

**T2.5 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)

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

$P_{\text{spez}}$  = 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 <sup>-1</sup> )	$F_{U\text{spez}}$ (N/cm)	$M_{\text{spez}}$ (Ncm/cm)	$P_{\text{spez}}$ (W/cm)	Rpm, n (min <sup>-1</sup> )	$F_{U\text{spez}}$ (N/cm)	$M_{\text{spez}}$ (Ncm/cm)	$P_{\text{spez}}$ (W/cm)	Rpm, n (min <sup>-1</sup> )	$F_{U\text{spez}}$ (N/cm)	$M_{\text{spez}}$ (Ncm/cm)	$P_{\text{spez}}$ (W/cm)
0	9.03	0.359	0.000	1100	5.61	0.223	0.257	3200	4.36	0.173	0.581
20	8.72	0.347	0.007	1200	5.51	0.219	0.275	3400	4.28	0.170	0.607
40	8.48	0.337	0.014	1300	5.41	0.215	0.293	3600	4.22	0.168	0.632
60	8.28	0.329	0.021	1400	5.33	0.212	0.311	3800	4.15	0.165	0.657
80	8.10	0.322	0.027	1500	5.25	0.209	0.328	4000	4.09	0.163	0.682
100	7.95	0.316	0.033	1600	5.17	0.206	0.345	5000	3.82	0.152	0.796
200	7.39	0.294	0.062	1700	5.10	0.203	0.361	6000	3.60	0.143	0.901
300	7.01	0.279	0.088	1800	5.04	0.200	0.378	7000	3.42	0.136	0.997
400	6.71	0.267	0.112	1900	4.97	0.198	0.394	8000	3.26	0.130	1.086
500	6.48	0.258	0.135	2000	4.91	0.195	0.409	9000	3.11	0.124	1.168
600	6.28	0.250	0.157	2200	4.80	0.191	0.440	10000	2.99	0.119	1.245
700	6.11	0.243	0.178	2400	4.70	0.187	0.470	12000	2.77	0.110	1.384
800	5.97	0.237	0.199	2600	4.60	0.183	0.499	15000	2.50	0.099	1.561
900	5.83	0.232	0.219	2800	4.51	0.180	0.527	18000	2.28	0.091	1.708
1000	5.71	0.227	0.238	3000	4.43	0.176	0.554	20000	2.15	0.086	1.791

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)	3	4	6	8	10	16	25	32
Synchroflex	25	39	65	92	117	195	312	403
Breco M	-	-	-	77	98	162	250	320
Breco V	-	-	-	38	49	81	125	160
Brecoflex	-	-	-	-	-	-	-	-