

Helical spring with rectangular section

$$D := 49 \text{ mm}$$

$$D_m := 38,1 \text{ mm}$$

$$b := 10,9 \text{ mm}$$

$$t := 5,4 \text{ mm}$$

$$N_a := 6 \quad \text{Number of active coils in the spring}$$

Material: Carbon Steel Strip AISI 1050 as rolled

$$G := 79,3 \text{ GPa} \quad \text{Shear Modulus} \quad \sigma_y := 415 \text{ MPa} \quad \text{Yield Tensile Strength}$$

$$F_s := 1,5 \quad \text{Security Factor}$$

Computation under The Engineering Guide To Spring Design:

Fig. 5-15. Rectangular Wire Compression Spring Wound on Flat or Edge.

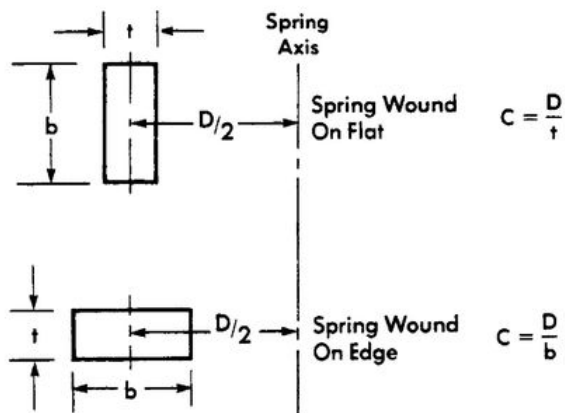
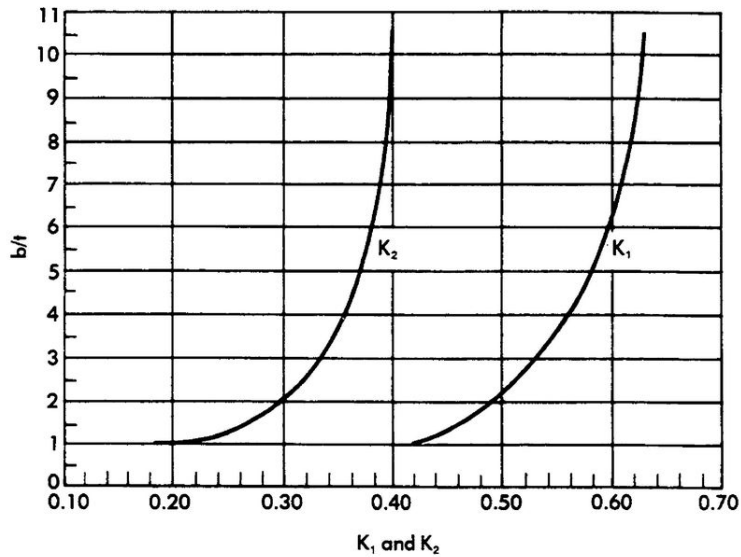


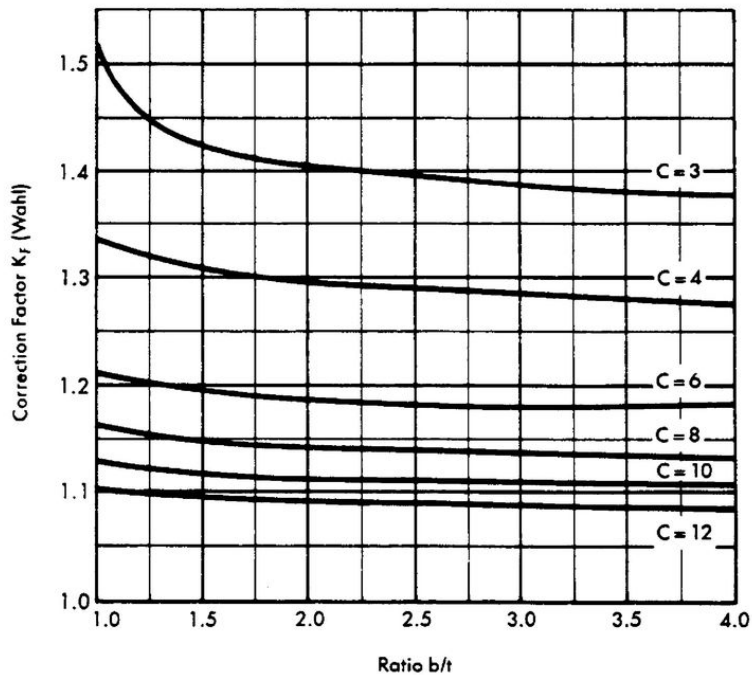
Fig. 5-16. Constants for Rectangular Wire in Torsion.

$$\frac{b}{t} = 2,0185$$

$$K_1 := 0,49$$

$$K_2 := 0,292$$

$$k := \frac{G \cdot b \cdot t^3}{N_a \cdot D} \cdot K_2 = 56,3021 \frac{N}{mm} \quad \text{Stiffness of the spring}$$

Fig. 5-17. Stress Correction Factors for Rectangular Wire Compression Springs Wound on Flat.

$$C := \frac{D}{b} = 4,4954$$

$$K_f := 1,27$$

$$S := \frac{P \cdot D}{K_1 \cdot b \cdot t} \cdot K_f \quad \text{Stress}$$

$$P_{\text{allowable}} := \frac{\sigma_y \cdot K_1 \cdot b \cdot t^2}{F_s \cdot D \cdot K_f} = 692,4161 N \quad \text{Allowable compression force}$$