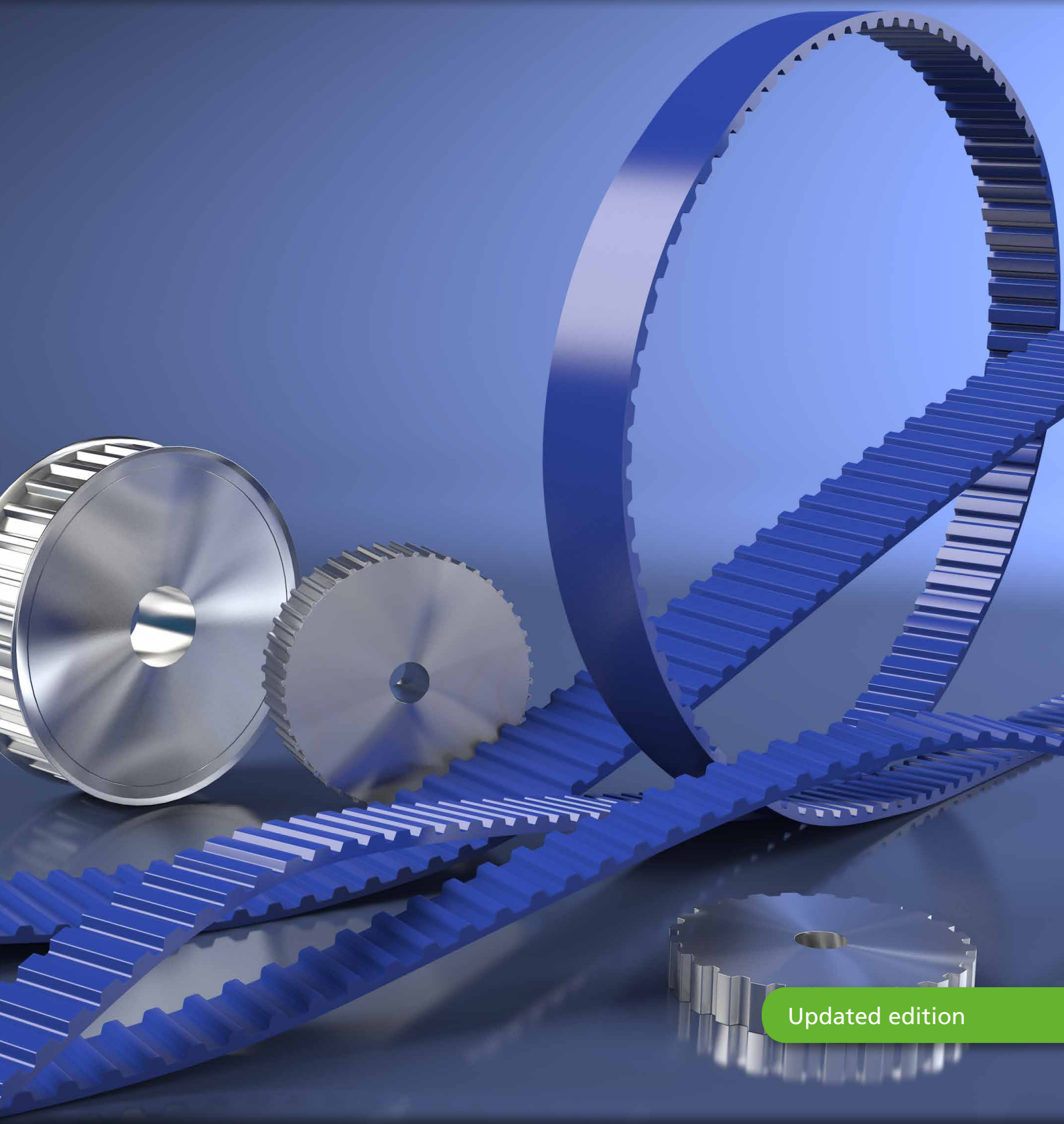


BRECOprotect® - Timing Belts

Corrosion protected, FDA compliant, blue.

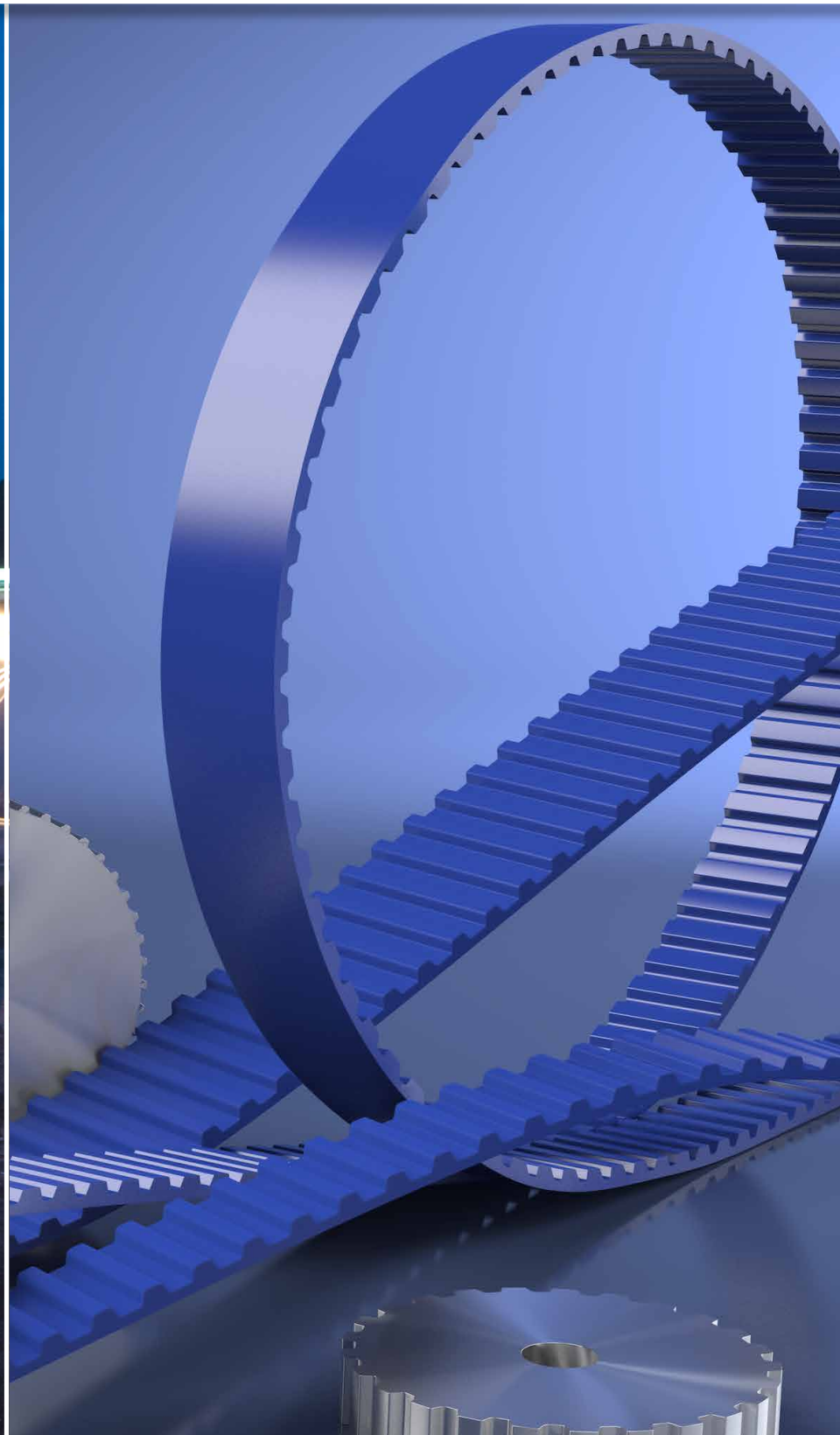


Updated edition



BRECO is member of Mulco Europe EWIV





Keeping things moving

Innovation is what drives us. BRECO Antriebstechnik Breher GmbH & Co. KG, the manufacturer of BRECO® and BRECOFLEX® timing belts, is the world's leading producer in the field of polyurethane timing belt technology. Abrasion-resistant polyurethane for the belt body and high-tensile steel cord tension members provide the basis for a reliable, first-class product.

As a result of years of experience in the field of thermoplastic polyurethane, the development of the BRECO® and BRECOFLEX® manufacturing processes and continuous further development, the name BRECO has become synonymous with polyurethane timing belts. The BRECO® and BRECOFLEX® timing belts, the perfectly matched pulleys and other components supplied by BRECO reflect the breadth of experience gathered over the decades by countless users of the products. We guarantee the utmost in quality through our exclusive use of the highest grade of raw materials and by listening to feedback from our suppliers about the needs of our customers.

The BRECOprotect® product line

The new BRECOprotect® product line offers timing belts with steel tension members completely enclosed in polyurethane to protect them against corrosion. The choice of material for the timing belts complies with FDA regulations and the blue colour is consistent with current requirements in the food processing industry.

The polyurethane used meets the compliance criteria of the FDA Code of Federal Regulations, Sec. 177.1680, the European Framework Regulation (EC) 1935-2004, Regulation (EU) No. 10/2011 and the European Commission Directives 90/128/CEE and 96/11/CE.

Keeping things moving.



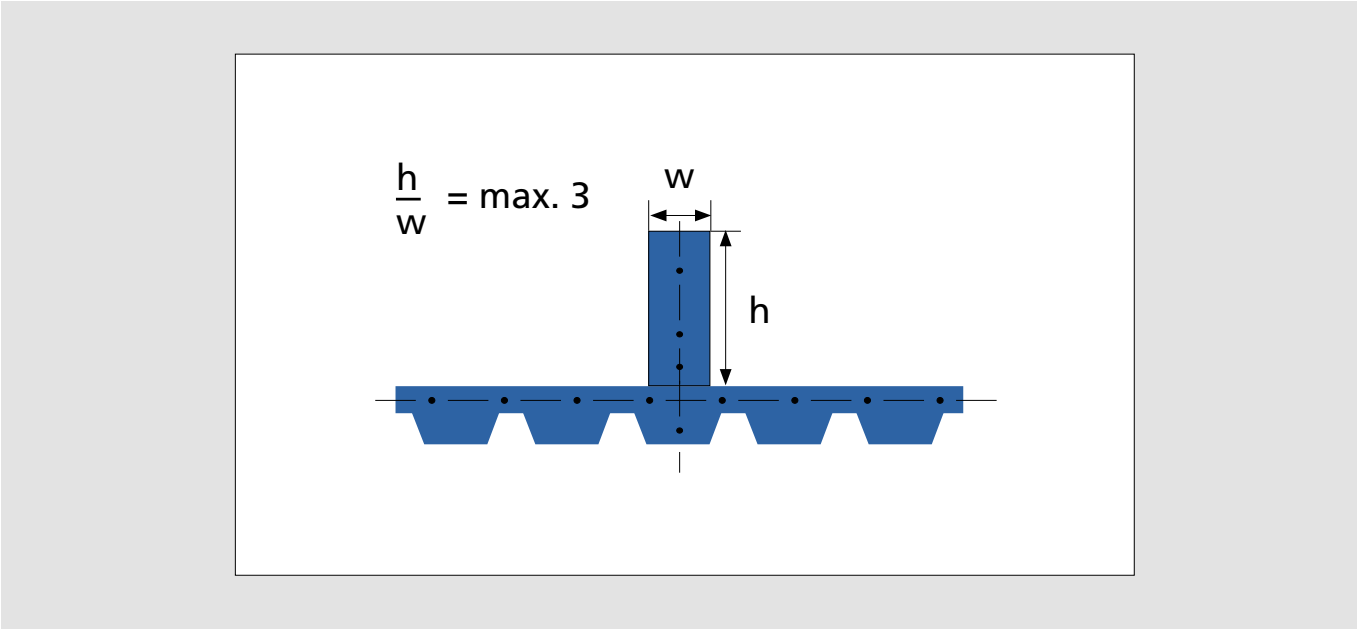
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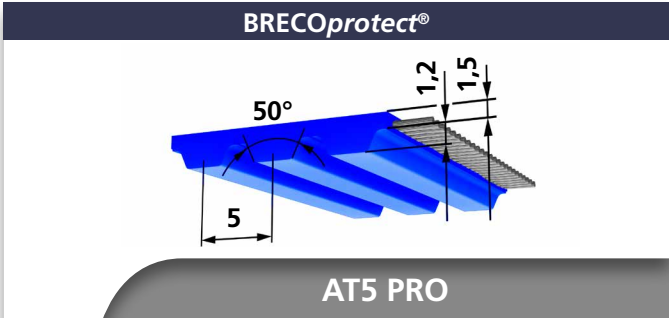
Notes on use

BRECOprotect® timing belts are designed specifically to meet the stringent requirements for food contact materials and the necessary cleaning processes involved. The design of these timing belts without coiling nose prevents the build-up of concealed and difficult-to-remove deposits and facilitates the cleaning process. The blue colour of the BRECOprotect® product range follows the general market trend towards a special food industry colour scheme. BRECOprotect® timing belts are also suitable for use in moist environments, where there are severe limitations on the use of conventional timing belts on account of the effects of hydrolysis.

The BRECOprotect® timing belts are available as open length and endless joined belts. The need for protection of the tension members precludes most forms of additional mechanical processing of the polyurethane belt body. Belt designs with welded-on profiles are possible in principle. However, the potential profile size and their load is limited. TPUAU1 is a mandatory material and the colour blue is recommended. The minimum number of teeth on the pulleys when BRECOprotect® timing belts with welded-on profiles are used is $t_{min} = 20$. The ratio of profile height to profile width (h/w) must not exceed 3.

For further information about our products and to find the sales partner for your area please go to www.breco.de.





AT5 PRO (M/V)		Specific tooth force			
Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]
0	42.000	1200	29.488	3600	21.776
20	41.521	1300	28.971	3800	21.370
40	41.069	1400	28.484	4000	20.983
60	40.641	1500	28.025	4500	20.089
80	40.234	1600	27.590	5000	19.284
100	39.846	1700	27.177	5500	18.550
200	38.142	1800	26.784	6000	17.877
300	36.733	1900	26.409	6500	17.255
400	35.531	2000	26.050	7000	16.677
500	34.483	2200	25.377	7500	16.138
600	33.554	2400	24.755	8000	15.631
700	32.721	2600	24.177	8500	15.154
800	31.964	2800	23.637	9000	14.704
900	31.271	3000	23.130	9500	14.277
1000	30.633	3200	22.654	10000	13.871
1100	30.040	3400	22.203		

Belt widths w [mm]			
25	50	75	100

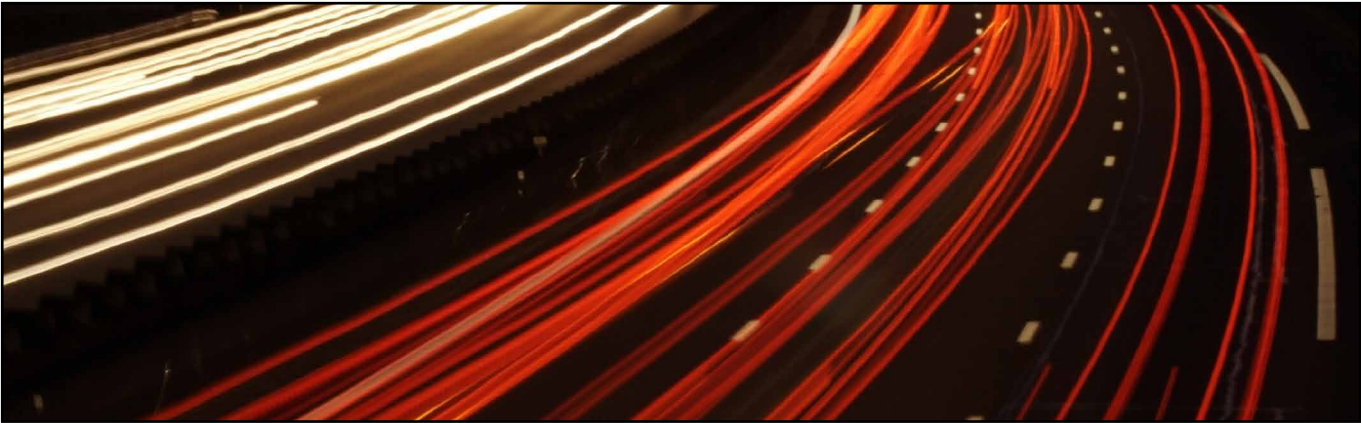
AT5 PRO (M/V)	Available lengths and versions
Standard delivery length (M)	50 or 100 m roll
Cut to lengths / lengths > 100 m	on request
Minimum length endless joined (V)	1100 mm
Standard material	TPUAU1
Belt colour	blue
Belt widths	only available in the widths listed in the table

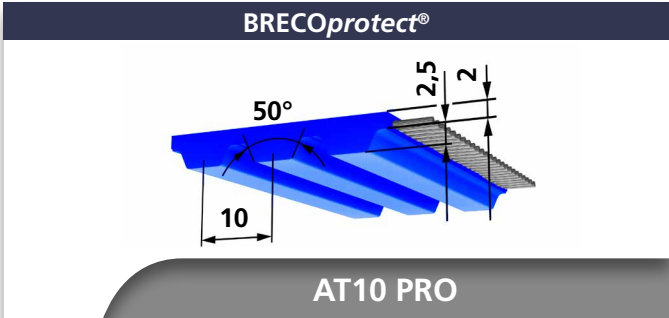
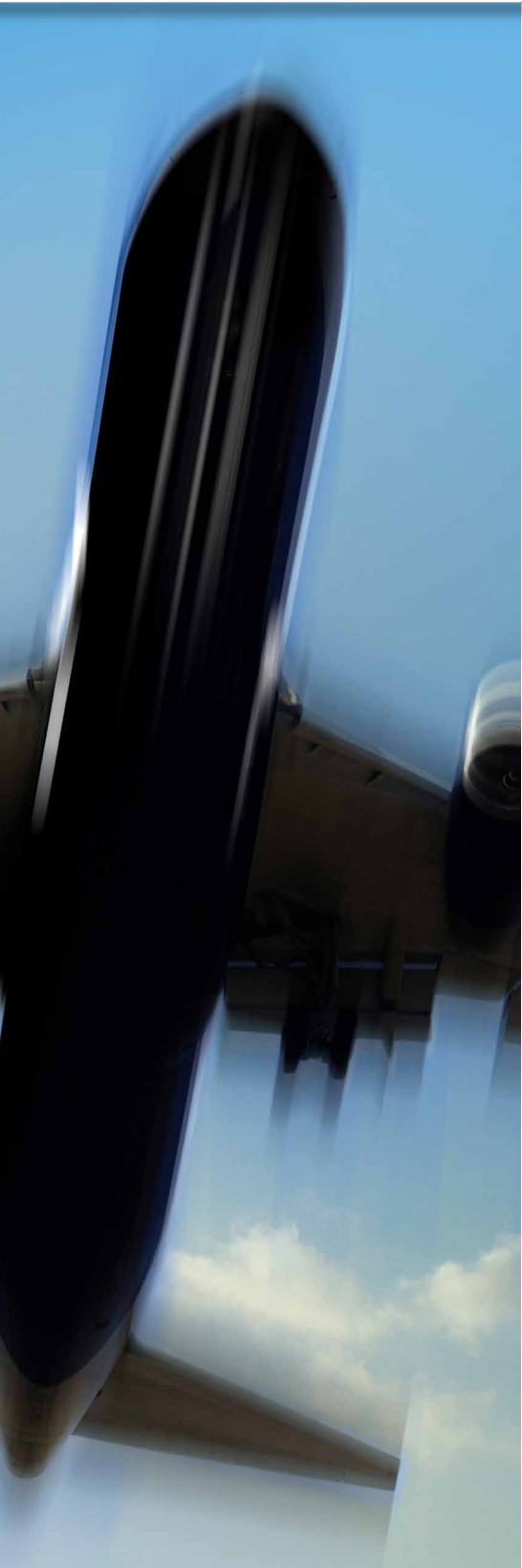
BRECOprotect® 50 AT5 PRO / 50000 M			
Width w			
Type/pitch			
Length in mm			
Open length			

AT5 PRO (M/V)		Admissible tensile force F _{Tadm} / spec. elasticity / belt weight				
Belt width		w [mm]	25	50	75	100
M	Steel tension members	F _{Tadm} [N]	1750	3500	5250	7000
	Spec. elasticity	C _{spec} [N]	0.440·10 ⁶	0.875·10 ⁶	1.310·10 ⁶	1.750·10 ⁶
V	Steel tension members	F _{Tadm} [N]	910	1750	2380	3500
Belt weight		Standard [kg/m]	0.082	0.164	0.245	0.327

Calculation as per specifications for BRECO® M and BRECO® V timing belts.

AT5 PRO (M/V)		Flexibility (minimum number of teeth / minimum diameter)		
		Steel tension members		
			M	V
	Without contraflexure	t _{min}	18	15
		d _{min} [mm]	30	25
	With contraflexure	t _{min}	25	25
		d _{min} [mm]	60	60





AT10 PRO (M/V) Specific tooth force					
Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]
0	87.500	1200	56.190	3600	37.925
20	86.216	1300	54.953	3800	36.972
40	85.013	1400	53.791	4000	36.064
60	83.881	1500	52.696	4500	33.967
80	82.814	1600	51.661	5000	32.079
100	81.803	1700	50.679	5500	30.362
200	77.426	1800	49.746	6000	28.787
300	73.870	1900	48.856	6500	27.333
400	70.877	2000	48.006	7000	25.982
500	68.291	2200	46.413	7500	24.721
600	66.016	2400	44.943	8000	23.538
700	63.984	2600	43.578	8500	22.425
800	62.148	2800	42.305	9000	21.374
900	60.475	3000	41.112	9500	20.377
1000	58.937	3200	39.989	10000	19.430
1100	57.514	3400	38.929		

Belt widths w [mm]				
25	32	50	75	100

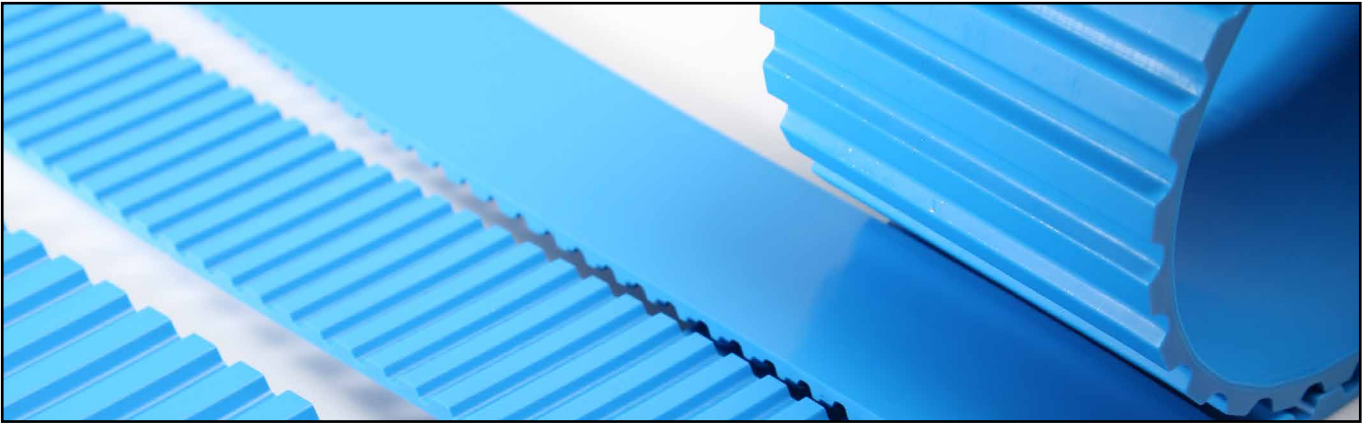
AT10 PRO (M/V)	Available lengths and versions
Standard delivery length (M)	50 or 100 m roll
Cut to lengths / lengths > 100 m	on request
Minimum length endless joined (V)	1100 mm
Standard material	TPUAU1
Belt colour	blue
Belt widths	only available in the widths listed in the table

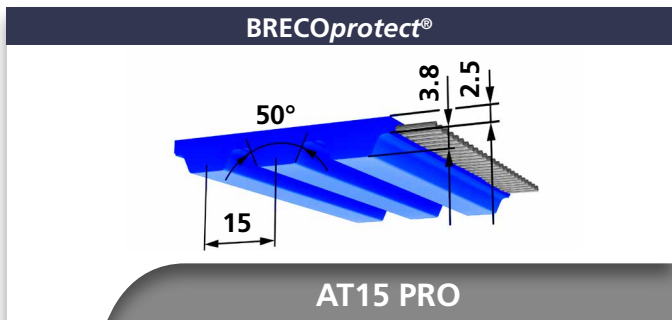
BRECOprotect® 100 AT10 PRO / 50000 M			
Width w			
Type/pitch			
Length in mm			
Open length			

AT10 PRO (M/V)			Admissible tensile force F _{Tadm} / spec. elasticity / belt weight					
Belt width			w [mm]	25	32	50	75	100
M	Steel tension members		F _{Tadm} [N]	4250	5500	8500	12750	17000
	Spec. elasticity		C _{spec} [N]	1.06·10 ⁶	1.37·10 ⁶	2.12·10 ⁶	3.18·10 ⁶	4.25·10 ⁶
V	Steel tension members		F _{Tadm} [N]	2125	2750	4250	6375	8500
Belt weight		Standard	[kg/m]	0.158	0.186	0.290	0.436	0.581

Calculation as per specifications for BRECO® M and BRECO® V timing belts.

AT10 PRO (M/V) Flexibility (minimum number of teeth / minimum diameter)				
			Steel tension members	
			M	V
	Without contraflexure	t _{min}	18	18
		d _{min} [mm]	60	60
	With contraflexure	t _{min}	25	25
		d _{min} [mm]	120	120





AT15 PRO (M/V)		Specific tooth force			
Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]
0	133.000	1200	80.981	3600	51.147
20	130.818	1300	78.954	3800	49.593
40	128.780	1400	77.052	4000	48.114
60	126.869	1500	75.260	4500	44.699
80	125.069	1600	73.567	5000	41.624
100	123.368	1700	71.962	5500	38.829
200	116.038	1800	70.436	6000	36.265
300	110.119	1900	68.982	6500	33.898
400	105.155	2000	67.594		
500	100.880	2200	64.991		
600	97.125	2400	62.591		
700	93.778	2600	60.364		
800	90.759	2800	58.288		
900	88.009	3000	56.342		
1000	85.485	3200	54.511		
1100	83.151	3400	52.783		

Belt widths w [mm]				
25	32	50	75	100

AT15 PRO (M/V)	Available lengths and versions
Standard delivery length (M)	50 or 100 m roll
Cut to lengths / lengths > 100 m	on request
Minimum length endless joined (V)	1260 mm
Standard material	TPUAU1
Belt colour	blue
Belt widths	only available in the widths listed in the table

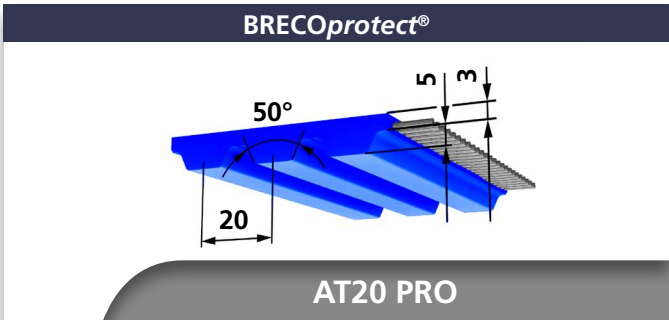
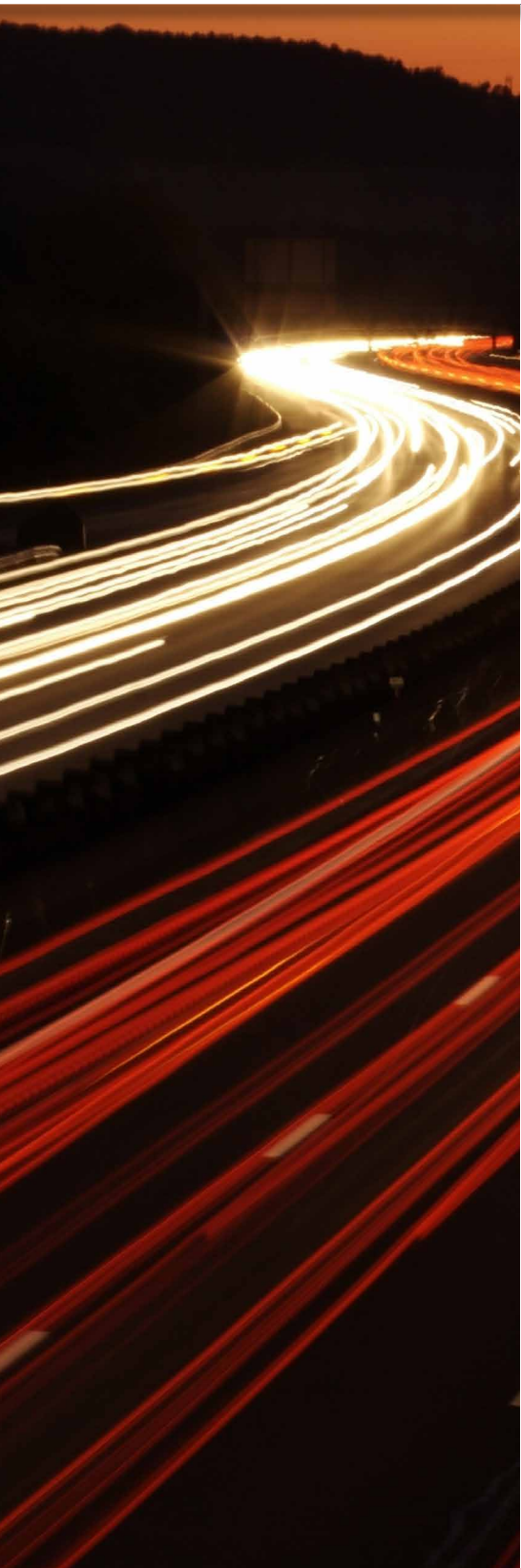
BRECOprotect®	75	AT15 PRO /	9000	V
Width w				
Type/pitch				
Length in mm				
Joined				

AT15 PRO (M/V)		Admissible tensile force F _{Tadm} / spec. elasticity / belt weight					
Belt width		w [mm]	25	32	50	75	100
M	Steel tension members	F _{Tadm} [N]	4800	5600	9600	14400	19200
	Spec. elasticity	C _{spec} [N]	1.2·10 ⁶	1.4·10 ⁶	2.4·10 ⁶	3.6·10 ⁶	4.8·10 ⁶
V	Steel tension members	F _{Tadm} [N]	2400	2800	4800	7200	9600
Belt weight		Standard [kg/m]	0.194	0.248	0.388	0.581	0.775

Calculation as per specifications for BRECO® M and BRECO® V timing belts.

AT15 PRO (M/V)		Flexibility (minimum number of teeth / minimum diameter)			
		Steel tension members			
			M	V	
	Without contraflexure	t _{min}	25	25	
		d _{min} [mm]	120	120	
	With contraflexure	t _{min}	40	40	
		d _{min} [mm]	250	250	





AT20 PRO (M/V)		Specific tooth force			
Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]
0	175.000	1200	98.938	3600	56.081
20	171.733	1300	96.018	3800	53.854
40	168.692	1400	93.279	4000	51.735
60	165.847	1500	90.700	4500	46.843
80	163.175	1600	88.264	5000	42.440
100	160.655	1700	85.956	5500	38.437
200	149.850	1800	83.762	6000	34.767
300	141.179	1900	81.673	6500	31.380
400	133.936	2000	79.678		
500	127.717	2200	75.940		
600	122.268	2400	72.494		
700	117.419	2600	69.299		
800	113.051	2800	66.319		
900	109.077	3000	63.528		
1000	105.432	3200	60.904		
1100	102.066	3400	58.426		

Belt widths w [mm]			
25	50	75	100

AT20 PRO (M/V)	Available lengths and versions
Standard delivery length (M)	50 m roll
Cut to lengths / lengths > 100 m	on request
Minimum length endless joined (V)	1260 mm
Standard material	TPUAU1
Belt colour	blue
Belt widths	only available in the widths listed in the table

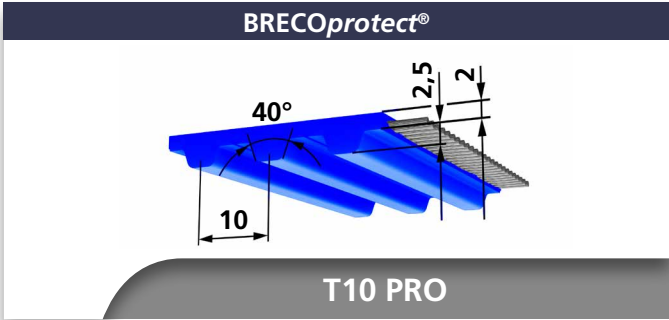
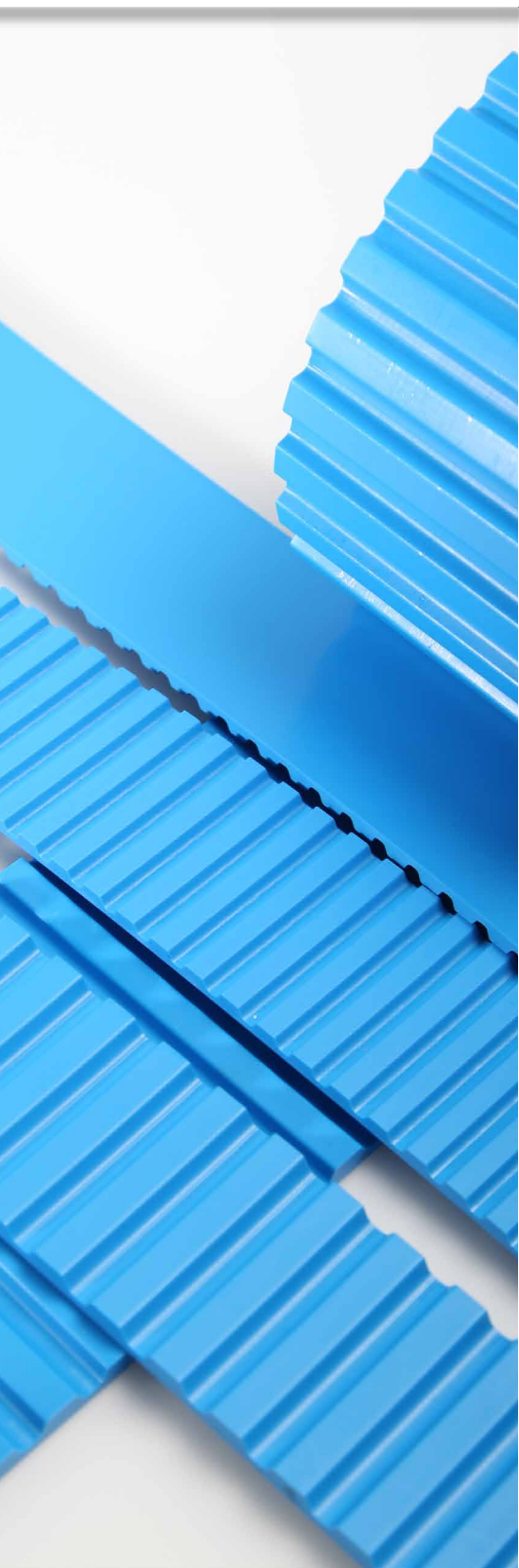
BRECOprotect® 75 AT20 PRO / 8000 V			
Width w			
Type/pitch			
Length in mm			
Joined			

AT20 PRO (M/V)		Admissible tensile force F _{Tadm} / spec. elasticity / belt weight				
Belt width		w [mm]	25	50	75	100
M	Steel tension members	F _{Tadm} [N]	5600	11200	16800	22400
	Spec. elasticity	C _{spec} [N]	1.4·10 ⁶	2.8·10 ⁶	4.2·10 ⁶	5.6·10 ⁶
V	Steel tension members	F _{Tadm} [N]	2800	5600	8400	11200
Belt weight		Standard [kg/m]	0.240	0.480	0.720	0.960

Calculation as per specifications for BRECO® M and BRECO® V timing belts.

AT20 PRO (M/V)		Flexibility (minimum number of teeth / minimum diameter)			
		Steel tension members			
			M	V	
	Without contraflexure	t _{min}	18	18	
		d _{min} [mm]	120	120	
	With contraflexure	t _{min}	25	25	
		d _{min} [mm]	180	180	





T10 PRO (M/V)		Specific tooth force			
Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]
0	50.50	1200	29.30	3600	20.70
20	49.00	1300	28.70	3800	20.30
40	47.70	1400	28.20	4000	19.86
60	46.60	1500	27.60	4500	18.91
80	45.70	1600	27.10	5000	18.06
100	44.80	1700	26.70	5500	17.28
200	41.40	1800	26.20	6000	16.58
300	39.10	1900	25.80	6500	15.93
400	37.20	2000	25.40	7000	15.33
500	35.70	2200	24.60	7500	14.76
600	34.40	2400	23.90	8000	14.24
700	33.30	2600	23.30	8500	13.74
800	32.40	2800	22.70	9000	13.28
900	31.50	3000	22.20	9500	12.84
1000	30.70	3200	21.70	10000	12.42
1100	30.00	3400	21.20		

Belt widths w [mm]					
16	25	32	50	75	100

T10 PRO (M/V)	Available lengths and versions
Standard delivery length (M)	50 or 100 m roll
Cut to lengths / lengths > 100 m	on request
Minimum length endless joined (V)	1100 mm
Standard material	TPUAU1
Belt colour	blue
Belt widths	only available in the widths listed in the table

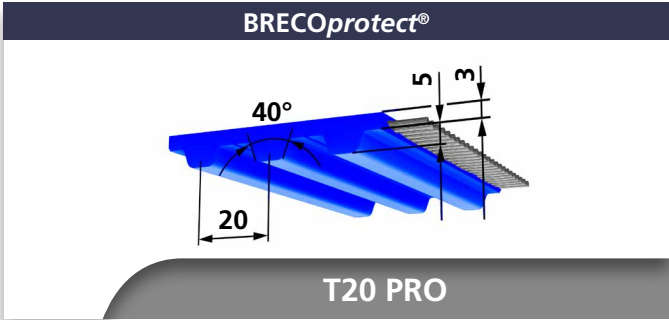
BRECOprotect® 50 T10 PRO / 4500 V	
Width w	
Type/pitch	
Length in mm	
Joined	

T10 PRO (M/V)		Admissible tensile force F _{Tadm} / spec. elasticity / belt weight						
Belt width		w [mm]	16	25	32	50	75	100
M	Steel tension members	F _{Tadm} [N]	1400	2200	2800	4400	6600	8800
	Spec. elasticity	C _{spec} [N]	3.5·10 ⁵	5.5·10 ⁵	7.0·10 ⁵	11.0·10 ⁵	16.5·10 ⁵	22.0·10 ⁵
V	Steel tension members	F _{Tadm} [N]	700	1100	1400	2200	3300	4400
Belt weight		Standard [kg/m]	0.073	0.114	0.145	0.227	0.341	0.454

Calculation as per specifications for BRECO® M and BRECO® V timing belts.

T10 PRO (M/V)		Flexibility (minimum number of teeth / minimum diameter)			
		Steel tension members			
			M	V	
	Without contraflexure	t _{min}	15	15	
		d _{min} [mm]	60	60	
	With contraflexure	t _{min}	20	20	
		d _{min} [mm]	60	60	





T20 PRO (M/V)		Specific tooth force			
Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]	Rpm n [rpm]	F _{tspec} [N/cm]
0	101.50	1200	54.20	3600	34.90
20	98.10	1300	52.80	3800	33.90
40	95.30	1400	51.50	4000	33.00
60	92.80	1500	50.30	4500	30.80
80	90.70	1600	49.20	5000	28.90
100	88.70	1700	48.20	5500	27.20
200	81.20	1800	47.20	6000	25.60
300	75.90	1900	46.20	6500	24.20
400	71.80	2000	45.30	7000	15.33
500	68.40	2200	43.60	7500	14.76
600	65.60	2400	42.10	8000	14.24
700	63.10	2600	40.70	8500	13.74
800	60.90	2800	39.40	9000	13.28
900	59.00	3000	38.10	9500	12.84
1000	57.20	3200	37.00	10000	12.42
1100	55.60	3400	35.90		

Belt widths w [mm]	
25	50

T20 PRO (M/V)	Available lengths and versions
Standard delivery length (M)	50 m roll
Cut to lengths / lengths > 100 m	on request
Minimum length endless joined (V)	1260 mm
Standard material	TPUAU1
Belt colour	blue
Belt widths	only available in the widths listed in the table

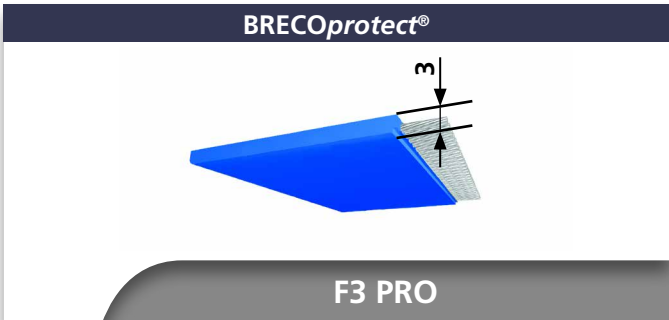
BRECOprotect® 50 T20 PRO / 4400 V	
Width w	
Type/pitch	
Length in mm	
Joined	

T20 PRO (M/V)		Admissible tensile force F _{Tadm} / spec. elasticity / belt weight	
Belt width		w [mm]	25 50
M	Steel tension members	F _{Tadm} [N]	3500 7000
	Spec. elasticity	C _{spec} [N]	0.87·10 ⁶ 1.75·10 ⁶
V	Steel tension members	F _{Tadm} [N]	1750 3500
Belt weight		Standard [kg/m]	0.184 0.368

Calculation as per specifications for BRECO® M and BRECO® V timing belts.

T20 PRO (M/V)		Flexibility (minimum number of teeth / minimum diameter)		
		Steel tension members		
			M	V
	Without Contraflexure	t _{min}	15	15
		d _{min} [mm]	120	120
	With Contraflexure	z _{min}	25	25
		d _{min} [mm]	120	120








Belt widths w [mm]	
25	50

F3 PRO (M)	Available lengths and versions
Standard delivery length (M)	50 and 100 m roll
Cut to lengths / lengths > 100 m	on request
Minimum length endless joined (V)	-
Standard material	TPUAU1
Belt colour	blue
Belt widths	only available in the widths listed in the table

BRECOprotect®	50	F3 PRO /	50000	M
Width w				
Type/pitch				
Length in mm				
Open length				

F3 PRO (M)		Admissible tensile force F_{Tadm} / spec. elasticity / belt weight		
Belt width		w [mm]	25	50
M	Steel tension members	F_{Tadm} [N]	7350	14700
	Tear-out force	F_{break} [N]	29400	58800
M	Spec. elasticity	C_{spec} [N]	$1.84 \cdot 10^6$	$3.68 \cdot 10^6$
Belt weight		Standard [kg/m]	0.172	0.343

Calculation as per specifications for BRECO® M timing belts.

F3 PRO (M)		Flexibility (minimum diameter)		
		Steel tension members		
		M		
	Without contraflexure	d_{min} [mm]	120	
	With contraflexure	d_{min} [mm]	150	
		$d_{min ten}$ [mm]	150	



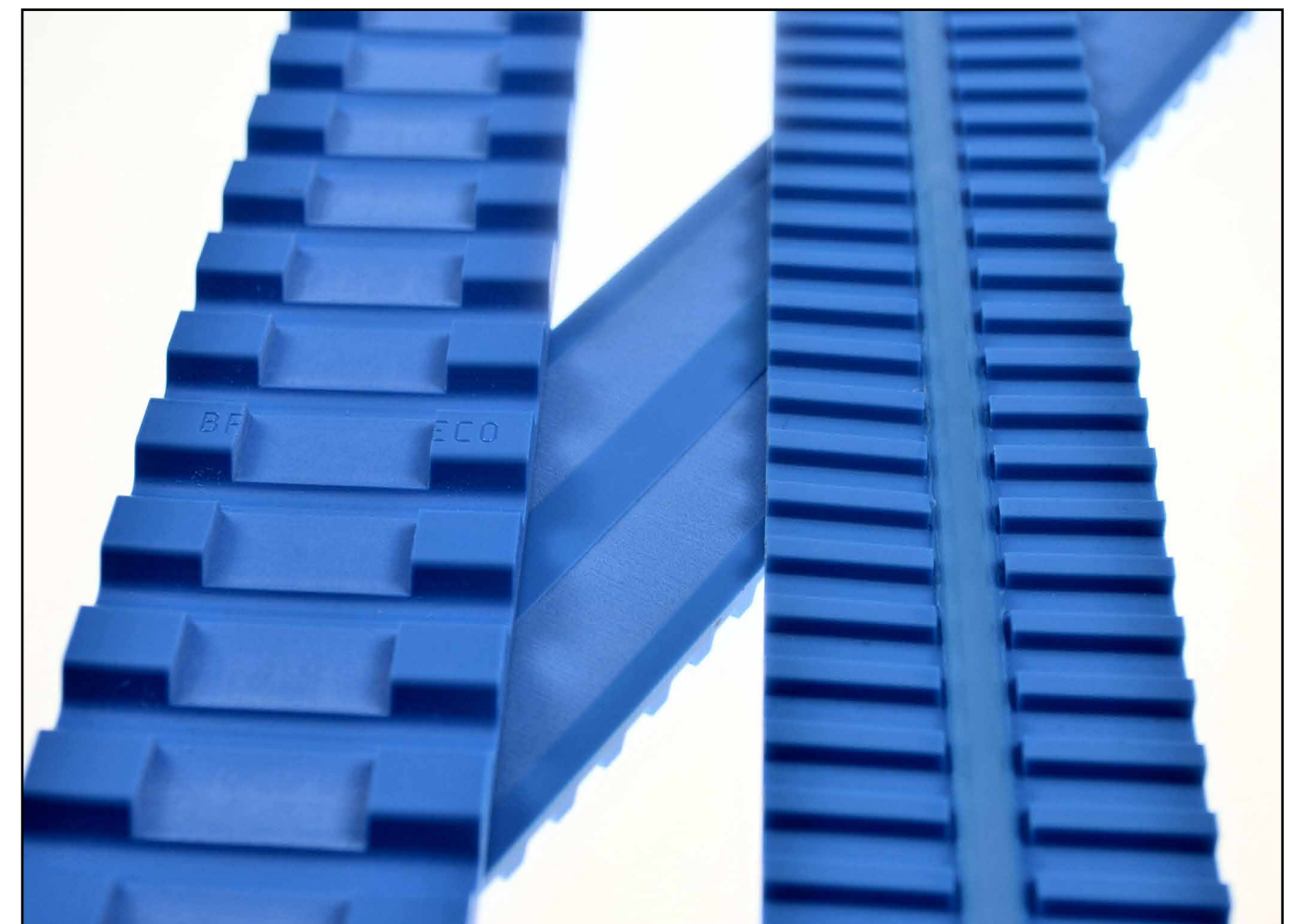
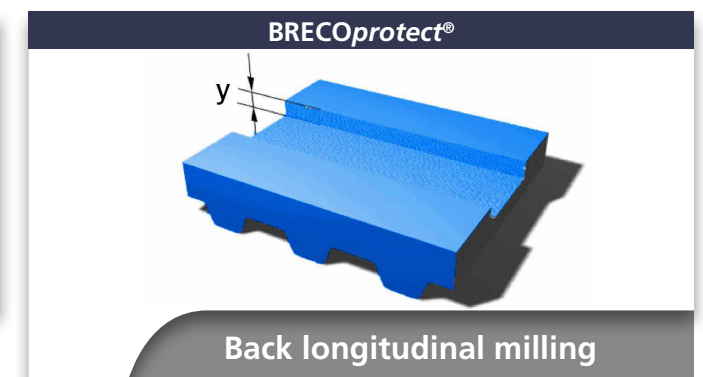
Mechanical processing of BRECO^{protect}® timing belts is possible in principle. However, BRECO would like to point out that this processing can affect the corrosion protection and cleaning process.

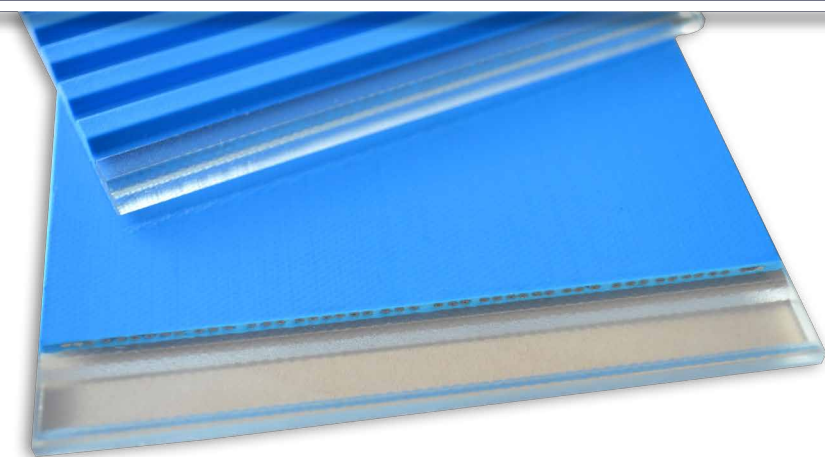
During mechanical processing, ensure that the tension members are always protected. Exposed or damaged tension members will no longer be protected from corrosion. Their use in areas with high demands regarding cleanliness and purity may no longer be possible.

Furthermore, mechanical processing can create edges, corners and milled surfaces, which may make a required cleaning process more difficult.

The following table contains an overview of possible processing types

Processing types				AT5 PRO	AT10 PRO	T10 PRO	AT15 PRO	AT20 PRO	T20 PRO	F3 PRO
Longitudinal groove on the tooth side (x_{\max})				0.6 mm	2.2 mm	2.2 mm	3.3 mm	4.5 mm	4.5 mm	-
Longitudinal or cross milling of backs (y_{\max})				-	0.3 mm	0.3 mm	0.3 mm	0.7 mm	0.6 mm	-
Wedge sealing	K6	Without contra-flexure	t_{\min}	38	30	30	25	-	-	-
			d_{\min}	60	95	95	120	-	-	-
		With contra-flexure	t_{\min}	38	30	30	40	-	-	-
			d_{\min}	60	120	95	250	-	-	-
	K13	Without contra-flexure	t_{\min}	-	48	48	34	25	25	-
			d_{\min}	-	150	150	160	160	160	-
		With contra-flexure	t_{\min}	-	48	48	40	25	25	-
			d_{\min}	-	150	150	250	180	180	-
Removing individual teeth				possible						-
Angling belt edges				chamfer only up to tooth height						-
Back grinding				possible						-
Longitudinal milling of belt edges				up to max. 0.2 mm minus allowance in relation to the nominal width						-
Perforating timing belts				only possible for special timing belts with a tension member free zone						-





Transparent protection

BRECOprotect® - protected on all sides

Where open length BRECOprotect® timing belts will come into contact with food and/or cleaning agents, they have to be sealed at the ends for reasons of compliance and protection against corrosion. BRECO offers an end seal to protect the ends of the belts.

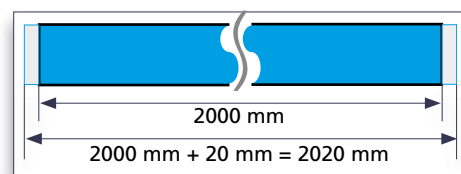
These end seals are designed to protect the tension members at the ends of the belt from external influences such as cleaning fluids and water. However, as these end seals do not contain tension members but are used as end caps, they cannot transmit tensile forces.

Important information regarding ordering

BRECOprotect® open length belts are predominantly used for converting rotary movement into linear movement, whereby this has to be executed along a particular travel distance. This distance determines the functional belt length. To ensure that this functional belt length (with respect to the power transmission) is not limited by the end seals BRECO decided not to include the length of the end seals in the functional belt length.

As far as ordering, manufacture and delivery of a BRECOprotect® belt with end seals is concerned, this means that if a BRECOprotect® 25AT10/2000 M belt with end seals is ordered, BRECO will manufacture and deliver a BRECOprotect® 25AT10/2000 M belt with end seals with an absolute length of 2000 mm + 2x10 mm end seal = 2020 mm. If this extra length cannot be accommodated by the design of the machine and the tensile force conditions allow one less tooth when it is finally tensioned, a BRECOprotect® 25AT10/1980 M with end seals must be ordered in this example. In this case, BRECO will deliver the belt with the actual length of 2000 mm.

We do not offer end seals for F3 PRO flat belts. If you are at all uncertain, please do not hesitate to consult our BRECO sales partners in order to obtain the desired product.

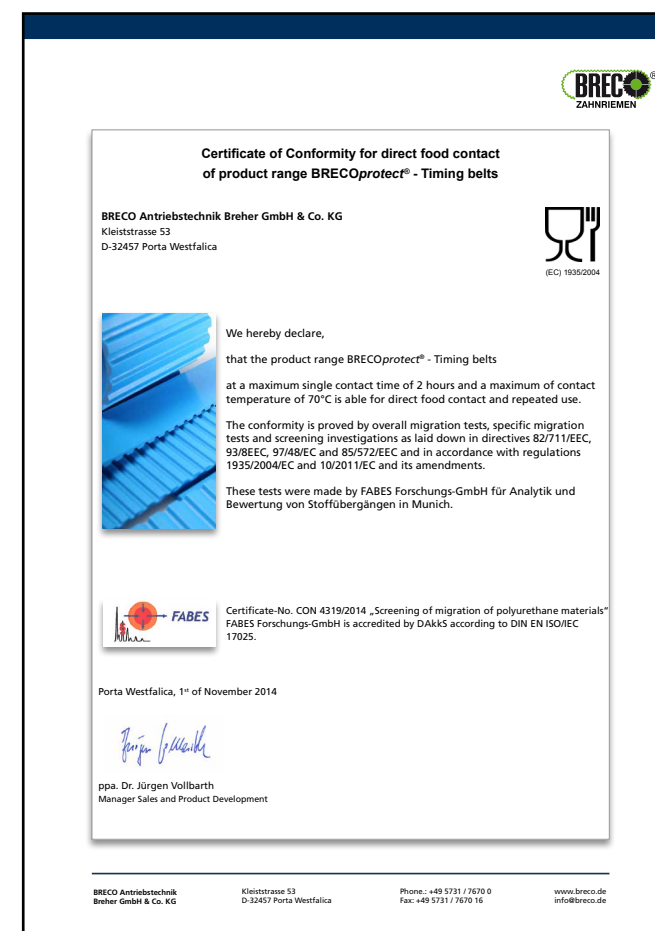


Example: BRECOprotect 25 AT10 / 2000 M with end seals

Compliance criteria

In accordance with the requirements of the food and pharmaceutical industry, all BRECOprotect® timing belts are made of polyurethane in line with the compliance criteria of the FDA Code of Federal Regulations, Sec. 177.1680, the European Framework Regulation (EC) 1935-2004, Regulation (EU) No. 10/2011 and the European Commission Directives 90/128/CEE and 96/11/CE. The blue colour of the BRECOprotect® product range follows the general trend in the food and food processing industry towards a special food industry colour scheme.

Our customers also frequently require a declaration of conformity for products coming into direct contact with food. It is not sufficient to declare the compliance of the materials used with the above directives. It is necessary to test the overall constituents of the materials in the product on direct contact with foodstuffs. These migration tests were successfully completed for the product range BRECOprotect® and these results are confirmed in a certificate. Compliance with the GMP Directive (EC) 2023/2006 (Good Manufacturing Practice) is also necessary to receive this certificate. Only this guarantees the cleanliness or purity of the product following the manufacturing process.



You can download the declaration of conformity from our website www.breco.de as a PDF file or send a request to BRECO via the sales partner for your area.