BRECO*roll* T20

Open length M / joined (V)

BRECO*roll*

Belt width b [mm]
100

T20 ROL (M/V)	Available lengths and versions
Standard length (M)	up to 100 m
Cut to lengths / lengths > 100 m	-
Minimum length joined (V)	1000 mm
Standard material	TPUST1[1)]
Steel tension member (Standard)	x
E tension member	o
Stainless steel tension member	o
Nylon tooth facing (PAZ)	-
Nylon facing on the back of the belt (PAR)	-

x available
o minimum purchase amount on request
- not available
[1)] further materials on request

BRECO*roll* T20

BRECO*roll* is a new development featuring rollers integrated in the teeth of the belt. BRECO has designed this product for applications in material conveying systems.

Timing belts used to transport materials are usually very long. The load run of the belt is almost always supported by a support rail, which guides the belt on its sides and absorbs the weight of the workpieces on the belt and of the belt itself. This generates friction between the belt and the support rail.

Frequently, the greater percentage of the drive power is used to overcome this self-inhibiting behaviour of the system. During this process, the drive is subject to major forces, generates heat and runs at a low degree of efficiency. The increase in the belt temperature lowers its stability – in particular, that of the welded point of the V connection – and reduces the service life of the belt.

The rollers in the belt teeth replace the sliding friction with rolling friction, which is significantly lower: While the friction coefficient of a polyurethane timing belt and a plastic guide rail is rarely lower than 0.5 ($\mu > 0.5$), it is possible to obtain friction coefficients of less than 0.2 ($\mu < 0.2$) with rolling friction. A significant reduction of the drive power is possible and the system's self-heating behaviour decreases considerably.

The small roller diameter, leading to high roller rotational speeds, and the Hertzian contact stress between the rollers and the support rail, however, limit the maximum speed and load-bearing capacity. BRECO*roll* is suitable for speeds of up to 1 m/s and area loads of up to 3 kg per roller. These limits are entirely sufficient for most material transport tasks in automated production processes.

The maximum transportable total mass m_{TGmax} of each transported good is based on the number n_{RP} of roller pairs on which the transported good rests at any one time.

$m_{TGmax} = n_{RP} * m_{RPmax}$, with $m_{RPmax} = 6kg$

The number of roller pairs subject to load is a result of the length of each transported good. The following applies:

$n_{RP} = l_{TG}$ [mm] / 40 mm

Always round down n_{RP}. The lowest number of roller pairs subject to load is $n_{RPmin} = 1$.

If the mass of the transported good is > 1 kg the base area of the transported good should not be smaller than 40 mm x 80 mm (length x width).

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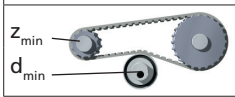
R.p.m. n [min^{-1}]	F_{tspec} [N/cm]	R.p.m. n [min^{-1}]	F_{tspec} [N/cm]	R.p.m. n [min^{-1}]	F_{tspec} [N/cm]	R.p.m. n [min^{-1}]	F_{tspec} [N/cm]
0	50,75	800	30,45	2000	22,65	5000	14,45
20	49,05	900	29,50	2200	21,80	5500	13,60
40	47,65	1000	28,60	2400	21,05	6000	12,80
60	46,40	1100	27,80	2600	20,35	6500	12,10
80	45,35	1200	27,10	2800	19,70		
100	44,35	1300	26,40	3000	19,05		
200	40,60	1400	25,75	3200	18,50		
300	37,95	1500	25,15	3400	17,95		
400	35,90	1600	24,60	3600	17,45		
500	34,20	1700	24,10	3800	16,95		
600	32,80	1800	23,60	4000	16,50		
700	31,55	1900	23,10	4500	15,40		

BRECO*roll* T20 (M/V)			Admissible tension cord strength F_{tadm} / Spec. elasticity / Belt weight
Belt widths		b [mm]	100
M	E- / Steel tension member	F_{tadm} [N]	12000
	Spec. elasticity (E- / steel tension member)	C_{spec}[N]	$3{,}5 \cdot 10^6$
	Stainless steel tension member	F_{tadm} [N]	10080
	Spec. elasticity (steel tension member)	C_{spec} [N]	$3{,}5 \cdot 10^6$
V	E- / Steel tension member	F_{tadm} [N]	6000
	Stainless steel tension member	F_{tadm} [N]	5040
Belt weight	Standard	[kg/m]	0,94
max. back strain	(at v_{max}=1m/s)	m_{RPmax}	6 kg/roller pair
Coefficient of friction			$\mu < 0{,}2$

BRECO*roll* T20 (M/V)			Flexibility (minimum number of teeth / minimum diameter)											
			Steel tension member				E tension member				Stainless steel tension member			
			Stan-dard	DL	DR	T	Stan-dard	DL	DR	T	Stan-dard	DL	DR	T
	without conbtra-flexure	z_{min}	15	-	-	-	12	-	-	-	20	-	-	-
		d_{min} [mm]	120	-	-	-	100	-	-	-	130	-	-	-
	with contra-flexure	z_{min}	25	-	-	-	22	-	-	-	30	-	-	-
		d_{min} [mm]	180	-	-	-	180	-	-	-	180	-	-	-