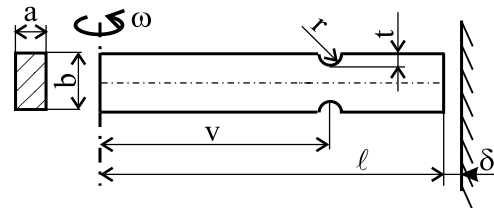


Problem 404

The homogeneous bar of rectangular cross section with a notch (according to the figure) rotates with the constant speed of 3000 rpm. The clearance between the bar end and the casing is 0,5 mm.

Evaluate the safety against the possible limit states. Suppose that the material is in ductile state under operation temperatures.

Input values: $l = 460 \text{ mm}$ $v = 290 \text{ mm}$
 $r = 1,5 \text{ mm}$ $t = 2,5 \text{ mm}$
 $a = 10 \text{ mm}$ $b = 35 \text{ mm}$
 $\delta = 0,5 \text{ mm}$ $n = 3000 \text{ ot/s}$
steel: $\rho = 7,8 \cdot 10^3 \text{ kgm}^{-3}$ $\sigma_K = 350 \text{ MPa}$



Solutions limit states