

**AT20, ATK20, SFAT20 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	147.00	46.800	0.000	1100	85.60	27.200	31.400	3200	50.90	16.200	54.300
20	144.20	45.900	0.961	1200	82.90	26.400	33.200	3400	48.80	15.530	55.300
40	141.70	45.100	1.889	1300	80.50	25.600	34.900	3600	46.80	14.910	56.200
60	139.30	44.300	2.790	1400	78.20	24.900	36.500	3800	45.00	14.310	56.900
80	137.00	43.600	3.650	1500	76.00	24.200	38.000	4000	43.20	13.740	57.600
100	134.90	42.900	4.500	1600	73.90	23.500	39.400	4500	39.00	12.430	58.600
200	125.80	40.000	8.390	1700	72.00	22.900	40.800	5000	35.30	11.250	58.800
300	118.50	37.700	11.850	1800	70.10	22.300	42.100	5500	32.00	10.170	60.600
400	112.40	35.800	14.990	1900	68.40	21.800	43.300	6000	28.90	9.190	61.700
500	107.20	34.100	17.860	2000	66.70	21.200	44.500	6500	26.00	8.280	62.400
600	102.60	32.700	20.500	2200	63.60	20.200	46.600				
700	98.50	31.400	23.000	2400	60.70	19.310	48.500				
800	94.80	30.200	25.300	2600	58.00	18.450	50.200				
900	91.50	29.100	27.400	2800	55.50	17.650	51.800				
1000	88.40	28.100	29.500	3000	53.10	16.900	53.100				

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)	25	32	50	75	100	150
Synchroflex	–	6750	11250	17550	23850	36450
Breco M	–	7200	11700	18000	25000	36000
Breco V	–	3600	5800	9000	12500	18000
Brecoflex	–	6000	10000	15600	21200	32400