

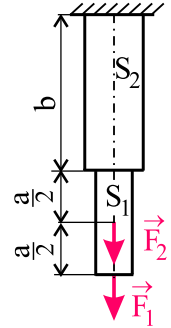
Problem 401

Determine the minimal cross section of the bar in the figure if the safety factor against the limit state of elasticity should not be less than 2. The stress concentration factor in the notch is $\alpha = 2$.

Moreover, determine the elongation of the bar.

Input values:

$$\begin{aligned} a &= 200 \text{ mm}, & F_1 &= 10^4 \text{ N}, & E &= 2 \cdot 10^5 \text{ MPa}, \\ b &= 300 \text{ mm}, & F_2 &= 2 \cdot 10^4 \text{ N}, & \sigma_K &= 300 \text{ MPa}, \\ S_1/S_2 &= 1/2. \end{aligned}$$



tension

safety factor

notches

elongation