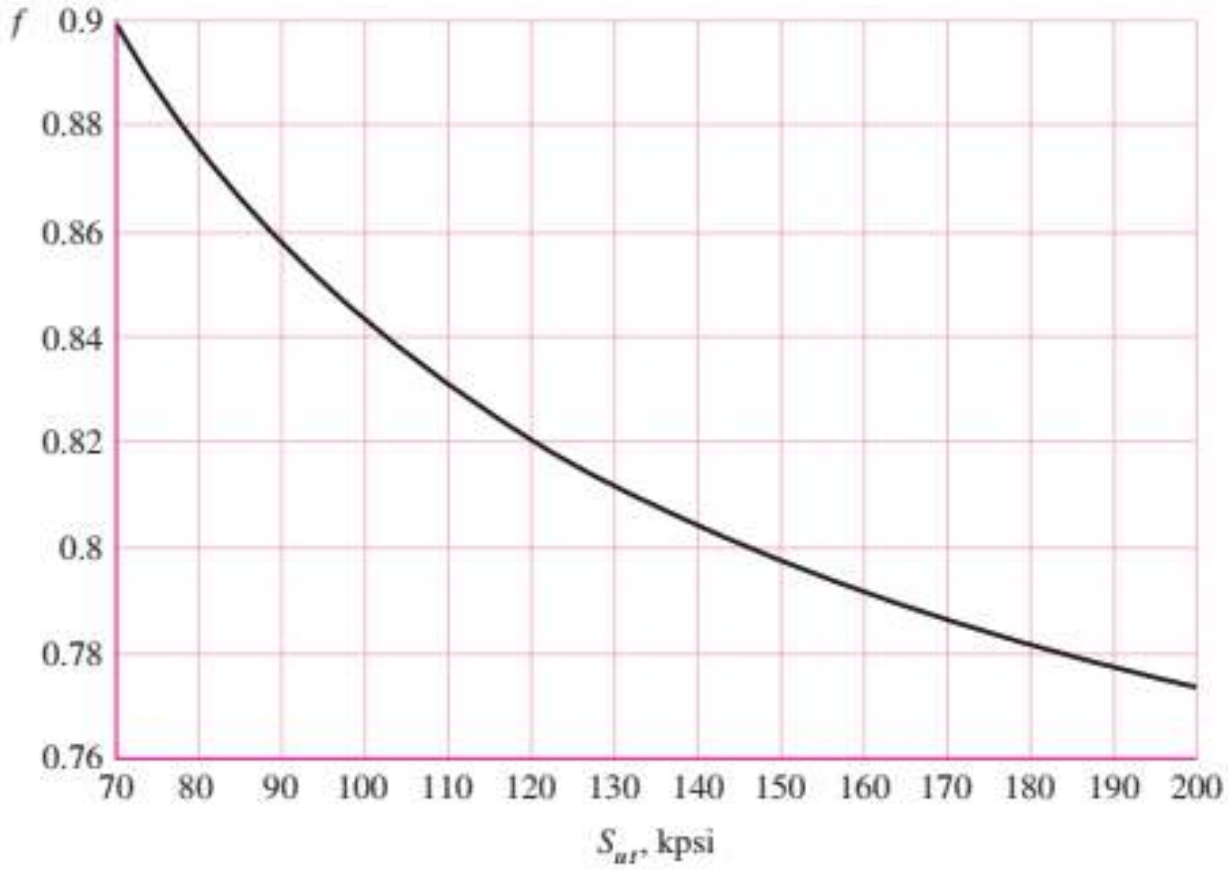


**Figure 6–18**

Fatigue strength fraction, $f$, of $S_{ut}$ at $10^3$ cycles for $S_e = S'_e = 0.5S_{ut}$ at $10^6$ cycles.

## Table 17–2

Properties of Some Flat- and Round-Belt Materials. (Diameter = $d$, thickness = $t$, width = $w$)

| Material | Specification | Size, in | Minimum Pulley Diameter, in | Allowable Tension per Unit Width at 600 ft/min, lbf/in | Specific Weight, lbf/in$^3$ | Coefficient of Friction |
|---|---|---|---|---|---|---|
| Leather | 1 ply | $t = \frac{11}{64}$ | 3 | 30 | 0.035–0.045 | 0.4 |
| | | $t = \frac{13}{64}$ | $3\frac{1}{2}$ | 33 | 0.035–0.045 | 0.4 |
| | 2 ply | $t = \frac{18}{64}$ | $4\frac{1}{2}$ | 41 | 0.035–0.045 | 0.4 |
| | | $t = \frac{20}{64}$ | 6[a] | 50 | 0.035–0.045 | 0.4 |
| | | $t = \frac{23}{64}$ | 9[a] | 60 | 0.035–0.045 | 0.4 |
| Polyamide[b] | F–0[c] | $t = 0.03$ | 0.60 | 10 | 0.035 | 0.5 |
| | F–1[c] | $t = 0.05$ | 1.0 | 35 | 0.035 | 0.5 |
| | F–2[c] | $t = 0.07$ | 2.4 | 60 | 0.051 | 0.5 |
| | A–2[c] | $t = 0.11$ | 2.4 | 60 | 0.037 | 0.8 |
| | A–3[c] | $t = 0.13$ | 4.3 | 100 | 0.042 | 0.8 |
| | A–4[c] | $t = 0.20$ | 9.5 | 175 | 0.039 | 0.8 |
| | A–5[c] | $t = 0.25$ | 13.5 | 275 | 0.039 | 0.8 |
| Urethane[d] | $w = 0.50$ | $t = 0.062$ | See | 5.2[e] | 0.038–0.045 | 0.7 |
| | $w = 0.75$ | $t = 0.078$ | Table | 9.8[e] | 0.038–0.045 | 0.7 |
| | $w = 1.25$ | $t = 0.090$ | 17–3 | 18.9[e] | 0.038–0.045 | 0.7 |
| | Round | $d = \frac{1}{4}$ | See | 8.3[e] | 0.038–0.045 | 0.7 |
| | | $d = \frac{3}{8}$ | Table | 18.6[e] | 0.038–0.045 | 0.7 |
| | | $d = \frac{1}{2}$ | 17–3 | 33.0[e] | 0.038–0.045 | 0.7 |
| | | $d = \frac{3}{4}$ | | 74.3[e] | 0.038–0.045 | 0.7 |

[a] Add 2 in to pulley size for belts 8 in wide or more.

[b] *Source: Habasit Engineering Manual,* Habasit Belting, Inc., Chamblee (Atlanta), Ga.

[c] Friction cover of acrylonitrile-butadiene rubber on both sides.

[d] *Source:* Eagle Belting Co., Des Plaines, Ill.

[e] At 6% elongation; 12% is maximum allowable value.

## Table 17–3

Minimum Pulley Sizes for Flat and Round Urethane Belts (Listed are the pulley diameters in inches).

*Source:* Eagle Belting Co., Des Plaines, Ill.

| Belt Style | Belt Size, in | Ratio of Pulley Speed to Belt Length, rev/(ft · min) | | |
|---|---|---|---|---|
| | | Up to 250 | 250 to 499 | 500 to 1000 |
| Flat | 0.50 × 0.062 | 0.38 | 0.44 | 0.50 |
| | 0.75 × 0.078 | 0.50 | 0.63 | 0.75 |
| | 1.25 × 0.090 | 0.50 | 0.63 | 0.75 |
| Round | $\frac{1}{4}$ | 1.50 | 1.75 | 2.00 |
| | $\frac{3}{8}$ | 2.25 | 2.62 | 3.00 |
| | $\frac{1}{2}$ | 3.00 | 3.50 | 4.00 |
| | $\frac{3}{4}$ | 5.00 | 6.00 | 7.00 |

## Table 17–4

Pulley Correction Factor $C_P$ for Flat Belts*

| Material | Small-Pulley Diameter, in | | | | | |
|---|---|---|---|---|---|---|
| | 1.6 to 4 | 4.5 to 8 | 9 to 12.5 | 14, 16 | 18 to 31.5 | Over 31.5 |
| Leather | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |
| Polyamide, F–0 | 0.95 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| F–1 | 0.70 | 0.92 | 0.95 | 1.0 | 1.0 | 1.0 |
| F–2 | 0.73 | 0.86 | 0.96 | 1.0 | 1.0 | 1.0 |
| A–2 | 0.73 | 0.86 | 0.96 | 1.0 | 1.0 | 1.0 |
| A–3 | — | 0.70 | 0.87 | 0.94 | 0.96 | 1.0 |
| A–4 | — | — | 0.71 | 0.80 | 0.85 | 0.92 |
| A–5 | — | — | — | 0.72 | 0.77 | 0.91 |

*Average values of $C_P$ for the given ranges were approximated from curves in the *Habasit Engineering Manual,* Habasit Belting, Inc., Chamblee (Atlanta), Ga.

## Table 17–5

Crown Height and ISO Pulley Diameters for Flat Belts*

| ISO Pulley Diameter, in | Crown Height, in | ISO Pulley Diameter, in | Crown Height, in | |
|---|---|---|---|---|
| | | | $w \le 10$ in | $w > 10$ in |
| 1.6, 2, 2.5 | 0.012 | 12.5, 14 | 0.03 | 0.03 |
| 2.8, 3.15 | 0.012 | 12.5, 14 | 0.04 | 0.04 |
| 3.55, 4, 4.5 | 0.012 | 22.4, 25, 28 | 0.05 | 0.05 |
| 5, 5.6 | 0.016 | 31.5, 35.5 | 0.05 | 0.06 |
| 6.3, 7.1 | 0.020 | 40 | 0.05 | 0.06 |
| 8, 9 | 0.024 | 45, 50, 56 | 0.06 | 0.08 |
| 10, 11.2 | 0.030 | 63, 71, 80 | 0.07 | 0.10 |

*Crown should be rounded, not angled; maximum roughness is $R_a$ = AA 63 $\mu$in.

For flat belt

Velocity correction factor $= C_v = 1$