

4.152 | U profil z 4.121 obr. 4.71 ocel 10372
 $\sigma_{D_0} = 80 \text{ MPa}$; $\gamma_{\text{max}} = ?$ $E = 2,1 \cdot 10^5 \text{ MPa}$

$$M_{\text{max}} = 324 \cdot 10^3 \text{ Nmm}$$

$$\sigma_{D_0} = \frac{M_{\text{max}}}{W_0} \Rightarrow W_0 = \frac{M_{\text{max}}}{\sigma_{D_0}} = \frac{324 \cdot 10^3}{80} = \underline{\underline{4050 \text{ mm}^3}}$$

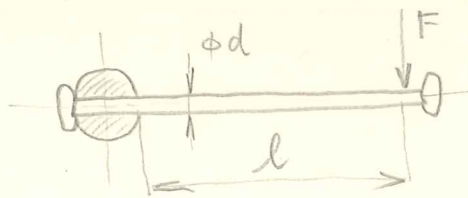
$$M50 \quad \text{---} \quad J_x = 26,4 \cdot 10^4 \text{ mm}^4$$

$$\gamma_G = \frac{G(l - 1,5d_2)^3}{3EJ} = \frac{400(1000 - 1,5 \cdot 160)^3}{3 \cdot 2,1 \cdot 10^5 \cdot 26,4 \cdot 10^4} = 1,055 \text{ mm}$$

$$\gamma_{G/2} = \frac{G}{2} \frac{l^3}{3EJ} = \frac{200 \cdot 1000^3}{3 \cdot 2,1 \cdot 10^5 \cdot 26,4 \cdot 10^4} = 1,2025 \text{ mm}$$

$$\underline{\underline{\gamma_{\text{max}} = 2,2575 \text{ mm}}}$$

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$F = 350 \text{ N}$ standard force

$l = 450 \text{ mm}$

$k = 2$

11370

$d = ?$

$$\begin{aligned}\sigma_{D_{0III}} &= C_{III} \frac{0,7 \sigma_{pe}}{k} \\ &= 0,65 \frac{0,7 \cdot 370}{2} = 84,2 \text{ MPa}\end{aligned}$$

$$\sigma_{D_{0III}} = \frac{M_{max}}{W_0} = \frac{Fl}{\frac{\pi}{32} d^3} = \frac{32 Fl}{\pi d^3}$$

$$d = \sqrt[3]{\frac{32 Fl}{\pi \sigma_{D_{0III}}}} = \sqrt[3]{\frac{32 \cdot 350 \cdot 450}{\pi \cdot 84,2}} = \underline{\underline{26,7 \text{ mm}}}$$