

**XH 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	126.30	44.700	0.000	1100	69.20	24.500	28.200	3200	46.00	16.270	54.500
20	122.10	43.200	0.904	1200	67.40	23.500	29.900	3400	44.60	15.790	56.200
40	118.50	41.900	1.756	1300	65.70	23.200	31.600	3600	43.40	15.340	57.800
60	115.50	40.800	2.570	1400	64.10	22.700	33.200	3800	42.20	14.910	59.300
80	112.80	39.900	3.340	1500	62.60	22.100	34.800	4000	41.00	14.500	60.700
100	110.40	39.000	4.090	1600	61.20	21.700	36.300	4500	38.40	13.570	63.900
200	101.00	35.700	7.490	1700	59.90	21.200	37.700				
300	94.40	33.400	10.490	1800	58.70	20.700	39.100				
400	89.30	31.600	13.230	1900	57.50	20.300	40.500				
500	85.10	30.100	15.770	2000	56.40	19.940	41.800				
600	81.60	28.900	18.130	2200	54.30	19.200	44.200				
700	78.50	27.800	20.400	2400	52.40	18.520	46.500				
800	75.80	26.800	22.500	2600	50.60	17.900	48.700				
900	73.40	26.000	24.500	2800	49.00	17.310	50.800				
1000	71.20	25.200	26.400	3000	47.40	16.770	52.700				

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 hundredths of an inch)	100	150	200	300	400
Synchroflex	-	-	-	-	-
Breco M	3500	5250	7000	10500	14000
Breco V	1750	2625	3500	5250	7000
Brecoflex	3800	5800	7750	12000	16250