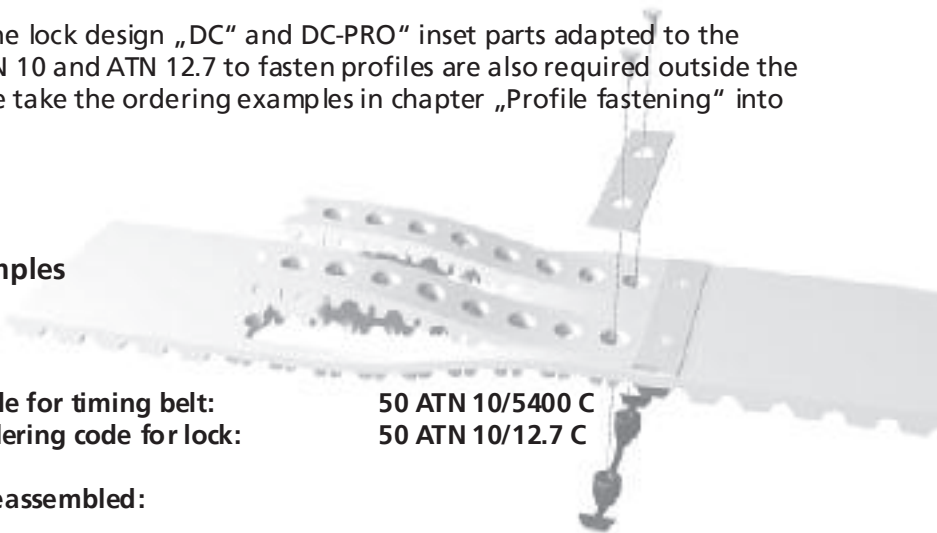
Ordering code for timing belt: 75 ATN 12,7 / 12700 DC assembled
 Ordering code for lock: 75 ATN 10 / 12,7 DC assembled

Design „DC-PRO“

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

Lock, preassembled:

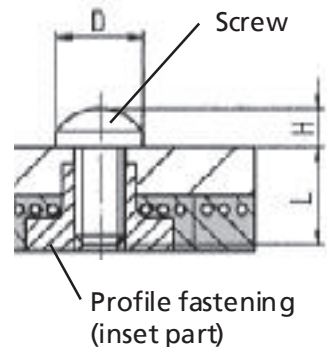
Ordering code for timing belt: 100 ATN 20 / 8000 DC assembled
 Ordering code for lock: 100 ATN 20 DC-PRO assembled



Profile fastening

Inset parts and screw types

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



Screw connection with black polyamide inset part



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.

Belt type	Screw type	Screw length L	D	H
ATN 10 / ATN 12.7 / ATN 10 K6 / ATN 12.7 K6	Z 40 x 8	8 mm	7,0	3,1
	Z 40 x 12	12 mm	7,0	3,1
	Z 40 x 16	16 mm	7,0	3,1
ATN 20 / ATNS 20	Z 50 x 12	12 mm	8,8	3,5
	Z 50 x 16	16 mm	8,8	3,5
	Z 50 x 20	20 mm	8,8	3,5

Note: For a high reliability of the screwed connection, we recommend 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 Mulco 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	TPU-ST1
Plastic	ATN 10 / 12.7	70 Ncm	70 Ncm	50 Ncm
	ATN 20	100 Ncm	100 Ncm	80 Ncm

Ordering code:

Inset parts made of polyamide:

ET-PA-ATN 10/12.7
ET-PA-ATN 20

Inset parts made of polyamide for ATN timing belts with the pitch 10 and 12.7 in design „DC“:

ET-PA-ATN 10/12.7 DC

Ordering example:

EJOT Delta PT® screw:

ATN 10/12.7 screws Z40x8

Screw connection with brass inset part

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
ATN 10 / ATN 12.7 / ATN 10 K6 / ATN 12.7 K6	M 4 x 8	8 mm	7,0	2,8
	M 4 x 12	12 mm	7,0	2,8
	M 4 x 16	16 mm	7,0	2,8
ATN 20 / ATNS 20	M 5 x 12	12 mm	8,5	3,5
	M 5 x 16	16 mm	8,5	3,5
	M 5 x 20	20 mm	8,5	3,5



Screw connection with V2A inset part

Screw types:

Cheese head screws according to DIN 7984 (V2A material number 1.4301) with hexagon socket and pressed head

Belt type	Screw type	Screw length L	D	H
ATN 10 / ATN 12.7	VA M 4 x 12	12 mm	7,0	2,8
ATN 20	VA M 5 x 16	16 mm	8,5	3,5



Note: These screws are exclusively designed for the application in brass and V2A inset parts. They are not selfthreading and insufficient for plastic inset parts.

Recommended maximum screw-in torques for the connection

Inset part	Belt	Flight material	
		Polyamide	Metal
Brass / VA	ATN 10 / 12.7	100 Ncm	100 Ncm
	ATN 20	150 Ncm	150 Ncm

Ordering code:

Inset parts made of brass or V2A-steel:

ET-MS-ATN10/12.7 or ET-VA-ATN10/12.7
ET-MS-ATN20 or ET-VA-ATN20

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:

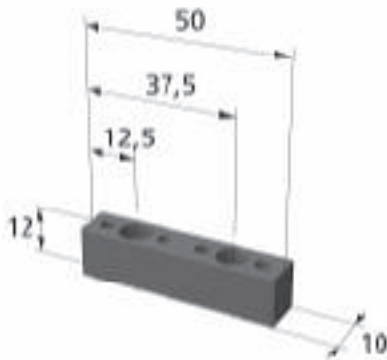
ATN20 screws M5x16

Cheese head screw (V2A):

ATN10/12.7 VA screws M4x12

ATN profiles

R profile, material PAN1, black



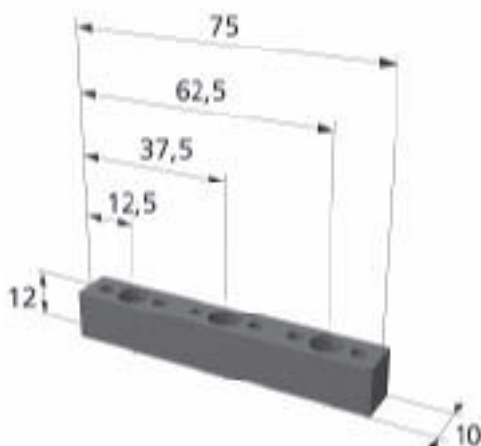
Width 50 mm, profile no.: 1.001.008

ATN adapter

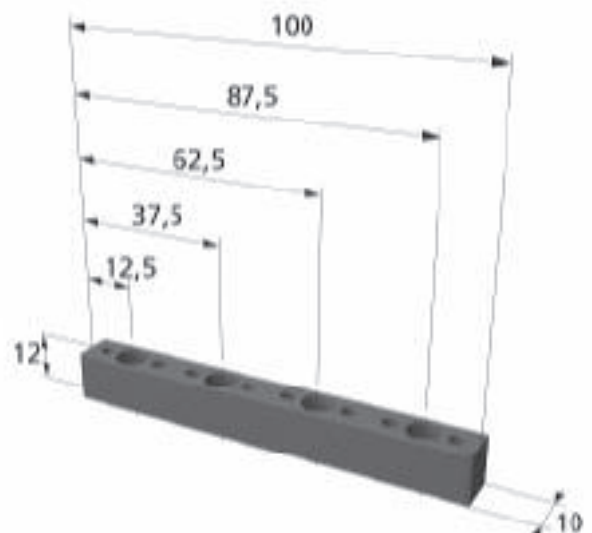
Two possibilities to fasten the ATN profiles are offered. The profile can be directly screwed to the back of the belt or pushed on an adapter. Pushing can be required when the profile shape does not allow the profile to be screwed on.

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

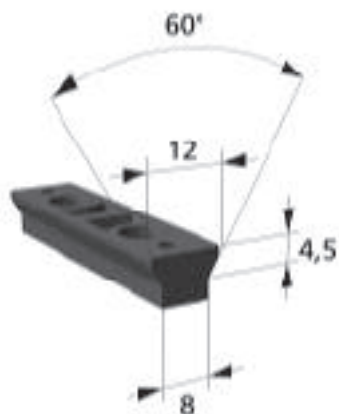
It is not required to replace inset parts because the adapters need not to be loosened during profile changes. Furthermore, longer screws are not required for fastening different profile heights.



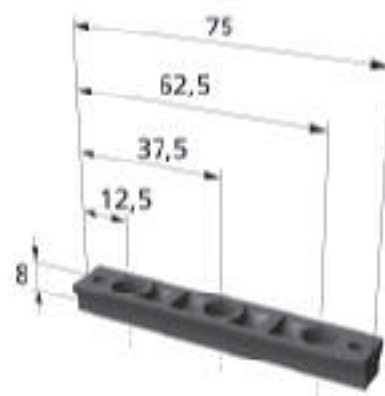
Width 75 mm, profile no.: 1.001.009



Width 100 mm, profile no.: 1.001.010

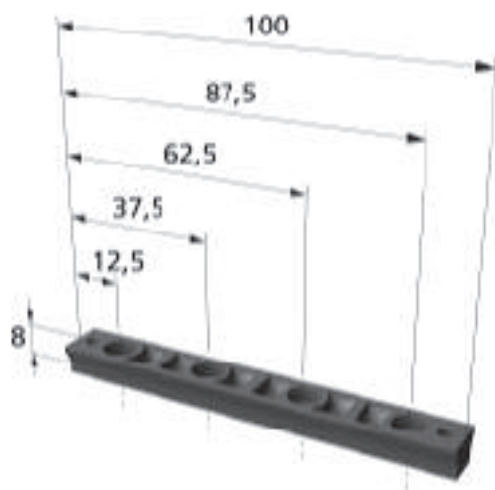


Y profile, material PAN1, black



Width 50 mm, profile no.: 1.001.002

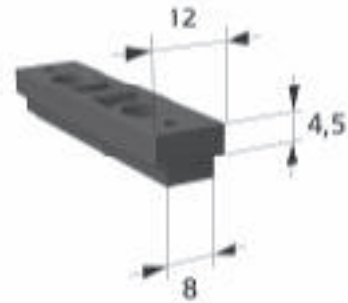
Width 75 mm, profile no.: 1.001.003



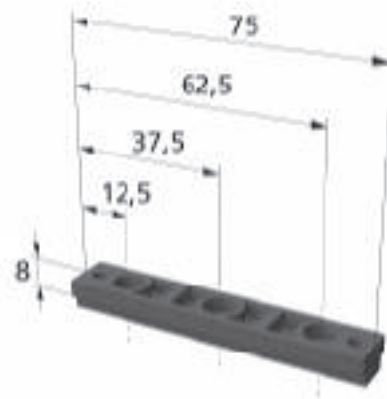
Width 100 mm, profile no.: 1.001.004

ATN profiles

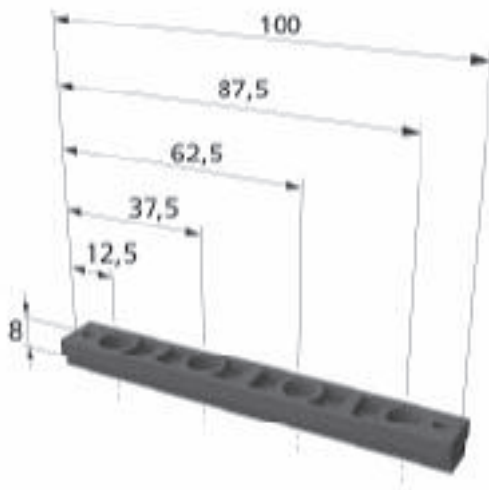
T profile, material PAN1, black



Width 50 mm, profile no.: 1.001.005



Width 75 mm, profile no.: 1.001.006



Width 100 mm, profile no.: 1.001.007



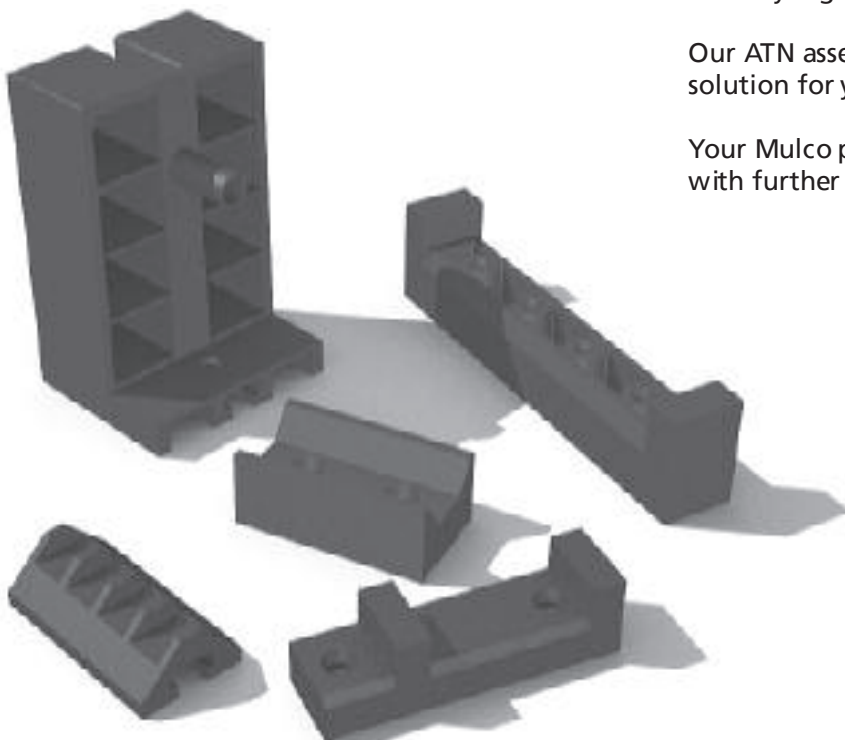
ATN profiles

We manufacture 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 us 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 us according to our information on page 18.



Examples of ATN profiles



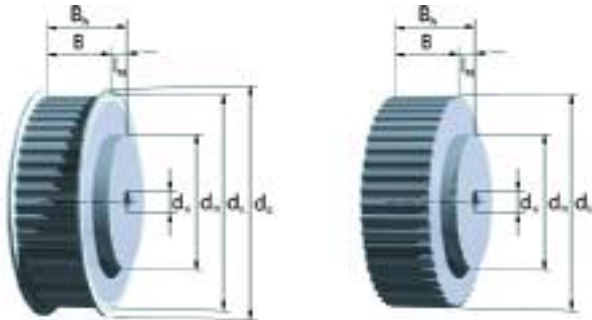
The displayed profiles are a small selection of shapes already realised. We design and manufacture the respective shape in our own tool manufacture according to your data. For this reason, a swift order processing, the function of the product and a reliable delivery is guaranteed.

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

Your Mulco partner would be pleased to provide you with further information.

Components

Synchronising pulley AT 10*



Pulleys up to
z = 44 with flanges

Pulleys from
z = 48 without flanges

Ordering code:

Synchronising pulley **AL 70 AT10 / 60 - 0** Hub **110x10**
 Material _____
 Total width B_N _____
 Type / pitch _____
 Number of teeth _____
 Number of flanges _____
 Hub dimensions $d_N \times l_N$ _____

Materials:

Synchronising pulley: AlCuMgPb

Flange: Steel, zinc plated

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

Belt width	b [mm]	25	50	75	100
Synchronising pulley width B [mm]	32	60	85	110	
Total width B_N [mm]	42	70	95	120	

The stock pulleys with standard dimensions are marked in blue

Other hub dimensions are possible

z = Number of teeth

d_0 = Pitch circle diameter

d_k = Crown diameter

d_B = Flange diameter

d_V = Diameter of pre-bore

d_{max} = max. drilling diameter without feather key groove for synchronising pulleys with flanges, hub is not required with maximum pre-bore

z	d_k [mm]	d_0 [mm]	d_B [mm]	Hub $d_N \times l_N$ [mm]	Bore	
					d_V	d_{max} [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

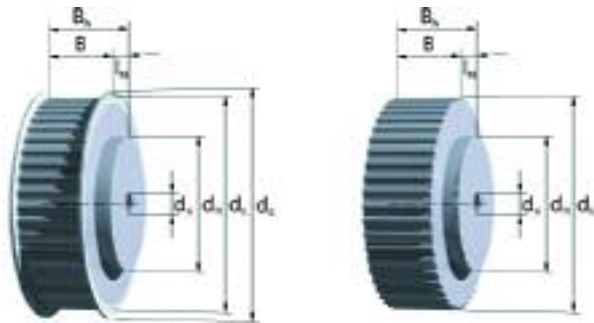
z	d_k [mm]	d_0 [mm]	d_B [mm]	Hub $d_N \times l_N$ [mm]	Bore	
					d_V	d_{max} [mm]
35	109,59	111,41	115	65x10	12H7	96
36	112,77	114,59	118	70x10	16H7	98
37	115,95	117,77	121	70x10	16H7	101
38	119,14	120,96	125	70x10	16H7	104
39	122,32	124,14	128	70x10	16H7	106
40	125,50	127,32	131	80x10	16H7	110
41	128,69	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

AT 10

z	d _k [mm]	d ₀ [mm]	d _B [mm]	Hub d _N x l _N [mm]	Bore		z	d _k [mm]	d ₀ [mm]	d _B [mm]	Hub d _N x l _N [mm]	Bore	
					d _V	d _{max} [mm]						d _V	d _{max} [mm]
45	141,42	143,24	147	90x10	16H7	120	80	252,83	254,65	258	160x10	20H7	219
46	144,60	146,42	150	90x10	16H7	122	81	256,01	257,83	262	160x10	20H7	223
47	147,79	149,61	153	90x10	16H7	122	82	259,19	261,01	265	160x10	20H7	225
48	150,97	152,79	156	95x10	16H7	124	83	262,38	264,20	268	160x10	20H7	229
49	154,15	155,97	160	95x10	16H7	126	84	265,56	267,38	271	160x10	20H7	231
50	157,33	159,15	163	95x10	16H7	130	85	268,74	270,56	274	160x10	20H7	235
51	160,52	162,34	166	95x10	16H7	134	86	271,93	273,75	277	160x10	20H7	239
52	163,70	165,52	169	110x10	16H7	136	87	275,11	276,93	281	160x10	20H7	241
53	166,88	168,70	172	110x10	16H7	140	88	278,29	280,11	284	160x10	20H7	245
54	170,07	171,89	176	110x10	16H7	144	89	281,48	283,30	287	160x10	20H7	247
55	173,25	175,07	179	110x10	16H7	146	90	284,66	286,48	290	160x10	20H7	251
56	176,43	178,25	182	110x10	16H7	150	91	287,84	289,66	293	160x10	20H7	255
57	179,62	181,44	185	110x10	16H7	152	92	291,03	292,85	296	160x10	20H7	257
58	182,80	184,62	188	110x10	16H7	156	93	294,21	296,03	300	160x10	20H7	261
59	185,98	187,80	191	110x10	16H7	160	94	297,39	299,21	302	160x10	20H7	263
60	189,17	190,99	195	110x10	16H7	162	95	300,57	302,39	306	160x10	24H7	267
61	192,35	194,17	198	110x10	16H7	164	96	303,76	305,58	310	180x10	24H7	269
62	195,53	197,35	201	110x10	16H7	166	97	306,94	308,76	312	180x10	24H7	273
63	198,72	200,54	204	140x10	16H7	170	98	310,12	311,94	315	180x10	24H7	279
64	201,90	203,72	207	140x10	16H7	171	99	313,31	315,13	318	180x10	24H7	283
65	205,08	206,90	210	140x10	16H7	174	100	316,49	318,31	322	180x10	24H7	285
66	208,26	210,08	214	140x10	16H7	175	101	319,67	321,49	325	180x10	24H7	289
67	211,45	213,27	217	140x10	16H7	177	102	322,86	324,68	329	180x10	24H7	293
68	214,63	216,45	220	140x10	16H7	181	103	326,04	327,86	332	180x10	24H7	295
69	217,81	219,63	223	140x10	16H7	185	104	329,22	331,04	335	180x10	24H7	299
70	221,00	222,82	226	140x10	16H7	187	105	332,41	334,23	338	180x10	24H7	301
71	224,18	226,00	230	140x10	16H7	191	106	335,59	337,41	341	180x10	24H7	305
72	227,36	229,18	233	140x10	20H7	193	107	338,77	340,59	344	180x10	24H7	309
73	230,55	232,37	236	140x10	20H7	197	108	341,95	343,77	348	180x10	24H7	311
74	233,73	235,55	239	140x10	20H7	201	109	345,14	346,96	351	180x10	24H7	315
75	236,91	238,73	242	140x10	20H7	203	110	348,32	350,14	354	180x10	24H7	317
76	240,10	241,92	246	140x10	20H7	207	111	351,50	353,32	357	180x10	24H7	321
77	243,28	245,10	249	160x10	20H7	209	112	354,69	356,51	360	180x10	24H7	323
78	246,46	248,28	252	160x10	20H7	213	113	357,87	359,69	363	180x10	24H7	327
79	249,64	251,46	255	160x10	20H7	215	114	361,05	362,87	367	180x10	24H7	330

Components

Synchronising pulley ATN 12.7



Ordering code:

Synchronising pulley AL 65 ATN12,7 / 60 - 0 Hub 110x10
 Material ————
 Total width B_N ————
 Type / pitch ————
 Number of teeth ————
 Number of flanges ————
 Hub dimensions $d_N \times l_n$ ————

Materials:

Synchronising pulley: AlCuMgPb
 Flange: Steel, zinc plated

Belt width	b [mm]	25	50	75	100
Synchronising pulley width B [mm]	B [mm]	32	60	85	110
Total width	B_N [mm]	42	70	95	120

Other hub dimensions are possible

- z = Number of teeth
- d_0 = Pitch circle diameter
- d_k = Crown diameter
- d_B = Flange diameter
- d_v = Diameter of pre-bore
- d_{max} = max. drilling diameter without feather key groove for synchronising pulleys with flanges, hub is not required with maximum pre-bore

z	d_k [mm]	d_0 [mm]	d_B [mm]	Hub $d_N \times l_N$ [mm]	Bore	
					d_v	d_{max} [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

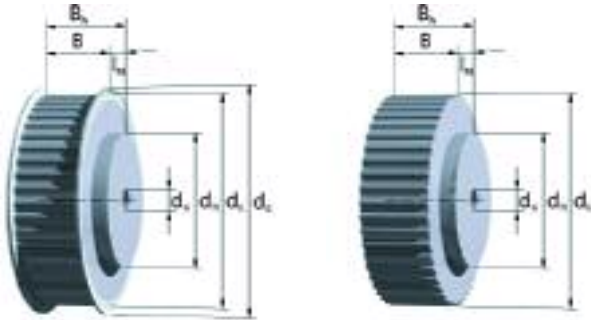
z	d_k [mm]	d_0 [mm]	d_B [mm]	Hub $d_N \times l_N$ [mm]	Bore	
					d_v	d_{max} [mm]
30	119,46	121,28	126	60x10	12H7	107
31	123,50	125,32	129	60x10	12H7	111
32	127,54	129,36	134	60x10	12H7	116
33	131,58	133,40	137	60x10	12H7	120
34	135,63	137,45	142	60x10	12H7	124
35	139,67	141,49	145	60x10	12H7	128
36	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

ATN 12,7

z	d _K [mm]	d ₀ [mm]	d _B [mm]	Hub d _N x l _N [mm]	Bore		z	d _K [mm]	d ₀ [mm]	d _B [mm]	Hub d _N x l _N [mm]	Bore	
					d _V	d _{max} [mm]						d _V	d _{max} [mm]
45	180,09	181,91	185	90x10	16H7	164	80	321,58	323,40	329	140x10	20H7	293
46	184,14	185,96	191	90x10	16H7	170	81	325,62	327,45	332	140x10	20H7	297
47	188,18	190,00	195	90x10	16H7	174	82	329,67	331,49	335	140x10	20H7	300
48	192,22	194,04	198	110x10	16H7	178	83	333,71	335,53	341	140x10	20H7	306
49	196,26	198,08	201	110x10	16H7	180	84	337,75	339,57	344	140x10	20H7	309
50	200,31	202,13	207	110x10	16H7	186	85	341,79	343,62	348	140x10	20H7	312
51	204,35	206,17	210	110x10	16H7	190	86	345,84	347,66	351	140x10	20H7	316
52	208,39	210,21	214	110x10	16H7	194	87	349,88	351,70	355	140x10	20H7	319
53	212,43	214,25	217	110x10	16H7	196	88	353,92	355,74	360	140x10	20H7	325
54	216,48	218,30	223	110x10	16H7	200	89	357,96	359,79	363	140x10	20H7	328
55	220,52	222,34	226	110x10	16H7	204	90	362,01	363,83	367	140x10	20H7	332
56	224,56	226,38	230	110x10	16H7	208	91	366,05	367,87	372	140x10	20H7	336
57	228,60	230,42	236	110x10	16H7	214	92	370,09	371,91	377	140x10	20H7	341
58	232,65	234,47	239	110x10	16H7	217	93	374,13	375,96	382	160x10	20H7	346
59	236,69	238,51	242	110x10	16H7	220	94	378,18	380,00	386	160x10	20H7	350
60	240,73	242,55	245	110x10	16H7	223	95	382,22	384,04	388	160x10	20H7	350
61	244,77	246,59	252	110x10	16H7	231	96	386,26	388,08	391	160x10	20H7	355
62	248,82	250,64	255	110x10	16H7	233	97	390,31	392,13	396	160x10	20H7	360
63	252,86	254,68	258	110x10	16H7	236	98	394,35	396,17	401	160x10	20H7	365
64	256,90	258,72	261	110x10	16H7	239	99	398,39	400,21	405	160x10	20H7	369
65	260,94	262,76	268	110x10	16H7	246	100	402,43	404,25	410	160x10	20H7	374
66	264,99	266,81	271	110x10	16H7	249	101	406,48	408,30	412	160x10	20H7	374
67	269,03	270,85	274	110x10	16H7	252	102	410,52	412,34	418	160x10	20H7	379
68	273,07	274,89	280	110x10	16H7	258	103	414,56	416,38	420	160x10	20H7	384
69	277,11	278,93	284	110x10	16H7	262	104	418,60	420,42	425	160x10	20H7	389
70	281,16	282,98	287	110x10	16H7	265	105	422,65	424,47	429	160x10	20H7	393
71	285,20	287,02	290	110x10	16H7	268	106	426,69	428,51	434	160x10	20H7	398
72	289,24	291,06	296	110x10	16H7	261	107	430,73	432,55	438	160x10	20H7	398
73	293,28	295,11	300	140x10	20H7	265	108	434,77	436,59	440	160x10	20H7	403
74	297,33	299,15	302	140x10	20H7	268	109	438,82	440,64	444	160x10	20H7	408
75	301,37	303,19	306	140x10	20H7	271	110	442,86	444,68	448	160x10	20H7	412
76	305,41	307,23	310	140x10	20H7	274	111	446,90	448,72	453	160x10	20H7	417
77	309,45	311,28	315	140x10	20H7	281	112	450,94	452,76	459	160x10	20H7	422
78	313,50	315,32	320	140x10	20H7	284	113	454,99	456,81	463	160x10	20H7	427
79	317,54	319,36	325	140x10	20H7	290	114	459,03	460,85	465	160x10	30H7	427

Components

Synchronising pulley AT 20*



Ordering code:

Synchronising pulley **AL 70 AT20 / 60 - 0 Hub 140x10**
 Material ————
 Total width B_N ————
 Type / pitch ————
 Number of teeth ————
 Number of flanges ————
 Hub dimensions $d_N \times l_N$ ————

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

Materials:

Synchronising pulley: AlCuMgPb
 Flange: Steel, zinc plated



Belt width	b [mm]	50	75	100
Synchronising pulley width B	[mm]	60	85	110
Total width	B_N [mm]	70	95	120

Other hub dimensions are possible

- z = Number of teeth
- d_0 = Pitch circle diameter
- d_k = Crown diameter
- d_B = Flange diameter
- d_V = Diameter of pre-bore
- d_{max} = max. drilling diameter without feather key groove for synchronising pulleys with flanges, hub is not required with maximum pre-bore

z	d_k [mm]	d_0 [mm]	d_B [mm]	Hub $d_N \times l_N$ [mm]	Bore	
					d_V	d_{max} [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

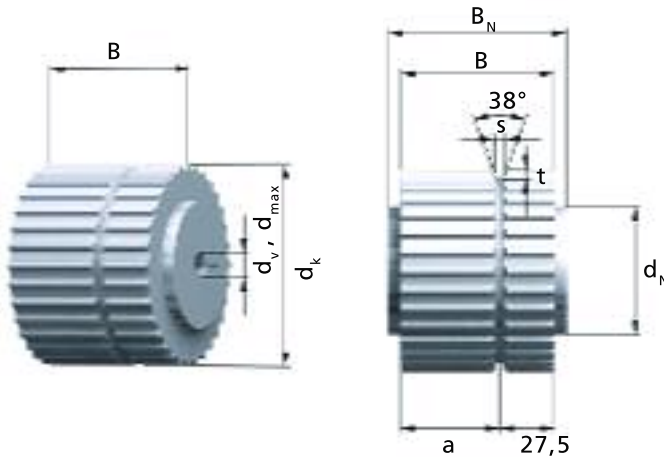
z	d_k [mm]	d_0 [mm]	d_B [mm]	Hub $d_N \times l_N$ [mm]	Bore	
					d_V	d_{max} [mm]
30	188,17	190,99	198	110x10	16H7	163
31	194,53	197,35	204	110x10	16H7	169
32	200,90	203,72	210	110x10	16H7	175
33	207,26	210,08	217	110x10	16H7	182
34	213,63	216,45	223	110x10	16H7	188
35	220,00	222,82	229	110x10	16H7	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

AT 20

z	d _K [mm]	d ₀ [mm]	d _B [mm]	Hub d _N x l _N [mm]	Bore		z	d _K [mm]	d ₀ [mm]	d _B [mm]	Hub d _N x l _N [mm]	Bore	
					d _V	d _{max} [mm]						d _V	d _{max} [mm]
45	283,66	286,48	293	130x10	18H7	258	80	506,48	509,30	516	200x10	30H7	476
46	290,03	292,85	300	130x10	18H7	265	81	512,84	515,66	522	200x10	30H7	482
47	296,39	299,21	306	130x10	18H7	271	82	519,21	522,03	529	200x10	30H7	489
48	302,76	305,58	312	130x10	18H7	278	83	525,57	528,39	535	200x10	30H7	495
49	309,12	311,94	319	140x10	20H7	284	84	531,94	534,76	541	200x10	30H7	501
50	315,49	318,31	325	140x10	20H7	290	85	538,31	541,13	548	200x10	30H7	503
51	312,86	324,68	331	140x10	20H7	296	86	544,67	547,49	554	200x10	30H7	509
52	328,22	331,04	338	140x10	20H7	303	87	551,04	553,86	561	200x10	30H7	516
53	334,59	337,41	344	140x10	20H7	310	88	557,41	560,23	567	200x10	30H7	522
54	340,95	343,77	350	140x10	20H7	315	89	563,77	566,59	573	200x10	30H7	528
55	347,32	350,14	357	140x10	20H7	322	90	570,14	572,96	580	200x10	30H7	535
56	353,69	356,51	363	140x10	20H7	328	91	576,50	579,32	586	200x10	30H7	541
57	360,05	362,87	370	140x10	20H7	335	92	582,87	585,69	592	200x10	30H7	548
58	366,42	396,24	376	140x10	20H7	341	93	589,24	592,06	599	200x10	30H7	554
59	372,79	375,61	382	140x10	20H7	347	94	595,60	598,42	605	200x10	30H7	560
60	379,15	381,97	389	140x10	20H7	354	95	601,97	604,79	611	200x10	40H7	566
61	385,52	388,34	395	140x10	20H7	360	96	608,33	611,15	618	200x10	40H7	573
62	391,88	394,70	401	140x10	20H7	366	97	614,70	617,52	624	200x10	40H7	579
63	398,25	401,07	408	140x10	20H7	373	98	621,07	623,89	631	200x10	40H7	586
64	404,62	407,44	414	140x10	20H7	379	99	627,43	630,25	637	200x10	40H7	592
65	410,98	413,80	420	140x10	20H7	385	100	633,80	636,62	643	200x10	40H7	598
66	417,35	420,17	427	140x10	20H7	392	101	640,17	642,99	650	200x10	40H7	605
67	423,72	426,54	433	140x10	20H7	398	102	646,53	649,35	656	200x10	40H7	611
68	430,08	432,90	440	140x10	20H7	405	103	652,90	655,72	662	200x10	40H7	617
69	436,45	439,27	446	140x10	20H7	406	104	659,26	662,08	669	200x10	40H7	624
70	442,81	445,63	452	140x10	20H7	412	105	665,63	668,45	675	200x10	40H7	630
71	449,18	452,00	459	140x10	20H7	419	106	672,00	674,82	681	200x10	40H7	636
72	455,55	458,37	465	140x10	20H7	425	107	678,36	681,18	688	200x10	40H7	643
73	461,91	464,73	471	160x10	30H7	431	108	684,73	687,55	694	200x10	40H7	649
74	468,28	471,10	478	160x10	30H7	438	109	691,10	693,92	701	200x10	40H7	656
75	474,64	477,46	484	160x10	30H7	444	110	697,46	700,28	707	200x10	40H7	662
76	481,01	483,83	490	160x10	30H7	450	111	703,83	706,65	713	200x10	40H7	663
77	487,38	490,20	497	160x10	30H7	457	112	710,19	713,01	720	200x10	40H7	670
78	493,74	496,56	503	160x10	30H7	463	113	716,56	719,38	726	200x10	40H7	676
79	500,11	502,93	510	160x10	30H7	470	114	722,93	725,75	732	200x10	40H7	682

Components

Self-tracking pulley ATN 10 K6



Belt width	b [mm]	50	75	100
Synchronising pulley width B	[mm]	55	80	105
Total width	B _N [mm]	65	90	115
Tooth width	a [mm]	27,5	52,5	77,5

Other hub dimensions are possible

- z = Number of teeth
- d₀ = Pitch circle diameter
- d_k = Crown diameter
- d_v = Diameter of pre-bore
- d_{max} = max. drilling diameter without feather key groove, hub is not required with maximum pre-bore

z	d _k [mm]	d ₀ [mm]	s	t	Hub d _N x l _N [mm]	Bore d _v	d _{max} [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

Ordering code:

Self-tracking pulley Al 65 ATN10K6 / 32 d=15 H7
 Material _____
 Total width B_N _____
 Type / pitch _____
 Number of teeth _____
 Bore _____

Material:
AlCuMgPb



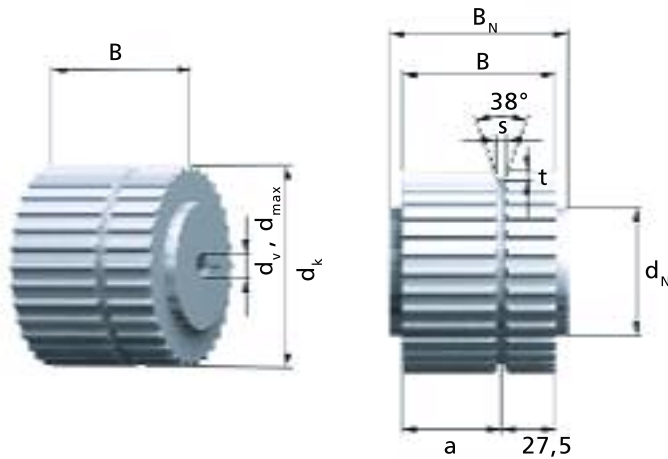
z	d _k [mm]	d ₀ [mm]	s	t	Hub d _N x l _N [mm]	Bore d _v	d _{max} [mm]
30	93,67	95,49	6,5	5	60x5	12H7	75
31	96,86	98,68	6,5	5	60x5	12H7	78
32	100,04	101,86	6,5	5	65x5	12H7	82
33	103,22	105,04	6,5	5	65x5	12H7	85
34	106,41	108,23	6,5	5	65x5	12H7	88
35	109,59	111,41	6,5	5	65x5	12H7	91
36	112,77	114,59	6,5	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

ATN 10 K6

z	d _k [mm]	d ₀ [mm]	s	t	Hub		Bore		z	d _k [mm]	d ₀ [mm]	s	t	Hub		Bore	
					d _N x l _N [mm]		d _v	d _{max} [mm]						d _N x l _N [mm]		d _v	d _{max} [mm]
45	141,42	143,24	6,5	5	90x5	16H7	123		80	252,83	254,65	6,5	5	160x5	20H7	234	
46	144,60	146,42	6,5	5	90x5	16H7	126		81	256,01	257,83	6,5	5	160x5	20H7	238	
47	147,79	149,61	6,5	5	90x5	16H7	129		82	259,19	261,01	6,5	5	160x5	20H7	241	
48	150,97	152,79	6,5	5	95x5	16H7	132		83	262,38	264,20	6,5	5	160x5	20H7	244	
49	154,15	155,97	6,5	5	95x5	16H7	136		84	265,56	267,38	6,5	5	160x5	20H7	247	
50	157,33	159,15	6,5	5	95x5	16H7	139		85	268,74	270,56	6,5	5	160x5	20H7	250	
51	160,52	162,34	6,5	5	95x5	16H7	142		86	271,93	273,75	6,5	5	160x5	20H7	253	
52	163,70	165,52	6,5	5	110x5	16H7	145		87	275,11	276,93	6,5	5	160x5	20H7	257	
53	166,88	168,70	6,5	5	110x5	16H7	148		88	278,29	280,11	6,5	5	160x5	20H7	260	
54	170,07	171,89	6,5	5	110x5	16H7	152		89	281,48	283,30	6,5	5	160x5	20H7	263	
55	173,25	175,07	6,5	5	110x5	16H7	155		90	284,66	286,48	6,5	5	160x5	20H7	268	
56	176,43	178,25	6,5	5	110x5	16H7	158		91	287,84	289,66	6,5	5	160x5	20H7	270	
57	179,62	181,44	6,5	5	110x5	16H7	161		92	291,03	292,85	6,5	5	160x5	20H7	273	
58	182,80	184,62	6,5	5	110x5	16H7	164		93	294,21	296,03	6,5	5	160x5	20H7	276	
59	185,98	187,80	6,5	5	110x5	16H7	167		94	297,39	299,21	6,5	5	160x5	20H7	279	
60	189,17	190,99	6,5	5	110x5	16H7	171		95	300,57	302,39	6,5	5	160x5	24H7	282	
61	192,35	194,17	6,5	5	110x5	16H7	174		96	303,76	305,58	6,5	5	180x5	24H7	285	
62	195,53	197,35	6,5	5	110x5	16H7	177		97	306,94	308,76	6,5	5	180x5	24H7	288	
63	198,72	200,54	6,5	5	140x5	16H7	181		98	310,12	311,94	6,5	5	180x5	24H7	292	
64	201,90	203,72	6,5	5	140x5	16H7	183		99	313,31	315,13	6,5	5	180x5	24H7	295	
65	205,08	206,90	6,5	5	140x5	16H7	187		100	316,49	318,31	6,5	5	180x5	24H7	298	
66	208,26	210,08	6,5	5	140x5	16H7	190		101	319,67	321,49	6,5	5	180x5	24H7	301	
67	211,45	213,27	6,5	5	140x5	16H7	193		102	322,86	324,68	6,5	5	180x5	24H7	304	
68	214,63	216,45	6,5	5	140x5	16H7	196		103	326,04	327,86	6,5	5	180x5	24H7	308	
69	217,81	219,63	6,5	5	140x5	16H7	201		104	329,22	331,04	6,5	5	180x5	24H7	311	
70	221,00	222,82	6,5	5	140x5	16H7	203		105	332,41	334,23	6,5	5	180x5	24H7	314	
71	224,18	226,00	6,5	5	140x5	16H7	206		106	335,59	337,41	6,5	5	180x5	24H7	317	
72	227,36	229,18	6,5	5	140x5	20H7	209		107	338,77	340,59	6,5	5	180x5	24H7	321	
73	230,55	232,37	6,5	5	140x5	20H7	212		108	341,95	343,77	6,5	5	180x5	24H7	324	
74	233,73	235,55	6,5	5	140x5	20H7	215		109	345,14	346,96	6,5	5	180x5	24H7	327	
75	236,91	238,73	6,5	5	140x5	20H7	218		110	348,32	350,14	6,5	5	180x5	24H7	330	
76	240,10	241,92	6,5	5	140x5	20H7	222		111	351,50	353,32	6,5	5	180x5	24H7	333	
77	243,28	245,10	6,5	5	160x5	20H7	225		112	354,69	356,51	6,5	5	180x5	24H7	336	
78	246,46	248,28	6,5	5	160x5	20H7	228		113	357,87	359,69	6,5	5	180x5	24H7	339	
79	249,64	251,46	6,5	5	160x5	20H7	232		114	361,05	362,87	6,5	5	180x5	24H7	343	

Components

Self-tracking pulley ATN 12,7 K6



Ordering code:

Self-tracking pulley Al 65 ATN12.7K6 / 32 d=15 H7
 Material _____
 Total width B_N _____
 Type / pitch _____
 Number of teeth _____
 Bore _____

Material:
AlCuMgPb

Belt width	b [mm]	50	75	100
Synchronising pulley width B [mm]	B	55	80	105
Total width	B_N [mm]	65	90	115
Tooth width	a [mm]	27,5	52,5	77,5



Other hub dimensions are possible

- z = Number of teeth
- d_0 = Pitch circle diameter
- d_k = Crown diameter
- d_v = Diameter of pre-bore
- d_{max} = max. drilling diameter without feather key groove, hub is not required with maximum pre-bore

z	d_k [mm]	d_0 [mm]	s	t	Hub $d_N \times l_N$ [mm]	Bore	
						d_v	d_{max} [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

z	d_k [mm]	d_0 [mm]	s	t	Hub $d_N \times l_N$ [mm]	Bore	
						d_v	d_{max} [mm]
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

ATN 12,7 K6

z	d _k [mm]	d ₀ [mm]	s	t	Hub d _N x l _N [mm]	Bore		z	d _k [mm]	d ₀ [mm]	s	t	Hub d _N x l _N [mm]	Bore	
						d _v	d _{max} [mm]							d _v	d _{max} [mm]
45	180,09	181,91	6,5	5	90x5	16H7	164	80	321,58	323,40	6,5	5	140x5	20H7	293
46	184,14	185,96	6,5	5	90x5	16H7	170	81	325,62	327,45	6,5	5	140x5	20H7	297
47	188,18	190,00	6,5	5	90x5	16H7	174	82	329,67	331,49	6,5	5	140x5	20H7	300
48	192,22	194,04	6,5	5	110x5	16H7	178	83	333,71	335,53	6,5	5	140x5	20H7	306
49	196,26	198,08	6,5	5	110x5	16H7	180	84	337,75	339,57	6,5	5	140x5	20H7	309
50	200,31	202,13	6,5	5	110x5	16H7	186	85	341,79	343,62	6,5	5	140x5	20H7	312
51	204,35	206,17	6,5	5	110x5	16H7	190	86	345,84	347,66	6,5	5	140x5	20H7	316
52	208,39	210,21	6,5	5	110x5	16H7	194	87	349,88	351,70	6,5	5	140x5	20H7	319
53	212,43	214,25	6,5	5	110x5	16H7	196	88	353,92	355,74	6,5	5	140x5	20H7	325
54	216,48	218,30	6,5	5	110x5	16H7	200	89	357,96	359,79	6,5	5	140x5	20H7	328
55	220,52	222,34	6,5	5	110x5	16H7	204	90	362,01	363,83	6,5	5	140x5	20H7	332
56	224,56	226,38	6,5	5	110x5	16H7	208	91	366,05	367,87	6,5	5	140x5	20H7	336
57	228,60	230,42	6,5	5	110x5	16H7	214	92	370,09	371,91	6,5	5	140x5	20H7	341
58	232,65	234,47	6,5	5	110x5	16H7	217	93	374,13	375,96	6,5	5	160x5	20H7	346
59	236,69	238,51	6,5	5	110x5	16H7	220	94	378,18	380,00	6,5	5	160x5	20H7	350
60	240,73	242,55	6,5	5	110x5	16H7	223	95	382,22	384,04	6,5	5	160x5	20H7	350
61	244,77	246,59	6,5	5	110x5	16H7	231	96	386,26	388,08	6,5	5	160x5	20H7	355
62	248,82	250,64	6,5	5	110x5	16H7	233	97	390,31	392,13	6,5	5	160x5	20H7	360
63	252,86	254,68	6,5	5	110x5	16H7	236	98	394,35	396,17	6,5	5	160x5	20H7	365
64	256,90	258,72	6,5	5	110x5	16H7	239	99	398,39	400,21	6,5	5	160x5	20H7	369
65	260,94	262,76	6,5	5	110x5	16H7	246	100	402,43	404,25	6,5	5	160x5	20H7	374
66	264,99	266,81	6,5	5	110x5	16H7	249	101	406,48	408,30	6,5	5	160x5	20H7	374
67	269,03	270,85	6,5	5	110x5	16H7	252	102	410,52	412,34	6,5	5	160x5	20H7	379
68	273,07	274,89	6,5	5	110x5	16H7	258	103	414,56	416,38	6,5	5	160x5	20H7	384
69	277,11	278,93	6,5	5	110x5	16H7	262	104	418,60	420,42	6,5	5	160x5	20H7	389
70	281,16	282,98	6,5	5	110x5	16H7	265	105	422,65	424,47	6,5	5	160x5	20H7	393
71	285,20	287,02	6,5	5	110x5	16H7	268	106	426,69	428,51	6,5	5	160x5	20H7	398
72	289,24	291,06	6,5	5	110x5	16H7	261	107	430,73	432,55	6,5	5	160x5	20H7	398
73	293,28	295,11	6,5	5	140x5	20H7	265	108	434,77	436,59	6,5	5	160x5	20H7	403
74	297,33	299,15	6,5	5	140x5	20H7	268	109	438,82	440,64	6,5	5	160x5	20H7	408
75	301,37	303,19	6,5	5	140x5	20H7	271	110	442,86	444,68	6,5	5	160x5	20H7	412
76	305,41	307,23	6,5	5	140x5	20H7	274	111	446,90	448,72	6,5	5	160x5	20H7	417
77	309,45	311,28	6,5	5	140x5	20H7	281	112	450,94	452,76	6,5	5	160x5	20H7	422
78	313,50	315,32	6,5	5	140x5	20H7	284	113	454,99	456,81	6,5	5	160x5	20H7	427
79	317,54	319,36	6,5	5	140x5	20H7	290	114	459,03	460,85	6,5	5	160x5	30H7	427

Components

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 reliably guided (see picture below).

We provide guide rails with and without guide channels for ATN timing belts without guide V-groove. Versions G, GC, F and FC can be used.

For the BRECO® TIMING BELTS ATN 10 K6 and ATN 12.7 K6 guide rails version K6, K6C, ATN K6 and ATN K6C are available.

Material

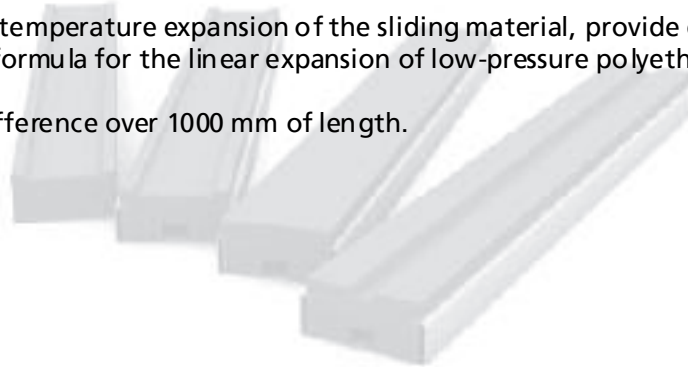
Low-pressure polyethylene is used as material. This material has a low friction coefficient and is wear resistant. The sliding friction value between standard polyurethane and low-pressure polyethylene is $\mu \approx 0.3$.

The C profile is made of zinc plated sheet steel. The cut-out is intended for fastening screws. The C profile has no bore holes.

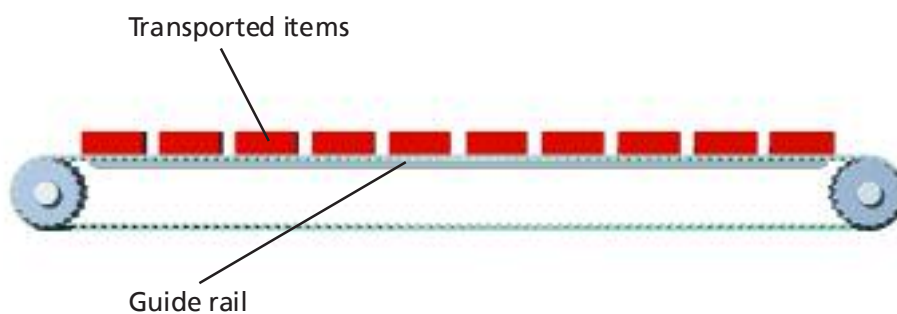
Mounting instruction

Due to the relatively high-temperature expansion of the sliding material, provide expansion gaps in the rail structure. Approximative formula for the linear expansion of low-pressure polyethylene:

2mm/10°C temperature difference over 1000 mm of length.

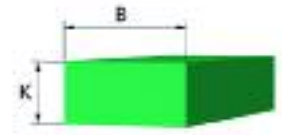


Example of a transport system

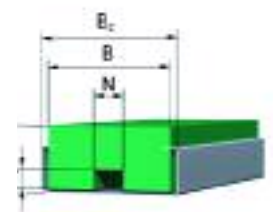


Guide rails without guide channels are of universal application for all timing belt types of our product range. They should be preferred where no strong lateral force act on the transport timing belt.

Guide rails without guide channels

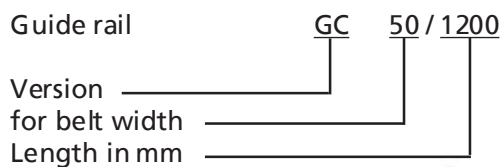


Version G



Version GC

Ordering example:



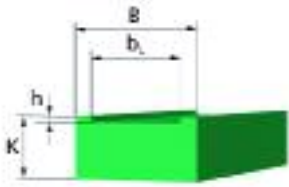
The preferred delivery length is 2000 mm. Cuts to length shorter than 2000 mm are available. Larger lengths upon request.

Version	Timing belt width	B	B _c	K	G	N	T
G 50	50	68	-	32	-	-	-
G 75	75	93	-	32	-	-	-
G 100	100	118	-	32	-	-	-
GC 50	50	68	75	32	34,5	14	9
GC 75	75	93	100	32	34,5	14	9
GC100	100	118	125	32	34,5	14	9

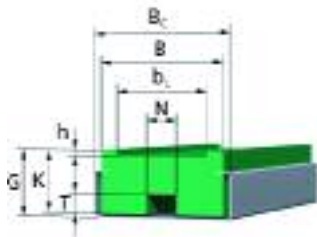
Components

Guide rails with guide channels

Guide rails with guide channels are to be used preferably to guide the transport belt against lateral influences.



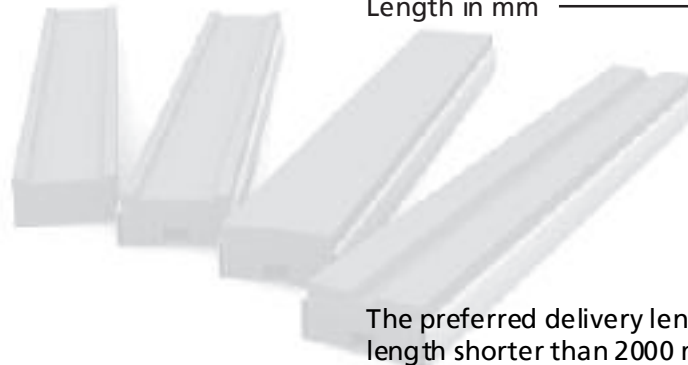
Version F



Version FC

Ordering example:

Guide rail FC 50 x 4 / 1200
 Version _____
 for belt width x h _____
 Length in mm _____



The preferred delivery length is 2000 mm. Cuts to length shorter than 2000 mm are available. Larger lengths upon request.

Version	belt width	B	B _C	b _L	K	h	G	N	T
F 50 x 4	50 ATN10 / 12,7	68	-	51	32	4	-	-	-
F 75 x 4	75 ATN10 / 12,7	93	-	76	32	4	-	-	-
F 100 x 4	100 ATN10 / 12,7	118	-	101	32	4	-	-	-
F 50 x 7	50 ATN20	68	-	51	32	7	-	-	-
F 75 x 7	75 ATN20	93	-	76	32	7	-	-	-
F 100 x 7	100 ATN20	118	-	101	32	7	-	-	-
FC 50 x 4	50 ATN10 / 12,7	68	75	51	32	4	34,5	14	9
FC 75 x 4	75 ATN10 / 12,7	93	100	76	32	4	34,5	14	9
FC100 x 4	100 ATN10 / 12,7	118	125	101	32	4	34,5	14	9
FC 50 x 7	50 ATN20	68	75	51	32	7	34,5	14	9
FC 75 x 7	75 ATN20	93	100	76	32	7	34,5	14	9
FC100 x 7	100 ATN20	118	125	101	32	7	34,5	14	9

Guide rails with V-guide are to be used with ATN timing belts with guide V-groove.

Guide rails with V-guide

Ordering example:

Guide rail ATN K6 C 75 x 2 / 1200

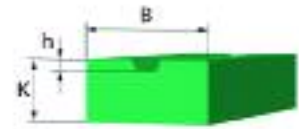
Version _____

for belt width x h _____

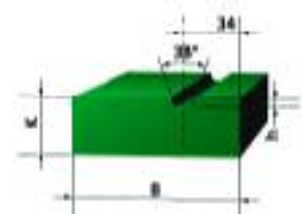
Length in mm _____



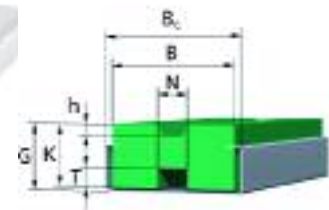
The preferred delivery length is 2000 mm. Cuts to length shorter than 2000 mm are available. Larger lengths upon request.



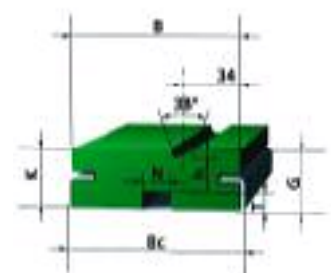
Version ATN K6
(for belt width 50 mm)



Version ATN K6
(for belt width 75 mm and 100 mm)



Version ATN K6 C
(for belt width 50 mm)



Version ATN K6 C
(for belt width 75 mm and 100 mm)

Version	belt width	B	K	h	B _c	G	N	T
ATN K6 50x2	50	68	32	2	-	-	-	-
ATN K6 75x2	75	93	32	2	-	-	-	-
ATN K6 100x2	100	118	32	2	-	-	-	-
ATN K6 C 50x2	50	68	32	2	75	34,5	14	9
ATN K6 C 75x2	75	93	32	2	100	34,5	14	9
ATN K6 C 100x2	100	118	32	2	125	34,5	14	9

Basis of calculation

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 page 10, the selection can also be based on the profile joint load.

- Pushing force F_{TG} of the product to be transported
- Inertial forces F_{IP} (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.

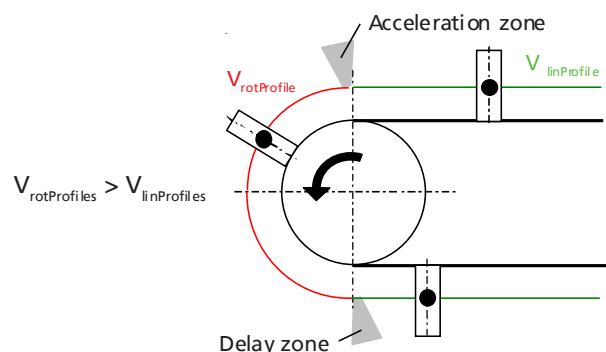
Additional inertial force when changing in to and out of the circular movement

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 40.

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 insert 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. One 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 39). 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 Mulco partner.

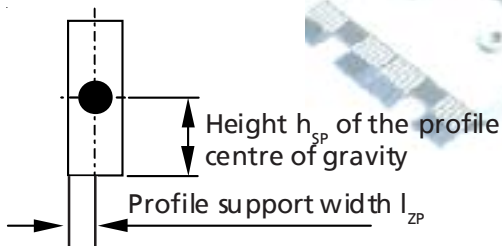
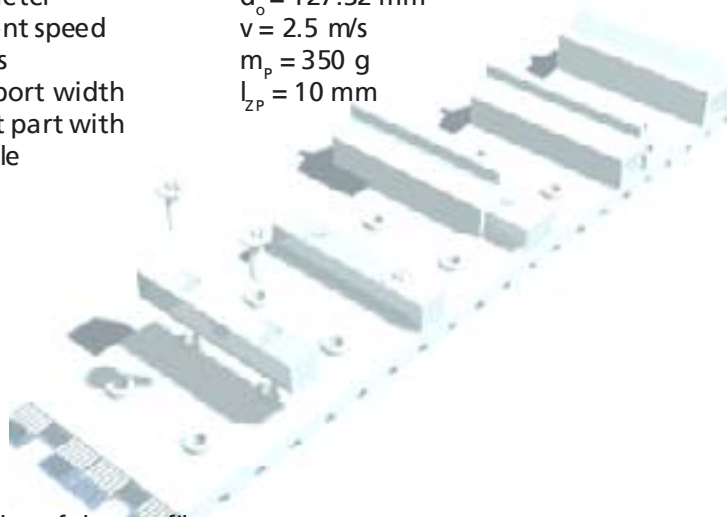
Admissible profile center of gravity height

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 41. For pulley diameters not contained in the diagrams, a respective approximation or interpolation is required.

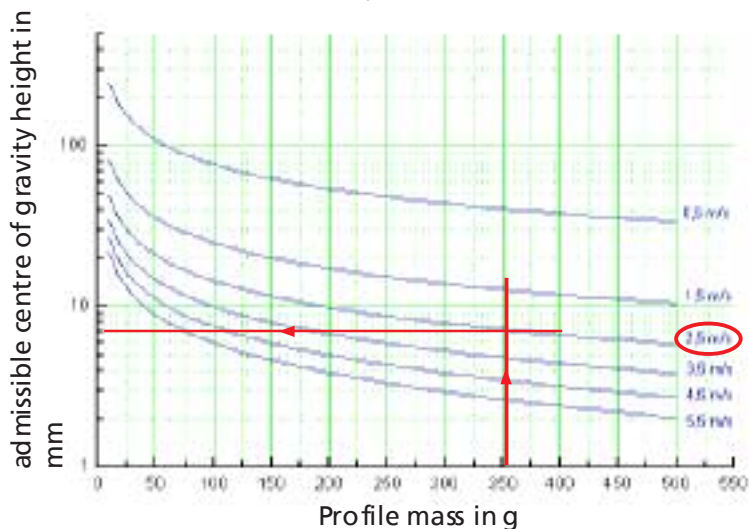
Example: Belt type
Pulley diameter
Displacement speed
Profile mass
Profile support width
Plastic inset part with metal profile

50 ATN 10
 $d_0 = 127.32 \text{ mm}$
 $v = 2.5 \text{ m/s}$
 $m_p = 350 \text{ g}$
 $l_{zP} = 10 \text{ mm}$



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

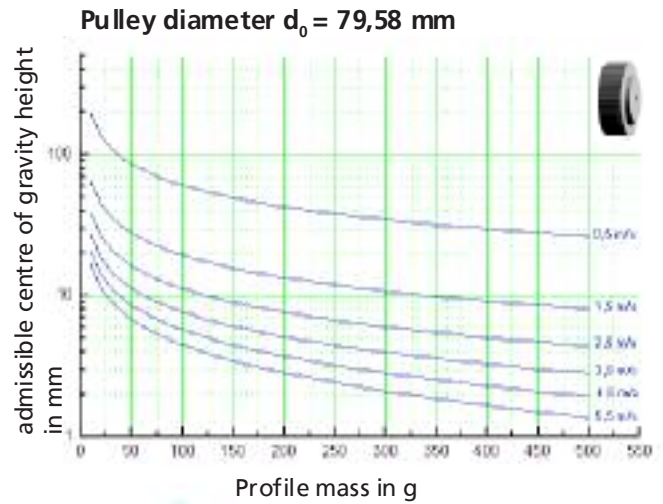
Pulley diameter $d_0 = 127.32 \text{ mm}$



Basis of calculation

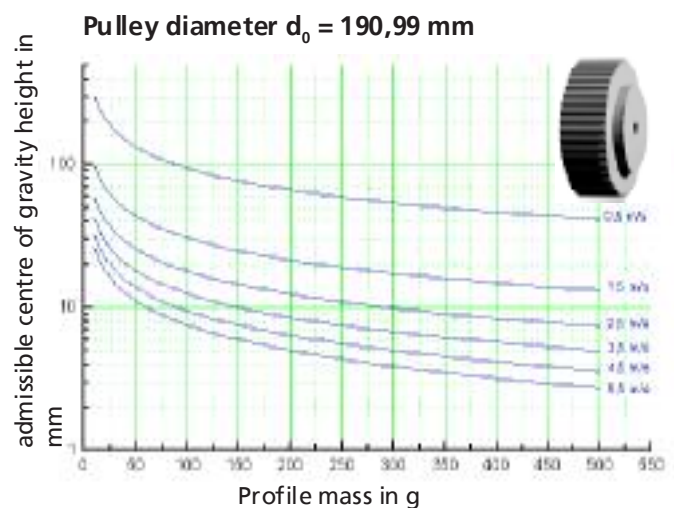
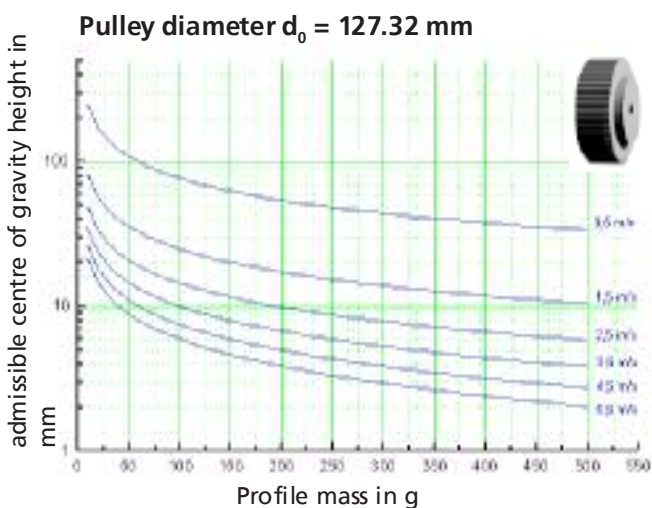
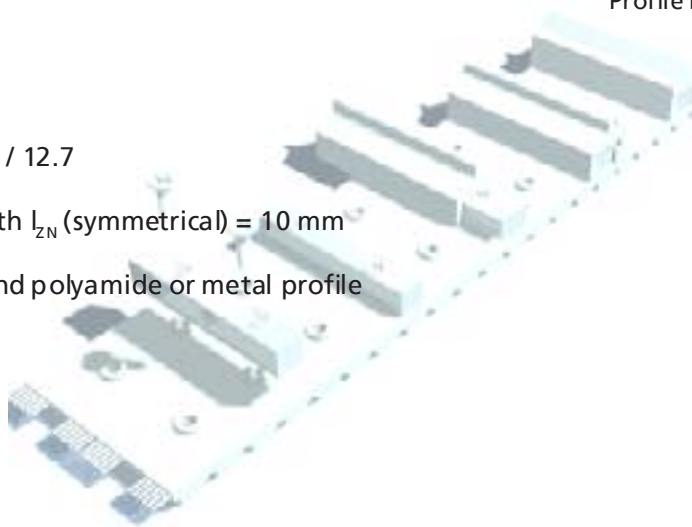
Admissible profile center of gravity height

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 41.



Parameter:

- Belt type 50 ATN 10 / 12.7
- Profile support width l_{2N} (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:

$$= \text{Curve value} \cdot \sqrt{\frac{0,1 \cdot l_{ZP}}{\text{mm}}} \text{ mm}$$

ATN 10 / 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

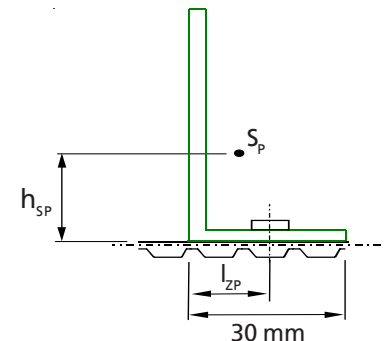
ATN 20 with various inset parts

- 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 sketch).

- Given:**
- | | |
|-------------------------------------|-------------------|
| Belt type: | 50 ATN 10 |
| 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 |
| Brass inset part with metal profile | |



Required: admissible centre of gravity height for the metal bracket

- Solution:**
- The admissible centre of gravity height is determined using the diagram on page 40. Refer to page 39 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.
 - Adapting the parameters of page 40 to the example calculation (calculation equation, see above).
 - Profile part width from 10 mm to 15 mm:

$$h_{sp} = 10 \text{ mm} \cdot \sqrt{\frac{0,1 \cdot 15 \text{ mm}}{\text{mm}}} = 12.2 \text{ mm}$$

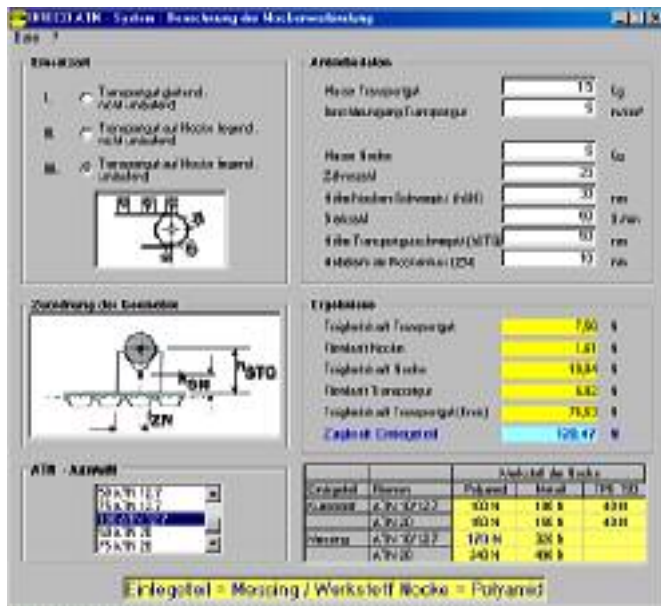
- from plastic inset part with polyamide or metal profile to brass inset part with metal profile:

$$h_{spadm} = 12.2 \text{ mm} \cdot 1.8 = 22 \text{ mm}$$

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.

Calculation basics / accessories



ATN-CONNECT calculation program

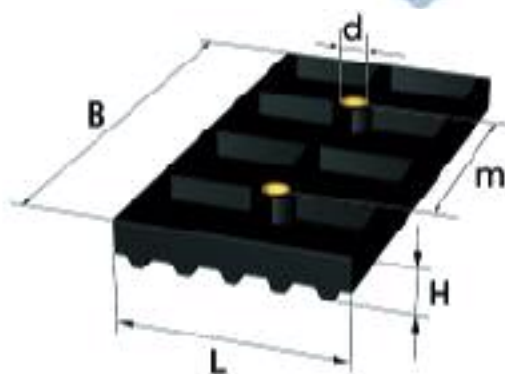
Alternatively to the calculation on the pages 38-41, the ATN-Connect calculation program provides the possibility of optimising the ATN profile joint after a preselection of various geometrical and kinematic parameters.

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.

Mounting plate



Mounting plate dimensions

Belt type [mm]	L [mm]	B [mm]	H [mm]	m	d
ATN 10	50	100	12	50	M5
ATN 12.7	63,5	100	12	50	M5
ATN 20	100	100	14	50	M5

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 M 5.

Take the respectively recommended screw-in torque into consideration when tightening the screw connection for profile fastening (see table on pages 18 and 19).

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

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 Mulco 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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Continuity, technical know-how and a convincing concept: these are the hallmarks of Mulco-Europe EWIV, Europe's leading group in the field of polyurthane timing belt technology, a group which includes well-known manufacturers and major companies in the distribution sector.

What started as a working partnership has today developed into a close-knit alliance of European companies which now represents one of the most important partners for those seeking solutions to drive problems in general and specialised machinery construction.

The working principles "out of the market, into the market", the focus on top-class advice and the philosophy of always being close to the customer is what has driven this success. The healthy mix of price and service make Mulco-Europe EWIV a sign of quality across the globe.