

AT3 TECHNICAL DATA

Tooth shear strength, tension member tensile strength and flexibility determine belt dimensions. See p.102.

1) Tooth Shear Strength

The belt width (in cm) required to transmit known peripheral force F_U , torque M or power P without exceeding the maximum allowable tooth shear strength is calculated using any of the following formulae and the values from the table:

$$b = \frac{F_U}{z_e \cdot F_{U\text{spez}}}$$

$$b = \frac{100 \cdot M}{z_1 \cdot z_e \cdot M_{\text{spez}}}$$

$$b = \frac{1000 \cdot P}{z_1 \cdot z_e \cdot P_{\text{spez}}}$$

b = belt width (in cm)

$F_{U\text{spez}}$ = specific peripheral force(N/cm)

M_{spez} = specific torque (Ncm/cm)

P_{spez} = specific power (W/cm)

z_1 = No. of teeth on the small pulley

z_2 = No. of teeth in the large pulley

t = pitch in mm

a = centre distance in mm

z_e = No. of teeth in mesh (see below)

$z_{e\text{max}} = 12$ for Brecoflex®,Synchroflex® or Breco® M

$z_{e\text{max}} = 6$ for Breco® V timing belts

To calculate the number of teeth in mesh, z_e :

$$z_e = \frac{z_1}{180} \cdot \text{arc cos} \frac{(z_2 - z_1) \cdot t}{2\pi a}$$

Specific Tooth Shear Strength Tables

Rpm, n (min ⁻¹)	$F_{U\text{spez}}$ (N/cm)	M_{spez} (Ncm/cm)	P_{spez} (W/cm)	Rpm, n (min ⁻¹)	$F_{U\text{spez}}$ (N/cm)	M_{spez} (Ncm/cm)	P_{spez} (W/cm)	Rpm, n (min ⁻¹)	$F_{U\text{spez}}$ (N/cm)	M_{spez} (Ncm/cm)	P_{spez} (W/cm)
0	32.34	1.544	0.000	1100	23.65	1.129	1.301	3200	18.17	0.868	2.908
20	32.00	1.528	0.032	1200	23.24	1.110	1.394	3400	17.84	0.852	3.032
40	31.68	1.513	0.063	1300	22.86	1.091	1.486	3600	17.52	0.837	3.154
60	31.37	1.498	0.094	1400	22.50	1.075	1.575	3800	17.22	0.822	3.271
80	31.08	1.484	0.124	1500	22.16	1.058	1.662	4000	16.93	0.808	3.386
100	30.80	1.471	0.154	1600	21.84	1.043	1.747	5000	15.67	0.480	3.916
200	29.58	1.412	0.296	1700	21.53	1.028	1.830	6000	14.62	0.698	4.385
300	28.55	1.363	0.428	1800	21.24	1.014	1.912	7000	13.72	0.655	4.803
400	27.68	1.322	0.554	1900	20.96	1.001	1.991	8000	12.94	0.618	5.177
500	26.91	1.285	0.673	2000	20.70	0.988	2.070	9000	12.25	0.585	5.513
600	26.23	1.253	0.787	2200	20.20	0.964	2.222	10000	11.63	0.555	5.815
700	25.62	1.223	0.897	2400	19.73	0.942	2.368	12000	10.55	0.504	6.330
800	25.07	1.197	1.003	2600	19.31	0.922	2.510	15000	9.22	0.440	9.915
900	24.56	1.172	1.105	2800	18.90	0.903	2.647	18000	8.13	0.388	7.316
1000	24.09	1.150	1.204	3000	18.53	0.855	2.779	20000	7.50	0.358	7.499

For designs over the quoted speed, please contact our Technical Department

2) Tensile Strength of Tension Member

Allowable tensile load F_{zul} on belt cross section in Newtons

BELT WIDTH (in mm)	6	8	10	16	20	25	32	50
Synchroflex	190	280	380	646	790	1102	1406	2200
Breco M	180	260	360	570	725	-	-	-
Breco V	90	130	180	285	360	-	-	-
Brecoflex	-	-	-	-	-	-	-	-