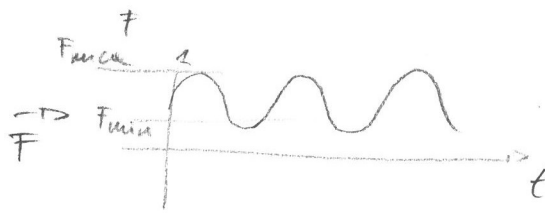
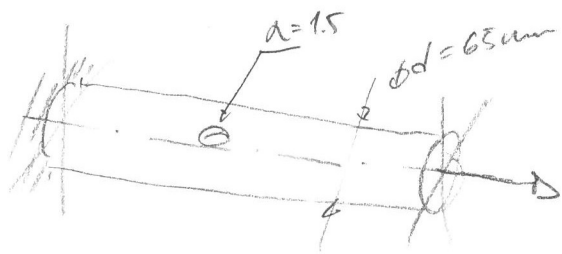


Pi:



$$\sigma_p = 400 \text{ MPa} \quad F_{\min} = 160 \text{ kN}$$

$$\sigma_{ar} = 80 \text{ MPa} \quad F_{\max} = ?$$

$$k_p = 3$$

$$k_{ar} = 35$$

$$\begin{aligned} \sigma_{\max} &= \alpha \cdot \frac{F_{\max}}{\frac{\pi d^2}{4}} = 1.5 \cdot \frac{F_{\max}}{\frac{\pi \cdot 65^2}{4}} = \\ &= 4.52 \cdot 10^{-4} F_{\max} \end{aligned}$$

$$\sigma_{\min} = \alpha \cdot \frac{F_{\min}}{\frac{\pi d^2}{4}} = 1.5 \cdot \frac{160 \cdot 10^3}{\frac{\pi \cdot 65^2}{4}} = 42.3 \text{ MPa}$$

$$\sigma_m = \frac{1}{2} (\sigma_{\max} + \sigma_{\min}) = \frac{1}{2} (4.52 \cdot 10^{-4} F_{\max} + 42.3)$$

$$\sigma_a = \frac{1}{2} (\sigma_{\max} - \sigma_{\min}) = \frac{1}{2} (4.52 \cdot 10^{-4} F_{\max} - 42.3)$$

$$\frac{\sigma_a}{\frac{\sigma_{ar}}{k_{ar}}} + \frac{\sigma_m}{\frac{\sigma_p}{k_p}} = 1 \Rightarrow \frac{2.26 \cdot 10^{-4} F_{\max} - 21.15}{\frac{80}{3.5}} + \frac{2.26 \cdot 10^{-4} F_{\max} + 21.15}{\frac{400}{3}} = 1$$

$$2.38 \cdot 10^{-6} F_{\max} = 1.04$$

$$F_{\max} = \underline{\underline{450 \text{ kN}}}$$